

Vote: 142 National Agricultural Research Organisation

Structure of Submission

QUARTER 2 Performance Report

Summary of Vote Performance

Cumulative Progress Report for Projects and Programme

Quarterly Progress Report for Projects and Programmes

QUARTER 3: Workplans for Projects and Programmes

QUARTER 4: Cash Request

Submission Checklist

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

VI: Summary of Issues in Budget Execution

This section provides an overview of Vote expenditure

(i) Snapshot of Vote Releases and Expenditures

Table V1.1 below summarises cumulative releases and expenditures by the end of the quarter:

Table V1.1: Overview of Vote Expenditures (US\$ Billion)

(i) Excluding Arrears, Taxes	Approved Budget	Cashlimits by End	Released by End	Spent by End Dec	% Budget Released	% Budget Spent	% Releases Spent
Recurrent Wage	18.972	9.486	9.486	9.486	50.0%	50.0%	100.0%
Recurrent Non Wage	8.765	4.292	4.292	4.292	49.0%	49.0%	100.0%
Development GoU	6.130	3.065	3.065	3.065	50.0%	50.0%	100.0%
Development Donor*	46.192	N/A	30.434	21.686	65.9%	46.9%	71.3%
GoU Total	33.868	16.844	16.844	16.844	49.7%	49.7%	100.0%
Total GoU+Donor (MTEF)	80.060	N/A	47.277	38.530	59.1%	48.1%	81.5%
(ii) Arrears	0.000	N/A	0.000	0.000	N/A	N/A	N/A
and Taxes Taxes**	8.000	N/A	0.000	0.000	0.0%	0.0%	N/A
Total Budget	88.060	16.844	47.277	38.530	53.7%	43.8%	81.5%
(iii) Non Tax Revenue	5.815	N/A	0.000	0.445	0.0%	7.7%	N/A
Grand Total	93.875	16.844	47.277	38.975	50.4%	41.5%	82.4%
Excluding Taxes, Arrears	85.875	16.844	47.277	38.975	55.1%	45.4%	82.4%

The table below shows cumulative releases and expenditures to the Vote by Vote Function :

Table V1.2: Releases and Expenditure by Vote Function*

Billion Uganda Shillings	Approved Budget	Released	Spent	% Budget Released	% Budget Spent	% Releases Spent
VF:0151 Agricultural Research	85.87	47.28	38.98	55.1%	45.4%	82.4%
Total For Vote	85.87	47.28	38.98	55.1%	45.4%	82.4%

* Excluding Taxes and Arrears

(ii) Matters to note in budget execution

NARO's mandate is oversight, coordination and implementation of research in all aspects of crops, livestock, fisheries, forestry and natural resources. . To fulfil its mandate and mission, NARO receives support from Government of Uganda (GoU), under the Recurrent and Development Expenditure and the World Bank for the ATAAS and EAAPP, JICA, USAID, KAFACI and other development partners. The organisation's impact is based on three major outputs. That is:

- Technology generation
- Research – extension - farmer interface
- Institutional capacity strengthening

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

The outputs are delivered through core funding to 15 Public Agricultural Research Institutes (PARIs) and competitive grants to other research service providers.

- Technology generation

NARO concentrated on the ten priority commodities recommended by cabinet i.e coffee, tea, maize, Beans, Cassava, Rice, cotton, dairy, beef, and fish. However, researchable issues in other commodities was given due attention. These commodities include but not limited to Potato, Sweet potato, Wheat, barley, sorghum, sunflower, millet, groundnuts, sesame, poultry, commercial fruits, citrus, mangoes, apples, pears. Also included are apiary, forests, Agroforestry and plantation forest trees, wood and non wood forest products, energy and water.

- Research – extension - farmer interface

Every effort has been made to reinforce the research and extension interface. Foundation seed provided to seed companies and farmer groups; breeder seed provided to seed companies; clean/improved planting materials multiplied and availed to uptake pathways; on station and on-farm trials conducted; technology demonstrations held on station and technology parks; capacity of farmers and farmer groups to make choices and implement decisions that affect their livelihoods enhanced; dissemination and training workshops and seminars held for scientists, policy makers, field extension staff, subject matter specialists and other service providers; designed and developed extension dissemination materials, farming manuals, publicity and news articles, and radio talk shows conducted;

Table V1.3: High Unspent Balances and Over-Expenditure in the Domestic Budget (Ushs Bn)

<i>(i) Major unspent balances</i>
<i>(ii) Expenditures in excess of the original approved budget</i>
* Excluding Taxes and Arrears

V2: Performance Highlights

This section provides highlights of output performance, focusing on key outputs and actions implemented to improve section performance.

Table V2.1: Key Vote Output Indicators and Expenditures*

<i>Vote, Vote Function Key Output</i>	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
<i>Vote Function: 0151 Agricultural Research</i>			
Output:015101	Generation of agricultural technologies		
<i>Description of Performance:</i>	Technologies for enhancing production and productivity of crops (new, intermediate), Livestock (new and intermediate), Forestry (new and intermediate) and natural resource management	Draft Digital elevation modeling (DEM) based map of Uganda showing locations where ram pumps can work. The final version of the map is to be generated next quarter	Under performance for research studies under CGS is due to screening and transforming of successful concept notes to full proposals. This was a lengthy process. Seventy (70 from the original 168) full proposals were received from the Principle Investigators. These proposals are to be reviewed by teams of technical experts. The planned target will be achieved in the third quarter.
	Cross cutting outputs to include but not limited to the Environment, HIV/AIDS	3 ram pumps fabricated; installation of ram pump for pumping water for irrigation in Mbale (Bungokho-Mutoto)	
	New varieties of submitted for release	Partially completed the development of a motorized maize sheller prototype for 5-19	
	New CGS studies conducted	hectare maize farm. The prototype is to be completed	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>next quarter.</p> <p>Evaluation of motorised chipper: Chipping efficiency in terms of chipping losses, fuel consumption, throughput, determined</p> <p>Evaluation of chipper design: Grating and pressing efficiency in terms of size reduction, fuel consumption, throughput and detoxification, determined</p> <p>Three formulations (ratios: 10:5,85; 20:5,75; and 30: 5: 65 of beans, soy and maize.) evaluated on station and in two districts by 150 people showed higher acceptance for 20,5,75 bean:soy:maize combination</p> <p>One formulation (fish crisp: 5:3:2 of fish, wheat and cassava) developed, tested for consumer acceptance and willingness to pay (N.bredoi had an unacceptable colour)</p> <p>Establishing a profile and composition of nutrients in fresh water fishes (before and after processing (smoking, salting, frying and drying)): Frying resulted in loss of 20% Zn, 15% Mn and 12% P in majority of spp. Retention of only 25% of DHA (fatty acid) in 4 fried spp.; 90% of consumers around Kampala peri-urban centres preferred fried products</p> <p>Determination of level of Omega 3 & 6 compounds in fermented N. bredoi products: Levels of Omega 3 & 6 and docosahexanoic acid (DHA) in powdered and fermented N. bredoi products was 13mg/100 and 12.89mg/100</p> <p>Development of cassava-based product: Gari-bar formulated</p> <p>Development of interventions to ensure safety of fish products: Smoke filters (with different</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>cyclone filter depth and arrangements) tested on station; Top introduction of smoke into cyclone and bottom introduction smoke into cyclone</p> <p>Final report on bean value chain in Oyam compiled. Key findings: Majority of farmers used local seed. Pests and diseased the major constraint during production and storage</p> <p>1 leaflet and 1 poster on maize storage generated</p> <p>Production of cassava biodegradable packaging materials: A method for producing powders and films developed</p> <p>A survey on prevalence of cotton wilt diseases was conducted in northern region (Dokolo, Alebtong, Apac, Pader and Gulu districts.</p> <p>Five promising cowpea lines selected for multi-location evaluation. K80 which gave yield of 2278 kg/ha, followed by ACC12 (2250 kg/ha), New cowpea (2111 kg/ha) and ACC26. These out yielded SECOW-2W (1944 kg/ha) and were selected for multilocation trials.</p> <p>Five of the promising lines performed better than the test released variety (SEPI 2) which gave yield of 2188 kg/ha. 2004/17/16/5 (2688 kg/ha) the highest, followed by ICEAP00554 (2667 kg/ha), 2004/16/16/7 (2334 kg/ha), and 2004/17/10/1 (2230 kg/ha)</p> <p>200 millet accessions characterised and 4 lines resistant to blast identified;</p> <p>Thirteen (13) millet lines with tolerance to drought confirmed;</p> <p>Baseline survey to collect</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>information on finger millet production systems, processing methods, market prospects and consumption patterns conducted in Katakwi and Mbale.</p> <p>10 promising pearl millet lines identified</p> <p>Pest field screening experiments in four locations of 16 sorghum advanced lines resulted in the identification of four lines resistant to shoot fly attack .</p> <p>Acaricidal activity of 3 selected botanicals against ticks was established in Karamoja and Teso Tephrosia vogelii and Albazia coriaria showed 90% and 70% effectiveness, respectively against adult and larvae of Boophilus and Rhipicephalus species from cattle</p> <p>Ethnoveterinary botanicals and knowledge utilised by pastoralists to control ticks and helminths in livestock was documented</p> <p>Preliminary laboratory results from screening for Brucellosis was done, seroprevalence of 23.2% Brucella abortus and 1.6% Brucella mellitensis was found, 0.8% (1 camel) was reactive to both Brucella species. dissemination of preliminary results to stakeholders was done, 128 participants attended at Alakas primary school on 19th dec 2013. 46 Camels were treated for corynebacterium infection from 17th -19th dec 2013</p> <p>26. Survey on seed system security assessment was conducted. Results showed that 90% of farmer use food grains as seeds. 60% of farmers sources food grain seeds from mobile markets,10% obtained from own saved from previous season harvests and 20% obtain seeds from neighbours</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>Preliminary report drafted for tea profitability in Kyenjojo district</p> <p>Promotion of IPM packages for management of BBW: Through the promotion of IPM packages, BBW incidence reduced to below 10% in most of the affected areas in Ankole and Kigezi</p> <p>Determination of nutrient levels & biophysical factors influencing fish production levels: In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1}. Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment. Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits</p> <p>Livelihood Analysis of fishing communities: Prioritized & socially acceptable livelihood options for Lake Edward fishers were identified</p> <p>Map on aquaculture production in Central region completed: Data on aquaculture production collected from 137 fish farms in Lira & Alebtong districts in Northern region (a database on aquaculture production in the Northern region is being developed)</p> <p>Development of topographic maps & designs of aquaculture reservoir fed systems in Western region: Appropriate site was established in Kagango dam in Isingiro district. Consensus was obtained from farmers & district officials following a consultative & sensitisation</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>meeting in preparation for formulation of MoU</p> <p>Development of selected fish species for ornamental fish culture: Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)</p> <p>Determination of Appropriate Gillnet Mesh Sizes: Conducted 3 monthly gillnet size selectivity experiments (Oct – Dec) during the wet season on the Northern part of Lake Albert. Preliminary analysis revealed the 2.5 inch mesh size gillnets as appropriate for sustainable harvest of <i>A. baremose</i> & <i>H. forskahlia</i> in the deep open waters of Lake Albert</p> <p>Update on current status of fishing effort on the Kyoga basin lakes: A census of all fishing inputs (effort) on lakes Kyoga and Kwania (Oct 2013) was conducted, showing an increase in undersize gillnets and fishers by 25% and 18% respectively between 2008 & 2013. A 5% decline in number of fish landing sites due to resurgence of water hyacinth, rendering inaccessibility & subsequent closure was registered</p> <p>Update on current fish production levels, income (beach values) & contribution to livelihoods & GDP from Lake Albert & Albert Nile fisheries: Undertook a lake-wide CAS (Nov – Dec) on Lake Albert & Albert Nile. Conducted 3 monthly CAS on 2 fish landings in vicinity of the lower Victoria (Murchison) Nile. Comparing with the previous quarter (Jul – Sep), there was a 10% decline in fish catch (from 500 t to 450 t), 20% decline in beach value (from 1.1 bn to 800 m) of catch</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>landed at the two fish landing sites. Analysis of the lake-wide CAS data for the period Nov – Dec is still ongoing but initial results indicate up to 40 fish species of economic importance to commercial fisheries of the Albert system</p> <p>Undertook monthly experimental surveys on fish populations in the Victoria Nile Ramsar site area of MFPN to identify critical habitats for fish avoidance during seismic & other oil related exploratory activities & to generate baseline data for post seismic monitoring. Up to 160 habitats important to fish as breeding & nursery grounds have been identified & mapped in the area. A total of 45 species of socio-ecological importance that need protection from oil seismic activities have been recorded. 3 technical reports have been prepared & submitted to Total E & P detailing technical advice on avoidance & protection strategies for the identified critical fish habitats & fish species</p> <p>Baseline information/ database energy returns from natural fish food organisms in Lake Edward: Study reports on energy returns & fatty acid profiling are still under compilation by MAK collaborator</p> <p>Development of technologies for sustained mass production of micro-algae, rotifers & Moina, two live larval feeds, rotifers & Moina: Prototypes of culture media & systems for micro-algae, rotifers & Moina using available fibre glass tanks was tried out successfully. Preliminary results of the trials showed Chlorella spp to be the best micro-algal food for Moina.</p> <p>Development of feed formulation for grower feed for</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>tilapia & 3 grower feeds for catfish: Proximate composition of at least 8 local feed ingredients determined</p> <p>Determination of major fish disease pathogens from 5 commercial fish farms/hatcheries:</p> <p>Laboratory characterization of parasites collected from hatcheries and 3 grow out fish farms in Serere, Lira, Gulu & Lacor. Parasitology revealed & confirmed presence of Trichodina sp, Acathecephalus sp, Bolbophorus sp, monogean – Cichildogyrus Euclinostomum sp & Gyrogactyrus sp infecting tilapia and catfish. DNA from bacterial samples was isolated & shipped to ILRI, Nairobi for molecular identification.</p> <p>Studies are on going on breeding Nile Perch and African catfish. Breed 1260 juveniles pureline Lake Edward Nile tilapia strains on station for use in breeding programme. Morphometrics data & genetic samples from 100 Nile tilapia samples from 100 Nile tilapia samples of Lake Kyoga collected. 132 Nile tilapia parent stock of Nile tilapia from Lake Kyoga acclimatized on station for use in breeding programme</p> <p>Undertook 1 field environment assessment of SON Fish farm: Water parameters indicated good conditions for aquaculture production: Dissolved oxygen (6.8 – 8.0 mg/L); Temperature (24.9 – 26.20C); pH (6.9 – 7.3); Blue green algae were dominant with high biomass (8000µg/L); Cage sites had high zooplankton densities.</p> <p>Final response of 27 clones to CBSD determined and data analysed.</p> <p>Performance evaluation of food-</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>grade motorized chipper undertaken. Chipper found to be efficient on chipping recovery (78%) and fuel consumption (Ug Shs 86/kg)</p> <p>Draft cassava market survey report has been produced; the results indicate the four main marketing channels for cassava and cassava products. These are: 1. Farmer-Middleman-Wholesaler-Retailer-Consumer (27%). 2. Farmer-Wholesaler-Consumer (18%). 3. Farmer-Retailer-Consumer (15%). 4. Farmer-Wholesaler-Processor-Consumer (17%).</p> <p>Refined profitability trial report for 2011/12; the report highlights include: Nase 19 and Nam 130 had the highest average market value of fresh roots of shs 37,000 per plot each followed by 52-TME 14 with shs 35,000, Nase 16, Nase 18 and Nase14 in that order). At the on station conditions, the average costs per plot are the same, therefore profitability of the varieties follow the same order.</p> <p>The average technical efficiency of cassava producers/farmers was found to be 54%, minimum being 27% and maximum was 74%. This implies cassava farmers allocated inputs in cassava production sub-optimally, cassava farmers have an allowance of 46% to improve on efficiency level of the production. Based on above results, farmers should be encouraged to increase area under cassava since small scale farmers were technically inefficient compared to their large scale counterparts, in addition improved high yielding cassava varieties should be planted by these farmers</p> <p>Mother stock of CGM and CM established in cages in the</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>screen house at NaCRRRI for infestation of cassava trees</p> <p>The highest number of CGM (34 mites leaf) was recorded in Arua district on the local cassava variety Bismenge and 45 mites /leaf on Bao in Northern Uganda. Densities of T. aripo ranged from 0-0.25 actives /tip and recoveries were on TME 14, NASE 13 and Omongole cassava varieties</p> <p>Combined average parasitism by two indigenous parasitoid species ranged from 14.6-15.6% with the highest recorded in the West Nile Farmlands (Yumbe and Koboko districts) and the lowest in the Lake Victoria Crescent and Mbale Farmlands (Iganga, Busia and Jinja districts).</p> <p>Cassava varieties TME 14 and NASE 13 supported the highest parasitism rate (over 17%) for the predominant parasitoid species</p> <p>65 local varieties and four wild relatives of cassava collected, initiated in tissue culture and maintained at NaCCRI. Indigenous farmer knowledge related to the collected varieties documented.</p> <p>A total of 208 lines comprising (200 lines generated with new rice population background and 8 lines with high vegetative value) acquired from Korea. Preliminary observations show that up to 85% of the lines do not show symptoms of the prevalent problem in the country of RYMV and rice blast diseases. However, these are japonica type that are typically short and bold making as opposed to the East African varieties that are medium in size.</p> <p>The 20 irrigated lines have been established in 6 locations in the</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>country. 10 best performing ones were selected and submitted to MAAIF for DUS</p> <p>4 Sustainable ISFM and plant nutrients management strategies in rice ecosystems which account for farmers of different resource endowment developed and evaluated.</p> <p>The distribution of AFRGM was determined . The insect was found in both cultivated and wild rice throughout the year. Higher levels on cultivated rice were between Feb and June and July to November. Parasitoids were more from September to December</p> <p>A survey on the main rice seed value chain actors was conducted. Preliminary results show the actors to include: seed companies, contractual farmers, community seed producers/farmer groups, individual farmers mainly large scale producers, breeders (research), inspectors, stockists/traders, Non-Governmental Organizations/Community based organizations and District Production Offices. These are promoting rice seed related projects within the community. There is weak linkage among these actors (breeders-inspectors, seed company-contractual farmers). Some actors are not knowledgeable in the varietal differences, resulting to varietal mixing.</p> <p>All the accessions gave a relatively high NDF ranging between 55% and 60% and low crude protein content (6.8% and 9.2%). Kakamega 1, Kakamega 2, 112, 16702 and 16805 were recommended for multiplication in NSD “hot spot” areas as a way to improve feed availability. Over 30 acres of forage seed have been established at NaLIRRI.</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>The effects of NSD on dairy enterprise farm performance through resource re-allocation and cash flow changes were assessed using financial analysis based on partial budgeting techniques. The disease led to reduction in area under Napier grass by about 40 per cent.</p> <p>Q1 Survey for insect pests in oil palm growing areas was conducted. Preliminary findings in Buvuma and Iganga suggest that mealy bugs, scales and birds were the major pests in the two areas. Further assessment underway</p> <p>Raised 20,500 seedlings each of M. eminii, E. grandis and M. volkensis</p> <p>10,000sqm of land identified and cleared for trial establishment; 20 soil samples collected and being analyzed; germplasm for 5 indigenous tree species collected and being raised in the nursery</p> <p>Propagation protocol for tree crop interaction (for five indigenous fodder species) trial developed</p> <p>Four indigenous tree species (Piliostigma thorningii, Bridelia micrantha, Erythrina abyssinica and Vitex doniana) characterised for medicinal and firewood uses.</p> <p>2 energy technologies assessed: the three-stone stove mostly used (82%) with energy consumption of 69MJ/cap; Lorena stove was the least used (4%) at 35MJ/cap</p> <p>1863 plants identified and botanical data collated for use in selection for domestication</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>Leafy biomass harvesting for Warburgia ugandensis under farm conditions documented</p>	
		<p>50 F4 cotton progenies planted in replicated trials on-station.</p>	
		<p>10 promising cotton lines in DUS trials planted in Ngetta, NaSARRI and NaCRRRI</p>	
		<p>14 early maturing elite lines from IITA were evaluated, highest yield (700 kg/ha) was for IT04K2274), followed by IT07K21011 (617 kg/ha) lines. Three Elite lines performed better the SECOW 2W (check). 11 medium duration elite lines were evaluated. Four of them performed better than the check variety as follows:IT07K29210 (1045 kg/ha) IT07K211118 (1031kg/ha), IT07K30944 (925 kg/ha), IT08K1493 (895 kg/ha) and SECOW2W (772 kg/ha). 11 dual purpose elite lines were evaluated, the check variety out yielded (775 kg/ha) them. Among the elite lines IT06K1472 gave the highest yield (469 kg/ha).</p>	
		<p>11 elite cowpea lines planted at NaSARRI and yield data was collected. Four of elite lines gave yields over 1000 kg/ha and they out yielded Secow-2W (check). Ngoji gave the highest yield (1,319 kg/ha). Planting of 11 elites for second rains 2013 was done</p>	
		<p>A total of 54 local cowpea accessions planted out and twenty of them gave yields above 1,000 kg/ha and five of them shown resistance to viral diseases .</p>	
		<p>A total of 52 cowpea crosses planted out and data on yield analyzed ten of them gave yields above 1,000 kg/ha and five of them shown resistance cowpea scab disease.</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>Twelve lines planted out and yield data analyzed. The yield was severely affected by the drought experienced. Mauritius gave the highest yield (718 kg/ha), followed by VC6173B-10 (648 kg/ha) and then VC61137B-14 (625 kg/ha). They out yielded the local variety (463 kg/ha).</p> <p>Evaluation completed and 45 cowpea lines resistant to blast and 13 lines with tolerance to drought identified.</p> <p>Selected 40 advanced cowpea lines for further screening;</p> <p>Selected 5 lines drought tolerance for further analysis</p> <p>20 sunflower lines selected for further screening</p> <p>Four cowpea lines B312, ACC11, ACC12, ACC26, were found to be resistant. Among the released varieties SECOW 2W and 3B showed moderate resistance. 5T, NC and 3B23 were tolerant. 1T4W,SS and ACC23 were susceptible.</p> <p>10 promising NaSARRI selections and 6 BC3 drought and Striga resistant sorghum lines were replanted in Bukedea, Kumi and Serere trial sites. results indicate that 2 NaSARRI selections had low Striga incidence while 2 BC3 lines from Sudan were early maturing and high yielding. Data on plant establishment and shoot fly incidence has been collected.</p> <p>BC2S2 crosses were advanced to BC3S3 generation, 12 BC6 lines were advanced to BC7 generations for bulking and evaluation</p> <p>Pest field screening experiments in four locations of 16 sorghum advanced lines resulted in the identification of four lines</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>resistant to shoot fly attack .54 lead farmers and 10 Agric extension staff trained on sorghum pest management in the three districts.</p> <p>16 elite forage sorghum lines planted for evaluation in 4 different locations for the first rain season 2013. Agronomic data collected on pest and disease responses. 5 lines identified promising.</p> <p>40 forage sorghum accessions assembled and characterized. 16 elite forage sorghum lines planted for evaluation in 4 locations first rain season 2013. Agronomic data collected on pest and disease responses. 30 introduced forage lines planted for further advancement.</p> <p>4 sweet sorghum varieties were planted 10 demonstration sites in 3 Sub-counties of Kayunga, Baale and Busaana to introduce NaSARRI released sorghum varieties to the farming communities. Data collection and harvesting has been done and two have been identified promising M.O.U signed between NaSARRI and Bio Green investments Kayunga. 400 farmers selected to start producing sweet sorghum for bio- ethanol production. Chinese company given permission by Govt. to start construction of the factory.</p> <p>14 sweet sorghum lines were planted for screening against resistance to major insect pest and diseases and stem sugar composition at NaSARRI, Kayunga and Ikulwe. Data collection and harvesting has been done. 10 identified promising</p> <p>10 Agriculture Extension staff and 47 lead farmers trained on pest and disease management and quality sweet sorghum seed</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>production in Kayunga district.</p> <p>10 promising BC5 populations were bulked to advance to BC6 population Three additional parents with high stem sugar content were incorporated into the breeding program to generate new crosses.</p> <p>Draft report detailing farmers agricultural need, constraints and opportunities in Bukedi sub zone produced</p> <p>A survey of 40 households in Masindi district was conducted. Preliminary results indicated that; poor hive performance, low hive colonization, inefficient baiting materials, bee abscondment, decline of bee forage floras, short flowering month of bee forage species, poor honey extraction techniques, bee pests and diseases, poisonous plants to bees and limited capacity of farmers in improved apiary management were the factors limiting honey yield production among bee keepers. The survey has revealed that the most important bee forage plant species and major sources of pollen and nectar in Hoima district are; Calliandra calothyrsus, Albizia coriaria, Coffea species and Grewia millis. The major bee forage species in Masindi district are; Vernonia amygdalina, Acacia spp, Millicia excelsa, Albizia coriaria, Mangifera indica, Sena spectabilis, Coffea spp, Albizia ziggia, Grewia mollis, Combretum molle, Mangifera indica and Combretum collinum.</p> <p>Data has been collected on severity of aphids, plant aphid infestation, groundnut rosette disease severity following application of botanicals extracts of Tephrosia vogelli, Mexican marigold, red pepper, Nicotiana tabacum (at rate of</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

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		<p>500g of plant paste in 4 litres of water per 209 sqm) on groundnut established in a groundnut rosette disease hotspot. Results of the analysis will follow.</p> <p>Monitored the performance of improved fruit trials/mother gardens in Mbarara, Sembabule and Kiruhura districts. Fruits yields ranged from 5-7 tons/ha for all varieties. Preliminary findings have suggested that fungicide and pesticide application regimes are appropriate for management of major mango, avocado and citrus pests and diseases. The use of systemic fungicide at vegetative, flowering and fruiting stages give promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocados</p> <p>Dominant agroforestry practices in the zone are being documented. Secondary data indicates that upper storey indigenous woody species scattered in crop fields and along the boundary constitute the prevalent tree-crop management practice in the region. These are mainly for wood production and to a less extent fodder but not soil fertility management in degraded fields.</p> <p>Monitored the survival, pest & disease resistance of agroforestry technologies. Survival: Kayunga 98% of citrus and Mubende 95% for mangoes. Average fruiting in all citrus varieties was 300, and mangoes 76.</p> <p>Preliminary technical report on yield performance for improved potato varieties developed in Rwebitaba ZARDI</p>	

Performance Indicators:

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

<i>Vote, Vote Function Key Output</i>	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
No. of research studies under competitive grants scheme	40	0	
No. of production technologies generated	80	60	
No. of new varieties/ prototypes submitted to Variety Release Committee for release	25	29	
<i>Output Cost:</i>	US\$ Bn: 5.820	US\$ Bn: 1.009	% Budget Spent: 17.3%
Output: 015102	Research extension interface promoted and strengthened		
<i>Description of Performance:</i>	Multistakeholder innovation platforms established or supported;	43 Multistakeholder innovation platforms(3 new, 40 supported).	None
	Foundation and basic seed provided to farmers, farmer groups and seed companies;	400,000 cuttings Clean/Improved planting materials	
	Clean/Improved planting materials multiplied and availed to uptake pathways;	20 on farm , 10 community demos, 13 demonstrations	
	On-farm trials conducted;	700 farmers empowered in various subjects	
	Technology demonstrations held on station and technology parks;	5 dissemination and 2 feedback workshops organised	
	Capacity of Farmers and Farmer Groups to make choices and implement decisions that affect their livelihoods enhanced;	3 scientific conferences supported, 90 extension workers empoweered	
	Dissemination and Training workshops held for subject matter specialists and other service providers;	16 scientific papers published, 9 leaflets, 1 policy brief developed 3 draft manuals, 7 New articles, 3 talk shows	
	Scientific conferences, dissemination workshops and seminars for scientists, extension agents and policy makers conducted;	Q1 Multistakeholder innovation platforms established or supported; 31 (4 new, 29 supported)	
	Scientific & extension dissemination materials developed and published;	Foundation and basic seed provided to farmers, farmer groups and seed companies; (600kgs-cowpeas; 2.31 tons-maize; 17 tons-beans;	
	Design and development of Farming manuals;	Clean/Improved planting materials multiplied and availed to uptake pathways; 1000 apple seedlings; 37000 tree seedlings; 1114-coffee; 2500 seedlings;	
	Publicity and News articles developed and published,		
	Audio Visuals in English and local languages developed and availed to uptake pathways;	On-farm trials conducted; 35 trials	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

<i>Vote, Vote Function Key Output</i>	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
	Radio talk shows conducted;	Technology demonstrations held on station and technology parks; 20 demonstration established (excluding on-station and show demos)	
		Capacity of Farmers and Farmer Groups to make choices and implement decisions that affect their livelihoods enhanced; empowered in 8 areas	
		Dissemination and Training workshops held for subject matter specialists and other service providers;	
		Scientific conferences, dissemination workshops and seminars for scientists, extension agents and policy makers conducted; 2 –extension agents; 1-policy dialogue	
		Scientific & extension dissemination materials developed and published; 4 scientific, 10 sets of extension materials	
		Design and development of Farming manuals; 0	
		Publicity and News articles developed and published, 2	
		Audio Visuals in English and local languages developed and availed to uptake pathways; 0	
		Radio talk shows conducted; 2	
<i>Performance Indicators:</i>			
No. of technological innovations delivered to uptake pathways	40	40	
No. of technological innovation platforms established/supported	12	12	
<i>Output Cost:</i>	US\$ Bn: 4.075	US\$ Bn: 0.369	% Budget Spent: 9.1%
Output:015105	Generation of technologies for priority commodities		
<i>Description of Performance:</i>	Technologies for enhancing productivity of Crops (cassava,maize,Rice, Horticultural crops,	Partially completed the development of a motorized maize sheller prototype for 5-19 hectare maize farm. The	None

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

<i>Vote, Vote Function Key Output</i>	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
	bananas)(new, intermediate), Livestock (dairy cattle, meats(new and intermediate), and fisheries	prototype is to be completed next quarter.	
	New varieties of submitted for release	Three formulations (ratios: 10,5,85; 20,5,75; and 30: 5: 65 of beans, soy and maize.) evaluated on station and in two districts by 150 people showed higher acceptance for 20,5,75 bean:soy:maize combination	
	Foundation and basic seed provided to farmers, farmer groups and seed companies;	One formulation (fish crisp: 5:3:2 of fish, wheat and cassava) developed, tested for consumer acceptance and willingness to pay (N.bredoi had an unacceptable colour)	
	Breeder seed provided to seed companies;	Establishing a profile and composition of nutrients in fresh water fishes (before and after processing (smoking, salting, frying and drying)): Frying resulted in loss of 20% Zn, 15% Mn and 12% P in majority of spp. Retention of only 25% of DHA (fatty acid) in 4 fried spp.;	
	Clean/Improved planting materials multiplied and availed to uptake pathways;	90% of consumers around Kampala peri-urban centres preferred fried products	
	On-farm trials conducted;	Determination of level of Omega 3 & 6 compounds in fermented N. bredoi products: Levels of Omega 3 & 6 and docosahexanoic acid (DHA) in powdered and fermented N. bredoi products was 13mg/100 and 12.89mg/100	
	Technology demonstrations held on station and technology parks;	Development of cassava-based product: Gari-bar formulated	
	Capacity of farmers and farmer groups to make choices and implement decisions that affect their livelihoods enhanced;	Development of interventions to ensure safety of fish products: Smoke filters (with different cyclone filter depth and arrangements) tested on station; Top introduction of smoke into cyclone and bottom introduction smoke into cyclone	
		Final report on bean value chain in Oyam compiled. Key findings: Majority of farmers used local seed. Pests and diseased the major constraint	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		during production and storage	
		1 leaflet and 1 poster on maize storage generated	
		Production of cassava biodegradable packaging materials: A method for producing powders and films developed	
		Acaricidal activity of 3 selected botanicals against ticks was established in Karamoja and Teso Tephrosia vogelii and Albazia coriaria showed 90% and 70% effectiveness, respectively against adult and larvae of Boophilus and Rhipicephalus species from cattle	
		Ethnoveterinary botanicals and knowledge utilised by pastoralists to control ticks and helminths in livestock was documented	
		Preliminary laboratory results from screening for Brucellosis was done, seroprevalence of 23.2% Brucella abortus and 1.6% Brucella mellitensis was found, 0.8% (1 camel) was reactive to both Brucella species. dissemination of preliminary results to stakeholders was done, 128 participants attended at Alakas primary school on 19th dec 2013. 46 Camels were treated for corynebacterium infection from 17th -19th dec 2013	
		Survey on seed system security assessment was conducted. Results showed that 90% of farmer use food grains as seeds. 60% of farmers sources food grain seeds from mobile markets,10% obtained from own saved from previous season harvests and 20% obtain seeds from neighbours	
		Preliminary report drafted for tea profitability in Kyenjojo	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>district</p> <p>Promotion of IPM packages for management of BBW: Through the promotion of IPM packages, BBW incidence reduced to below 10% in most of the affected areas in Ankole and Kigezi</p> <p>Determination of nutrient levels & biophysical factors influencing fish production levels: In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1}. Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment. Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits</p> <p>Livelihood Analysis of fishing communities: Prioritized & socially acceptable livelihood options for Lake Edward fishers were identified</p> <p>Map on aquaculture production in Central region completed: Data on aquaculture production collected from 137 fish farms in Lira & Alebtong districts in Northern region (a database on aquaculture production in the Northern region is being developed)</p> <p>Development of topographic maps & designs of aquaculture reservoir fed systems in Western region: Appropriate site was established in Kagango dam in Isingiro district. Consensus was obtained from farmers & district officials following a consultative & sensitisation meeting in preparation for formulation of MoU</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>Development of selected fish species for ornamental fish culture: Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)</p>	
		<p>Determination of Appropriate Gillnet Mesh Sizes: Conducted 3 monthly gillnet size selectivity experiments (Oct – Dec) during the wet season on the Northern part of Lake Albert. Preliminary analysis revealed the 2.5 inch mesh size gillnets as appropriate for sustainable harvest of A. baremose & H. forskahlia in the deep open waters of Lake Albert</p>	
		<p>Update on current status of fishing effort on the Kyoga basin lakes: A census of all fishing inputs (effort) on lakes Kyoga and Kwania (Oct 2013) was conducted, showing an increase in undersize gillnets and fishers by 25% and 18% respectively between 2008 & 2013. A 5% decline in number of fish landing sites due to resurgence of water hyacinth, rendering inaccessibility & subsequent closure was registered</p>	
		<p>Update on current fish production levels, income (beach values) & contribution to livelihoods & GDP from Lake Albert & Albert Nile fisheries: Undertook a lake-wide CAS (Nov – Dec) on Lake Albert & Albert Nile. Conducted 3 monthly CAS on 2 fish landings in vicinity of the lower Victoria (Murchison) Nile. Comparing with the previous quarter (Jul – Sep), there was a 10% decline in fish catch (from 500 t to 450 t), 20% decline in beach value (from 1.1 bn to 800 m) of catch landed at the two fish landing sites. Analysis of the lake-wide CAS data for the period Nov –</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>Dec is still ongoing but initial results indicate up to 40 fish species of economic importance to commercial fisheries of the Albert system</p> <p>Undertook monthly experimental surveys on fish populations in the Victoria Nile Ramsar site area of MFNP to identify critical habitats for fish avoidance during seismic & other oil related exploratory activities & to generate baseline data for post seismic monitoring. Up to 160 habitats important to fish as breeding & nursery grounds have been identified & mapped in the area. A total of 45 species of socio-ecological importance that need protection from oil seismic activities have been recorded. 3 technical reports have been prepared & submitted to Total E & P detailing technical advice on avoidance & protection strategies for the identified critical fish habitats & fish species</p> <p>Baseline information/ database energy returns from natural fish food organisms in Lake Edward: Study reports on energy returns & fatty acid profiling are still under compilation by MAK collaborator</p> <p>Development of technologies for sustained mass production of micro-algae, rotifers & Moina, two live larval feeds, rotifers & Moina: Prototypes of culture media & systems for micro-algae, rotifers & Moina using available fibre glass tanks was tried out successfully. Preliminary results of the trials showed Chlorella spp to be the best micro-algal food for Moina.</p> <p>Development of feed formulation for grower feed for tilapia & 3 grower feeds for catfish: Proximate composition of at least 8 local feed</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>ingredients determined</p> <p>Determination of major fish disease pathogens from 5 commercial fish farms/hatcheries:</p> <p>Laboratory characterization of parasites collected from hatcheries and 3 grow out fish farms in Serere, Lira, Gulu & Lacor. Parasitology revealed & confirmed presence of Trichodina sp, Acathecephalus sp, Bolbophorus sp, monogean – Cichildogyrus Euclinostomum sp & Gyrogactyrus sp infecting tilapia and catfish. DNA from bacterial samples was isolated & shipped to ILRI, Nairobi for molecular identification.</p> <p>Studies are on going on breeding Nile Perch and African catfish. Breed 1260 juveniles pureline Lake Edward Nile tilapia strains on station for use in breeding programme. Morphometrics data & genetic samples from 100 Nile tilapia samples from 100 Nile tilapia samples of Lake Kyoga collected. 132 Nile tilapia parent stock of Nile tilapia from Lake Kyoga acclimatized on station for use in breeding programme</p> <p>Undertook 1 field environment assessment of SON Fish farm: Water parameters indicated good conditions for aquaculture production: Dissolved oxygen (6.8 – 8.0 mg/L); Temperature (24.9 – 26.20C); pH (6.9 – 7.3); Blue green algae were dominant with high biomass (8000µg/L); Cage sites had high zooplankton densities.</p> <p>Final response of 27 clones to CBSD determined and data analysed.</p> <p>Performance evaluation of food-grade motorized chipper undertaken. Chipper found to be efficient on chipping</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>recovery (78%) and fuel consumption (Ug Shs 86/kg)</p> <p>Draft cassava market survey report has been produced; the results indicate the four main marketing channels for cassava and cassava products. These are: 1. Farmer-Middleman-Wholesaler-Retailer-Consumer (27%). 2. Farmer-Wholesaler-Consumer (18%). 3. Farmer-Retailer-Consumer (15%). 4. Farmer-Wholesaler-Processor-Consumer (17%).</p> <p>Refined profitability trial report for 2011/12; the report highlights include: Nase 19 and Nam 130 had the highest average market value of fresh roots of shs 37,000 per plot each followed by 52-TME 14 with shs 35,000, Nase 16, Nase 18 and Nase14 in that order). At the on station conditions, the average costs per plot are the same, therefore profitability of the varieties follow the same order.</p> <p>The average technical efficiency of cassava producers/farmers was found to be 54%, minimum being 27% and maximum was 74%. This implies cassava farmers allocated inputs in cassava production sub-optimally, cassava farmers have an allowance of 46% to improve on efficiency level of the production. Based on above results, farmers should be encouraged to increase area under cassava since small scale farmers were technically inefficient compared to their large scale counterparts, in addition improved high yielding cassava varieties should be planted by these farmers</p> <p>Mother stock of CGM and CM established in cages in the screen house at NaCRRI for infestation of cassava trees</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>The highest number of CGM (34 mites leaf) was recorded in Arua district on the local cassava variety Bismenge and 45 mites /leaf on Bao in Northern Uganda. Densities of T. aripo ranged from 0-0.25 actives /tip and recoveries were on TME 14, NASE 13 and Omongole cassava varieties</p> <p>Combined average parasitism by two indigenous parasitoid species ranged from 14.6-15.6% with the highest recorded in the West Nile Farmlands (Yumbe and Koboko districts) and the lowest in the Lake Victoria Crescent and Mbale Farmlands (Iganga, Busia and Jinja districts).</p> <p>Cassava varieties TME 14 and NASE 13 supported the highest parasitism rate (over 17%) for the predominant parasitoid species</p> <p>65 local varieties and four wild relatives of cassava collected, initiated in tissue culture and maintained at NaCCRI. Indigenous farmer knowledge related to the collected varieties documented.</p> <p>A total of 208 lines comprising (200 lines generated with new rice population background and 8 lines with high vegetative value) acquired from Korea. Preliminary observations show that up to 85% of the lines do not show symptoms of the prevalent problem in the country of RYMV and rice blast diseases. However, these are japonica type that are typically short and bold making as opposed to the East African varieties that are medium in size.</p> <p>The 20 irrigated lines have been established in 6 locations in the country. 10 best performing ones were selected and submitted to MAAIF for DUS</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>4 Sustainable ISFM and plant nutrients management strategies in rice ecosystems which account for farmers of different resource endowment developed and evaluated.</p> <p>The distribution of AFRGM was determined . The insect was found in both cultivated and wild rice throughout the year. Higher levels on cultivated rice were between Feb and June and July to November. Parasitoids were more from September to December</p> <p>A survey on the main rice seed value chain actors was conducted. Preliminary results show the actors to include: seed companies, contractual farmers, community seed producers/farmer groups, individual farmers mainly large scale producers, breeders (research), inspectors, stockists/traders, Non-Governmental Organizations/Community based organizations and District Production Offices. These are promoting rice seed related projects within the community. There is weak linkage among these actors (breeders-inspectors, seed company-contractual farmers). Some actors are not knowledgeable in the varietal differences, resulting to varietal mixing.</p> <p>All the accessions gave a relatively high NDF ranging between 55% and 60% and low crude protein content (6.8% and 9.2%). Kakamega 1, Kakamega 2, 112, 16702 and 16805 were recommended for multiplication in NSD “hot spot” areas as a way to improve feed availability. Over 30 acres of forage seed have been established at NaLIRRI.</p> <p>The effects of NSD on dairy enterprise farm performance</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>through resource re-allocation and cash flow changes were assessed using financial analysis based on partial budgeting techniques. The disease led to reduction in area under Napier grass by about 40 per cent.</p> <p>Q1</p> <p>12 promising coffee candidates selected according to yield</p> <p>17 CWD resistant hybrid progenies identified</p> <p>Distributed 1114 TC derived plantlets to nursery operators</p> <p>The morphology of shade species varied with shade species with the largest canopy being shown by <i>Ficus ovate</i> and <i>Cordia africana</i> and least by pine</p> <p>Determined the disease and yield losses caused by ALS and rust on-farm with 3 farmers' fields in Wakiso district</p> <p>22 climbing bean genotypes which appeared very outstanding during the season from the PYT, IYT and IYT trials have been identified and selected. Most of the remaining genotypes had intermediate performance and 7 genotypes were completely rejected</p> <p>430 kg of seed obtained from 10 genotypes from 10 nutrient dense bean lines</p> <p>bean innovation platforms established.</p> <p>23 hybrids selected from previous regional trials and planted for second evaluation.</p> <p>8 hybrids selected through PVS at farmers filed</p> <p>Development of interventions to ensure safety of fish products:</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>Smoke filters (with different cyclone filter depth and arrangements) tested on station; Top introduction of smoke into cyclone and bottom introduction smoke into cyclone</p> <p>Final report on bean value chain in Oyam compiled. Key findings: Majority of farmers used local seed. Pests and diseased the major constraint during production and storage</p> <p>1 leaflet and 1 poster on maize storage generated</p> <p>Production of cassava biodegradable packaging materials: A method for producing powders and films developed</p> <p>Acaricidal activity of 3 selected botanicals against ticks was established in Karamoja and Teso Tephrosia vogelii and Albazia coriaria showed 90% and 70% effectiveness, respectively against adult and larvae of Boophilus and Rhipicephalus species from cattle</p> <p>Ethnoveterinary botanicals and knowledge utilised by pastoralists to control ticks and helminths in livestock was documented</p> <p>Preliminary laboratory results from screening for Brucellosis was done, seroprevalence of 23.2% Brucella abortus and 1.6% Brucella mellitensis was found, 0.8% (1 camel) was reactive to both Brucella species. Dissemination of preliminary results to stakeholders was done, 128 participants attended at Alakas primary school on 19th dec 2013. 46 Camels were treated for corynebacterium infection from 17th -19th dec 2013</p> <p>Survey on seed system security</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>assessment was conducted. Results showed that 90% of farmer use food grains as seeds. 60% of farmers sources food grain seeds from mobile markets, 10% obtained from own saved from previous season harvests and 20% obtain seeds from neighbours</p> <p>Preliminary report drafted for tea profitability in Kyenjojo district</p> <p>Promotion of IPM packages for management of BBW: Through the promotion of IPM packages, BBW incidence reduced to below 10% in most of the affected areas in Ankole and Kigezi</p> <p>Determination of nutrient levels & biophysical factors influencing fish production levels: In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1}. Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment. Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits</p> <p>Livelihood Analysis of fishing communities: Prioritized & socially acceptable livelihood options for Lake Edward fishers were identified</p> <p>Map on aquaculture production in Central region completed: Data on aquaculture production collected from 137 fish farms in Lira & Alebtong districts in Northern region (a database on aquaculture production in the Northern region is being developed)</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>Development of topographic maps & designs of aquaculture reservoir fed systems in Western region: Appropriate site was established in Kagango dam in Isingiro district. Consensus was obtained from farmers & district officials following a consultative & sensitisation meeting in preparation for formulation of MoU</p> <p>Development of selected fish species for ornamental fish culture: Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)</p> <p>Determination of Appropriate Gillnet Mesh Sizes: Conducted 3 monthly gillnet size selectivity experiments (Oct – Dec) during the wet season on the Northern part of Lake Albert. Preliminary analysis revealed the 2.5 inch mesh size gillnets as appropriate for sustainable harvest of <i>A. baremose</i> & <i>H. Forskahlii</i> in the deep open waters of Lake Albert</p> <p>Update on current status of fishing effort on the Kyoga basin lakes: A census of all fishing inputs (effort) on lakes Kyoga and Kwania (Oct 2013) was conducted, showing an increase in undersize gillnets and fishers by 25% and 18% respectively between 2008 & 2013. A 5% decline in number of fish landing sites due to resurgence of water hyacinth, rendering inaccessibility & subsequent closure was registered</p> <p>Update on current fish production levels, income (beach values) & contribution to livelihoods & GDP from Lake Albert & Albert Nile fisheries: Undertook a lake-wide CAS (Nov – Dec) on Lake Albert &</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>Albert Nile. Conducted 3 monthly CAS on 2 fish landings in vicinity of the lower Victoria (Murchison) Nile. Comparing with the previous quarter (Jul – Sep), there was a 10% decline in fish catch (from 500 t to 450 t), 20% decline in beach value (from 1.1 bn to 800 m) of catch landed at the two fish landing sites. Analysis of the lake-wide CAS data for the period Nov – Dec is still ongoing but initial results indicate up to 40 fish species of economic importance to commercial fisheries of the Albert system</p>	
		<p>Undertook monthly experimental surveys on fish populations in the Victoria Nile Ramsar site area of MFNP to identify critical habitats for fish avoidance during seismic & other oil related exploratory activities & to generate baseline data for post seismic monitoring. Up to 160 habitats important to fish as breeding & nursery grounds have been identified & mapped in the area. A total of 45 species of socio-ecological importance that need protection from oil seismic activities have been recorded. 3 technical reports have been prepared & submitted to Total E & P detailing technical advice on avoidance & protection strategies for the identified critical fish habitats & fish species</p>	
		<p>Baseline information/ database energy returns from natural fish food organisms in Lake Edward: Study reports on energy returns & fatty acid profiling are still under compilation by MAK collaborator</p>	
		<p>Development of technologies for sustained mass production of micro-algae, rotifers & Moina, two live larval feeds, rotifers & Moina: Prototypes of culture media & systems for micro-</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>algae, rotifers & Moina using available fibre glass tanks was tried out successfully. Preliminary results of the trials showed Chlorella spp to be the best micro-algal food for Moina.</p> <p>Development of feed formulation for grower feed for tilapia & 3 grower feeds for catfish: Proximate composition of at least 8 local feed ingredients determined</p> <p>Determination of major fish disease pathogens from 5 commercial fish farms/hatcheries:</p> <p>Laboratory characterization of parasites collected from hatcheries and 3 grow out fish farms in Serere, Lira, Gulu & Lacor. Parasitology revealed & confirmed presence of Trichodina sp, Acathocephalus sp, Bolbophorus sp, monogean – Cichildogyrus Euclinostomum sp & Gyrogactyrus sp infecting tilapia and catfish. DNA from bacterial samples was isolated & shipped to ILRI, Nairobi for molecular identification.</p> <p>Studies are on going on breeding Nile Perch and African catfish. Breed 1260 juveniles pureline Lake Edward Nile tilapia strains on station for use in breeding programme. Morphometrics data & genetic samples from 100 Nile tilapia samples from 100 Nile tilapia samples of Lake Kyoga collected. 132 Nile tilapia parent stock of Nile tilapia from Lake Kyoga acclimatized on station for use in breeding programme</p> <p>Undertook 1 field environment assessment of SON Fish farm: Water parameters indicated good conditions for aquaculture production: Dissolved oxygen (6.8 – 8.0 mg/L); Temperature (24.9 – 26.20C); pH (6.9 – 7.3); Blue green algae were dominant</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>with high biomass (8000µg/L); Cage sites had high zooplankton densities.</p> <p>Final response of 27 clones to CBSD determined and data analysed.</p> <p>Performance evaluation of food-grade motorized chipper undertaken. Chipper found to be efficient on chipping recovery (78%) and fuel consumption (Ug Shs 86/kg)</p> <p>Draft cassava market survey report has been produced; the results indicate the four main marketing channels for cassava and cassava products. These are: 1. Farmer-Middleman-Wholesaler-Retailer-Consumer (27%). 2. Farmer-Wholesaler-Consumer (18%). 3. Farmer-Retailer-Consumer (15%). 4. Farmer-Wholesaler-Processor-Consumer (17%).</p> <p>Refined profitability trial report for 2011/12; the report highlights include: Nase 19 and Nam 130 had the highest average market value of fresh roots of shs 37,000 per plot each followed by 52-TME 14 with shs 35,000, Nase 16, Nase 18 and Nase14 in that order). At the on station conditions, the average costs per plot are the same, therefore profitability of the varieties follow the same order.</p> <p>The average technical efficiency of cassava producers/farmers was found to be 54%, minimum being 27% and maximum was 74%. This implies cassava farmers allocated inputs in cassava production sub-optimally, cassava farmers have an allowance of 46% to improve on efficiency level of the production. Based on above results, farmers should be encouraged to increase area under cassava since small scale</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>farmers were technically inefficient compared to their large scale counterparts, in addition improved high yielding cassava varieties should be planted by these farmers</p> <p>Mother stock of CGM and CM established in cages in the screen house at NaCRRI for infestation of cassava trees</p> <p>The highest number of CGM (34 mites leaf) was recorded in Arua district on the local cassava variety Bismenge and 45 mites /leaf on Bao in Northern Uganda. Densities of T. aripo ranged from 0-0.25 actives /tip and recoveries were on TME 14, NASE 13 and Omongole cassava varieties</p> <p>Combined average parasitism by two indigenous parasitoid species ranged from 14.6-15.6% with the highest recorded in the West Nile Farmlands (Yumbe and Koboko districts) and the lowest in the Lake Victoria Crescent and Mbale Farmlands (Iganga, Busia and Jinja districts).</p> <p>Cassava varieties TME 14 and NASE 13 supported the highest parasitism rate (over 17%) for the predominant parasitoid species</p> <p>65 local varieties and four wild relatives of cassava collected, initiated in tissue culture and maintained at NaCCRI. Indigenous farmer knowledge related to the collected varieties documented.</p> <p>A total of 208 lines comprising (200 lines generated with new rice population background and 8 lines with high vegetative value) acquired from Korea. Preliminary observations show that up to 85% of the lines do not show symptoms of the prevalent problem in the country</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		<p>of RYMV and rice blast diseases. However, these are japonica type that are typically short and bold making as opposed to the East African varieties that are medium in size.</p> <p>The 20 irrigated lines have been established in 6 locations in the country. 10 best performing ones were selected and submitted to MAAIF for DUS</p> <p>4 Sustainable ISFM and plant nutrients management strategies in rice ecosystems which account for farmers of different resource endowment developed and evaluated.</p> <p>The distribution of AFRGM was determined . The insect was found in both cultivated and wild rice throughout the year. Higher levels on cultivated rice were between Feb and June and July to November. Parasitoids were more from September to December</p> <p>A survey on the main rice seed value chain actors was conducted. Preliminary results show the actors to include: seed companies, contractual farmers, community seed producers/farmer groups, individual farmers mainly large scale producers, breeders (research), inspectors, stockists/traders, Non-Governmental Organizations/Community based organizations and District Production Offices. These are promoting rice seed related projects within the community. There is weak linkage among these actors (breeders-inspectors, seed company-contractual farmers). Some actors are not knowledgeable in the varietal differences, resulting to varietal mixing.</p> <p>All the accessions gave a relatively high NDF ranging between 55% and 60% and low</p>	

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

Vote, Vote Function Key Output	Approved Budget and Planned outputs	Cumulative Expenditure and Performance	Status and Reasons for any Variation from Plans
		crude protein content (6.8% and 9.2%). Kakamega 1, Kakamega 2, 112, 16702 and 16805 were recommended for multiplication in NSD "hot spot" areas as a way to improve feed availability. Over 30 acres of forage seed have been established at NaLIRRI.	
		The effects of NSD on dairy enterprise farm performance through resource re-allocation and cash flow changes were assessed using financial analysis based on partial budgeting techniques. The disease led to reduction in area under Napier grass by about 40 per cent.	
	<i>Output Cost:</i> US\$ Bn:	7.595	US\$ Bn: 0.869 % Budget Spent: 11.4%
Vote Function Cost	US\$ Bn:	85.875	US\$ Bn: 38.975 % Budget Spent: 45.4%
Cost of Vote Services:	US\$ Bn:	85.875	US\$ Bn: 38.975 % Budget Spent: 45.4%

* Excluding Taxes and Arrears

Challenges During the reporting period, drought was a big challenge for on station and on farm trials, seed multiplication fields for farmer groups and Otherstakeholders.

Table V2.2: Implementing Actions to Improve Vote Performance

Planned Actions:	Actual Actions:	Reasons for Variation
Vote: 142 National Agricultural Research Organisation		
Vote Function: 01 51 Agricultural Research		
NARO in collaboration with NAADS have started implementation the Multistakeholder innovation platform and the value chain approaches. These successes have been tried with considerable success.	The capacity of zonal NARO and NAADS were enhanced with training in monitoring MSIPs	zonal None
Vote: 142 National Agricultural Research Organisation		
Vote Function: 01 51 Agricultural Research		
35 posts to be advertised during the FY 2013-2014.	35 posts advertised and 300 applications received	None

V3: Details of Releases and Expenditure

This section provides a comprehensive summary of the outputs delivered by the Vote and further details of Vote expenditures by Vote Function and Expenditure Item.

Table V3.1: GoU Releases and Expenditure by Output*

Billion Uganda Shillings	Approved Budget	Released	Spent	% GoU Budget Released	% GoU Budget Spent	% GoU Releases Spent
VF:0151 Agricultural Research	33.87	16.84	16.84	49.7%	49.7%	100.0%
<i>Class: Outputs Provided</i>	<i>32.31</i>	<i>16.02</i>	<i>16.02</i>	<i>49.6%</i>	<i>49.6%</i>	<i>100.0%</i>

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

015101	Generation of agricultural technologies	1.92	1.01	1.01	52.4%	52.4%	100.0%
015102	Research extension interface promoted and strengthened	0.74	0.37	0.37	49.9%	49.6%	99.3%
015103	Internal Audit	0.06	0.03	0.03	53.3%	53.3%	100.0%
015104	Agricultural research capacity strengthened	27.88	13.74	13.74	49.3%	49.3%	100.0%
015105	Generation of technologies for priority commodities	1.70	0.87	0.87	50.9%	51.1%	100.3%
<i>Class: Outputs Funded</i>		<i>1.56</i>	<i>0.83</i>	<i>0.83</i>	<i>53.1%</i>	<i>53.1%</i>	<i>100.0%</i>
015151	Payments to International Organisations (CGIAR, ASARECA, WARDA)	1.56	0.83	0.83	53.1%	53.1%	100.0%
Total For Vote		33.87	16.84	16.84	49.7%	49.7%	100.0%

* Excluding Taxes and Arrears

Table V3.2: 2013/14 GoU Expenditure by Item

<i>Billion Uganda Shillings</i>	Approved Budget	Releases	Expend-iture	% Budget Released	% Budget Spent	% Releases Spent	
Output Class: Outputs Provided	32.31	16.02	16.02	49.6%	49.6%	100.0%	
211102	Contract Staff Salaries (Incl. Casuals, Temporary)	18.97	9.49	9.49	50.0%	50.0%	100.0%
211103	Allowances	0.09	0.04	0.04	46.9%	46.9%	100.0%
212101	Social Security Contributions	2.47	1.09	1.09	44.4%	44.4%	100.0%
213001	Medical expenses (To employees)	0.10	0.05	0.05	53.3%	53.3%	100.0%
213002	Incapacity, death benefits and funeral expenses	0.11	0.06	0.06	53.3%	53.3%	100.0%
213004	Gratuity Expenses	1.45	0.68	0.68	47.1%	47.1%	100.0%
221001	Advertising and Public Relations	0.11	0.06	0.06	49.8%	49.8%	100.0%
221002	Workshops and Seminars	0.13	0.07	0.07	53.3%	53.3%	100.0%
221003	Staff Training	0.49	0.25	0.25	50.9%	50.9%	100.0%
221004	Recruitment Expenses	0.19	0.10	0.10	50.8%	50.8%	100.0%
221005	Hire of Venue (chairs, projector, etc)	0.11	0.06	0.06	50.3%	50.3%	100.0%
221006	Commissions and related charges	0.54	0.27	0.27	51.2%	51.2%	100.0%
221007	Books, Periodicals & Newspapers	0.08	0.04	0.04	51.2%	51.2%	100.0%
221008	Computer supplies and Information Technology (IT)	0.27	0.14	0.14	51.6%	51.6%	100.0%
221009	Welfare and Entertainment	0.25	0.13	0.13	51.4%	51.4%	100.0%
221011	Printing, Stationery, Photocopying and Binding	0.18	0.09	0.09	53.3%	53.3%	100.0%
221012	Small Office Equipment	0.12	0.06	0.06	51.1%	51.1%	100.0%
221016	IFMS Recurrent costs	0.31	0.16	0.16	52.5%	52.5%	100.0%
222001	Telecommunications	0.14	0.07	0.07	52.2%	52.2%	100.0%
222002	Postage and Courier	0.04	0.02	0.02	50.9%	50.9%	100.0%
222003	Information and communications technology (ICT)	0.09	0.05	0.05	51.2%	51.2%	100.0%
223004	Guard and Security services	0.12	0.06	0.06	47.2%	47.2%	100.0%
223005	Electricity	0.29	0.16	0.16	53.3%	53.3%	100.0%
223006	Water	0.03	0.02	0.02	53.3%	53.3%	100.0%
223901	Rent – (Produced Assets) to other govt. units	0.03	0.02	0.02	50.0%	50.0%	100.0%
224001	Medical and Agricultural supplies	1.76	0.90	0.90	51.2%	51.2%	100.0%
224002	General Supply of Goods and Services	0.85	0.44	0.44	51.8%	51.8%	100.0%
225001	Consultancy Services- Short term	0.14	0.07	0.07	50.1%	50.1%	100.0%
226001	Insurances	0.06	0.03	0.03	50.4%	50.4%	100.0%
227001	Travel inland	1.23	0.63	0.63	51.1%	51.1%	100.0%
227002	Travel abroad	0.03	0.02	0.02	50.0%	50.0%	100.0%
227004	Fuel, Lubricants and Oils	0.59	0.30	0.30	50.3%	50.3%	100.0%
228001	Maintenance - Civil	0.23	0.06	0.06	26.1%	26.1%	100.0%
228002	Maintenance - Vehicles	0.44	0.23	0.23	52.2%	52.2%	100.0%
228003	Maintenance – Machinery, Equipment & Furniture	0.19	0.08	0.08	39.9%	39.9%	100.0%
228004	Maintenance – Other	0.05	0.03	0.03	51.2%	51.2%	100.0%
Output Class: Outputs Funded		1.56	0.83	0.83	53.1%	53.1%	100.0%
262101	Contributions to International Organisations (Curre	1.55	0.82	0.82	53.1%	53.1%	100.0%

Vote: 142 National Agricultural Research Organisation

HALF-YEAR: Highlights of Vote Performance

<i>Billion Uganda Shillings</i>	Approved Budget	Releases	Expenditure	% Budget Released	% Budget Spent	% Releases Spent
264101 Contributions to Autonomous Institutions	0.01	0.01	0.01	51.7%	51.7%	100.0%
Output Class: Capital Purchases	8.00	0.00	0.00	0.0%	0.0%	N/A
312206 Gross Tax	8.00	0.00	0.00	0.0%	0.0%	N/A
Grand Total:	41.87	16.84	16.84	40.2%	40.2%	100.0%
Total Excluding Taxes and Arrears:	33.87	16.84	16.84	49.7%	49.7%	100.0%

Table V3.3: GoU Releases and Expenditure by Project and Programme*

<i>Billion Uganda Shillings</i>	Approved Budget	Released	Spent	% GoU Budget Released	% GoU Budget Spent	% GoU Releases Spent
VF:0151 Agricultural Research	33.87	16.84	16.84	49.7%	49.7%	100.0%
<i>Recurrent Programmes</i>						
01 Headquarters	24.33	12.02	12.02	49.4%	49.4%	100.0%
02 Competitive Grant scheme Secretariat	0.00	0.00	0.00	N/A	N/A	N/A
07 National Crops Research	0.60	0.31	0.31	51.8%	51.8%	100.0%
08 National Fisheries Research	0.31	0.16	0.16	52.3%	52.3%	100.0%
09 National Forestry Research	0.20	0.10	0.10	49.2%	49.2%	100.0%
10 National Livestock Research	0.29	0.14	0.14	49.3%	49.3%	100.0%
11 National Semi arid Research	0.28	0.15	0.15	53.5%	53.5%	100.0%
12 National Laboratories Research	0.68	0.35	0.35	52.2%	52.2%	100.0%
13 Abi ZARDI	0.10	0.06	0.06	53.3%	53.3%	100.0%
14 Bulindi ZARDI	0.10	0.05	0.05	53.3%	53.3%	100.0%
15 Kacwekano	0.12	0.06	0.06	48.0%	48.0%	100.0%
16 Mukono ZARDI	0.12	0.06	0.06	52.4%	52.4%	100.0%
17 Ngetta ZARDI	0.13	0.05	0.05	41.0%	41.0%	100.0%
18 Nabium ZARDI	0.10	0.05	0.05	53.5%	53.5%	100.0%
19 Mbarara ZARDI	0.10	0.05	0.05	53.3%	53.3%	100.0%
20 Buginyaya ZARDI	0.13	0.07	0.07	55.1%	55.1%	100.0%
21 Rwebitaba ZARDI	0.08	0.04	0.04	52.5%	52.5%	100.0%
26 NARO Internal Audit	0.06	0.03	0.03	53.3%	53.3%	100.0%
<i>Development Projects</i>						
0382 Support for NARO	6.13	3.07	3.07	50.0%	50.0%	100.0%
1138 EAAPP	0.00	0.00	0.00	N/A	N/A	N/A
1139 ATAAS (Grant) EU, WB and DANIDA Funded	0.00	0.00	0.00	N/A	N/A	N/A
Total For Vote	33.87	16.84	16.84	49.7%	49.7%	100.0%

* Excluding Taxes and Arrears

Table V3.4: Donor Releases and Expenditure by Project and Programme*

<i>Billion Uganda Shillings</i>	Approved Budget	Released	Spent	% GoU Budget Released	% GoU Budget Spent	% GoU Releases Spent
VF:0151 Agricultural Research	46.19	30.43	21.69	65.9%	46.9%	71.3%
<i>Development Projects</i>						
1138 EAAPP	16.38	7.95	5.67	48.5%	34.6%	71.3%
1139 ATAAS (Grant) EU, WB and DANIDA Funded	29.81	22.49	16.02	75.4%	53.7%	71.2%
Total For Vote	46.19	30.43	21.69	65.9%	46.9%	71.3%

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 01 Headquarters

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

Quarterly GOU subscriptions transferred to international organisations (ASARECA, CGIAR, etc)	Quarterly GOU subscriptions transferred to ASARECA, CGIAR.	Item	Spent
		262101 Contributions to International Organisations (Current)	351,214
		264101 Contributions to Autonomous Institutions	2,666

Reasons for Variation in performance

Late release of funds.

Total	353,880
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	353,880
<i>NTR</i>	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Competitive grants scheme research agenda developed; 2. Competitive research projects processed and implemented - research programmes monitored in the NARS - RMIS institutionalized - UJAS editorial committee meetings facilitated; 4 volumes of UJAS p	- Supported review and planning meetings in Kachwekano and Mbarara ZARDIs. - 5 institutes have been guided to finalise consolidation research projects - 70 principle Investigators trained in writing winning proposals.	Item	Spent
		211103 Allowances	6,120
		221011 Printing, Stationery, Photocopying and Binding	17,674
		222001 Telecommunications	6,709
		223005 Electricity	13,440
		223006 Water	1,226
		224002 General Supply of Goods and Services	117,835
		227004 Fuel, Lubricants and Oils	18,666
	Q1 • 120 priority projects that address issues of national importance identified - Supported review and planning meetings in two institutes - 16 institutes have been guided to finalise and so far 12 have re-submitted for consolidation - 168 concept notes received, pre-screened and 68 identified for full proposals		

Reasons for Variation in performance

Experienced late release of funds

Total	181,669
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	181,669
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 01 Headquarters

		<i>Item</i>	<i>Spent</i>
DG's office:	Q2		
Good governance and corporate social responsibility ensured and promoted.	- Organized a capacity building workshop in monitoring and evaluation of MSIPS for 40 NARO-NAADS zonal staff. DTPIS staffs were part of the team of facilitators.	221002 Workshops and Seminars	8,488
NARO's contribution towards national Agricultural Research .	- Organized and conducted the UJAS end of year editorial meeting	221008 Computer supplies and Information Technology (IT)	2,666
Networking, Partnership and collaboration stakeholders meetings held;	- Participated in organizing Jinja Nile Agricultural show at which NARO technologies were demonstrated and marketed to the general public.	227001 Travel inland	42,666
Stakeholders sensitisation	- Participated in the National expo promotion activities		
	- Organized the second meeting of the organizing committee NARO scientific conference, 2014.		
	- Organized the World Food day celebrations on 16th October 2013 in NASARRI, Serere.		
	Q1		
	•Organized capacity building workshop in monitoring and evaluation of MSIPS for NARO-NAADS zonal staff. DTPIS staffs were part of the team of facilitators.		
	•Organized and conducted the UJAS mid-year editorial meeting		
	•Participated in organizing Jinja Nile Agricultural show at which NARO technologies were demonstrated and marketed to the general public.		
	•Participated in the National expo promotion activities		
	•Organized the first meeting of the organizing committee NARO scientific conference, 2014. And has started publicizing the NARO scientific conference, 2014.		
	•Organizing and publicizing the World Food day celebrations slated for 16th-October, 2013 to be held at NASARRI, Serere.		

Reasons for Variation in performance

Experienced late release of funds.

Total	53,819
<i>Wage Recurrent</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>53,819</i>
<i>NTR</i>	<i>0</i>

Output: 01 5104 Agricultural research capacity strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 01 Headquarters

HR:	Q2	Item	Spent
1. Staff Salaries and other contract salaries paid	Staff Salaries and other contract salaries paid for period October-December 2013.	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	9,372,082
2. Good Governance and corporate social responsibility ensured and promoted; Leadership and oversight Management of agricultural research provided;	paid	212101 Social Security Contributions	1,094,352
3. Staff recruited and trained	Q1	213001 Medical expenses (To employees)	53,333
4. Stationery	1. Staff Salaries and other contract salaries paid for period July-September 2013.	213002 Incapacity, death benefits and funeral expenses	53,333
	2. NARO council facilitated in providing leadership and oversight Management of agricultural research provided;	213004 Gratuity Expenses	684,757
		221003 Staff Training	9,013
		221004 Recruitment Expenses	13,333
		221005 Hire of Venue (chairs, projector, etc)	4,037
		221006 Commissions and related charges	17,189
		221007 Books, Periodicals & Newspapers	5,576
		221008 Computer supplies and Information Technology (IT)	10,715
		221009 Welfare and Entertainment	7,184
		221012 Small Office Equipment	11,107
		221016 IFMS Recurrent costs	32,887
		222002 Postage and Courier	2,858
		222003 Information and communications technology (ICT)	11,306
		223004 Guard and Security services	10,800
		224002 General Supply of Goods and Services	10,662
		226001 Insurances	800
		228002 Maintenance - Vehicles	26,168
		228004 Maintenance - Other	2,800
		Total	11,434,291
		Wage Recurrent	9,372,082
		Non Wage Recurrent	2,062,209
		NTR	0

Reasons for Variation in performance

Experienced late release of funds

Programme 07 National Crops Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	NaCRRRI	Item	Spent
1. Development of technologies for enhancing productivity and utilization of fruits and vegetables.	Horticulture	211103 Allowances	5,440
2. Evaluation of Soil and water management systems on-farm.	- Planting 2500 fruit seeds for generating rootstocks	221002 Workshops and Seminars	4,346
3. Evaluation of selected suitable shade trees.	- Visits to oil palm farms planted in 2001 revealed that farmers in Hoima were harvesting 2-3 times a month.	221011 Printing, Stationery, Photocopying and Binding	21,877
	- Trip to oil palm farms in Buvuma did not reveal any major disease	222001 Telecommunications	3,840
	- After confirmation of Armillaria root rot in some areas of Kalangala preventive practices were demonstrated to farmers	223005 Electricity	33,600
	- 6 nurseries of quality fruit trees were constructed and 18 mother gardens established	227004 Fuel, Lubricants and Oils	42,880
	- 2 sets of brochure and production manual on quality fruit trees have been produced		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

Q1
 •Oil palm trials for different soil fertility amendments were maintained. Growth and yield data was collected on-station. Yield increase of 7.5 tons/ha for 11 year old palm and 3 tons/ha for 15 year old oil palm using a combination 4 kg of CAN 3 kg of SSP, 3 kg of MOP, and 0.8 kg of magnesium sulphate /tree was realised. Further assessments are underway.
 •Survey for insect pests in oil palm growing areas was conducted. Preliminary findings in Buvuma and Iganga suggest that mealy bugs, scales and birds were the major pests in the two areas. Further assessment underway

Reasons for Variation in performance

Experienced late release of funds

Total	111,982
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	111,982
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

	<i>Item</i>	<i>Spent</i>
1.Manpower gap filled.	- Security Services procured	221001 Advertising and Public Relations 1,946
2.Awareness of technology generated by NaCRRRI to the stakeholders.	- Travel inland facilitated	221003 Staff Training 9,173
3.Capacity of staff enhanced.	- Telephone services procured	221006 Commissions and related charges 5,120
4.Provision of small office equipment	- Electricity bills paid to zero balance	221008 Computer supplies and Information Technology (IT) 12,800
5.Follow-up to ensure that research activities are carried out.	- Internet Services & Entertainment procured	221009 Welfare and Entertainment 5,450
6.Management and planning meetings for the institute	- Salaries & Wages paid to-date	221011 Printing, Stationery, Photocopying and Binding 6,400
7.Effective running operational activities.	- 10 kilometers of on station road maintained	221012 Small Office Equipment 5,019
8.Timely reporting and data processing.	- 20 of office buildings painted on the outside	222002 Postage and Courier 448
9.Constant flow of information and ICT.	- 4 vehicles repaired and serviced	224002 General Supply of Goods and Services 47,905
10.Policy guidelines and recommendations for Institute Management Produced.	- 10 meetings and workshops attended by administrative staff	226001 Insurances 1,066
11.Uninterrupted & Constant Supply of Electricity to all NaCRRRI Units.	- 6 acres of compound mowed and trimmed, offices cleaned	227001 Travel inland 16,000
12.Staff welfare.		227004 Fuel, Lubricants and Oils 10,881
13.Cmmunication with other organisation strengthened.		228002 Maintenance - Vehicles 6,400
14.Documentation and report writing.		228003 Maintenance – Machinery, Equipment & Furniture 8,533
15.Financial Accountability and		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

reporting.

16. Well maintained compounds and roads for a good working environment.

17. Maintain institute vehicles in a good working condition.

18. Maintain institute machinery and equipment in a good working condition.

19. To enhance security at the institute.

20. Maintenance of power lines within the institute

21. Office Block & Staff houses renovated.

22. Nursery plants well maintained and sold out.

23. Nursery activities & field trials monitored

Reasons for Variation in performance

Experienced late release of funds

Total	140,339
Wage Recurrent	0
Non Wage Recurrent	120,037
NTR	20,302

Output: 01 5105 Generation of technologies for priority commodities

	<i>Item</i>	<i>Spent</i>
1. Reaction of germplasma of priority commodities to pests determined.	NaCRRRI	
2. Reaction of germplasma of priority commodities to diseases determined.	- Bean disease surveys conducted in 10 districts including Mityana, Mubende and Kyegegwa	224001 Medical and Agricultural supplies
3. Nursery Shade, Lavatory, Road section repaired	- 3 On-farm trials established in Mpigi to determine disease severities and yield losses on farmers' fields - Established PYT, IYT, AYT and NPT – trials of the available advanced climbing bean genotypes and also recorded data on their agronomic performance - Field evaluation conducted and 14 lines earmarked for selection and advancement to AYT and PVS trials - 25 new families established from 25 new different seeds - AYT data obtained on 3 promising bean lines (MYA 2, MYA 3 & MYA 5). - 41.815 MT of of quality declared seed produced by 19 farmer groups - Data from NTP trials for 8 nutrient bean genotypes at NaCCRI, Ngeta ZARDI ABiZARDI, RwebitaZARDI, Nakabango, Buginyanya-ZARDI and	78,677

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

KaZARDI obtained and 8 lines selected

- A total of 525kg for bush genotypes obtained

- Data from PVS trials obtained with genotypes Nyiramuhondo & Kivuzo for Climbers and RWR 2154, HM 21-7, RWR 10 for bush showing superior performance

- 40 other PVS trials established in the districts of Hoima, Mubende, Gulu, Lira, Arua, Masaka, Kabale, Kisoro and Kamuli

- There was production of 17.6 Tons of Quality declared seed from the data so far collected. Production activities are still ongoing in other locations.

- 12 demonstrations on weed, soil fertility, pest and disease and management were successfully conducted in Wakiso, Mpigi and Bushenyi.

- 10 trials to test different potential staking options were established in kabale and Kisoro. They are still ongoing and data collection is progressing well.

- Samples of 19 bean varieties were analysed for miro nutrient and other nutrient in Kawanda and in Makerere university. Nutrient data is now available.

- 78 Stakeholders (16 Males and 62 females) were trianed in Bushenyi and Wakiso on the utilization of different bean based products.

- The bean based product receipe book was completed and is in press for printing.

- Brochures were developed and translated into five languages. Printing is ongoing and upto 25,000 brochures will be produced for differebt regions of the country.

- Promotion of bean based products and other technologies was done on world food day and its estimated that over 60,000 persons were reached.

- Data was collected and reviewed and insights into the factors that affect the operations of innovative bean platforms established.

Rice

- Harvested 700 Kgs of NERICA 2

- Distributed 100 rice production manuals and 500 NERICA posters

- Produced NERICA policy brief

Q1

Beans

- Surveys on virulence of bean root rot

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousands</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

pathogens conducted in 9 districts.
Morphological characterization of S. rolfsii commence
•Surveys of Angular leaf spot disease of common beans conducted in Gulu, Amuru and Oyam
1)Determination of disease and yield losses caused by ALS and Rust on-farm with 3 farmers' fields in Wakiso district
2)22 climbing bean genotypes which appeared very outstanding during the season from the PYT, IYT and IYT trials have been identified and selected. Most of the remaining genotypes had intermediate performance and 7 genotypes were completely rejected
•Data from AYT trials for 10 nutrient bean genotypes at NaCCRI, Ngeta ZARDI ABIZARDI, Nakabango and KaZARDI obtained and 8 lines selected
3)430 kg of seed obtained from 10 genotypes from 10 nutrient dense bean lines
•318 accessions with tolerance to drought and multiple pathogen resistance prepared for further testing

Reasons for Variation in performance

Experienced late release of funds

Total	78,677
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	78,677
<i>NTR</i>	0

Programme 08 National Fisheries Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	Q2	Item	Spent
- Human Resource identified and appropriately utilised and managed	- In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1} ,	211103 Allowances	4,243
- Critical competent staff in the Institute recruited and motivated	- Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment	221002 Workshops and Seminars	2,400
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO	221011 Printing, Stationery, Photocopying and Binding	3,072
- Institute physical faci		222001 Telecommunications	3,840
		223005 Electricity	14,080
		223006 Water	6,400
		227004 Fuel, Lubricants and Oils	9,712

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 08 National Fisheries Research

recommended limits.

Q1
Nil

Reasons for Variation in performance

Late release of funds

Total	43,747
Wage Recurrent	0
Non Wage Recurrent	43,747
NTR	0

Output: 01 5102 Research extension interface promoted and strengthened

	Q2	Item	Spent
Improved awareness in ways of increasing fish production.	1 Press Release placed in the Monitor on 21st November 2013 to mark World Fisheries Day.	221007 Books, Periodicals & Newspapers	3,202
Capacity for producing dissemination outreach materials using ICT facilities.		221008 Computer supplies and Information Technology (IT)	2,026
		227001 Travel inland	4,059
Coordinated research management	Q1 •Annual review workshop held at NaFIRRI Kajjansi where NaFIRRI workplans were evaluated and areas of research prioritised that fed into NARO-wide prioritisation of the research projects		

Reasons for Variation in performance

Late and inadequate release of funds.

Total	9,286
Wage Recurrent	0
Non Wage Recurrent	9,286
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

	Q2	Item	Spent
- Human Resource identified and appropriately utilised and managed	- 2 office buildings rehabilitated	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	23,827
- Critical competent staff in the Institute recruited and motivated	- 3 vehicles repaired and serviced		
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Kajjansi and Jinja compounds maintained	221003 Staff Training	7,573
- Institute physical facilities	- Electricity bills paid to zero balance	221004 Recruitment Expenses	3,413
	- Internet Services & Entertainment procured	221006 Commissions and related charges	8,533
	- Salaries & Wages paid to-date	221008 Computer supplies and Information Technology (IT)	3,040
	- Security Services procured	221009 Welfare and Entertainment	2,334
	- Telephone services procured	221012 Small Office Equipment	1,898
	- Travel inland facilitated	222002 Postage and Courier	1,120

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 08 National Fisheries Research

Q1	225001 Consultancy Services- Short term	1,280
- 5 of office buildings painted on the outside	226001 Insurances	480
- 4 vehicles repaired and serviced	228002 Maintenance - Vehicles	11,856
- 6 acres of compound mowed and trimmed, offices cleaned	228003 Maintenance – Machinery, Equipment & Furniture	6,071
- Electricity bills paid to zero balance	228004 Maintenance – Other	2,333
- Internet Services & Entertainment procured		
- Salaries & Wages paid to-date		
- Security Services procured		
- Telephone services procured		
- Travel inland facilitated		

Reasons for Variation in performance

Late release of funds.

Total	90,770
<i>Wage Recurrent</i>	12,800
<i>Non Wage Recurrent</i>	54,866
<i>NTR</i>	23,104

Output: 01 5105 Generation of technologies for priority commodities

	Item	Spent
- The quality fish technologies maintained	224001 Medical and Agricultural supplies	41,906
- Publications of technology development and dissemination developed		
- Process of dissemination and adoption of the fish technologies monitored		
- fish technologies developed and disseminated		
- In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1} ,		
- Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment		
- Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits.		
Q1		
• - Ecological characterisation and capture of geographical coordinates for potential fish breeding /nursery grounds on Lake Victoria.		
• - Aquaculture field surveys covering of 2 hatcheries and 3 grow out fish farms. 2. The description of morphometric and physiochemical of disease pathogens in cultured fish from 5 farms		
• - Undertook census of fishing effort on upper Victoria Nile (September 2013) indicating a reduction in effort compared to the April 2013 period.		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 08 National Fisheries Research

The major reduction was in the number of boats and fishers depicting the migratory nature of fishers

- - Conducted monthly CASs on two fish landing sites in vicinity of the lower Victoria (Murchison) Nile and one quarterly assessment of production and value on the Upper River Nile. An increase in Nile perch catches was observed on the upper Nile while a total of 505 tonnes of fish valued at 1.1 billion Uganda shillings was landed (July-September, 2013) to support local livelihoods compared to the 434 tonnes valued at 0.7 billion in the previous quarter

Reasons for Variation in performance

Late release of funds

Total	41,906
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	41,906
<i>NTR</i>	0

Programme 09 National Forestry Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	Q2	Item	Spent
1.Improved management of On-station experiments and Kifu research forest.	•Raised 25,000 seedlings each for M. eminii, E. Grandis and M. volkensii	211103 Allowances	4,714
2.NaFORRI Kifu Forest Management plan developed	•Established one Nelder trial for M. Eminii in Buginyanya	221001 Advertising and Public Relations	6,392
3.Quality of research and research output enhanced	•Thaumisticoris perigrinus a pest previously in S.Africa and Kenya identified in Uganda. The pest incidence in Wanale and Budwale sub-counties Mbale district was 39% and 42% respectively. Low pest incidence observed in Manafa, Bududa, Tororo and Busia districts. Established high incidence of deaths among Pines ranging from (8%-98%) in thirteen(13) woodlots surveyed in S. Western Uganda	221007 Books, Periodicals & Newspapers	1,301
4.Regional and international partnership enhanced		221008 Computer supplies and Information Technology (IT)	1,000
5.Sawmill & carpentry		221011 Printing, Stationery, Photocopying and Binding	1,600
		221012 Small Office Equipment	533
		224002 General Supply of Goods and Services	25,648
		227001 Travel inland	6,400
		227004 Fuel, Lubricants and Oils	12,811
	Q1		
	•Trials at Mabuye and Mpoma in Kifu assessed: No damage on seedlings in the newly established trials at Kifu. Average damage levels of C.		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 09 National Forestry Research

Cronortii in Mafuga, Kiirima and Katugo were 23%, 15% and 14% respectively. C. cronortii population was highest in Lower (55%), followed by Middle (31.5%) section and upper section (18%). Indigenous natural enemies included: Crysopa carnea, Exhocomus spp and aranea in Mafuga and Kiirima respectively. Chemones propingua, aranea, exchomus spp were the indigenous natural enemies in Katugo.

Reasons for Variation in performance

Late release of funds

Total	60,399
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	60,399
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

1. Regional and international partnership enhanced

In collaborative arrangements 29 prospective forage species identified on 100 smallholder dairy farms in Masaka district.
- Forage production (6), processing (2), and preservation (1) options identified on 100 smallholder dairy farms in Masaka district. Candidate practices (8) earmarked for on-station forage management trials.

Item
221002 Workshops and Seminars

Spent
8,000

Q1
Attended regional meeting ICRAF

Reasons for Variation in performance

Late release of funds.

Total	8,000
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	8,000
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 09 National Forestry Research

		Item	Spent
1.NaFORRI's capacity for effective information management and communication enhanced	Q2	222001 Telecommunications	3,733
	- Security Services procured and paid	222002 Postage and Courier	43
	- Utility services procured and paid	222003 Information and communications technology (ICT)	7,040
2.Generation of NTR improved	- Travel inland facilitated	223005 Electricity	9,600
3.Management enhanced and Performance of staff improved	- 3 vehicles repaired and serviced	226001 Insurances	533
4.Vehicles for activities maintained.	- Salaries & Wages paid to-date	228002 Maintenance - Vehicles	8,506
5.Fuel, Lubricants and oils procured	- Internet Services & Entertainment procured	228003 Maintenance – Machinery, Equipment & Furniture	1,600
	- Electricity bills paid to zero balance		
	- One acres of compound mowed and trimmed, offices cleaned		
	Q1		
	• - Security Services procured		
	• - Telephone services procured		
	• - Travel inland facilitated		
	• - 4 of office buildings painted on the outside		
	• - 4 vehicles repaired and serviced		
	• - Salaries & Wages paid to-date		
	• - Internet Services & Entertainment procured		
	• - Electricity bills paid to zero balance		
	• - 10 acres of compound mowed and trimmed, offices cleaned		

Reasons for Variation in performance

Late release of funds

Total	31,330
Wage Recurrent	0
Non Wage Recurrent	31,054
NTR	276

Programme 10 National Livestock Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		Item	Spent
- Human Resource identified and appropriately utilised and managed	•Management innovations for tick-borne diseases and milk-borne zoonoses: Company to sequence 200 purified DNA samples and characterize T. parva identified and procurement of services initiated. Also, Prevalence of T. parva per agro-ecological zone	221002 Workshops and Seminars	1,238
- Critical competent staff in the Institute recruited and motivated		221011 Printing, Stationery, Photocopying and Binding	5,043
- Adequate financial resources mobilised, appropriately utilised and duly accounted for		222001 Telecommunications	3,840
- Institute physical faci		223005 Electricity	6,400
		223006 Water	2,400
		224001 Medical and Agricultural supplies	14,773
		224002 General Supply of Goods and Services	1,554
		227004 Fuel, Lubricants and Oils	11,869
	•Characterize Mycobacterium, Brucella and haemorrhagic E. coli for improvement of diagnostic tests: Culture has been done on 320 out of the 600 milk samples collected. From these samples, 5 suspect bacteria were		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 10 National Livestock Research

identified - E. coli, Staphylococcus sp, Streptococcus sp, Lactobacillus sp and Pseudomonas. Of the 321 samples 65 have been analysed for isolation of Enterohaemorrhagic E. coli

- 5 isolates of Enterohaemorrhagic E. coli have obtained has been isolated from the 65 samples
- 72 milk samples were analysed for the number of colony forming units (CFU) of E. coli organisms. per 100 ml of milk. Results are:
 - Range: 320,000 – 840,000 CFU/100ml. Average/Mean: 590,000 CFU/100mL

Q1
Data on disease prevalence has been collected and analyzed. Preliminary results indicate that the disease prevalence in the zone is as follows; FMD-60%, ECF-97%, NCD-90%, LSD-80%, Brucellosis-50%, Helminthosis-100%, ASF-50%. The major disease risk factors in the zone include; proximity to national park, porous nature of the borders, improper use of drugs, high cost of veterinary inputs.

Reasons for Variation in performance

late release of funds

Total	47,117
Wage Recurrent	0
Non Wage Recurrent	47,117
NTR	0

Output: 01 5102 Research extension interface promoted and strengthened

	Q2	Item	Spent
NaLIRRI research activities and functions demystified	<ul style="list-style-type: none"> - Trained 340 farmers (210 female and 130 male) in Mbarara, Masaka and Wakiso districts on NSD management - Trained stakeholders in Masaka (30) and Wakiso (30) districts on harvesting and processing forage seed 	221001 Advertising and Public Relations	800
	<p>Q1</p> <ul style="list-style-type: none"> • A total of 160 farmers have been interviewed. 700 faecal samples have been collected from four districts to determine the efficiency and 		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 10 National Livestock Research

effectiveness of the conventional methods that are used in helminthes control.

Reasons for Variation in performance

Late release of funds

Total	800
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	800
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

	<i>Item</i>	<i>Spent</i>
- Human Resource identified and appropriately utilised and managed	221003 Staff Training	11,200
- Critical competent staff in the Institute recruited and motivated	221006 Commissions and related charges	14,720
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	221007 Books, Periodicals & Newspapers	2,336
- Institute physical faci	221008 Computer supplies and Information Technology (IT)	9,653
- Security Services procured	221009 Welfare and Entertainment	2,496
- Telephone services procured	228002 Maintenance - Vehicles	16,106
- Travel inland facilitated		
- 1 residential buildings painted outside		
- 5 vehicles repaired and serviced		
- Salaries & Wages paid to-date		
- Internet Services & Entertainment procured		
- Electricity bills paid to zero balance		
- 4 acres of farm land fenced		

Q1

- Security Services procured
- Telephone services procured
- Travel inland facilitated
- 5 of office buildings painted on the outside
- 5 vehicles repaired and serviced
- Salaries & Wages paid to-date
- Internet Services & Entertainment procured
- Electricity bills paid to zero balance
- 4 acres of compound mowed and trimmed, offices cleaned

Reasons for Variation in performance

late release of funds

Total	57,755
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	56,510
<i>NTR</i>	1,245

Output: 01 5105 Generation of technologies for priority commodities

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 10 National Livestock Research

		<i>Item</i>	<i>Spent</i>
- The quality dairy and beef technologies maintained	•Development of supplementary feed rations for dairy and beef cattle: 20 sorghum stover and Tithonia samples collected and analysis is underway; A survey was conducted on on Social-economic factors affecting utilization of sorghum stover for feeding animals and statistical analysis of collected data is underway	224001 Medical and Agricultural supplies	40,334
- Publications of technology development and dissemination developed	•Characterisation of productivity of pasture in three selected grazing areas in Nakasongola, Kotido, Amudat and Mbarara during the wet season of October-November: Results of the assessment indicated that pasture biomass ranged from 1500-4500kg/ha-1 with the lowest value occurring in Kotido. The sward legume component ranged between 5-20% of the total basal cover with lowest and highest legume component occurring in Kotido and Mbarara respectively.		
- Process of dissemination and adoption of the dairy and beef technologies monitored	Q1		
- dairy and beef technologies develop	•Training of 60 farmers across the zone in pasture seed production, hay and silage making		
	•Maintenance of three (3) established Bricharia species in the evaluation trial		
	•Collection of plant tissue analysis samples from Bricharia trial		
	•Results acquired from soil analysis in the Bricharia species.		

Reasons for Variation in performance

late release of funds

Total	40,334
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	40,334
<i>NTR</i>	0

Programme 11 National Semi arid Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 11 National Semi arid Research

		Item	Spent	
Germplasm collected ,characterized and evaluated, variety maintenance, seed multiplication of priority crops (cotton.sorghum,finger millet, sun flower, sesame, groundnuts and cow peas).	3.Five of the promising lines performed better than the test released variety (SEPI 2) which gave yield of 2188 kg/ha. 2004/17/16/5 (2688 kg/ha) the highest, followed by ICEAP00554 (2667 kg/ha), 2004/16/16/7 (2334 kg/ha), and 2004/17/10/1 (2230 kg/ha) 4.200 millet accessions characterised and 4 lines resistant to blast identified; 5.Thirteen (13) millet lines with tolerance to drought confirmed;	221002 Workshops and Seminars	2,410	
		221007 Books, Periodicals & Newspapers	1,333	
		221011 Printing, Stationery, Photocopying and Binding	5,610	
		222001 Telecommunications	1,600	
		223005 Electricity	1,669	
		224001 Medical and Agricultural supplies	16,512	
		224002 General Supply of Goods and Services	25,707	
		227004 Fuel, Lubricants and Oils	6,938	
		Q1		
		8)50 F4 cotton progenies planted in replicated trials on-station. 9)10 promising cotton lines in DUS trials planted in Ngetta, NaSARRI and NaCRRI •30 acres planted for production of foundation seed of BPA2002		

Reasons for Variation in performance

Late release of funds

Total	61,778
Wage Recurrent	0
Non Wage Recurrent	61,778
NTR	0

Output: 01 5102 Research extension interface promoted and strengthened

		Item	Spent
1.NARO-NAADS Joint workshops and meetings conducted; 2.Capacity development workshops for IARD; 3.Planning/Review/Feedback/ workshops and meetings held; 4.Make contributions to NGOs and CBOs; subscribe to associations; 5.Networking ,Partnerships and c	Q2 •Trained 12 farmer groups on Integrated Striga Management Technologies and community quality seed production. Q1 - Cowpea farming information materials produced. 100 Leaflets and 2 Posters printed	221002 Workshops and Seminars	2,944
		221005 Hire of Venue (chairs, projector, etc)	533
		221007 Books, Periodicals & Newspapers	1,333
		221008 Computer supplies and Information Technology (IT)	5,600

Reasons for Variation in performance

Late release of funds

Total	10,410
Wage Recurrent	0
Non Wage Recurrent	10,410

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 11 National Semi arid Research

NTR

0

Output: 01 5104 Agricultural research capacity strengthened

		Item	Spent
- Human Resource identified and appropriately utilised and managed	- Security Services procured and paid	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	28,800
- Critical competent staff in the Institute recruited and motivated	- Utility services procured and paid		
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Travel inland facilitated	221001 Advertising and Public Relations	2,880
- Institute physical faci	- 3 vehicles repaired and serviced	221003 Staff Training	8,000
	- Salaries & Wages paid to-date	221004 Recruitment Expenses	1,066
	- Internet Services & Entertainment procured	221006 Commissions and related charges	8,453
	- Electricity bills paid to zero balance	221009 Welfare and Entertainment	4,339
	- One acres of compound mowed and trimmed, offices cleaned	221012 Small Office Equipment	1,866
		226001 Insurances	320
	Q1	228002 Maintenance - Vehicles	13,333
	• - Security Services procured	228003 Maintenance – Machinery, Equipment & Furniture	5,856
	• - Telephone services procured		
	• - Travel inland facilitated	228004 Maintenance – Other	651
	• - 5 of office buildings painted on the outside		
	• - 4 vehicles repaired and serviced		
	• - Salaries & Wages paid to-date		
	• - Internet Services & Entertainment procured		
	• - Electricity bills paid to zero balance		
	• - 6 acres of compound mowed and trimmed, offices cleaned		

Reasons for Variation in performance

Late release of funds.

Total	75,819
Wage Recurrent	28,800
Non Wage Recurrent	46,763
NTR	256

Programme 12 National Laboratories Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		Item	Spent
1. - Improved fertiliser recommendation and extension packages in place	- use of ISFM practices improved gnuts performance. The 2013A data showed optimum rates to be: 8.73 kg P/ha for serenut 3 and 4.37+2 t FYM/ha for red beauty.	221002 Workshops and Seminars	8,010
2. Options for CA demonstrated		222001 Telecommunications	10,666
3. Increased centralized germplasm base collection for target species.		223005 Electricity	42,666
4. Maintenance of cover crop demonstrations at NARL	Q1	223006 Water	1,866
5.	1. - draft fertiliser recommendation developed	227001 Travel inland	60,960
	2. Gene bank strengthened.	227004 Fuel, Lubricants and Oils	11,733
	3. Increased centralized germplasm base collection for target species.		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 12 National Laboratories Research

Reasons for Variation in performance

Late and inadequate release of funds

Total	135,899
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	135,899
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

		<i>Item</i>	<i>Spent</i>
1 Science conference, 1 open day, 1 Annual review planning workshop, 4 peer review seminars, 1 staff AGM, 1 Budget retreat and one budget conference by June 2014.	1 staff AGM, Q1 Annual review planning workshop held.	221002 Workshops and Seminars	5,333
NARO research results, outputs, products and services published promoted and disseminated in		221005 Hire of Venue (chairs, projector, etc)	480
		221008 Computer supplies and Information Technology (IT)	1,066
		221011 Printing, Stationery, Photocopying and Binding	1,066

Reasons for Variation in performance

Late release of funds

Total	7,944
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	7,944
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

		<i>Item</i>	<i>Spent</i>
- Human Resource identified and appropriately utilised and managed	- Security Services procured and paid	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	70,708
- Critical competent staff in the Institute recruited and motivated	- Utility services procured and paid	213002 Incapacity, death benefits and funeral expenses	3,440
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Travel inland facilitated	221001 Advertising and Public Relations	2,986
- Institute physical faci	- 3 vehicles repaired and serviced	221003 Staff Training	2,666
	- Salaries & Wages paid to-date	221004 Recruitment Expenses	370
	- Internet Services & Entertainment procured	221006 Commissions and related charges	5,050
	- Electricity bills paid to zero balance	221009 Welfare and Entertainment	4,266
	- One acres of compound mowed and trimmed, offices cleaned	221011 Printing, Stationery, Photocopying and Binding	1,498
	Q1	221012 Small Office Equipment	1,066
	• - Security Services procured	221016 IFMS Recurrent costs	266
	• - Telephone services procured	222002 Postage and Courier	1,066
	• - Travel inland facilitated	223005 Electricity	10,666
	• - 1 of office buildings painted on the outside	225001 Consultancy Services- Short term	1,706
	• - 5 vehicles repaired and serviced	226001 Insurances	560
	• - Salaries & Wages paid to-date	227004 Fuel, Lubricants and Oils	12,912
	• - Internet Services & Entertainment procured		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousands
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 12 National Laboratories Research

• - Electricity bills paid to zero balance	228002 Maintenance - Vehicles	51,721
• - 17 acres of compound mowed and trimmed, offices cleaned	228003 Maintenance – Machinery, Equipment & Furniture	10,666
	228004 Maintenance – Other	4,696

Reasons for Variation in performance

Late release of funds

Total	198,044
Wage Recurrent	55,386
Non Wage Recurrent	106,456
NTR	36,202

Output: 01 5105 Generation of technologies for priority commodities

	Item	Spent	
Banana hybrids tolerance stress, high yielding and with consumer acceptable qualities generated and technologies that enhance the banana value chain developed and promoted	- Collected data on the performance of Black sigatoka incidence and agronomic at pre-flowering stage; Incidence of Black Sigatoka on hybrids determined at the pre flowering stage in the PYT at Kawanda,	224001 Medical and Agricultural supplies	49,086
Develop technology options for exploitation of renewable energy resources, irrigat	Q1 - Banana germplasm collecte and characterised. - Banaana trial maintained on station		

Reasons for Variation in performance

Late and inadquate release of funds

Total	49,086
Wage Recurrent	0
Non Wage Recurrent	49,086
NTR	0

Programme 13 Abi ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	Item	Spent	
- Human Resource identified and appropriately utilised and managed	Sorghum: •Trials were set up in three districts of Nebbi, Arua and Koboko and data was collected; 12 improved varieties were planted both on-station and at DFIs to collect multi-location performance data.	221002 Workshops and Seminars	5,545
- Critical competent staff in the Institute recruited and motivated		221006 Commissions and related charges	6,611
- Adequate financial resources mobilised, appropriately utilised and duly accounted for		221011 Printing, Stationery, Photocopying and Binding	2,133
- Institute physical faci	•I6 local (Godo) varieties were established on-station for performance evaluation. Both trials were planted	222001 Telecommunications	640
		224002 General Supply of Goods and Services	11,946
		227004 Fuel, Lubricants and Oils	5,392

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 13 Abi ZARDI

using RCB design with 3 reps and a check.

Q1
 - Raising and maintaining of the established seedlings of shea in the nursery
 - Market Survey on the potential for agro forestry products carried out in four districts(Nebbi, Zombo, Arua and Nebbi) done

Reasons for Variation in performance

Late release of funds.

Total	32,266
Wage Recurrent	0
Non Wage Recurrent	32,266
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

	<i>Item</i>	<i>Spent</i>
- Human Resource identified and appropriately utilised and managed	- Security Services procured and paid	
- Critical competent staff in the Institute recruited and motivated	- Utility services procured and paid	221003 Staff Training 4,800
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Travel inland facilitated	221009 Welfare and Entertainment 8,946
- Institute physical faci	- 3 vehicles repaired and serviced	227001 Travel inland 8,867
	- Salaries & Wages paid to-date	228002 Maintenance - Vehicles 3,290
	- Internet Services & Entertainment procured	
	- Electricity bills paid to zero balance	
	- One acres of compound mowed and trimmed, offices cleaned	
	Q1	
	• - Security Services procured	
	• - Telephone services procured	
	• - Travel inland facilitated	
	• - 5 of office buildings painted on the outside	
	• - 4 vehicles repaired and serviced	
	• - Salaries & Wages paid to-date	
	• - Internet Services & Entertainment procured	
	• - Electricity bills paid to zero balance	
	• - 6 acres of compound mowed and trimmed, offices cleaned	

Reasons for Variation in performance

Late release of funds

Total **30,579**

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 13 Abi ZARDI

<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	20,902
<i>NTR</i>	9,677

Output: 01 5105 Generation of technologies for priority commodities

	Q2	Item	Spent
- The quality of the developed technologies maintained	Cassava:	224001 Medical and Agricultural supplies	2,666
- Publications of technology development and dissemination developed	- Trials with landraces were harvested and participatory evaluation conducted in Nyaravuru (Nebbi) and Rhino camp (Arua).		
- Process of dissemination and adoption of the technologies monitored	- Adaptive trials of improved varieties in 10 sites were harvested and participatory evaluation conducted with farmers. Results were published in the Journal of Agricultural Science (Abaca et al. Vol. 6, No. 1; 2014. Pp 116-122).		
- Agricultural technologies developed and dissemina	- New adaptive trials and demos were planted in Maracha, Moyo, Nebbi, Koboko and Arua.		
	Aquaculture:		
	- Six fish cages of low volume high density have been assembled and established in Onigo D fishing bay; Results of reproductive seasonality of A. baremoze over 12-month period showed that: Basing on the observable characteristics during the maturity stages, A. baremoze undergo total spawning as no opaque eggs were noticed to be left in the ovary during the spawning stage; The spawning pattern exhibited by A. baremoze across the twelve months of study indicate that this species undergo short spawning periods; Results on ovary description of "Angara" published in peer reviewed journals - Stages of ovarian stages of Alestes baremoze (Joannis, 1835): A Step towards Understanding Its Reproductive Biology, published in Frontiers in Science, Vol. 3 No. 4, pp. 107-113.		
	- Six fish cages of low volume high density have been assembled and established in Onigo D fishing bay.		
	Dairy productivity		
	- (evaluation of forage cultivars): On-station forage-adaptive trial, including 12 forage spp set up. Apart from Panicum maximum, all other forages either germinated or sprouted with more than 80% establishment. Nutrifeed forage sorghum achieved more than 50% flowering after 2.5 months of planting.		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 13 Abi ZARDI

- Q1
- 4 adaptive trials planted in the districts of Maracha, Koboko, Moyo and Nebbi
 - Maintained 69 acres of cassava variety NASE 14 already planted and fencing of sites was conducted,
 - Established 4 NARO-NAADS collaborative Demonstrations and 4 Adaptive trials sets in five districts of West Nile

Reasons for Variation in performance

Late release of funds

Total	2,666
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	2,666
<i>NTR</i>	0

Programme 14 Bulindi ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	<i>Item</i>	<i>Spent</i>
1. Strategies for improving livestock productivity in the mid western zone of Uganda developed and promoted.	• Evaluation performance of key crops: • From the 0.2 acres of beans, NABE 4, NABE 16 yielded much better at 634kg/acre and 787kg/acre respectively than NABE 15 and k132 at 336.2kg/acre and 390kg/acre respectively). Growth and yield data from 0.1 acres maize (Longe4, Longe 5, Longe10H, Longe 6H), 0.1 acre rice (NERICA 1, 4, 10 and SUPERICA) and 0.6 acre groundnut (SERENUT 1-14) is under analysis	221002 Workshops and Seminars 2,688
2. Improved livestock breeds introduced and evaluated in the MWZ		221011 Printing, Stationery, Photocopying and Binding 1,066
3. Maintenance of On-Station Casual Labour		222001 Telecommunications 2,666
4. Mechanisms for efficient institutional management strengthened		223005 Electricity 3,200
5. Direc		224002 General Supply of Goods and Services 4,328
		227004 Fuel, Lubricants and Oils 10,666
	Q1 Farming systems and livelihood survey conducted in Kiryandongo, Kibaale and Hoima districts.	

Reasons for Variation in performance

Late release of funds

Total	24,613
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	24,613
<i>NTR</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousands</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 14 Bulindi ZARDI

Output: 01 5102 Research extension interface promoted and strengthened

		<i>Item</i>	<i>Spent</i>
1. Increased public awareness and access to knowledge, skills and technologies generated by BuZARDI	<ul style="list-style-type: none"> The 1 acre of demonstration for Maize; (Longe 5, Longe 4 and Longe 10H), beans (NABE 4, K131, NABE 12C) Rice (NERICA 1, NERICA 4, NERICA 10, NARIC 1, NARIC 2), Sorghum (Sekedo), Soya (Namusoy1N, Namusoy2N, Namusoy3N & Maksoy4M), Sweet potatoes (NASPOT6, NASPOT8, NASPOT10, NASPOT7, NASPOT11 & Ejumula) which was previously established on-station to increase farmers' knowledge on Good agronomic Practices and access to adapted crop cultivars in the LACZ was visited by 284 students and 49 farmers 	221008 Computer supplies and Information Technology (IT)	2,133
	<p>Q1</p> <ul style="list-style-type: none"> 100 farmers from 8 farmer field school (FFS) groups in Rugashari and Kyaterekera subcounties of Kibaale district were equipped with IPM technologies for management of bean fly and snail pests in beans 		

Reasons for Variation in performance

late release of funds

Total	2,133
Wage Recurrent	0
Non Wage Recurrent	2,133
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

		<i>Item</i>	<i>Spent</i>
<ul style="list-style-type: none"> Human Resource identified and appropriately utilised and managed Critical competent staff in the Institute recruited and motivated Adequate financial resources mobilised, appropriately utilised and duly accounted for Institute physical faci 	<ul style="list-style-type: none"> Security Services procured and paid Utility services procured and paid Travel inland facilitated 3 vehicles repaired and serviced Salaries & Wages paid to-date Internet Services & Entertainment procured Electricity bills paid to zero balance One acres of compound mowed and trimmed, offices cleaned 	221006 Commissions and related charges 221009 Welfare and Entertainment 228002 Maintenance - Vehicles	6,866 3,797 3,786
	<p>Q1</p> <ul style="list-style-type: none"> Security Services procured Telephone services procured Travel inland facilitated 5 of office buildings painted on the 		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 14 Bulindi ZARDI

outside

- - 4 vehicles repaired and serviced
- - Salaries & Wages paid to-date
- - Internet Services & Entertainment procured
- - Electricity bills paid to zero balance
- - 9 acres of compound mowed and trimmed, offices cleaned

Reasons for Variation in performance

Late and inadequate release of funds

Total	15,149
Wage Recurrent	0
Non Wage Recurrent	14,448
NTR	701

Output: 01 5105 Generation of technologies for priority commodities

	Q2	Item	Spent
- The quality dairy and quality fish technologies maintained	•The 1 acre of demonstration for Maize; (Longe 5, Longe 4 and Longe 10H), beans (NABE 4, K131,NABE 12C) Rice (NERICA 1, NERICA 4, NERICA 10, NARIC 1, NARIC 2),Sorghum (Sekedo), Soya (Namusoy1N, Namusoy2N, Namusoy3N & Maksoy4M),Sweet potatoes (NASPOT6, NASPOT8, NASPOT10, NASPOT7, NASPOT11 & Ejumula) which was previously established on-station to increase farmers' knowledge on Good agronomic Practices and access to adapted crop cultivars in the LACZ was visited by 284 students and 49 farmers	224001 Medical and Agricultural supplies	9,952
- Publications of technology development and dissemination developed	•Evaluation of drought tolerance of forage species: Greenness, vigor, biomass and fraction of dead to green determined for November 2013. Neonotonia wightii and Congo signal (control) were the most green. Brachiaria Toledo & B. Hybrid had the highest biomass (fresh). DM yet to be determined		
- Process of dissemination and adoption of the technologies monitored	•Exploration of cage fish farming opportunities in the region: A total of 30 bays on lake Albert were surveyed, water and sediment samples collected in Hoima, Kibaale and Buliisa districts. These are: Sabagolo, Nyawayiga, Nyamula, Nkondo, Ndokole, Susa, Bugoma, Bugoma –		
- dairy and quality fish technologies develop			

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 14 Bulindi ZARDI

Kinya (Bagdad), Kinya B, Kisege, Kayiso, Mbegu, Tonya (Songa Nyanyama and Songa Mali), and Mbegu-Lwengabi in Hoima, Pida, Booma A, Booma B, Booma-Tugombiri, Kinyamukuta, Butiaba, Walukuba, Somusio, and Bugoigo in Buliisa and Mpeefu, Kabukanga, Kitebere, Ndayiga, Nguse, Rwebigongoro and Kamina bays in Kibaale
 •Fruit tree production: Analysis of data collected on

Q1
 - Participatory economic evaluation of Beans, Maize and cassava enterprises conducted in Kibaale, Hoima, Masindi, Kiryandongo, and Buliisa district.

Reasons for Variation in performance

late and inadequate release of funds

Total	9,952
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	9,952
<i>NTR</i>	0

Programme 15 Kacwekano

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Human Resource identified and appropriately utilised and managed
 - Critical competent staff in the Institute recruited and motivated
 - Adequate financial resources mobilised, appropriately utilised and duly accounted for
 - Institute physical faci

Q2
 - Establishment of field trials in Kanungu, kisoro, Mbarara and Kanungu, Data collected on disease incidence and other agronomic characters
 - 20 clones selected based on bacterial wilt incidence for further development
 - About 198 plantlets of three varieties (Rutuku, Kachpot 1 and Victoria) inoculated for in vitro performance in the laboratory.
 - Confirmed the presence of B-gluconidase gene (gus) in 5 lines of Victoria and Rutuku, NPT II marker gene in 3 lines of Kachpot 2, lines of victoria and 1 line of Rutuku
 - Maintained 1.5 ha of land planted with nuclear seed for basic seed production and seed crop management

<i>Item</i>	<i>Spent</i>
221007 Books, Periodicals & Newspapers	27
221011 Printing, Stationery, Photocopying and Binding	2,470
222001 Telecommunications	853
223005 Electricity	4,800
223006 Water	1,536
227004 Fuel, Lubricants and Oils	7,805

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 15 Kacwekano

Q1
1.5 ha of land planted with nuclear seed for basic seed production and seed crop management
•Planting and management of 720 plantlets under convention and aeroponic methods of generating potato seed
•Information on costs of different techniques (aeroponics and conventional) generated for evaluation

Reasons for Variation in performance

Late and inadequate release of funds

Total	17,491
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	17,491
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

	<i>Item</i>	<i>Spent</i>
1) Director and other Administrative staff participate in planning meeting for the institute at NARO-Sec and other places for effective delivery of agricultural research technologies	- Security Services procured and paid	4,501
	- Utility services procured and paid	8,358
	- Travel inland facilitated	4,960
	- 3 vehicles repaired and serviced	1,336
	- Salaries & Wages paid to-date	160
2) 2 quarterly monitoring of research & development activities conduct	- Internet Services & Entertainment procured	6,412
	- Electricity bills paid to zero balance	1,546
	- One acres of compound mowed and trimmed, offices cleaned	4,000
	Q1	
	• - Security Services procured	
	• - Telephone services procured	
	• - Travel inland facilitated	
	• - 5 of office buildings painted on the outside	
	• - 4 vehicles repaired and serviced	
	• - Salaries & Wages paid to-date	
	• - Internet Services & Entertainment procured	
	• - Electricity bills paid to zero balance	
	• - 6 acres of compound mowed and trimmed, offices cleaned	

Reasons for Variation in performance

late and inadequate release of funds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 15 Kacwekano

Total	42,010
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	37,193
<i>NTR</i>	4,817

Output: 01 5105 Generation of technologies for priority commodities

- The quality fish technologies maintained
 - Publications of technology development and dissemination developed
 - Process of dissemination and adoption of the fish technologies monitored
 - fish technologies developed and disseminated

- 3,140 apple grafted seedlings generated. 1,223 apple rootstock seedlings raised at the central nursery at Bugongi. 640 rootstocks ground layered at Bugongi and a further 2,220 earthed up.

Q1
 •Planted 4 acres of cassava cuttings for Multiplication and generation of foundation cassava seed in Kihihhi

<i>Item</i>	<i>Spent</i>
224001 Medical and Agricultural supplies	4,134

Reasons for Variation in performance

Late and inadquate release of funds

Total	4,134
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	4,134
<i>NTR</i>	0

Programme 16 Mukono ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Human Resource identified and appropriately utilised and managed
 - Critical competent staff in the Institute recruited and motivated
 - Adequate financial resources mobilised, appropriately utilised and duly accounted for
 - Institute physical faci

Q2
 Monitored the performance of the newly released cassava varieties on 15 farmers fields .

Q1
 Monitored the survival, pest & disease resistance of agroforestry technologies. Survival: Kayunga 98% of cirtus and Mubende 95% for mangoes. AVERAGE fruiting in all cirtrus varities was 300, and mangoes 76.

<i>Item</i>	<i>Spent</i>
221011 Printing, Stationery, Photocopying and Binding	7,704
222001 Telecommunications	1,920
223005 Electricity	5,888
224002 General Supply of Goods and Services	6,077
227004 Fuel, Lubricants and Oils	3,773

Reasons for Variation in performance

Late and inadquately release of funds

Total	25,362
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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 16 Mukono ZARDI

<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	25,362
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

Agricultural research information accessed by atleast 1000 stakeholders in the zone	Q2 - Monitored the 5 established on-farm Nakati trials in Mpigi and Wakiso. There was commendable progress.	Item 221007 Books, Periodicals & Newspapers	Spent 2,666
	Q1 - Established a total 5 on-farm Nakati trials in Mpigi and Wakiso for determining the most appropriate application rate for poultry manure and NPK. - Two on-station Nakati (Solanum aethopicum) trials i.e. 1 for poultry manure rate and 1 for NPK rate were established		

Reasons for Variation in performance

Late and inadequate release of funds

Total	2,666
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	2,666
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed	- Security Services procured and paid	<i>Item</i> 221006 Commissions and related charges	<i>Spent</i> 2,840
- Critical competent staff in the Institute recruited and motivated	- Utility services procured and paid	221008 Computer supplies and Information Technology (IT)	7,381
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Travel inland facilitated	221009 Welfare and Entertainment	10,419
- Institute physical faci	- 3 vehicles repaired and serviced	221012 Small Office Equipment	258
	- Salaries & Wages paid to-date	227001 Travel inland	2,144
	- Internet Services & Entertainment procured		
	- Electricity bills paid to zero balance		
	- One acres of compound mowed and trimmed, offices cleaned.		
	Q1		
	• - 5 of office buildings painted on the outside		
	• - 4 vehicles repaired and serviced		
	• - 6 acres of compound mowed and trimmed, offices cleaned		
	• - Electricity bills paid to zero balance		
	• - Internet Services & Entertainment procured		
	• - Salaries & Wages paid to-date		
	• - Security Services procured		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 16 Mukono ZARDI

- Telephone services procured
- Travel inland facilitated

Reasons for Variation in performance

Late and inadequate release of funds

Total	254,296
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	24,848
<i>NTR</i>	229,449

Output: 01 5105 Generation of technologies for priority commodities

	Q2	Item	Spent
- The quality banana, maize, rice, cassava and fish technologies maintained	Four fished ponds were partially stocked	224001 Medical and Agricultural supplies	10,701
- Publications of technology development and dissemination developed	Q1		
- Process of dissemination and adoption of the banana, maize, rice, cassava and fish technologies mon	Construction of 4 (four) fish ponds on station at Kamenyamiggo was completed. Drainage channels completed; 3 inlets and outlets installed. In addition 3 fish ponds were de-silted, banks strengthened Compacted and limed.		

Reasons for Variation in performance

Late and inadequate release of funds

Total	10,701
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	10,701
<i>NTR</i>	0

Programme 17 Ngetta ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	Q1	Item	Spent
1. Issues concerning the Organisation discussed and resolved	- Maintained 6,000 seedlings established for pasture seed multiplication on station.	221011 Printing, Stationery, Photocopying and Binding	2,389
2. Management & committee meetings held		222001 Telecommunications	2,765
4. Utilities & other charges paid.		223005 Electricity	3,200
6. Staff motivated.	- 4 Labour saving technologies tested on-station (ploughs, disc, planter, herbicides) for rice & maize	223006 Water	3,661
8. Telephone, postage and courier services used.		224002 General Supply of Goods and Services	4,198
9. Water systems maintenance paid		227004 Fuel, Lubricants and Oils	3,648
10. Ba			

Reasons for Variation in performance

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 17 Ngetta ZARDI

Late and inadequate release of funds

Total	19,861
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	19,861
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

1. Dissemination of research findings made None

2. Utilisation of improved farming practices enhanced

Reasons for Variation in performance

NA

Total	0
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	0
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
 - Critical competent staff in the Institute recruited and motivated
 - Adequate financial resources mobilised, appropriately utilised and duly accounted for
 - Institute physical faci

- Security Services procured and paid
 - Utility services procured and paid
 - Travel inland facilitated
 - 3 vehicles repaired and serviced
 - Salaries & Wages paid to-date
 - Internet Services & Entertainment procured
 - Electricity bills paid to zero balance
 - One acres of compound mowed and trimmed, offices cleaned

Item	Spent
221001 Advertising and Public Relations	1,664
221003 Staff Training	5,973
221008 Computer supplies and Information Technology (IT)	1,162
221009 Welfare and Entertainment	4,134
221012 Small Office Equipment	197
227001 Travel inland	7,466
228002 Maintenance - Vehicles	6,960

Q1
 • - Security Services procured
 • - Telephone services procured
 • - Travel inland facilitated
 • - 5 of office buildings painted on the outside
 • - 3 vehicles repaired and serviced
 • - Salaries & Wages paid to-date
 • - Internet Services & Entertainment procured
 • - Electricity bills paid to zero balance
 • - 14 acres of compound mowed and trimmed, offices cleaned

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 17 Ngetta ZARDI

Reasons for Variation in performance

Late and inadequate release of funds

Total	42,815
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	27,555
<i>NTR</i>	15,260

Output: 01 5105 Generation of technologies for priority commodities

- The quality of the developed cassava, fish, dairy technologies maintained
 - Publications of technology development and dissemination developed
 - Process of dissemination and adoption of the cassava, fish, dairy technologies monitored
 - cassava

Q1

•6 on-farm and 2 on-station season two trials for testing agronomic performance of 5 CBSD tolerant varieties in Amolatar, Lamwo, Gulu, Otuke, and Agago districts established.
 •6 on-farm and 2 on-station trials sites established for farmer participatory evaluation of management options of pests and diseases of mango and citrus maintained and data collected.

Item

224001 Medical and Agricultural supplies

Spent

7,104

Reasons for Variation in performance

Late and inadequate release of funds

Total	7,104
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	7,104
<i>NTR</i>	0

Programme 18 Nabium ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Management practices that affect the performance of goats assessed and appropriate interventions recommended in Teso and Karamoja sub-regions.
 Efficacious botanicals in controlling crop pests and diseases identified.
 Appropriate water harvesting (two)

Ethnoveterinary botanicals and knowledge utilised by pastoralists to control ticks and helminths in livestock was documented

Q1

1 trial of labour saving animal drawn established in Serere district.

Item

221002 Workshops and Seminars

221007 Books, Periodicals & Newspapers

221011 Printing, Stationery, Photocopying and Binding

222001 Telecommunications

223005 Electricity

223006 Water

227004 Fuel, Lubricants and Oils

Spent

1,066

426

1,098

213

256

213

2,218

Reasons for Variation in performance

Late and inadequate release of funds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 18 Nabium ZARDI

Total	5,488
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	5,488
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

	<i>Item</i>	<i>Spent</i>
At least 2 Apiary demo sites established and maintained at Nabuin and Serere.	221002 Workshops and Seminars	3,437
At least 3 farmer trainings on apiary management held in the zone.	227001 Travel inland	3,413
At least 10 TOTS in each district in Karamoja and Teso backstopped on Apiary management.		
Honey processing e		
- 5 newly released CBSD resistant cassava varieties are being evaluated for adaptability at on-farm (NabuZARDI)		
Q1 Stakeholders' meeting held in Nakapiripirit district to communicate the study plan and map out direction of the study on approaches for disease control in cattle to enhance beef.		

Reasons for Variation in performance

Inadquate release of funds

Total	6,850
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	6,850
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

	<i>Item</i>	<i>Spent</i>
- Human Resource identified and appropriately utilised and managed	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	7,349
- Critical competent staff in the Institute recruited and motivated	221003 Staff Training	5,110
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	221004 Recruitment Expenses	1,066
- Institute physical faci	221006 Commissions and related charges	6,597
- Security Services procured and paid	221008 Computer supplies and Information Technology (IT)	402
- Utility services procured and paid	227001 Travel inland	876
- Travel inland facilitated	228002 Maintenance - Vehicles	2,133
- 3 vehicles repaired and serviced		
- Salaries & Wages paid to-date		
- Internet Services & Entertainment procured		
- Electricity bills paid to zero balance		
- One acres of compound mowed and trimmed, offices cleaned		
Q1		
• - Security Services procured		
• - Telephone services procured		
• - Travel inland facilitated		
• - 5 of office buildings painted on the outside		
• - 4 vehicles repaired and serviced		
• - Salaries & Wages paid to-date		
• - Internet Services & Entertainment procured		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousands</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 18 Nabium ZARDI

- Electricity bills paid to zero balance
- 6 acres of compound mowed and trimmed, offices cleaned

Reasons for Variation in performance

Late and inadequate release of funds

Total	24,324
<i>Wage Recurrent</i>	3,646
<i>Non Wage Recurrent</i>	16,000
<i>NTR</i>	4,678

Output: 01 5105 Generation of technologies for priority commodities

- The quality cassava, fish, dairy, beef technologies maintained
- Publications of technology development and dissemination developed
- Process of dissemination and adoption of the cassava, fish, dairy, beef technologies monitored
- cassava,

- 10 acres of rice were maintained in Kolir, Bukedea District.

Item

224001 Medical and Agricultural supplies

Spent

20,789

Q1
06 kgs each of legumes and grass sourced from Bulindi-Zardi and 03 acres of land opened ready for planting 02 on station and 01 on farm. Established evaluation trials for dry matter yield, nutritive value and adaptability for 4 pastures namely brachiaria mulatao, Rhodes grass, buffel grass, giant setaria, guinea grass and molasses grass in soroti and nakapiripirit (on station) districts. Established trials for grass and legume combinations to evaluate for dry matter yield, nutritive value and adaptability in soroti districts and on station. Data collection to start in next quarter

Reasons for Variation in performance

Late and inadequate release of funds and prolonged drought

Total	20,789
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	20,789
<i>NTR</i>	0

Programme 19 Mbarara ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 19 Mbarara ZARDI

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Item	Spent
Validation and evaluation of agricultural technologies in the Zone supported.	•Preliminary results of fungicide and pesticide application regime appropriate for management of major mango, avocado and citrus pests and diseases were obtained. Systemic fungicide sprayed at vegetative, flowering and fruiting stages gave promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocados.	221011 Printing, Stationery, Photocopying and Binding	2,666
		222001 Telecommunications	2,133
		223005 Electricity	5,333
		227004 Fuel, Lubricants and Oils	3,413

Q1

Monitored the performance of improved fruit trials/mother gardens in Mbarara, Sembabule and Kiruhura districts. Fruits yields ranged from 5-7 tons/ha for all varieties. Preliminary findings have suggested that fungicide and pesticide application regimes are appropriate for management of major mango, avocado and citrus pests and diseases. The use of systemic fungicide at vegetative, flowering and fruiting stages give promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocados

Reasons for Variation in performance

Late and inadequate release of funds

Total	13,544
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	13,544
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Item	Spent
Computers serviced and maintained	•Experiments were established on-farm and on-station. On-station results best nitrogen fixing shrubs to be Calliandra C., Gliricidia S., Leuceana T. while low results were obtained from Sesbania S. and control with 968,966, 948 while 731 and 816 kgs of bean yield per hectare. •Soil analyses indicate soil nitrogen and phosphorus being below the critical values of 0.2 % and 15 mg/kg respectively in most soils	221008 Computer supplies and Information Technology (IT)	1,706

Q1

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 19 Mbarara ZARDI

- Trials to evaluate the effect of different tree root pruning regimes on yield performance of banana and coffee crops established in Sembabule district.
- Trials on proper spacing of upper storey woody species in banana and coffee crops established in Sembabule district.

Reasons for Variation in performance

late and inadequate release of funds.

Total	1,706
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	1,706
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

Management of physical, human, financial and information resources of the Mbarara zonal agricultural research and development institute.

- Security Services procured and paid
- Utility services procured and paid
- Travel inland facilitated
- 3 vehicles repaired and serviced
- Salaries & Wages paid to-date
- Internet Services & Entertainment procured
- Electricity bills paid to zero balance
- One acres of compound mowed and trimmed, offices cleaned

Item	Spent
221006 Commissions and related charges	4,266
221009 Welfare and Entertainment	2,666
227001 Travel inland	16,213
228002 Maintenance - Vehicles	3,645
228003 Maintenance – Machinery, Equipment & Furniture	8,457

Q1

- Experiments were established on-farm and on-station. On-station results best nitrogen fixing shrubs to be Calliandra C., Gliricidia S., Leuceana T. while low results were obtained from Sesbania S. and control with 968,966, 948 while 731 and 816 kgs of bean yield per hectare.
- Soil analyses indicate soil nitrogen and phosphorus being below the critical values of 0.2 % and 15 mg/kg respectively in most soils

Reasons for Variation in performance

Late and inadequate release of funds

Total	112,224
<i>Wage Recurrent</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 19 Mbarara ZARDI

<i>Non Wage Recurrent</i>	28,389
<i>NTR</i>	83,835

Output: 01 5105 Generation of technologies for priority commodities

- The quality beans, bananas, fish and dairy technologies maintained
- Publications of technology development and dissemination developed
- Process of dissemination and adoption of the beans, bananas, fish and dairy technologies monitored
- bean

•In a survey of 200 households in the zone, it was established that only 7% of farmers conserved fodder. Limited awareness, high cost of inputs, unreliable labour, low quality pasture species and high cattle stocking rates identified as major constraints to on-farm feed conservation. Hay and silage making the only methods used to conserve fodder.

Item

224001 Medical and Agricultural supplies

Spent

8,624

Q1

•Trials to evaluate the effect of different spacing patterns of exotic fodder shrubs on biomass and nutritional value of the species in pure and mixed production systems in Mbarara, Sembabule and Isingiro districts
•Trials to evaluation the nodulation efficiency and performance of seasonal crops under different nitrogen fixing shrubs established in Mbarara, Sembabule and Isingiro districts
•Trials on four improved bean varieties (NABE 2, 4, 15 and 17) established in Sheema and Buhweju District under different soil fertility amendment options.

Reasons for Variation in performance

Late and inadequate release of funds

Total	8,624
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	8,624
<i>NTR</i>	0

Programme 20 Buginyaya ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 20 Buginyaya ZARDI

		Item	Spent
1.1: Farming systems and livelihood characteristics including farmers' agricultural needs, constraints and opportunities in the Busoga subzone validated and documented	- Baseline information on SWC practices in project sites: Survey tool developed and pretested for data collection	221002 Workshops and Seminars	1,200
		221011 Printing, Stationery, Photocopying and Binding	6,294
3.1: Three (3) cost effective fungicide spray regimes identified for management of C	Q1 Draft report detailing farmers agricultural need, constraints and opportunities in Bukedi sub zone produced.	222001 Telecommunications	2,069
		223005 Electricity	1,280
		227001 Travel inland	10,902
		227004 Fuel, Lubricants and Oils	6,568

Reasons for Variation in performance

late and inadequate release of funds

Total	28,314
Wage Recurrent	0
Non Wage Recurrent	28,314
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

		Item	Spent
Management of physical, human, financial and information resources of the Buginyanya zonal agricultural research and development institute.	- Security Services procured and paid - Utility services procured and paid - Travel inland facilitated - 3 vehicles repaired and serviced - Salaries & Wages paid to-date - Internet Services & Entertainment procured - Electricity bills paid to zero balance - One acres of compound mowed and trimmed, offices cleaned	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	12,068
		221003 Staff Training	5,661
		221006 Commissions and related charges	3,555
		221007 Books, Periodicals & Newspapers	605
		221009 Welfare and Entertainment	2,093
		227001 Travel inland	4,142
		228002 Maintenance - Vehicles	3,200
		228003 Maintenance – Machinery, Equipment & Furniture	1,859
		Q1	
		• - Security Services procured for all 3 stations	
		• - Telephone services procured	
		• - Travel inland facilitated	
		• - 5 of office buildings painted on the outside	

Reasons for Variation in performance

Late and inadequate release of funds

Total	33,530
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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 20 Buginyaya ZARDI

<i>Wage Recurrent</i>	12,068
<i>Non Wage Recurrent</i>	21,315
<i>NTR</i>	146

Output: 01 5105 Generation of technologies for priority commodities

Development, multiplication, packaging and dissemination of high quality/improved technologies for beans, maize, cassava and coffee to uptake pathways in the eastern highlands and low lands

•Arabica Coffee: Surveillance of crop nutrition and disease incidence: -Poor coffee crop nutrition observed in 45% of surveyed fields around Bulambuli; leaf miners and coffee berry disease was the most prevalent disease in most of the fields surveyed

Item

224001 Medical and Agricultural supplies

Spent

10,875

Q1
- 3.5t of quality seed expected from 8ha coffee fields
- The status of pest and disease prevalence of Arabica coffee was determined. Coffee leaf rust at >5% on station, 80% of fields in Bulambuli with symptoms of Nitrogen deficiency and suffering dieback due to overbearing

Reasons for Variation in performance

Late and inadequate release of funds

Total	10,875
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	10,875
<i>NTR</i>	0

Programme 21 Rwebitaba ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

1.1 Improved water supply system to laboratories and field trials at Rwebitaba and Kyembogo

Q2
- Evaluation trials maintained on station for improved mangoes, citrus oranges and Apples.
- Demonstration trials for Eucalyptus, Maesopsis eminii, Albizia Chinensis and Terminalia species maintained.

Item

221002 Workshops and Seminars	1,173
221011 Printing, Stationery, Photocopying and Binding	3,200
222001 Telecommunications	1,600
223005 Electricity	640
224002 General Supply of Goods and Services	2,605
227001 Travel inland	5,333
227004 Fuel, Lubricants and Oils	2,133

Q1
- Maintained on station water supply system
- Maintenance of Eucalyptus, Maesopsis eminii, Albizia Chinensis and Terminalia species under evaluation between Rwebitaba ZARDI Agroforestry project and NaFORRI
- Land preparation for improved

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 21 Rwebitaba ZARDI

fallow, soil and water conservation trials/experiments on-station
 35)Preliminary technical report on yield performance for improved potato varieties developed
 •Maintained the on station apiary unit. Planted bee forage plants (Calliandra - 150, Bottle brush - 100, Angels trumpet- 100 and Moringa- 100) in the apiary.

Reasons for Variation in performance

Late release of funds

Total	16,683
Wage Recurrent	0
Non Wage Recurrent	16,683
NTR	0

Output: 01 5102 Research extension interface promoted and strengthened

- Relevant and timely technical advice and back-up provided Nil
 - Technical support provided
 - Capacity of collaborators and stakeholders in the zone to provide agricultural services built
 - Partnerships and linkages with farmers, beneficiaries and other

Item	Spent
221008 Computer supplies and Information Technology (IT)	480

Reasons for Variation in performance

NA

Total	480
Wage Recurrent	0
Non Wage Recurrent	480
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
 - Critical competent staff in the Institute recruited and motivated
 - Adequate financial resources mobilised, appropriately utilised and duly accounted for
 - Institute physical facilities
 - Security Services procured and paid
 - Utility services procured and paid
 - Travel inland facilitated
 - 3 vehicles repaired and serviced
 - Salaries & Wages paid to-date
 - Internet Services & Entertainment procured
 - Electricity bills paid to zero balance
 - One acres of compound mowed and

Item	Spent
211102 Contract Staff Salaries (Incl. Casuals, Temporary)	1,332
221003 Staff Training	2,282
221006 Commissions and related charges	1,066
221009 Welfare and Entertainment	1,066
221011 Printing, Stationery, Photocopying and Binding	1,242

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 21 Rwebitaba ZARDI

trimmed, offices cleaned.	221012 Small Office Equipment	704
	222001 Telecommunications	320
Q1	222002 Postage and Courier	85
- 5 kilometers of on station road maintained	227001 Travel inland	5,636
- 2 meetings and workshops attended by administrative staff	227004 Fuel, Lubricants and Oils	2,580
- 4 of office and 3 residential buildings painted on the outside	228002 Maintenance - Vehicles	2,666
- 3 vehicles repaired and serviced	228003 Maintenance – Machinery, Equipment & Furniture	1,493
- 4 acres of compound mowed and trimmed, offices cleaned		
•Electricity bills paid to zero balance		
•Internet Services & Entertainment procured		
•Salaries & Wages paid to-date		
•Security Services procured		
•Telephone services procured		
•Travel inland facilitated		

Reasons for Variation in performance

Late release of funds

Total	32,204
Wage Recurrent	1,332
Non Wage Recurrent	15,530
NTR	15,342

Output: 01 5105 Generation of technologies for priority commodities

	Q2	Item	Spent
- The quality of the developed tea, cassava, fish, dairy, bananas technologies maintained	Rwebitaba ZARDI	224001 Medical and Agricultural supplies	8,530
- Publications of technology development and dissemination developed	- On station performance trials for tea clones established on 1. 2 acres		
- Process of dissemination and adoption of the tea, cassava, fish, dairy, bananas techn	- 15,000 clones raised and 23,433 plantlets maintained in the tea nursery. 400,000 cuttings supplied to a nursery operator		
	- Mother garden of the 7 lines of coffee on station maintained. In addition another 1 acre of Robusta and Arabica coffee lines for demonstration was established		
	- Maintenance of 4 acres of upland rice (NERICA 1, 4 and 10)		
	- Maintenance of three (3) forage pasture established bracharia species in the evaluation trial		
	- 2 acres of livestock pastures and fodder species (Lab lab and mucuna) established for multiplication on-station. Monitored dairy farmers who		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 21 Rwebitaba ZARDI

received 21,000 splits of Bricharia species under EAAPP project in collaboration with NaLIRRI

- 20 acres of cassava (Nase 14- 4271 variety) maintained on-station. An additional 40 acres of cassava (NASE 14 variety) on-station under EAAPP maintained
- Acquired 3000 plantlets of improved banana for multiplication on 7 acres on-station
- Conducted survey on banana production and marketing constraints conducted in Kabarole, Kyenjojo and Kyegegwa districts
- Maintenance of bee forage plants (Calliandra - 150, Bottle brush - 100, Angels trumpet- 100 and Moringa-100) in the apiary. Raised 350 oscimum seedlings
- Two fish ponds fully filled with fresh water and stocked with Cat fish (Clarias gariepinus)

13.Preliminary report drafted for tea profitability in Kyenjojo district

Q1

Tea

- 15,000 planting materials raised and 23,433 maintained in the nursery. Maintained the tea gene bank. Maintained 20 tea fields and mother gardens

Coffee

- Soil samples from Kyenjojo with coordinates were collected to determine soil fertility status (Nitrogen (N), Phosphorus (P), Potassium (K), Magnesium (Mg), Calcium (Ca) Soil pH and Soil Organic matter (SOM) in 15 tea field

Banana

- Maintained 7 acres of banana multiplication field on station

Rice

- Maintained 4 acres of upland rice (NERICA 1, 4 and 10) on-farm in Mubuku Irrigation Scheme

Reasons for Variation in performance

late and inadequate release of funds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 21 Rwebitaba ZARDI

Total	8,530
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	8,530
<i>NTR</i>	0

Programme 26 NARO Internal Audit

Outputs Provided

Output: 01 5103 Internal Audit

		<i>Item</i>	<i>Spent</i>
Internal Controls reviewed and key risks controlled.	- Audited salary edits october-december 2013 and other payments at NAROSEC with a view of ascertaining the adequacy of internal controls during the reporting period.	221002 Workshops and Seminars	10,667
Adherence to laid down regulations and policies.	- witness and physically verified items delivered at NAROSEC	221003 Staff Training	1,867
Minimized cases of disagreements with auditors and management arising from their reports.	- monitored the implementation of procurement regulations, human resource regulations, and financial regulations at NAROSEC.	221016 IFMS Recurrent costs	4,800
Payroll embracing all NARO staff audited.		227001 Travel inland	13,333
Proper a	Q1 •Audited salary edits and other payments at NAROSEC with a view of ascertaining the adequacy of internal controls. •Witness and physically verified items delivered at NAROSEC •Monitored the implementation of procurement regulations, human resource regulations, and financial regulations at NAROSEC. •Visited Rwebitaba ZARDI, Mbarara ZARDI, NaFORRI and NaFIRRI to follow up implementation of AG's recommendations and to get responses for the issues raised in his reports.		

Reasons for Variation in performance

Delayed approval of funds to undertake planned activities

Total	30,667
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	30,667
<i>NTR</i>	0

Development Projects

Project 0382 Support for NARO

Capital Purchases

Output: 01 5175 Purchase of Motor Vehicles and Other Transport Equipment

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Nil Nil

Reasons for Variation in performance

Nil

Total	0
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>
<i>NTR</i>	<i>0</i>

Output: 01 5176 Purchase of Office and ICT Equipment, including Software

No funding Nil

Reasons for Variation in performance

Nil

Total	0
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>
<i>NTR</i>	<i>0</i>

Output: 01 5177 Purchase of Specialised Machinery & Equipment

No funding Nil

Reasons for Variation in performance

Nil

Total	0
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>
<i>NTR</i>	<i>0</i>

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

Payment to international organisations made	Partial payment or CGIAR contribution.	<i>Item</i>	<i>Spent</i>
		262101 Contributions to International Organisations (Current)	471,720
		264101 Contributions to Autonomous Institutions	2,499

Reasons for Variation in performance

The funds were released late

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Total	474,219
<i>GoU Development</i>	474,219
<i>External Financing</i>	0
<i>NTR</i>	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Research programmes in the NARS monitored; RMIS institutionalized; 4 UJAS editorial committee meetings facilitated; 4 volumes of UJAS published; Innovations systems initiated; Multi stakeholder Innovation platforms supported	Biotechnology •Development of biotechnology tools and processes: Regeneration process and media composition for g-nut and passion fruit determined; Regeneration has been archived in all 4 varieties with average 4 shoots per explants.	<i>Item</i>	<i>Spent</i>
		211103 Allowances	22,860
		221007 Books, Periodicals & Newspapers	22,000
		222001 Telecommunications	24,999
		227004 Fuel, Lubricants and Oils	112,500

- Q1
- 1) Survey for insect pests in oil palm growing areas was conducted. Preliminary findings in Buvuma and Iganga suggest that mealy bugs, scales and birds were the major pests in the two areas. Further assessment underway
 - 2) Raised 20,500 seedlings each of M. eminii, E. grandis and M. volkensii
 - 3) 10,000sqm of land identified and cleared for trial establishment; 20 soil samples collected and being analyzed; germplasm for 5 indigenous tree species collected and being raised in the nursery
 - 4) Propagation protocol for tree crop interaction (for five indigenous fodder species) trial developed
 - 5) Four indigenous tree species (Piliostigma thoringii, Bridelia micrantha, Erythrina abyssinica and Vitex doniana) characterised for medicinal and firewood uses.
 - 6) 2 energy technologies assessed: the three-stone stove mostly used (82%) with energy consumption of 69MJ/cap; Lorena stove was the least used (4%) at 35MJ/cap
 - 7) 1863 plants identified and botanical data collated for use in selection for domestication
 - 8) Leafy biomass harvesting for Warburgia ugandensis under farm conditions documented
 - 9) 50 F4 cotton progenies planted in replicated trials on-station.
 - 10) 10 promising cotton lines in DUS trials planted in Ngetta, NaSARRI and NaCRRRI
 - 11) 14 early maturing elite lines from IITA were evaluated, highest yield

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

(700 kg/ha) was for IT04K2274), followed by IT07K21011 (617 kg/ha) lines. Three Elite lines performed better the SECOW 2W (check). 11 medium duration elite lines were evaluated. Four of them performed better than the check variety as follows: IT07K29210 (1045 kg/ha) IT07K211118 (1031kg/ha), IT07K30944 (925 kg/ha), IT08K1493 (895 kg/ha) and SECOW2W (772 kg/ha). 11 dual purpose elite lines were evaluated, the check variety out yielded (775 kg/ha) them. Among the elite lines IT06K1472 gave the highest yield (469 kg/ha).

12) 11 elite cowpea lines planted at NaSARRI and yield data was collected. Four of elite lines gave yields over 1000 kg/ha and they out yielded Secow-2W (check). Ngoji gave the highest yield (1,319 kg/ha). Planting of 11 elites for second rains 2013 was done

13) A total of 54 local cowpea accessions planted out and twenty of them gave yields above 1,000 kg/ha and five of them shown resistance to viral diseases .

14) A total of 52 cowpea crosses planted out and data on yield analyzed ten of them gave yields above 1,000 kg/ha and five of them shown resistance cowpea scab disease.

15) Twelve lines planted out and yield data analyzed. The yield was severely affected by the drought experienced. Mauritius gave the highest yield (718 kg/ha), followed by VC6173B-10 (648 kg/ha) and then VC61137B-14 (625 kg/ha). They out yielded the local variety (463 kg/ha).

16) Evaluation completed and 45 cowpea lines resistant to blast and 13 lines with tolerance to drought identified.

17) Selected 40 advanced cowpea lines for further screening;

18) Selected 5 lines drought tolerance for further analysis

19) 20 sunflower lines selected for further screening

20) Four cowpea lines B312, ACC11, ACC12, ACC26, were found to be resistant. Among the released varieties SECOW 2W and 3B showed moderate resistance. 5T, NC and 3B23 were tolerant. 1T4W, SS and ACC23 were susceptible.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

21)10 promising NaSARRI selections and 6 BC3 drought and Striga resistant sorghum lines were replanted in Bukedea, Kumi and Serere trial sites. Results indicate that 2 NaSARRI selections had low Striga incidence while 2 BC3 lines from Sudan were early maturing and high yielding. Data on plant establishment and shoot fly incidence has been collected.

22)20 BC2S2 crosses were advanced to BC3S3 generation, 12 BC6 lines were advanced to BC7 generations for bulking and evaluation

23)Pest field screening experiments in four locations of 16 sorghum advanced lines resulted in the identification of four lines resistant to shoot fly attack .54 lead farmers and 10 Agric extension staff trained on sorghum pest management in the three districts.

24)16 elite forage sorghum lines planted for evaluation in 4 different locations for the first rain season 2013. Agronomic data collected on pest and disease responses. 5 lines identified promising.

25)40 forage sorghum accessions assembled and characterized.16 elite forage sorghum lines planted for evaluation in 4 locations first rain season 2013. Agronomic data collected on pest and disease responses.30 introduced forage lines planted for further advancement.

26)4 sweet sorghum varieties were planted 10 demonstration sites in 3 Sub-counties of Kayunga, Baale and Busaana to introduce NaSARRI released sorghum varieties to the farming communities. Data collection and harvesting has been done and two have been identified promising M.O.U signed between NaSARRI and Bio Green investments Kayunga. 400 farmers selected to start producing sweet sorghum for bio- ethanol production. Chinese company given permission by Govt. to start construction of the factory.

27)14 sweet sorghum lines were planted for screening against resistance to major insect pest and diseases and stem sugar composition at NaSARRI, Kayunga and Ikulwe. Data collection and harvesting has been done. 10 identified promising

28)10 Agriculture Extension staff and 47 lead farmers trained on pest and disease management and quality sweet

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

sorghum seed production in Kayunga district.

29)10 promising BC5 populations were bulked to advance to BC6 population Three additional parents with high stem sugar content were incorporated into the breeding program to generate new crosses.

30)Draft report detailing farmers agricultural need, constraints and opportunities in Bukedi sub zone produced

31)A survey of 40 households in Masindi district was conducted. Preliminary results indicated that; poor hive performance, low hive colonization, inefficient baiting materials, bee abscondment, decline of bee forage floras, short flowering month of bee forage species, poor honey extraction techniques, bee pests and diseases, poisonous plants to bees and limited capacity of farmers in improved apiary management were the factors limiting honey yield production among bee keepers. The survey has revealed that the most important bee forage plant species and major sources of pollen and nectar in Hoima district are; Calliandra calothyrsus, Albizia coriaria, Coffea species and Grewia millis. The major bee forage species in Masindi district are; Vernonia amygdalina, Acacia spp, Millicia excelsa, Albizia coriaria, Mangifera indica, Sena spectabilis, Coffea spp, Albizia ziggia, Grewia mollis, Combretum molle, Mangifera indica and Combretum collinum.

32)Data has been collected on severity of aphids, plant aphid infestation, groundnut rosette disease severity following application of botanicals extracts of Tephrosia vogelli, Mexican marigold, red pepper, Nicotiana tabacum (at rate of 500g of plant paste in 4 litres of water per 209 sqm) on groundnut established in a groundnut rosette disease hotspot. Results of the analysis will follow.

33)Monitored the performance of improved fruit trials/mother gardens in Mbarara, Sembabule and Kiruhura districts. Fruits yields ranged from 5-7 tons/ha for all varieties. Preliminary findings have suggested that fungicide and pesticide application regimes are appropriate for management of major mango, avocado and citrus pests and diseases. The use of systemic fungicide

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

at vegetative, flowering and fruiting stages give promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocados

34) Dominant agroforestry practices in the zone are being documented.

Secondary data indicates that upper storey indigenous woody species scattered in crop fields and along the boundary constitute the prevalent tree-crop management practice in the region. These are mainly for wood production and to a less extent fodder but not soil fertility management in degraded fields.

35) Monitored the survival, pest & disease resistance of agroforestry technologies. Survival: Kayunga 98% of citrus and Mubende 95% for mangoes. Average fruiting in all citrus varieties was 300, and mangoes 76.

36) Preliminary technical report on yield performance for improved potato varieties developed in Rwebitaba ZARDI

Reasons for Variation in performance

Delayed release of funds

Total	182,359
<i>GoU Development</i>	182,359
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

- Value chain actors and MSIPs established
- infrastructural and informational needs of NARO/NAADS and the proposed Joint ICT platform established

- Organised and participated in the World Food day celebrations at NASARRI.
- Developed and published a newspaper article on Agricultural investment opportunities in Uganda.
- Trained 340 farmers (210 female and 130 male) in Mbarara, Masaka and Wakiso districts on NSD management
- Trained stakeholders in Masaka (30) and Wakiso (30) districts on harvesting and processing forage seed
- A Draft paper on evaluation of different Napier accessions for NSD tolerance developed
- A draft leaflet on forage seed production produced

<i>Item</i>	<i>Spent</i>
221005 Hire of Venue (chairs, projector, etc)	49,999
221008 Computer supplies and Information Technology (IT)	75,000
227001 Travel inland	139,999

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

- About 1000 fact sheets on FMD produced
- About 1000 fact sheets on CBPP produced

Q1

NASARRI

a) Cowpea farming information materials produced. 100 Leaflets and 2 Posters printed

b) 54 farmers in Serere District were equipped with skills of cowpea diseases and how to prevent them.

c) 50 ISM demonstration plots established in Serere, Soroti Kumi and Katakwi districts. 200 Lead farmers and Agric. Extension staff trained on striga management and community quality sorghum seed production

d) 12 demonstrations of forage sorghum established in 3 districts. Preliminary data on farmer perceptions of forage sorghum lines was collected and analysed.

Abi ZARDI

e) Six improved bean and six improved Gnut varieties were established on-farm with farmer groups in three districts

- Followed up establishment of alleys and vegetative strips in the trials to plant the test crops

- Six on-farm and two on-station INM trial set using maize as test crop with intention of repeating the previous trial

f) West Nile Soil fertility status dissemination workshop conducted under WeSFI project and was attended by over 80 participants involving DNCs, DAOs, District Farmer Forum chairpersons, NGOs and Abi ZARDI Scientists among others

g) Capacity of 105 Farmers (M-62, F-43) from the Sub Counties of Ariwa, Romogi and Apo built. 346 students (M-145, F-201) from 10 Secondary schools who visited the Institute were taught on soil health management

Buginyanya ZARDI

h) 15,600 agro forestry trees (Grevillea, Dovyalis (kei apple) and Markhamia planted at Buginyanya, Bulegeni and Ikulwe. One tree nursery with capacity of 40,000 seedling per year established at Buluganya PS

i) 15kgs of assorted tree seed availed to "champions" in the sub-county

- 7 active farmers and champions of SWC taken for an exposure visit in the

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>UShs Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

National Agricultural Show at Jinja
 •2 brochures (300 copies) and 1 Poster developed and printed for use, Bulindi ZARDI
 •1 acre of demonstration for Sorghum (Sekedo), Soya (Namusoy1N, Namusoy2N, Namusoy3N & Maksoy4M), Sweet potatoes (NASPOT6, NASPOT8, NASPOT10, NASPOT7, NASPOT11 & Ejumula) to increase farmers' knowledge on Good agronomic Practices and access to adapted crop cultivars in the LACZ; 581 students and 86 farmers visited the demonstration plots on station.
 J) Training of 30 farmer groups and agro processors in 14 in agro processing and 16 in participatory market research regarding cassava, maize rice and poultry in Kiryandongo, Buliisa, Hoima, Masindi and Kibaale
 k) 100 farmers from 8 farmer field school (FFS) groups in Rugashari and Kyaterekera subcounties of Kibaale district were equipped with IPM technologies for management of bean fly and snail pests in beans Kachwekano ZARDI
 • Information on growth parameters was generated and indicated that three genotypes out of 6 that were grown under farmers conditions had good vigour and showed high resistance to late blight. A paper on potato clones with durable field resistance was published in African journal of Agricultural research
 l) Harvested 3 tons of prebasic seed potato.
 M) Harvested 4 ha of basic seed potato and realised 16 tons
 n) Backstopped and provided information to apple farmers in Kanungu, Rukungiri, Kabale and Kisoro. Some farmer's orchards have been identified as demonstration sites (e.g Matayo's in Rukungiri, Keith's and Mbarara's farms in Kabale). Farmer in Rukungiri was backstopped while establishing a 15 ha apple orchard in Buyanja subcounty. Mbarara ZARDI
 o) Trials to evaluate the effect of different tree root pruning regimes on yield performance of banana and coffee crops established in Sembabule district.
 P) Trials on proper spacing of upper storey woody species in banana and

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

coffee crops established in Sembabule district.

Q)Trials to evaluate the effect of different spacing patterns of exotic fodder shrubs on biomass and nutritional value of the species in pure and mixed production systems in Mbarara, Sembabule and Isingiro districts

r)Trials to evaluation the nodulation efficiency and performance of seasonal crops under different nitrogen fixing shrubs established in Mbarara, Sembabule and Isingiro districts

s)Trials on four improved bean varieties (NABE 2, 4, 15 and 17) established in Sheema and Buhweju District under different soil fertility amendment options.

T)Trials on two improved maize varieties (longe 5 and MM3) established on-farm in Insigiro and Ibanda Districts under different soil fertility amendments.

Mukono ZARDI

u)Established a total 5 on-farm Nakati trials in Mpigi and Wakiso for determining the most appropriate application rate for poultry manure and NPK.

V)Two on-station Nakati (*Solanum aethopicum*) trials i.e. 1 for poultry manure rate and 1 for NPK rate were established

1)Monitored the survival, pest & disease resistance of agroforestry technologies. Survival: Kayunga 98% of citrus and Mubende 95% for mangoes. Average fruiting in all citrus varieties was 300, and mangoes 76.

w)60 rice actors mobilized to a rice market chain actors' workshop. In addition two thematic groups on rice grain and processed products formed. Ngetta ZARDI

x)6 on-farm and 2 on-station season two trials for testing agronomic performance of 5 CBSD tolerant varieties in Amolatar, Lamwo, Gulu, Otake, and Agago districts established.

Y)6 on-farm and 2 on-station trials sites established for farmer participatory evaluation of management options of pests and diseases of mango and citrus maintained and data collected.

Z)Established 1 experiment to evaluate 2 IPM strategies (planting date and variety) for simsim gall midge on-station

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

aa)Set up 2 on station trials to evaluate performance of different varieties (3) under different weed management conditions.
 Bb)Set up 2 on station trials to evaluate performance of different varieties (4) under different weed management conditions
 Rwebitaba ZARDI
 •Training of 60 farmers across the zone in pasture seed production, hay and silage making
 •Distributed over 21,000 splits of Bricharia species to Dairy farmers
 •Demonstrated Tea clones at the National Agricultural show, Jinja district.

Reasons for Variation in performance

Delayed released

Total	264,999
<i>GoU Development</i>	264,999
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

	<i>Item</i>	<i>Spent</i>
1 - Good Governance and corporate social responsibility ensured and promoted; Leadership and oversight Management of agricultural research provided;	1 - NARO council facilitated;	221001 Advertising and Public Relations 39,999
2 - Staff recruited and trained	2 - Staff recruited and trained	221003 Staff Training 174,999
3 - Stationery and office consumables procured;	3 - Stationery and office consumables procured;	221004 Recruitment Expenses 75,000
4 - Office equipment maintained;	4 - Office equipment maintained;	221006 Commissions and related charges 174,999
5 - Water utility bills paid; Electricity utility bills paid; Telephone, Postage and courier services used;	5 - Water utility bills paid; Electricity utility bills paid; Telephone, Postage and courier services used;	221009 Welfare and Entertainment 75,000
6 - Vehicles serviced; Office buildings maintained; Compound maintained;	6 - Vehicles serviced; Office buildings maintained; Compound maintained;	221012 Small Office Equipment 39,999
7 - Maintain effective ICT facilities; Subscription for internet paid;	7 - Maintain effective ICT facilities; Subscription for internet paid;	221016 IFMS Recurrent costs 124,999
8 - Quarterly entity accounts, financial statements, commitment control reports, several manual books of accounts maintained. Bank charges timely paid;	8 - Quarterly entity accounts, financial statements, commitment control reports, several manual books of accounts maintained. Bank charges timely paid;	222002 Postage and Courier 15,000
9 - Acquisition of books, agric. Information magazines and newspapers;	9 - Acquisition of books, agric. Information magazines and newspapers;	222003 Information and communications technology (ICT) 30,000
10 - security maintained	10 - security maintained	223004 Guard and Security services 30,000
11 - Break tea and Refreshments provided ;	11 - Break tea and Refreshments provided ;	223901 Rent – (Produced Assets) to other govt. units 15,000
9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;	9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;	224002 General Supply of Goods and Services 199,499
10 - Conduct audits in all NARO's	10 - Conduct audits in all NARO's	225001 Consultancy Services- Short term 65,061
		226001 Insurances 24,039
		227001 Travel inland 279,999
		227002 Travel abroad 17,414
		228001 Maintenance - Civil 60,575
		228002 Maintenance - Vehicles 75,526
		228004 Maintenance – Other 15,765

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;	processes;
10 - Conduct audits in all NARO's processes;	11 - Facilitate and guide the procurement process in NARO;
11 - Facilitate and guide the procurement process in NARO;	12 - Participate in Jinja Agricultural show;
12 - Backstop research institutes in areas of Public Relations & Development Communication as well as branding concepts;	13 - Undertake Corporate Marketing and Promotional activities;
13 - Participate in Agricultural exhibitions, trade fairs, shows and Open days;	14 - UJAS editorial board facilitated.
14 - Undertake Corporate Marketing and Promotional activities;	Q1
15 - agricultural research finding published (both hard and soft);	1 - NARO council facilitated;
16 - Facilitate the approval and registration of all non-PARI research service providers;	2 - Staff recruited and trained
17 - Participate in donor dialogues meetings	3 - Stationery and office consumables procured;
	4 - Office equipment maintained;
	5 - Water utility bills paid; Electricity utility bills paid; Telephone, Postage and courier services used;
	6 - Vehicles serviced; Office buildings maintained; Compound maintained;
	7 - Maintain effective ICT facilities; Subscription for internet paid;
	8 - Quarterly entity accounts, financial statements, commitment control reports, several manual books of accounts maintained. Bank charges timely paid;
	9 - Acquisition of books, agric. Information magazines and newspapers;
	10 - security maintained
	11 - Break tea and Refreshments provided ;
	9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;
	10 - Conduct audits in all NARO's processes;
	11 - Facilitate and guide the procurement process in NARO;
	12 - Participate in Jinja Agricultural show;
	13 - Undertake Corporate Marketing and Promotional activities;
	14 - UJAS editorial board facilitated.

Reasons for Variation in performance

There was a delay in funds disbursement

Total	1,567,670
GoU Development	1,567,670
External Financing	0
NTR	0

Output: 01 5105 Generation of technologies for priority commodities

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

		<i>Item</i>	<i>Spent</i>
Beans	NARL		
NACRRRI	Bananas	224001 Medical and Agricultural supplies	576,000
1. Released and near release bean varieties produced and maintained (Breeder, basic and foundation seeds of all released varieties and segregating population produced)	<ul style="list-style-type: none"> • Collected data on the performance of Black sigatoka incidence and agronomic at pre-flowering stage; Incidence of Black Sigatoka on hybrids determined at the pre flowering stage in the PYT at Kawanda, • Submitted two matooke hybrids (for M19 and M20) to Variety release committee • BBW: Selected 10 lines replanted in Confined Field Trial, to establish resistance to BBW • Nematode resistance: Collected pre-flowering agronomic performance of transgenic lines in the confined field trial • Enhanced nutritive value: Generated 50 transgenic lines of M9 with Provitamin A enhancing genes 		
2. Introduction, collection and identification of weevil resistant	<p>14. Promotion of IPM packages for management of BBW: Through the promotion of IPM packages, BBW incidence reduced to below 10% in most of the affected areas in Ankole and Kigezi</p> <p>NaFIRRI</p> <p>15. Determination of nutrient levels & biophysical factors influencing fish production levels:</p> <ul style="list-style-type: none"> • In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1} • Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment • Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits <p>16. Development of options for management of aquatic weeds:</p> <ul style="list-style-type: none"> • Field data was collected from 18 geo-referenced sites in the western zone of Lake Kyoga (i.e. Kibuye, Kokoyilo, Mukotte, Ninga, Kachanga, Kasambya, Iruma, Kyalusaka, Muwunani, Kasenyi, Kiguli, Mbwiko, Namasale, Kayago, Muchora, Oripchan, Lwampanga & Zengebe). Major aquatic weeds of importance in the western zone of the lake were <i>Najas horrida</i> (445 ha); <i>Salvinia molesta</i> (300 ha); water hyacinth (232 ha); & 		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>UShs Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Hydrilla verticillata (199 ha). Of these, local fishers reported *Salvinia molesta* to be the most devastating to various water-based activities especially gill net fishing.

17.Livelihood Analysis of fishing communities: Prioritized & socially acceptable livelihood options for Lake Edward fishers were identified

18.Map on aquaculture production in Central region completed: Data on aquaculture production collected from 137 fish farms in Lira & Alebtong districts in Northern region (a

database on aquaculture production in the Northern region is being developed)

19.Development of topographic maps & designs of aquaculture reservoir fed systems in Western region:

Appropriate site was established in Kagango dam in Isingiro district.

Consensus was obtained from farmers & district officials following a consultative & sensitisation meeting in preparation for formulation of MoU

20.Development of selected fish species for ornamental fish culture:

Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)

21.Determination of Appropriate Gillnet Mesh Sizes: Conducted 3 monthly gillnet size selectivity experiments (Oct – Dec) during the wet season on the Northern part of Lake Albert. Preliminary analysis revealed the 2.5 inch mesh size gillnets as appropriate for sustainable harvest of *A. baremose* & *H. forskahlii* in the deep open waters of Lake Albert

22.Update on current status of fishing effort on the Kyoga basin lakes: A census of all fishing inputs (effort) on lakes Kyoga and Kwania (Oct 2013) was conducted, showing an increase in undersize gillnets and fishers by 25% and 18% respectively between 2008 & 2013. A 5% decline in number of fish landing sites due to resurgence of water hyacinth, rendering inaccessibility & subsequent closure was registered

23.Update on current fish production levels, income (beach values) & contribution to livelihoods & GDP from Lake Albert & Albert Nile fisheries: Undertook a lake-wide CAS (Nov – Dec) on Lake Albert & Albert Nile. Conducted 3 monthly CAS on 2

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

fish landings in vicinity of the lower Victoria (Murchison) Nile. Comparing with the previous quarter (Jul – Sep), there was a 10% decline in fish catch (from 500 t to 450 t), 20% decline in beach value (from 1.1 bn to 800 m) of catch landed at the two fish landing sites. Analysis of the lake-wide CAS data for the period Nov – Dec is still ongoing but initial results indicate up to 40 fish species of economic importance to commercial fisheries of the Albert system

24.Undertook monthly experimental surveys on fish populations in the Victoria Nile Ramsar site area of MFNP to identify critical habitats for fish avoidance during seismic & other oil related exploratory activities & to generate baseline data for post seismic monitoring. Up to 160 habitats important to fish as breeding & nursery grounds have been identified & mapped in the area. A total of 45 species of socio-ecological importance that need protection from oil seismic activities have been recorded. 3 technical reports have been prepared & submitted to Total E & P detailing technical advice on avoidance & protection strategies for the identified critical fish habitats & fish species

25.Baseline information/ database energy returns from natural fish food organisms in Lake Edward: Study reports on energy returns & fatty acid profiling are still under compilation by MAK collaborator

26.Development of technologies for sustained mass production of micro-algae, rotifers & Moina, two live larval feeds, rotifers & Moina: Prototypes of culture media & systems for micro-algae, rotifers & Moina using available fibre glass tanks was tried out successfully. Preliminary results of the trials showed Chlorella spp to be the best micro-algal food for Moina.

27.Development of feed formulation for grower feed for tilapia & 3 grower feeds for catfish: Proximate composition of at least 8 local feed ingredients determined

•Draft report & map indicating locations of fish breeding/ nursery areas on Lake Victoria produced
28.Determination of major fish disease pathogens from 5 commercial fish farms/hatcheries:

29.Laboratory characterization of

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

parasites collected from hatcheries and 3 grow out fish farms in Serere, Lira, Gulu & Lacor. Parasitology revealed & confirmed presence of *Trichodina* sp, *Acathocephalus* sp, *Bolbophorus* sp, monogean – *Cichildogyrus* *Euclinostomum* sp & *Gyrogactyrus* sp infecting tilapia and catfish. DNA from bacterial samples was isolated & shipped to ILRI, Nairobi for molecular identification.

30. Studies are on going on breeding Nile Perch and African catfish. Breed 1260 juveniles pureline Lake Edward Nile tilapia strains on station for use in breeding programme. Morphometrics data & genetic samples from 100 Nile tilapia samples from 100 Nile tilapia samples of Lake Kyoga collected. 132 Nile tilapia parent stock of Nile tilapia from Lake Kyoga acclimatized on station for use in breeding programme

31. Undertook 1 field environment assessment of SON Fish farm: Water parameters indicated good conditions for aquaculture production: Dissolved oxygen (6.8 – 8.0 mg/L); Temperature (24.9 – 26.20C); pH (6.9 – 7.3); Blue green algae were dominant with high biomass (8000µg/L); Cage sites had high zooplankton densities.

Q1

NACORRI

Coffee

- 1) 12 promising candidates selected according to yield
- 2) 17 CWD resistant hybrid progenies identified
- 3) Distributed 1114 TC derived plantlets to nursery operators
 - Maintained all the mother bushes
 - Maintained 304 plantlets ready for distribution to nursery operators.
 - Maintained 1058 plants under hardening for distribution next rain season
 - Maintained 4338 cultures of leaf explants on petri dishes for embryo and callus induction
 - Maintained 1704 cultures in culture tubes for embryo induction
 - Maintained 43 cultures in flasks on orbital shaker for embryo induction
 - Embryos extracted from explants and flasks were nurtured in 601 RITAs for development into plantlets
 - Weaned and maintained 19916 plantlets in poly-boxes under humidity

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

cages for further development into plantlets

- Weaned 14342 plantlets into pots
- Maintained 3948 plants under hardening
- 160 Arabica samples among the Elgon A, Germplasm collection and Elgon Hybrids collected On-station and processed for bean and cup quality analysis.
- 160 lines of Elgon A, Germplasm collection and Elgon Hybrids evaluated for bean size and weight /filling (ratio of floaters and outturn) at fresh cherry and parchment stage On-station.
- 50 CWD-R samples collected On-station for bean and cup quality analysis.
- 50 CWD-R Robusta lines evaluated for bean size and weight /filling (ratio of floaters and outturn) at fresh cherry and parchment stage On-station.
- 40 CWD-R samples collected on On-farm (Kamuli) for bean and cup quality analysis.
- In Kapchorwa and Kween districts the dominant shade species in coffee were Cordia africana 63 %, Graviilea Robusta 27 %, Ficus mucosoa 18%, others with less than 10 % incidences were Ficus natalensis, Jacaranda, Pine.
- 4)The morphology of shade species varied with shade species with the largest canopy being shown by Ficus ovate and Cordia africana and least by pine
- Soil samples taken from Robusta coffee areas submitted to Kawanda NARLI for analysis
- Trial on in-vitro rearing of BCTB using cuttings initiated in lab. At Kituza.

NACRRI

Beans

- Surveys on virulence of bean root rot pathogens conducted in 9 districts.
- Morphological characterization of S. rolfsii commence
- Surveys of Angular leaf spot disease of common beans conducted in Gulu, Amuru and Oyam
- 5)Determination of disease and yield losses caused by ALS and Rust on-farm with 3 farmers' fields in Wakiso district
- 6)22 climbing bean genotypes which appeared very outstanding during the season from the PYT, IYT and IYT trials have been identified and selected.

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Most of the remaining genotypes had intermediate performance and 7 genotypes were completely rejected

- Data from AYT trials for 10 nutrient bean genotypes at NaCCRI, Ngeta ZARDI ABiZARDI, Nakabango and KaZARDI obtained and 8 lines selected
- 7)430 kg of seed obtained from 10 genotypes from 10 nutrient dense bean lines
- 318 accessions with tolerance to drought and multiple pathogen resistance prepared for further testing
- 8 promising segregating populations tolerant to drought selected for further testing (in the field).
- Multiplied seed for the four new bean lines.
- Advanced yield trials established for 3 new promising bean lines.
- 2,790 Kg of foundation bean seed was produced and multiplication of more is on going.
- 15.4 Tons of Quality declared seed produced by partners
- 6 trials to test different potential staking options were established.
- The bean based product recipe book was revised but is still in its draft form.
- 40 stakeholders were in Bushenyi were empowered on the utilization of different bean based products.
- An MOU was signed with FIT (U) Ltd for them to offer market information and business development training and mentoring to farmers.
- A total of 6000 Brochures was printed.
- 8)bean innovation platforms established.

Maize

- Harvested 1100 S3 lines from previous line nurseries and prepared seed for 1100 S3 lines for planting.
- Planted nurseries for 490 lines for test crossing to 2 testers of A and B at Namulonge
- 9)23 hybrids selected from previous regional trials and planted for second evaluation.
- 36 hybrid and 35 inbred line laboratory analysed for aflatoxin
- 10)8 hybrids selected through PVS at farmers filed
- 11)Application for release of at least 4 varieties submitted
- 12)Applied for release of highland maize 3 candidate varieties
- At least 165 hybrids evaluated to

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

select the best hybrids pedigree population formation and Dh line induction

- 321 diallel hybrids generated
- 300Kg of breeder seed of each OPV produced
- Produced 5kg of breeder seed of released varieties
- Harvested and distributed 0.21t of Breeder seed
- Harvested 14 t of foundation seed from NaCRRI and Pearl Seeds
- Established 1.5 hectares of breeder and foundation seed at NaCRRI
- 13) Distributed 0.6t of certified seed to the 3 IPTA
- A total of 21 demonstration plots established in the participating IPTA
- 215 IPTA members empowered in QPM production
- Participated in Agricultural show conducted in July in Jinja and exhibited QPM Value added products and demonstrations on improved management of QPM varieties
- Participated in Agri-business Expo conducted in June in Masindi and exhibited QPM products together with participating IPTA stakeholders
- Cooking and Chemical properties 20 maize varieties determined

Horticulture

Mango

- Mango fields for different cultivars under different spacing were maintained on station
- Mango fields for fertilizer trial maintained and monitored in Serere and Tororo
- 2500 fruit seedlings for generating rootstocks were planted
- Empowered 147 nursery operators in six districts
- 6 sets of fruit promotion materials were developed. These included Brochures for commercial crops which included Avocado, Citrus & Mango pests, disease & production.

Cassava

- In order to generate varieties with desired storage root qualities, a total of 80 storage root samples rich in β -carotene were collected from multicoational trial and analysed for pro-vitamin content,
- Additionally, 3,000 storage root samples from 2 varieties in the AYT were collected and analysed for dry

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

matter and starch yield,

- One data set generated on biotic stress from a seedling trial planted for evaluating families of cassava for adaptation to highland regions in Buginyanya, the selected adapted varieties will be recommended to expand cassava production to highland regions
- Started sequential storage root sampling for analysis of β -carotene accumulation over time. These generates useful information for β -carotene rich cassava
- Established a trial at NaCRRI with 8 clean varieties to generate information for understanding the extend of degeneration caused by CBSD over time, generated 2 data sets.
- Completed harvesting of elite cultivars of cassava from 5 remaining locations,
- Planted UYT with 4 cultivars at 5 locations (NaCRRI, Kamuli, Tororo, Kaberamaido and Abii) to generate performance stability data for variety release
- In order to develop high yielding disease resistant varieties with improved storage root quality, 5 data sets were collected each from partial inbreds (SET & CET) expressing CBSD resistance triat, Collected 60 leaf samples from 60 genotypes assayed in the field for quantification of CBSD associated viruses,
- Furthermore, genotype by sequencing (GBS) analysis of the lines generated from crosses between Namikonga and elite varieties begun at BECA to identify SNPs associated with CBSD resistance,
- Established a seedling evaluation trial with 23 families expressing β -carotene trait at Abii for studies on effect of inbreeding on β -carotene content, and collected first data set on vigor and key diseases,
- Very high establishment rate achieved from the trial for diallel studies on β -carotene content
- 14)Thesis on molecular characterisation of partial inbreds for CBSD resistance submitted to Makerere University for examination
- A total of 19 species of wild cassava were introduced from Brazil for improving Ugandan cassava germplasm, a total of the 187 seedlings raised from these 19 species in the

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

nursery have been planted in field at NaCRRRI for adaptation

- Generated 3 data sets from multilocational trial aimed at understanding effect of environments on flowering of cassava varieties , this will generate information for improving cassava breeding
- Collected 3 clean cassava varieties for screenhouse based pathogenic study. The generated diversity information will help in development of informed CBB management package
- Planted new CBSD epidemiology trials with 6 varieties at four locations and yeild loss trial at Loro with 4 varieties (both clean and diseased) to generate information package for managing CBSD and other cassava diseases
- Collected 200 soil samples from 2 regions to establish types of soil in major cassava growing regions Uganda for recommending best production practices
- Established a trial at 3 locations to understand response of various varieties to varying fertiliser levels and generated one data set.
- A market survey on improving cassava marketing and processing in Uganda was conducted. A total of 1,600 respondents were interviewed in 48 districts.

NAFIRRI

15)A technical report on physico-chemical conditions of the environment were suitable for fish production based and status of heavy metal pollutants for Lake Kyoga was produced. It shows that compared to NEMA/WHO Standards i.e. dissolved oxygen was $\geq 3\text{mg/L}$; pH was 6.3-10.6 compared to 6-8 of WHO/NEMA Standard; with the parameters conductance, temperature salinity, within NEMA/WHO but turbidity (0-1,152 FTU compared to 5FTU of NEMA/WHO) and redox potential (652.6-918 mV compared to +125-200mV of NEMA/WHO) that were beyond the standards of NEMA and WHO. Heavy metal pollutants within acceptable limits were copper ($\leq 1\text{ppm}$) and zinc ($\leq 5\text{ppm}$). Those above WHO permissible limits were Manganese ($>0.1\text{ppm}$), Ni ($>0.1\text{ppm}$) and iron (0.1ppm)

16)Revised a section in the technical report detailing major aquatic weeds

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

on Lake Kyoga (Eichhornia crassipes, Najas horrida and Hydrilla verticillata) and their hotspots which become more pronounced in the east-west direction i.e. become prominent in the western zone and almost non in the east. Major hot spots for aquatic weeds were identified and mapped for the three major weeds

17)Established major anthropogenic activities that drive water quality on Lake Kyoga. The include: animal grazing (12.0%), cultivation (11.6%), brick making (11.4%), bush burning (11.3%), wetland destruction (11.7%), poor waste disposal (10.4%), settlements on suddes (10.6%), alcohol brewing (10.7%), and charcoal burning (10.3%)

18)Ecological characterisation and capture of geographical coordinates for potential fish breeding /nursery grounds on Lake Victoria.

19)Aquaculture field surveys covering of 2 hatcheries and 3 grow out fish farms. 2. The description of morphometric and physiochemical of disease pathogens in cultured fish from 5 farms

20)Undertook census of fishing effort on upper Victoria Nile (September 2013) indicating a reduction in effort compared to the April 2013 period. The major reduction was in the number of boats and fishers depicting the migratory nature of fishers

21)Conducted monthly CASs on two fish landing sites in vicinity of the lower Victoria (Murchison) Nile and one quarterly assessment of production and value on the Upper River Nile. An increase in Nile perch catches was observed on the upper Nile while a total of 505 tonnes of fish valued at 1.1 billion Uganda shillings was landed (July-September, 2013) to support local livelihoods compared to the 434 tonnes valued at 0.7 billion in the previous quarter

22)Gape calibration of the bottom and pelagic trawl net to improve biomass calculation revealed that the bottom trawl opening earlier reported to be 3.5 m (LVFO, SOP) is actually 2.8 m at a trawl speed of 3 knots while the Pelagic net opening at an average speed of 2.2 knots was 10.5 m instead of earlier assumed 8 m. This increases certainty on fish stock size calculation

23)Gillnet selectivity experiments

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

undertaken on the Victoria Nile delta (Murchison falls national park) to generate information to guide exploitation and conservation of the key stone species in the delta show that the major species; Alestes baremose, Hydrocinus forskalli, Barbus bynni, can be effectively harvested using 2.5" gillnets while the small Brycinus nurse requires a 1.5" net.

- Annual review workshop held at NaFIRRI Kajjansi where NaFIRRI workplans were evaluated and areas of research prioritised that fed into NARO-wide prioritisation of the research projects

Abi ZARDI

Fish

24)A rapid site suitability survey to identify potential areas for cage farming along the Nile River in the Adjumani area indicated that Onigo D fishing bay is most suitable for establishment of fish cages with following parameters Depth (3.06m), Temp(26.560C)pH (6.03), DO (4mgL-1)Conductivity (240us/cm), salinity (0.12ppt)

25)Observable studies indicate that Alestes baremoze seems to respond well to sinking pellets than floating fish pellets because of its bottom feeding characteristics. An average weight increase of 0.6g/day has been noted for the last 5 months of stocking

Dairy/Beef/Meat

- 3.75acres of Lablab, Mucuna and Glycine cover crops well established and maintained in six on-farm and one on-station sites.

- Three (3) local medicinal plants (Cassia nigricans, Aristolochia bracleolata & Chamaecrista nigricans) have been screened in the lab for phytochemistry, median lethal dose & organ toxicity

- A new set of trial for B. mulato established in Zombo DFI, preliminary data on potential biomass yield of B. mulato and B. brizantha (local) collected in Moyo and Zombo DFIs, Fields for on-station trials prepared and ready for planting

- Some locally available feed resources were identified in the districts of Arua, Zombo and Nebbi

- Six mubende bucks were delivered to 4 farmer groups for adaptive trials in 4 districts of Moyo, Yumbe, Arua and

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Nebbi

Cassava

- 4 adaptive trials planted in the districts of Maracha, Koboko, Moyo and Nebbi
- Maintained 69 acres of cassava variety NASE 14 already planted and fencing of sites was conducted,
- Established 4 NARO-NAADS collaborative Demonstrations and 4 Adaptive trials sets in five districts of West Nile
- Conducted in collaboration with Zonal NAADS to train 41 cassava farmers in improved processing technologies

Maize

- Maize and beans crops planted on-station under different Nitrogen and Phosphorus fertilizer levels
- Two On-station trials and three out of station trials were established at 3 DFIs with improved sorghum varieties. Local varieties were only evaluated on-station
- Eight hybrid maize varieties were established in on-station and out of station trials at DFIs. Maize hybrids included L6H, L7H, L8H, L9H, FH6150, KH500-43A, PAN67, DH04 obtained from different seed companies
- Maize varieties Longe 5 and Longe 4 were multiplied

Bean

- Six improved bean and six improved Gnut varieties were established on-farm with farmer groups in three districts
- Followed up establishment of alleys and vegetative strips in the trials to plant the test crops
- Six on-farm and two on-station INM trial set using maize as test crop with intension of repeating the previous trial Buginyanya ZARDI

Coffee

- 3.5t of quality seed expected from 8ha coffee fields
- 26) The status of pest and disease prevalence of Arabica coffee was determined. Coffee leaf rust at >5% on station, 80% of fields in Bulambuli with symptoms of Nitrogen deficiency and suffering dieback due to overbearing

Cassava

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

- 14 ha of NASE 14 cassava variety at physiological maturity stage (approx. One year old)
- 14 ha of NASE 14 cassava variety at 1 m height
- 8 ha of NASE 14 cassava variety at 4 months old

Rice

- 1 ton of upland rice seed harvested
- On station rice multiplication completed. Nerica 10 (0.4 t), Nerica 4 (0.3 t), Nerica 1 (0.3 t)
- Excellent (98%) germination of Nerica 4 rice in the new IWM trial

Maize

- Two maize farmer groups in Buluguyi and Bugiri empowered on good agronomic practices
- 250Kg of UW400 seed harvested from 0.4ha of land in Sebei
- Longe 9H (7.5t/ha), Longe 6H (6.8 t/ha), Longe 7H (5.6 t/ha) most farmer preferred hybrids. Longe 5 (3.5 t/ha) most preferred OPV. Field for establishment of new VPT prepared
- Varieties 11SADVL-F2, CZH1157 and CZH1136 so far with the lowest disease incidence, highest vigour & short ASI out of 20 elite lines.
- 1st season data showed that Biochar, a soil organic amendment made from maize stalks, when applied at 5 t/ha resulted in grain yield advantage of 2.7 t/ha, i.e. 1.35 m/- profit

Beans

- Climbing bean variety trial on 0.2 ha currently at 3 leaf stage at Bulegeni. Germination rate for all varieties above 80% .
- On-farm evaluation sites established in Mbale (Busoba and Ruhonge) and Sironko (Sironko town council and Nalusala)
- Germination rate above 80 % and the varieties are at 3 leaf stage at Bulegeni in the trial on 0.2ha.
- Two hand hoe weedings so far the most cost effective (1.99 m/= profit) followed by post-emergence application of 4 l/ha of Butanil 70 + 1 hand-hoe weeding (1.2 m/= profit).
Bulindi ZARDI
- On station trials to establish the best management practices demonstration for improved varieties were maintained. These include 0.1 acres maize (Longe4, Longe 5, Longe10H,

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Longe 6H), 0.2 acres bean (NABE 4, 15, K132, NABE 16), 1/4 acre cassava (NASE14, TME14 and 0686) and 0.1 acre rice (NERICA 1, 4,10 and SUPERICA) and 0.6 acre groundnut (SERENUT 1-14).

- 1/4 acres of of cassava varieties TME14, NASE14, MH0686, MH2961.

- 1acre of demonstration for Maize; (Longe 5, Longe 4 and Longe 10H), beans (NABE 4, K131,NABE 12C) Rice (NERICA 1, NERICA 4, NERICA 10, NARIC 1, NARIC 2),Sorghum (Sekedo), to increase farmers' knowledge on Good agronomic Practices and access to adapted crop cultivars in the LACZ; 581 students and 86 farmers visited the demonstration plots on station.

- 1/2 acre of NABE 17 and NABE 15 was planted for seed multiplication and not yet mature for harvesting expecting an estimated 400kg of bean seed

- 27 acres of adapted cassava (NASE 14) planted on station estimated to produce 2160 cuttings of cassava to be available to farmers for increased productivity of cassava in the LACZ of Uganda

- All the 6.5 acres of multiplication fields for adapted upland rice varieties (NERICA 1, 4, and 10) established.

- On farm trials of 1.6 acres each of beans, maize, cassava established in Kibaale and Buliisa districts were monitored.

- On farm upland rice trials on 9 acres involving 18 farmers in Hoima and Masindi were maintained and monitored. Analysis of results is underway.

- Established 7 community upland demonstration fields of 0.2 acres each for NERICA 1, 4 and 10 in Miihya subcounty (Masindi) and Kitoba subcounty (Hoima)

- Routine maintenance of onfarm forage trial established in Buliisa and Kiryandongo districts for evaluating drought tolerance (trends in vigor, level of greenness, fraction of dead material, biomass) of 12 introduced forages (Brachiaria brizantha cv Toledo green, Desmanthus virgatus, Sweet lupin (Lupinus angustifolius, Desmodium uncinatum (cv silver leaf), Cratylia argentea, Canavalia brasiliensis, Vicia villosa, Desmodium intortum, Burgundy bean (macroptilium bracteatum), Brachiaria

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

hybrid cv mulato II), Brachiaria
brizantha.

- Empowering 30 farmer groups and agro processors in 14 in agro processing and 16 in participatory market research regarding cassava, maize rice and poultry in Kiryandongo, Buliisa, Hoima, Masindi and Kibaale

- Participatory economic evaluation of Beans, Maize and cassava enterprises conducted in Kibaale, Hoima, Masindi, Kiryandongo, and Buliisa district.

- Two fish ponds (150 m² by 250 m²) were constructed and maintained

- Data has been collected on bean fly/stem maggot infestation, plant stem damage, bean fly larvae counts and number of dead plants following standard rate application of Cypermethrin 5 % EC, Dimethoate 40% EC and Malathion 57%EC on NABE 4 variety growing in a bean fly hotspot.

- Data has been collected on severity of aphids, plant aphid infestation, groundnut rosette disease severity following application of botanicals extracts of Tephrosia vogelli, Mexican marigold, red pepper, Nicotiana tabacum (at rate of 500g of plant paste in 4 litres of water per 209 sqm) on groundnut established in a groundnut rosette disease hotspot. Results of the analysis will follow.

- 100 farmers from 8 farmer field school (FFS) groups in Rugashari and Kyaterekera subcounties of Kibaale district were equipped with IPM technologies for management of bean fly and snail pests in beans Kachwekano ZARDI

- Planted 4 acres of cassava cuttings for Multiplication and generation of foundation cassava seed in Kihihi

- Conducted participatory rural appraisal, and established that cassava is forth most important food security crop especially in the mid altitude areas of the SWHAEZ, and key production challenges are CMV virus and lack of planting materials. We acquired 17 new cassava CMV Accession from NACRI and planted them at Kachwekano for highland adaptability study

- Data was collected on growth parameters and the rice trial was harvested in last week of June 2013.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>UShs Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Grain yield is being processed and results will be available after analysis. Six varieties were planted in RCB, replicated three times. The varieties are NERICA 4, ERICA 6, NERICA 10, NERICA 14, NERICA 18 and local farmer variety called WHITE as the control.

- 16 experimental fish holding facilities were renovated. One experimental protocol formulated and shared with the experimenters/farmers in the zone. Three feeding charts designed. One water quality testing kit accessed. 3 fish seed species; Mirror carp, Nile tilapia and African catfish, totalling to 17,000 seed, sourced and stocked in the experimental facilities in the zone
- One aquaculture research facility (5 ponds at Kyanamira Sub county Kabale District) acquired for use by KAZARDI and work on-going for rehabilitation
- Following the rapid survey all the major classes of dewormers were found on the market and so the commercially available ones were procured and experimental units selected. A total of 340 goats were earmarked for the experiment and fecal samples taken for the baseline epg.
- Earlier established fodder gardens maintained and new gardens opened for multiplication of improved pastures for uptake pathways. 5 legume species are in the process of being procured for 2013B planting
- 150 goats (25 Boer, 51 of 75% Boer, 19 of 50% Boer and 55 of Kigezi/ Local goats) were maintained by regular spraying, deworming, repair of broken fences and herding of goats Mbarara ZARDI
- Monitored the monthly weight gain and feed consumed in monoculture African catfish from 11 ponds within Mbarara, Ntungamo, Mitooma, Bushenyi and Ibanda districts. Current results show average growth of 253.08g for floating pellets with Specific Growth Rate (SGR)= 0.57% and 216.38g for sinking pellets with SGR= 0.38%
- Trials to evaluate the effect of different tree root pruning regimes on yield performance of banana and coffee crops established in Sembabule district.
- Trials on proper spacing of upper storey woody species in banana and

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

coffee crops established in Sembabule district.

- Trials to evaluate the effect of different spacing patterns of exotic fodder shrubs on biomass and nutritional value of the species in pure and mixed production systems in Mbarara, Sembabule and Isingiro districts

- Trials to evaluation the nodulation efficiency and performance of seasonal crops under different nitrogen fixing shrubs established in Mbarara, Sembabule and Isingiro districts

- Trials on four improved bean varieties (NABE 2, 4, 15 and 17) established in Sheema and Buhweju District under different soil fertility amendment options.

- Trials on two improved maize varieties (longe 5 and MM3) established on-farm in Insigiro and Ibanda Districts under different soil fertility amendments.

- A mother garden of 326 coffee wilt resistant varieties maintained and ready for cloning activities in October 2013.

- Earmarked 15 acres at each of Rakai and Ibanda prison farms for NASE14 multiplication

- Data on disease prevalence has been collected and analyzed. Preliminary results indicate that the disease prevalence in the zone is as follows; FMD-60%, ECF-97%, NCD-90%, LSD-80%, Brucellosis-50%, Helminthosis-100%, ASF-50%. The major disease risk factors in the zone include; proximity to national park, porous nature of the boarders ,improper use of drugs, high cost of veterinary in puts.

- A total of 160 farmers have been interviewed. 700 faecal samples have been collected from four districts to determine the efficiency and effectiveness of the conventional methods that are used in helminthes control.

- ECF survey findings were availed to stakeholders during the annual review and planning meeting.

Mukono ZARDI

27) Construction of 4 (four) fish ponds on station at Kamenyamiggo was completed. Drainage channels completed; 3 inlets and outlets installed. In addition 3 fish ponds were de-silted, banks strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Compacted and limed.

- Tilapia broodstock (Victoria) F1 (1200 raised to 257g at MUZARDI), while Tilapia F2 (>10,000) raised to 100g at MUZARDI

- 60 rice actors mobilized to a rice market chain actors' workshop. In addition two thematic groups on rice grain and processed products formed. Ngetta ZARDI

- 28)3 formulations for the supplementation packages developed using locally available materials in the dry seasons

- 3 acres of lablab established and maintained on-station

- 1 maize + napier grass intercrop trial established and maintained on-station.

- 4 Labour saving technologies tested on-station (ploughs, disc, planter, herbicides) for rice & maize

- On-station ex-situ trial was maintained by means of strip weeding. On-station propagation experiments at the nursery were maintained through regular watering and insect pest control.

- 6 on-farm and 2 on-station season two trials for testing agronomic performance of 5 CBSD tolerant varieties in Amolatar, Lamwo, Gulu, Otuke, and Agago districts established.

- 6 on-farm and 2 on-station trials sites established for farmer participatory evaluation of management options of pests and diseases of mango and citrus maintained and data collected.

- Established 1 experiment to evaluate 2 IPM strategies (planting date and variety) for simsim gall midge on-station

- Set up 2 on station trials to evaluate performance of different varieties (3) under different weed management conditions.

- Set up 2 on station trials to evaluate performance of different varieties (4) under different weed management conditions

- Set up 1 on station experiment to evaluate plant population in conservation farming basins Rwebitaba ZARDI

Tea

- 15,000 planting materials raised and 23,433 maintained in the nursery.

- Maintained the tea gene bank. Maintained 20 tea fields and mother gardens

- Priority clones identified and labeled

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

on-station in field 17. Data collection on susceptibility of some tea clones to pests conducted on-station and in Kyenjojo district.

Coffee

- Soil samples from Kyenjojo with coordinates were collected to determine soil fertility status (Nitrogen (N), Phosphorus (P), Potassium (K), Magnesium (Mg), Calcium (Ca) Soil pH and Soil Organic matter (SOM) in 15 tea field

- 320 plantlets of 7 Robusta coffee lines acquired from NARL-COREC Tissue culture Unit.

- Acquired 126 plantlets of Robusta coffee lines for evaluation trial acquired from CoRRI

- Acquired coffee plantlets- 450 Robusta and 450 Arabica) from Zonal NAADS office

- Demonstrated Tea clones at the National Agricultural show, Jinja district.

Banana

- Maintained 7 acres of banana multiplication field on station

- Soil samples (48 samples) collected from three banana growing (Kabarole, Kyegegwa & Kyenjojo) districts

Rice

- Maintained 4 acres of upland rice (NERICA 1, 4 and 10) on-farm in Mubuku Irrigation Scheme

- Institute cattle herd maintained and increased with 3 acquired in-calf Friesian heifers

Dairy

- Cattle crush rehabilitated

- Seeds collected from on-station pasture album of 15 fodder species

- Training of 60 farmers across the zone in pasture seed production, hay and silage making

- Maintenance of three (3) established Bricharia species in the evaluation trial

- Collection of plant tissue analysis samples from Bricharia trial

- Results acquired from soil analysis in the Bricharia species.

- Conducted survey on livestock

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousands</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

production opportunities and constraints in Kabarole and Kamwenge districts

- Distributed over 21,000 splits of Bricharia species to Dairy farmers
- Preliminary technical report on yield performance for improved potato varieties developed

• 34 acres of cassava (Nase 14- 4271 variety) maintained on-station

Fish

- Maintained the 3 established fish ponds of 10 m x 20 m dimension; Constructed a water reservoir of 10mx30m dimension; Constructed 12 dykes

Reasons for Variation in performance

There was a delay in funds disbursement

Total	576,000
<i>GoU Development</i>	576,000
<i>External Financing</i>	0
<i>NTR</i>	0

Project 1138 EAAPP

Capital Purchases

Output: 01 5172 Government Buildings and Administrative Infrastructure

EAAPP areas of excellencies rehabilitated

- The consultant for civil works Arch Consults (U) Ltd is now on board
- Architectural drawings for CCRoE were developed . Bids were opened on 3rd January 2014 and evaluation exercise has been finalized. It is expected that contract will signed by end of February, 2014 after input from clearance from Contracts committee and Office of the Solicitor General
- Rehabilitation of Food Biosciences laboratory at NARL: Bidding process has been finalized. However the firm, Crossholdings Ltd that had won the bid was later discovered to have tendered a forged bid security. The second best has therefore been proposed for the work. Arrangements are underway to communicate to PPDA and The World Bank in order to blacklist this firm.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	<i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Q1
Architectural designs for the CRCOE have been developed.

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>
<i>NTR</i>	<i>0</i>

Output: 01 5177 Purchase of Specialised Machinery & Equipment

Agric TractorS & its Accessories. Purchase and installation of liquid nitrogen plan and AI equipment

Nitrogen plant delivered at NAGRIC-DB. The shed for for the plant was completed. The plant is awaiting installation and commissioning.

Q1
2 tractors delivered. Completed deliveries of semen equipmentand nitrogen bank

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>
<i>NTR</i>	<i>0</i>

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

n/a

Partial contribution to ASARECA, MAAIF, NAGRIC.

Q1
Partial contribution to ASARECA, MAAIF, NAGRIC.

Reasons for Variation in performance

None

Total **1,800,000**

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

<i>GoU Development</i>	0
<i>External Financing</i>	1,800,000
<i>NTR</i>	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Information on cassava production to consumption continuum generated, disseminated and utilized
- Knowledge on biology and ecology of pests and diseases increased .
- Cassava varieties with desirable attributes developed.
- Capacity for cassava tissue culture, genetic transformation and conservation systems developed.
- Knowledge on markets, profitability, adoption and impact of cassava technologies generated.
- Knowledge on adaptability and tolerance of rice landraces to major pests and diseases generated
- New rice genotypes with improved tolerance to rice blast and drought stress generated
- Information on rice field management practices in RYMV prone areas catalogued
- Information on rice field management practices in AfRGM prone areas catalogued
- Information on economic importance of RYMV determined
- Putative vectors of RYMV identified
- Determine biotypes of AfRGM
- Capacity of stakeholders who are active in use and maintenance of rice water harvesting and improved production mechanization increased
- Appropriate AfRGM control package developed
- Segregation populations arising from crosses of local materials and introductions generated
- Promising wheat introductions with resistance to Ug99 identified
- Promising introductions with heat and drought tolerance identified
- Promising appropriate packages for production of Ug99 resistant wheat identified.
- Technologies and innovations that enhance food safety, shelf life, and market value of cassava, rice, wheat and dairy based value added products, generated.
- Technologies for management of environmental pollutants from cassava,

- Wheat Research
- 6 lines from M3 selected from Acidic test block at Buginyanya station
- 1 Kg Nkungu and 1kg UW400 submitted for irradiation at IAEA
- Q1 1.1Wheat Research
- 1)5 wheat lines submitted for DUS-MAAIF.
- 2)4 wheat lines at multi-locational yield trials
- 3)10 wheat lines (5-Kenya) at Advanced Yield Trial
- 4)20 lines selected from 6 nurseries (5 EABWVON) for PYT
- 5)500Kg of UW400 multiplied at Bukwo, Kere and Buginyanya station
- 6)12 farmer varieties bulked for characterization and conservation.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

wheat, rice and dairy value-addition processes developed

- Increased availability of feed resources in smallholder dairy systems through utilization of Napier stunt tolerant varieties
- Increased availability of feed resources in the smallholder dairy system through utilization of crop residues/wastes and agro-industrial by-products.
- Improved control of ECF in small holder dairy farming system in Uganda
- Improved detection and control of drug residues
- Improved control of milk-borne zoonoses
- Indigenous cattle with desirable dairy production traits identified
- Genetic diversity of indigenous cattle assessed
- Pedigree database created
- Pure breed exotic cattle selected and procured
- Farmers trained on cattle breeding and improvement
- Superior Indigenous cattle evaluated on-station and on-farm
- Dairy Nucleus herds established
- Capacity of NAGRC&DB Embryo Transfer (ET) unit built
- 4 registry centres equipped with herd recording hardware and software (computers and accessories)
- Farmers sensitised on national breeding plan and guidelines
- Dairy breeders selected
- Dairy breeders certified and registered
- Capacity built for breeding activities.
- Breeding activities regulated
- Seed Companies technically assisted
- Breeder seed in public research institutes multiplied (ZARDIS)
- Production of seed/planting materials of cassava, rice, wheat and pastures among farmers' groups supported (NAADS)
- Seed Entrepreneurs given skills on development of business plans
- Seed enterprises established
- Rural networks of seed and other agro-inputs established
- Studies on policy dialogue with relevant government agencies performed
- Seed policy awareness created
- PVP regulations put in place
- Seed Regulations awareness created
- Plant protection and Health

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

awareness created
 - Strategy and action plan for control of CBSD put in place
 - Government labs strengthened .
 - Seed Inspectorate strengthened
 - Variety Testing Unit strengthened.
 - National, regional and International Seed collaboration/ networks strengthened.
 - Logistical Operation support provided.

Reasons for Variation in performance

None

Total	783,000
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>783,000</i>
<i>NTR</i>	<i>0</i>

Output: 01 5102 Research extension interface promoted and strengthened

1.Promising technologies of the four priority enterprises promoted
 2.Innovation Platforms developed and existing ones strengthened.
 3.Production and Value Addition Technologies and value added products promoted
 4.New learning platforms established and existing ones strengthened
 5.Advisory services/extension strengthened
 6.Capacity built among dairy stakeholders regarding NSD control
 7.4. Strategic Public - Private Partnerships and networks for increased market access of cassava, rice, wheat and dairy value added products fostered

- 2378 stakeholders (1450 female) in Masaka, Mbarara, Kiruhura, Soroti, Kampala, Wakiso, Mukono, Gulu and Jinja districts were trained on NSD control/management strategies.
 - On-farm sensitization of 317 farmers (92 female and 225 male) was conducted in various livestock production aspects which included selection, breeding, record keeping and husbandry practices and over 400 on breed characteristics during blood sampling processes.
 - Workshops to mentor Farmer Organisations in production, Bulking and processing of EAAPP commodities were conducted. Nabuin ZARDI mentored 50 executive members 30M, 20F of cassava platform. Bulindi: ZARDI, mentored 146 AASPs and DARST on Cassava Value chain and products promotion in the five Districts of Buliisa, Hoima, Kibaale, Kiryandongo and Masindi.
 - Low Cost Processing Technologies and Promising Products of EAAPP Priority Commodities were promoted. 2 Cassava Graters, 1 Press for 1 farmer group were procured. Nabuin ZARDI procured 2 modern processors for Rice for Katakwi, and is in the process of roofing five procuring 3 cassava processors in Soroti. The processing demonstration equipment is targeted at

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>UShs Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

the MSIPs initiated groups being developed in the districts following zonal and district level platforms..

- Education materials were printed and disseminated to stakeholders.

Thirty thousand brochures and posters have since been printed and distributed during shows in country and outside events such as the NANE NANE show in Dodoma. The NAADS team compiled technical information for The East African newspaper. 4 appearances on the East African Newspaper has so far been made.

- EAAPP and its stakeholders participated in in-country and other regional events. KPF a farmer group multiplying cassava displayed improved cassava technologies in country and in Dodoma NANE NANE show.

- 87 Youth and leaders were taken for a study tour in Kenya. They visited KARI EAAPP Centre of Excellence, KAGRIC, Dairy Farmers in Uthinguru, Young farmer Njoroge near Nairobi and several flower and mixed farmers in Kenya. The trip lasted 1 week and was an eye opener on the opportunities for the youth in Uganda.

- A follow up practical training for 40 youth at Njeru stock farm on feed making techniques was undertaken. The training module was highly commended by the ministry and NAADS administration and will be adopted for training special groups in all NARO centres throughout the country.

- Bulindi: conducted short courses for 90 AASPS from the five District of Buliisa, Hoima, Kibaale, Kiryandongo and Masindi on extension methodologies and Cassava agronomy. The course organised for rice farmers in Tanzania could not be conducted.

- The training on environment and social safeguards that took place in Addis Ababa, Ethiopia. The concepts are already being used by the T&D team during verification of field projects such as cassava multiplication and rice sites. In Kiryandongo, the new proposed cassava multiplication site has had to be moved to avoid deforestation of over 10 acres of forest land that had been identified by the farmers for clearing.

Availability of seed and improved planting materials

- 85 acres of Rice NERICA 1, 4 and

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

10 are under multiplication at NACRRI. Seed was produced in Buginyanya, Kachwekano, Mbarara, Nabuin, Ngetta, Rwabitaba, Mukono, Bulindi, and Abi ZARDIs.

- 480 acres of cassava NASE14 have been bulked at ZARDIs. 16,068 Bags equivalent to over about 1000 have been distributed to farmers who are expected to pass over 70% of the received to their neighbours. There is an additional 187 acres by small scale and big multipliers who have given out over 500,000 cuttings equivalent to while 12 applicants are being considered for multiplication of cassava under 154 acres.
- 1ha of land under wheat variety UW400 multiplication.
- Cassava multiplication has been conducted through the ZARDIS, NGOs, and other farmer organizations. In the ZARDIs, the following has been achieved. 16,068 bags have been distributed, which gives rise to 9,640,800 cuttings distributed implying 2,678 acres planted from 64,272,000 stem cuttings Multiplied.
- Cassava multiplication through Small scale seed companies has had successes. 4 SSSCs have established a total of 50 acres from 331,800 cuttings given. They have 1,872,000 cuttings multiplied (equivalent to 267 ha) and 1265 repaid (bags) and 759000 stems recovery. 187 new sites (acres) have been established
- KPF a SSSC has expanded from 40 acres to 90 acres through their sister group called Dolphins based in Luwero
- KPF recovered 200 bags equivalent to the 7 million shillings due to NAADS as per the MOUs signed. The materials were sent to Mbarara and planted 30 acres in 10 sites
- BUKADEF re paid 175 bags from the 8 acres they established in 2012. This planted a total of 30 acres in Masaka district.
- Nabuin ZARDI, 20 acres of rice multiplication were established at Kidetok Mission Demonstration farm. The varieties demonstrated include NERICA 4, NERICA 10 and NERICA 1. Harvest is ongoing and the seed will be accessed to more farmers in the area in February/march 2014

Availability of improved Pastures

- EAAPP has been made every effort

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

in upscaling pasture technologies. 55 acres of forage for seed production established at NaLIRRI.

- Over 200kg of lablab seed equivalent to over 80 acres given out to multipliers and 48 acres of assorted pastures have been bulked at ZARDIs.
- 700 kgs of Clitoria ternatea and Chloris Guyana equivalent 135 acres have been distributed to farmers.
- The capacity for 1027 farmers (675F) has been built in forage seed and fodder production

Availability of improved breeding stock under NAGRC &DB

- Synchronization and Artificial insemination using procured semen under EAAPP continued to be undertaken. Over percent of the 136 heifers are pregnant imported under EAAPP and a good number of these in advanced pregnancy. A total of 7 calves have been born to date, 7 (1 bull, 6 heifers). These include Calves born out of sexed semen-5 heifers (2 Ayrshire, 2 Jersey, 1 Guernsey); Calves born out of natural mating-1 (Jersey x Friesian) bull; Calves born using non sexed semen-1 Sahiwal.
- 387 indigenous cattle were synchronized and inseminated with non-sexed semen. Out of previous synchronization programs, 332 calves were born. There are about 230 adult crosses are ready to be given to farmers.
- 146 Ankole X Friesian crosses were synchronized and inseminated with imported dairy semen July 2013 under NAGRC&DB cross-breeding program.
- Improvement of Njeru Stock Farm through repairs of old fencing lines, fenced off 80 acres and established 85 acres of maize for silage.
- 5,038 doses of semen produced and 7,246 doses of semen delivered to 73 AI subcentres.
- 3061 inseminations undertaken by AI centers to dairy cattle under smallholder farmers. Delivery of 261 (145 heifer) calves was reported by field staff.
- 87 doses and 120 doses were sold to DRC and Tanzania respectively.
- The first batch of 150 heifers have been selected for purchase by farmers under NAGRC-NAADS arrangement.

Q1

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Cassava RCoE

a) Backstopped 2 Multistakeholder meetings for NAADS in Lira & Soroti districts.
 B) Tz/130 from on farm trials bulked at Rwebitaba for multiplication
 - CBSD booklet produced.
 Value addition

- MoU signed with: Kyambogo University, Makerere University, CAES, KCCA (Incubation + others), ICRISAT (Incubation), and USAID Restless Youth Programme.
 - Development of MoUs is ongoing for Africa Agribusiness Academy and FinAfrica.

1.4 Rice Research

c) 50 stakeholders were trained on quality seed production. (21 female and 29 male)

1.5 Wheat Research

d) 12 farmer varieties bulked for characterization and conservation.
 E) 4 community-based breeding groups formed in Katakwi
 f) 1000 brochures, 1 poster and 1 paper developed on indigenous cattle characteristics.
 Dairy component
 g) The first batch of 150 heifers have been selected for purchase by farmers under NAGRC-NAADS arrangement.
 H) 27 AI technicians for South-Western Uganda have been trained during the quarter
 i) 4865 doses of semen delivered to 73 AI subcentres and a total of 3330 litres of liquid nitrogen was produced.
 J) Consultative workshops in the midwest (Kibale, Kyenjojo, Kasese, Kabarole, Ntoroko, Kamwenge, Bulisa, Hoima); and Eastern (Kamuli, Kaliro, Tororo, Mbale, Pallisa, Soroti) milk sheds to input in drafting of breeding guidelines.
 K) Continued support to RELINE farmers platform in form of breeding management, use of assisted reproductive technology (AI) and herd recording
 1.6 NAADS: Training and Dissemination
 l) 24 seed multipliers verified and MOUs signed with 19 multipliers
 m) 550 farmers (100F) in trained on improved technologies : Amudat-cassava, Kanungu-

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

RiceMukono/Bulindi- cassava
Mukono: Dairy/pasture
n)Under Nnabuin 20 acres of rice established in Kidetok, Serere, 3 varieties NERICA 4, 10 and NERICA 1 being demonstrated together with management practices
o)27 farmers trained in cassava processing in Rukungiri District.
P)2735 bags of cassava stems equivalent to 905 acres re-distributed from ZARDIs to farmer groups for multiplication.
Q)Exchange visit to Kabarole 20 farmers (8 F, 12 M) 10 (DPO & DNC) from the five Districts of Buliisa, Hoima, Kibaale, Kiryandongo and Masindi and 3 zonals : Focus on cassava and Rice value chain.
R)Under Nabuin 2 rice processors for 2 IP groups in Katakwi procured, . In Mukono, 2 cassava graters procured for Mukono, 1 press for 1 farmer group and 4 processors procured under Nabuin for demonstrations of good practices.
S)cross border MSIPS on cassava and dairy in Buginyanya. 70 ugandans 35 Kenyans strengthened.
T)90 participants (30F), facilitated by CRCoE for cassava platform in Apac-Ngetta Zone.
U)52 farmers from the seven districts of the Rwebitaba zone trained on value addition in collaboration with NaRL and NAADS.

-
2Improved Availability of Planting Material and Seeds through bulking and multiplication

(a)Cassava
- Under the 8 NARO institutes, 480 acres of cassava was established and 100 acres maintained during the quarter. A total of 2770 bags were distributed to farmers and farmer groups for seed multiplication and 396 acres of cassava seed were established from these bags.

(b)Pastures
v)97 acres of Brachiaria mulato established on-station and under farmers under the support of NaLIRRI.
W)Multiplication of 20 acres of Napier clones undertaken at NaCRRI and on-farm
x)400 kg of Chloris Guyana harvested and distributed to farmers. 35 acres of pasture are expected to be established

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

from this seedlot.
 Y)300 kg of Clitoria ternatea have been harvested and distributed to farmers. 100 acres of pasture are expected to be established from this seedlot.
 Z)A total of 55 acres of assorted pastures have been established at NALIRRI
 aa)126 kg of lablab seed distributed to 68 farmers to establish 52 acres.
 - 48 acres of assorted pastures planted by other NARO Institutes
 bb)Capacity of 1027 farmers (675F) in forage seed and fodder production strengthened.
 ©Rice seed
 85 acres of rice seed acreage bulked at various NARO Institutes. Most harvest will be done towards the end of the the rainy season and about 125 tons of seed are expected. These seeds will be distributed to farmer organizations.

Reasons for Variation in performance

None

Total	499,000
<i>GoU Development</i>	0
<i>External Financing</i>	499,000
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

- Critical mass of well trained staff in various disciplines built.
- Rice- Formal training for 2 PhD degree commence.
- Rice- Formal training for 1 MSc degree commence.
- Rice- Short courses
- Rice- Vehicle purchased and maintained.
- Rice- ommunication facilities purchased and used.
- Capacities in wheat research and improvement enhanced.
- Institutional research capacity improved in animal nutrition
- Institutional research capacity built by training one PhD student
- Institutional research capacity built by training one MSc student
- Institutional research capacity

a)EAAPP Management and Coordination
 The Project Coordination Unit continued to coordinate EAAPP activities both nationally and regionally through meetings and generation of reports. These meetings and reports are itemized below:
 - 1 regional meeting for Cassava RCoE was held. Significant progress was registered in the 5 regional projects while write-ups for 3 new projects were improved upon.
 - Actions for areas identified as weaknesses in the 6th World Bank Implementation Support Mission continue to be undertaken.
 Subsequently, contract management has improved, burn rate improved and

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

improved in molecular pathogen identification and characterization

- Institutional research capacity improved in animal breeding
- Annual Dairy Breeders For a Platform held
- Artificial Insemination technicians trained
- Training and backstopping registered breeders undertaken
- Visit to Dairy RCoE by NAGRC technical Staff undertaken.
- Visit to Dairy RCoE by Dairy breeders undertaken
- Short course on Planning and Management of National Breeding Program undertaken
- Short course on advanced technologies on AI & MOET
- Short course on Finance Management undertaken
- Short course on Procurement Management Undertaken
- International Forum on Animal Genetic resources attended
- Masters in Livestock Planning and Development and in Agriculture Economics at MU K started
- Coordination of EAAPP activities meant for NAGRC&DB undertaken
- DAPM activities coordinated
- Regional research and training and dissemination activities implemented according to plan
- Harmonized M&E system for RCoEs in cooperation with ASARECA developed, adopted and implemented
- Harmonized M&E system for RCoEs in cooperation with ASARECA developed, adopted and implemented .
- Improved means of transport to carry out research activities
- RCoE – Cassava CAPACITY ENHANCED.

accountability requirements by implementing agencies fulfilled. For civil works at NaCRRI, Contracts Management Committee chaired by Director of Research, NaCRRI is in place, consultant for designs in place, and designs have been finalized and are awaiting clearance from Town Councils as a requirement. Activities of VAC have been reviewed to reflect market linkages.

- Scaling up of dairy technologies had been undertaken with improvements in pasture seed production and Artificial insemination activities. Health and safety of cassava products have been prioritized under selection of germplasm and also at value addition.
- Regional visits continued with Tanzania, Kenya and Ethiopia with Rice and NAADS teams to Tanzania; Dairy teams to Naivasha and VAC team to Ethiopia. Scientists, farmers and other stakeholders shared platforms for information updates. A WAAP team visited Uganda under the ASARECA arrangements.
- Regional Collaboration also continued with collaboration with other RCoEs in information sharing, participation in field days and review meetings. For the purpose, three visits were made to the Dairy RCoE, and one to Rice RCoE. PCU has also participated in 3 ASARECA organized meetings and workshops on Monitoring and Evaluation (PMP), and policy harmonization.

Procurement

- An assorted laboratory equipment and suppliers under NaCRRI, liquid nitrogen plant and plant house at NAGRC&DB, 2 tractors and implements, and a mixer for Value Addition Component.

Civil Works

- The consultant for civil works Arch Consults (U) Ltd is now on board
- Architectural drawings for CCRoE were developed . Bids were opened on 3rd January 2014 and evaluation exercise has been finalized. It is expected that contract will signed by end of February, 2014 after input from clearance from Contracts committee and Office of the Solicitor General
- Rehabilitation of Food Biosciences laboratory at NARL: Bidding process has been finalized. However the firm, Crossholdings Ltd that had won the

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

bid was later discovered to have tendered a forged bid security. The second best has therefore been proposed for the work. Arrangements are underway to communicate to PPDA and The World Bank in order to blacklist this firm.

Training

- A workshop for Environmental and Social Safeguards (ESS) was held in Addis Ababa under ASARECA where 12 Ugandans under the project were trained in the ESS requirements. Since then they have guided their sub-projects for ESS compliance.

- 13 MSc and 8 PhD students have continued well with their training.

- MSc Students have finalized course work and 2 have submitted draft thesis.

- 7 staff have attended courses in ICT and laboratory management

- 2 PhD students trained in rice pathology by IRRI in Burundi

- Rice team staff attend the recently concluded AfricaRice congress in Cameroon

- 2 MSc. Students attend rice breeding course

Q1

1)Cassava RCoE

- Training 25 staff trained in Virus Diagnostics; 30 staff trained in participatory plant breeding; 15 staff trained in Defensive Driving; and 3 staff undertake courses in Resource Management

- 19 students pursuing higher degrees have made good progress. 2 PhD students have defended their proposals. All MS students have completed their course works. One MSc Student training under EAAPP has submitted her thesis.

- Project consultants salaries paid for the quarter

2)Rice component

- 2 PhD students trained in rice pathology by IRRI in Burundi

- 4 staff attend the recently concluded AfricaRice congress in Cameroon

- 2MSc. Students attend breeding course

3)NAGRIC

- Improvement of Njeru Stock Farm through repairs of old fencing lines, fenced off 80 acres and established 85 acres of maize for silage.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Reasons for Variation in performance

None

Total	186,000
<i>GoU Development</i>	0
<i>External Financing</i>	186,000
NTR	0

Output: 01 5105 Generation of technologies for priority commodities

Cassava lines resistant to stress with desirable attributes released, Virus disease maps generated, Early warning systems developed, nutrient-use-efficiencies of elite cassava genotypes determined

Stress tolerant rice varieties released, released rice varieties purified, pests & diseases yield loss determined & performance of new upland and rain fed low land rice lines determined

Tse-tse fly and ticks management options, Forage management, Pest and disease management

New cassava varieties resistant to CMD and CBSV; with other farmer-preferred attributes developed

New rice varieties available to farming communities and Farmers trained on recommended agronomic and post-harvesting techniques of rice

High yielding forage cultivars disseminated, Performance of 5 cross breed calves determined, Concentrates for supp. feeding developed

High quality farmer preferred cassava varieties multiplied for uptake pathways in the mid altitude areas of the SEAEZ and Disease tolerant cassava varieties identified and validated

Promising Integrated weed management options in rice validated with farmer groups

High yielding and high quality rice varieties and lines for small scale farmers are selected, seed systems developed & disseminated

Cassava:

- 15 clones at AYT & 13 more clones for GxE study at 3 locations (NaCRRI, AbiZARDI & BuZARDI)
- 6 elite genotypes on-farm at 9 locations
- 1 candidate variety (TZ- 130) being bulked at RwaZARDI
- Harvesting of on-farm trials involving the candidate variety (TZ 130) at nine locations: Uganda: Arua, Lira, Hoima, Nakasongola, Kayunga, Mukono, Busia, Kamuli, & Kumi
- 840 isolates collected, DNA /RNA extracted, live cultures maintained for further characterization. PhD Student is expected to characterize these isolates under her study.
- 10 CBB isolates tested using 6 primer pairs for future sequencing
- 42 CBB isolates collected from Central Uganda, live cultures established invitro, DNA extracted & 2 data sets collected from Kasese, Serere, Oyam, Abi and NaCRRI experiment. One data set Oyam
- 32. Final response of 27 clones to CBSD determined and data analysed. Value addition component
- 33. Performance evaluation of food-grade motorized chipper undertaken. Chipper found to be efficient on chipping recovery (78%) and fuel consumption (Ug Shs 86/kg)
- Modification to reduce clearance between the chipping element and the feeding embarked upon.
- Anti-nutrients profiling initiated at Msc level focusing on tannins and phytates in the cassava varieties of Nase 3, Nase14, Nyaraboke , MH02-073HS, CPCR-24B-10.
- Proximate analysis of cassava leaf and peels samples initiated and test data collected for analysis.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

- Feed protocepts for the different stages of the various livestock being initiated and data collected for solid and powder protocepts.

34. Draft cassava market survey report has been produced; the results indicate the four main marketing channels for cassava and cassava products. These are: 1. Farmer-Middleman-Wholesaler-Retailer-Consumer (27%). 2. Farmer-Wholesaler-Consumer (18%). 3. Farmer-Retailer-Consumer (15%). 4. Farmer-Wholesaler-Processor-Consumer (17%).

35. Refined profitability trial report for 2011/12; the report highlights include: Nase 19 and Nam 130 had the highest average market value of fresh roots of shs 37,000 per plot each followed by 52-TME 14 with shs 35,000, Nase 16, Nase 18 and Nase 14 in that order). At the on station conditions, the average costs per plot are the same, therefore profitability of the varieties follow the same order.

36. The average technical efficiency of cassava producers/farmers was found to be 54%, minimum being 27% and maximum was 74%. This implies cassava farmers allocated inputs in cassava production sub-optimally, cassava farmers have an allowance of 46% to improve on efficiency level of the production. Based on above results, farmers should be encouraged to increase area under cassava since small scale farmers were technically inefficient compared to their large scale counterparts, in addition improved high yielding cassava varieties should be planted by these farmers

37. Mother stock of CGM and CM established in cages in the screen house at NaCRRI for infestation of cassava trees

38. The highest number of CGM (34 mites leaf) was recorded in Arua district on the local cassava variety Bismenge and 45 mites /leaf on Bao in Northern Uganda. Densities of T. aripo ranged from 0-0.25 actives /tip and recoveries were on TME 14, NASE 13 and Omongole cassava varieties

39. Combined average parasitism by two indigenous parasitoid species ranged from 14.6-15.6% with the highest recorded in the West Nile Farmlands (Yumbe and Koboko districts) and the lowest in the Lake

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Victoria Crescent and Mbale

Farmlands (Iganga, Busia and Jinja districts).

- One parasitoid species predominant with the highest parasitism level 14.8% compared with 8.7% for the other parasitoid species

40. Cassava varieties TME 14 and NASE 13 supported the highest parasitism rate (over 17%) for the predominant parasitoid species

- Pure fungal isolates were recovered from dead white fly nymphal stages in cassava fields at Yumbe, Nebbi and Kamuli districts

41.65 local varieties and four wild relatives of cassava collected, initiated in tissue culture and maintained at NaCCRI. Indigenous farmer knowledge related to the collected varieties documented.

2Rice:

42. A total of 208 lines comprising (200 lines generated with new rice population background and 8 lines with high vegetative value) acquired from Korea. Preliminary observations show that up to 85% of the lines do not show symptoms of the prevalent problem in the country of RYMV and rice blast diseases. However, these are japonica type that are typically short and bold making as opposed to the East African varieties that are medium in size.

- Another set of 2,100 lines were received from AfricaRice comprising of (1,700 lines at the F4-F7 generation, 72 Multi-environment upland lines, 32 upland PET, 32 PET rainfed lowland lines) were received from AfricaRice and established at Namulonge for evaluation.

- During the reporting period, a total of 427 lines developed for irrigated conditions (143), rice blast resistance (65), bacterial blight resistance (68), preferred grains qualities (117) and upland lines (34) from IRRI were established at NaCRRI.

43. A total of 72 F2 lines generated waiting testing for transmission of aroma characteristics.

- Overall, there is an increase from previous value of 124 to 2,765 entries
44. The 20 irrigated lines have been established in 6 locations in the country. 10 best performing ones were selected and submitted to MAAIF for DUS

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

45.4 Sustainable ISFM and plant nutrients management strategies in rice ecosystems which account for farmers of different resource endowment developed and evaluated.

46. The distribution of AFRGM was determined. The insect was found in both cultivated and wild rice throughout the year. Higher levels on cultivated rice were between Feb and June and July to November. Parasitoids were more from September to December

A survey on the main rice seed value chain actors was conducted.

Preliminary results show the actors to include: seed companies, contractual farmers, community seed producers/farmer groups, individual farmers mainly large scale producers, breeders (research), inspectors, stockists/traders, Non-Governmental Organizations/Community based organizations and District Production Offices. These are promoting rice seed related projects within the community. There is weak linkage among these actors (breeders-inspectors, seed company-contractual farmers). Some actors are not knowledgeable in the varietal differences, resulting to varietal mixing.

- Farmers contracted by seed companies received training on seed production and management through the seed companies that contracted them.

- Differential lines received namely Gigante, BE90.2, TOE5672, TOE5674, BOUAKE 189, TOE 5681 and IR64; and are undergoing multiplication for screening against RYMV on Station at NaCRRI, Namulonge.

3Dairy Research

- The continued evaluation of napier clones from Kenya have confirmed that Kakamega 1 and Kakamega 2 produces the highest dry matter yield of 40 to 42.0 kg/ha. Accessions 105, 112, 16702, 16789, 16805, 16815, 19, 75, Kakamega 1, and Kakamega 2 did not show disease symptoms up to 4th harvest.

47. All the accessions gave a relatively high NDF ranging between 55% and 60% and low crude protein content (6.8% and 9.2%). Kakamega 1, Kakamega 2, 112, 16702 and 16805 were recommended for multiplication

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

in NSD "hot spot" areas as a way to improve feed availability. Over 30 acres of forage seed have been established at NaLIRRI.

48. The effects of NSD on dairy enterprise farm performance through resource re-allocation and cash flow changes were assessed using financial analysis based on partial budgeting techniques. The disease led to reduction in area under Napier grass by about 40 per cent.

- Two thousand three hundred and seventy eight (2378) stakeholders (1450 female) in Masaka, Mbarara, Kiruhura, Soroti, Kampala, Wakiso, Mukono, Gulu and Jinja districts were trained on NSD control/management strategies and use of alternative forages through agricultural shows, field visits, scientific conferences and farmer workshops.

- Under animal breeding synchronization and AI was conducted twice. The first was done in early July 2013 covering Teso sub-region a total of 170 cows (from 101 farmers herds) received insemination out of 243 examined from 127 farmers herds. The second was conducted in late November 2013 covering Katakwi the sub-counties of Toroma, Kapujan and Omodoi where a total of 166 cows were artificially inseminated (263 cows examined from 107 household herds but only 188 cows synchronised and 166 successfully inseminated from 94 farmers' herds).

- Direct interaction and sensitization of over 700 farmers and stakeholders were made including on-farm sensitization of 317 farmers (92 female and 225 male) sensitized on-farm on selection, breeding, record keeping and husbandry practices and over 400 on breed characteristics during blood sampling processes.

- The project disseminated information to farmers and stakeholders at various by producing 1000 brochures.

- A total of 250 blood samples from local cattle were collected for genetic analysis from the districts of Katakwi, Serere, Amuria and Kumi for the Small Zebu cattle; Moroto, Amudat and Kotido for the Large Zebu cattle; Mukono, Mpigi, Kamuli and Kayunga for the Nganda cattle; and Nakasongola for the Ankole cattle.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Q1

1.1 Cassava RCoE

1) 900 F1 seedlings from 23 families planted for CMD/CBSD resistance and screening at NaCRRI.

- Over 5000 crosses have been made for recombination amongst selected CMD and CBSD resistance.

2) 4800 F1 provitamin A seedlings transplanted at AbiZardi and NaCRRI

3) 960 S2 provitamin A seedlings transplanted at AbiZardi.

- Harvest data collected from stability trial; experiment replanted for second season

4) AYT using 4 elite cassava genotypes established at four sites: NaCRRI, Kaberamaido, Tororo, Arua and Kamuli

- 30 CBB isolates collected, live cultures established invitro, DNA extracted & PCR tested using RACE primer.

5) Preliminary results identifies 2 CBB distinct strains

- Screen house experiment established
- 840 isolates collected, DNA/RNA extracted, live cultures maintained for further characterization. PhD Student is expected to characterize these isolates under her study.
- 10 CBB isolates tested using 6 primer pairs for future sequencing

6) Two cassava varieties namely TME 204 and TME 14 identified as most suitable for mass production of T. aripo.

- 10 cassava trees established in the screen house at NaCRRI for mass production of T. aripo
- 3 indigenous whitefly parasitoid species collected from parasitized whiteflies
- Galleria insects colony being established at NaLIRRI to isolate pathogens
- 150 soil samples from hot spot areas of CM analyzed for levels of P, K, N and organic matter as part of Integrated soil fertility management and cultural practices to reduce the incidence of cassava pests and diseases.
- Five Profitability trials 2013/14 planted on station at 5 PARIs (NaCRRI, AbiZARDI, NgeZARDI, BuZARDI & NaSARRI)

7) Profitability trial report 2011/12 produced. Highlights of the report include: Nase 19 and Nam 130 had the

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

highest market value. Cassava farmers have been found to be 66% efficient.

8) Survey report on the status of pests and diseases in the region has been produced & shared

- CBSD booklet produced.

Value addition

9) Microbial Safety levels of the various cassava samples established using MPN standard table (Scott Sutton, 2010). There was a significant difference between the reference samples processed under research (desired) recommended methods and those found in the market.

- VAC is currently in demonstrating to producers in good practices (sanitation, safety product appearance, proper processing and drying methods) for production of high quality cassava flour, good quality cassava chips and other cassava based products.

- Anti-nutrients profiling initiated at Msc level focusing on tannins and phytates in the cassava varieties of Nase 3, Nase 14, Nyaraboke, MH02-073HS, CPCR-24B-10.

- Proximate analysis of cassava leaf and peels samples initiated and test data collected for analysis.

- Feed protocepts for the different stages of the various livestock being initiated and data collected for solid and powder protocepts.

10) Four storage options for chips & flour quality maintenance and shelf life evaluated over 6-months. These were: Hermetic metal silo, hermetic bags, Internal non-lined and lined polyethylene bags. 11% MC was maintained & no microbial contaminations detected on products stored in hermetic metal silo. Strategy to make availability of these hermetic metal silos for communities has been developed by the Value Addition Component.

- 3 Bio-packaging material protocepts from cassava roots that are degradable have been developed and are undergoing optimization process under PhD study.

11) One individual incubatee at NARL is hosted and is exploring use of cassava peels and other bio-products as briquettes. Five incubatee companies; Four on site.

- Variety Plus 'U' Ltd: Focused on the

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

following Product range-- Nutritious Cookies, Flavored Banana Crisps, Cassava Crisps, Nutritious Cakes, Baggias and Enriched Composite Flours

- Biospore Uganda Ltd: Focused on product range of Cassava snacks and Vegetable sausages
- Masupa Enterprises: Focused on Briquettes from wastes
- JAH New Life Centre (off site):Product range: JAH Cassava composite products

- MoU signed with: Kyambogo University, Makerere University CAES, KCCA (Incubation + others), ICRISAT (Incubation), and USAID Restless Youth Programme.
- Development of MoUs is ongoing for Africa Agribusiness Academy and FinAfrica.

1.2Rice Research

12)2 genotypes with aroma identified

- Over 150 crosses made by crossing 12 aromatic with 10 non aromatic genotypes, 65 were regenerated

13)Fertilizers rates have been determined. 60 kg N + 15 kg P /ha gave the highest yields of 3.6 ton and 2.9 tons in Nakaseke and Namutumba respectively.

- Over 500 RYMV samples have been collected from 24 districts for lab diagnosis and for diversity studies.

•Differential lines received namely Gigante, BE90.2, TOE5672, TOE5674, BOUAKE 189, TOE 5681 and IR64; and are undergoing multiplication for screening against RYMV on Station at NaCRRI, Namulonge.

14)4 varieties Tai, Komboka, TXD 306 and TXD 307 at NPT and DUS

15)Gigante, BE90.2, TOE5672, TOE5674, BOUAKE 189, TOE 5681 and IR64. Only 50 g of seed was sent per line and all the seven lines are undergoing multiplication on Station at NaCRRI, Namulonge

16)1 Modified walking tractor

17)1 diesel engine planter modified and tested

18)A diesel engine thresher fabricated by NARL tested.

1.3 Dairy Research

- 4 Clones: 112, Kakamega 1 and 2; and 16805 continued to show

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

tolerance to NSD
 24) Genotype, low soil fertility & drought found to be associated with severity of NSD
 25) Preliminary results show a decrease (20%) in NSD incidence where manure was applied
 • Presented a paper during the 22nd International Grassland Congress (IGC) in Australia, September 2013
 • Field and on-station data on growth and reproductive performance from 78 households and 158 cattle collected and entered

Dairy health
 • Media for isolation of E. coli optimized and culturing on-going
 26) Key organisms identified in sampled milk: E. coli, Staphylococcus spp, Streptococcus spp and Lactobacillus spp
 27) Factors influencing tick resistance identified
 • Resistance was 3.3 times more likely on farms keeping exotic than local and cross-bred cattle
 • Resistance was less likely (OR=0.20, p=0.021; CI=0.05-0.78) on farms on zero grazing compared to other grazing systems
 • Farms using hand pumps were less likely (OR=0.40, p=0.005; CI=0.38-0.55) to experience resistance compared to those using bucket pump, hand sprayer, knap sack pump, spray race,
 • Resistance was 5.2 times more associated with North Eastern Savannah Grasslands AEZ (OR=5.2, p=0.031; CI=1.16-23.6) compare to other AEZs
 • Farms that used synthetic pyrethroids for up to 10 years were more likely (OR=5.2, p=0.043; CI=1.16-23.6) to experience resistance compared to Amitraz, organophosphates or macrolides
 • Cross-breeding indigenous cattle with Jersey to produce 1 line.
 • 146 Ankole X Friesian crosses were synchronized and inseminated with imported dairy semen July 2013 under NAGRC&DB cross-breeding program.
 • Improvement of Njeru Stock Farm through repairs of old fencing lines, fenced off 80 acres and established 85 acres of maize for silage.
 • Data base for Dairy breeders

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

periodically updated.
 J)Consultative workshops in the midwest (Kibale, Kyenjojo, Kasese,Kabarole, Ntoroko, Kamwenge, Bulisa, Hoima); and Eastern (Kamuli, Kaliro, Tororo, Mbale, Pallisa, Soroti) milk sheds to input in drafting of breeding guidelines.
 •Continued support to RELINE farmers platform in form of breeding management, use of assisted reproductive technology (AI) and herd recording

Reasons for Variation in performance

None

Total	2,400,000
<i>GoU Development</i>	0
<i>External Financing</i>	2,400,000
<i>NTR</i>	0

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Capital Purchases

Output: 01 5172 Government Buildings and Administrative Infrastructure

- Design and development of drawings and bills of quantities for office, laboratories and farm buildings at NACRRI, NAFIRRI, Bulindi ZARDI, Ngetta ZARDI; Rehabilitation of office, laboratories and farm buildings NACRRI, NAFIRRI, Bulindi ZARDI, Nabuin & Ngetta ZARDI

Preparation for engaging a consultant to design and development of drawings and bills of quantities for construction/rehabilitation office, laboratories, farm and field structures are in final stages.

Reasons for Variation in performance

None

Total	1,350,000
<i>GoU Development</i>	0
<i>External Financing</i>	1,350,000
<i>NTR</i>	0

Output: 01 5175 Purchase of Motor Vehicles and Other Transport Equipment

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

		Item	Spent
NAFORRI - Motor vehicles and Motorcycles - Purchased	15 Station wagon vehicles, 3 vans and 2 trucks were delivered	231004 Transport equipment	1,350,000
BUZARDI- 3 vehicle pickups procured; 1 vehicle station Wagon procured; 4 motorcycles procured; 2 generators procured			

Reasons for Variation in performance

None

Total	1,350,000
<i>GoU Development</i>	0
<i>External Financing</i>	1,350,000
<i>NTR</i>	0

Output: 01 5176 Purchase of Office and ICT Equipment, including Software

Power requirements identified	NARO Secretariat CCTV Cameras have been procured and installed
Prerequisite training. ICTspecialists identified and recruited.	Buginyanya ZARDI •Provided telephone, internet and electricity services and stationery at Buginyanya, Ikulwe and Bulegeni stations
Infrastructure and equipment procured.	Bulindi ZARDI •Assorted stationery procured •Telephone services procured •Internet Services and entertainment procured •Office Consumables and office stationery procured
Mobile applications , user info needs and Software requirements identified.	
- ICT infrastructure and eq	NaLIRRI •Lap top computer procured

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5177 Purchase of Specialised Machinery & Equipment

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

NAROSEC- Necessary equipments & tools procured .	Bulindi ZARDI Received one tractor with farm implements
NaCRRI - Laboratory equipment purchased	
NaFORRI - Specialized Machinery & Equipment for research activities acquired.	Q1 Awaiting world Bank no objection to procure an assortment of specialised machinery and equipment.
Kachwekano ZARDI - 1 digital and 1 bench type PH meter procure	

Reasons for Variation in performance

None

Total	655,000
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>655,000</i>
<i>NTR</i>	<i>0</i>

Output: 01 5178 Purchase of Office and Residential Furniture and Fittings

NAROSEC- 2 glass fitted book selves procured	None
NaCRRI - Laboratory furniture & fittings purchased.	
Kachwekano ZARDI - Conference/dinning room furnished with 8 tables and 50 modern chairs; Resource center furnished with shelves, lockers,	

Reasons for Variation in performance

None

Total	700,000
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>700,000</i>
<i>NTR</i>	<i>0</i>

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

n/a	Partial payment to CGIAR effected.
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Reasons for Variation in performance

None

Total	0
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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

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<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Performance of the livestock breeds (multipurpose Sahiwal cattle breed, Pigs, Chicken, Boer goats) and their crosses with local breeds determined; Appropriate management methods for livestock established and promoted; appropriate pasture management options for dry season feeding determined and; Better performing pasture accessions and management practices determined and promoted; Appropriate technologies for water harvesting/harnessing and storage for livestock use developed and promoted. Occurrence and magnitude of spread of major livestock pests and Disease in the zone established. Setup and maintain on station and on farm trials; Documentation of support tools for the rapid assessment of feed ingredients developed; Lab analysis of formulated feeds.

High yielding, early maturing crop varieties with desired market attribute tested and promoted; Integrated Pest Management options for control weeds identified and promoted; Identifying, adaption and promotion of cover crops which have multipurpose utilisation with famers Establishing optimum application rates of fertilizers, Identifying water and promoting and water harvesting techniques in the Agroecological zones; Better performing tree and shrub species for soil fertility replenishment, food, forage and fodder on station and on-farm identified and promoted; Propagation methods for various adaptable tree species determined and promoted; adequate amounts of quality planting materials (seed) of improved crop varieties produced.

NaCRRRI

Horticulture
- Planting 2500 fruit seeds for generating rootstocks
- Visits to oil palm farms planted in 2001 revealed that farmers in Hoima were harvesting 2-3 times a month.
- Trip to oil palm farms in Buvuma did not reveal any major disease
- After confirmation of Armillaria root rot in some areas of Kalangala preventive practices were demonstrated to farmers
- 6 nurseries of quality fruit trees were constructed and 18 mother gardens established
- 2 sets of brochure and i production manual on quality fruit trees have been produced

NARL

Agricultural Engineering:

- Partially completed the design of a sheep hoof compactor. The design is to be completed next quarter
- Completed 1st prototype of diffuser aerator design; five collaborative farmer groups (30 farmers) identified and their
- critical engineering needs in pond construction and management established
- Draft Digital elevation modeling (DEM) based map of Uganda showing locations where ram pumps can work. The final version of the map is to be generated next quarter
- 3 ram pumps fabricated; installation of ram pump for pumping water for irrigation in Mbale (Bungokho-Mutoto)
- Partially completed the development of a motorized maize sheller prototype for 5-19 hectare maize farm. The prototype is to be completed next quarter.

Postharvest:

- Postharvest losses during harvesting and threshing of swamp rice from the northern hub
- Data collected on loss levels during harvesting from 10 farmers in Lira and 10 farmers in Hoima
- Data collected on loss levels during

Item

224001 Medical and Agricultural supplies	610,000
224002 General Supply of Goods and Services	689,000

Spent

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
------------------------	---	--

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

threshing from 5 farmers in Lira and 5 farmers in Hoima

- Evaluation of motorised chipper: Chipping efficiency in terms of chipping losses, fuel consumption, throughput, determined
- Evaluation of chipper design: Grating and pressing efficiency in terms of size reduction, fuel consumption, throughput and detoxification, determined
- Partial design of a centrifugal fan for conveying drying air; To be completed next quarter.

Value-added products:

- Three formulations (ratios: 10:5:85; 20:5:75; and 30: 5: 65 of beans, soy and maize.) evaluated on station and in two districts by 150 people showed higher acceptance for 20:5:75 bean:soy:maize combination
- One formulation (fish crisp: 5:3:2 of fish, wheat and cassava) developed, tested for consumer acceptance and willingness to pay (N.bredoi had an unacceptable colour)
- Establishing a profile and composition of nutrients in fresh water fishes (before and after processing (smoking, salting, frying and drying)): Frying resulted in loss of 20% Zn, 15% Mn and 12% P in majority of spp. Retention of only 25% of DHA (fatty acid) in 4 fried spp.; 90% of consumers around Kampala peri-urban centres preferred fried products
- Determination of level of Omega 3 & 6 compounds in fermented N. bredoi products: Levels of Omega 3 & 6 and docosahexanoic acid (DHA) in powdered and fermented N. bredoi products was 13mg/100 and 12.89mg/100
- One brochure developed (in English) and a draft technical report on powdered Mukene product
- All four tamarind products market tested and nutrient profiled; Tannin levels and aflatoxins determined in four products; Tamarind pulper developed and tested for efficiency
- Development of cassava-based product: Gari-bar formulated
- Development of interventions to ensure safety of fish products: Smoke filters (with different cyclone filter depth and arrangements) tested on station; Top introduction of smoke into cyclone and bottom introduction smoke into cyclone

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Postharvest

- Final report on bean value chain in Oyam compiled. Key findings:

Majority of farmers used local seed.

Pests and diseases the major constraint during production and storage

- Maize storage pest management options evaluated

- A paper on legume storage presented at the ACSS conference

- 1 leaflet and 1 poster on maize storage generated

- Production of cassava biodegradable packaging materials: A method for producing powders and films developed

Scaling up integrated soil fertility management (ISFM):

- Use of ISFM practices improved gnuts performance. The 2013A data showed optimum rates to be: 8.73 kg P/ha for serenut 3 and 4.37+2 t FYM/ha for red beauty.

- Establish on-station trials on conservation farming, including soil cover, permanent planting basins (PPBs), rip lines and intercropping at NARL-Kawanda and NgeZARDI: Preliminary results for maize and beans show Yield increases of about 30% for planting basins both at NgeZARDI and NARL-Kawanda

Bio control

- Control of cassava white flies and spiraling white flies: Field parasitism of 2 species of indigenous whiteflies in 5 districts of West Nile region ranged between 0.28 % and 18.11% indicating the need for introduction of exotic parasitoids

- Control of CM and CGM and release of releases of bio agents:

Multiplication Sites identified along River Nile in Nebbi, Arua, Koboko, Yumbe and Moyo districts where cassava varieties sustained high population of *T. aripo*

- Use as bio pesticides and bio fertilizers for management of insect pests and disease: 4 *Trichoderma* spp isolates showed inhibition potential ranging from 50% to 80% on colony growth of *Rhizoctonia* spp and *Fusarium oxysporium cubense* and *Pythium* spp

Biotechnology

- Development of biotechnology tools and processes: Regeneration process and media composition for g-nut and

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

passion fruit determined; Regeneration has been archived in all 4 varieties with average 4 shoots per explants.

NAFORRI

- Raised 25,000 seedlings each for M. eminii, E. Grandis and M. volkensii
- Established one Nelder trial for M. Eminii in Buginyanya
- Thaumisticoris perigrinus a pest previously in S.Africa and Kenya identified in Uganda. The pest incidence in Wanale and Budwale sub-counties Mbale district was 39% and 42% respectively. Low pest incidence observed in Manafa, Bududa, Tororo and Busia districts. Established high incidence of deaths among Pines ranging from (8%-98%) in thirteen(13) woodlots surveyed in S. Western Uganda
- 29 prospective forage species identified on 100 smallholder dairy farms in Masaka district.
- Forage production (6), processing (2), and preservation (1) options identified on 100 smallholder dairy farms in Masaka district. Candidate practices (8) earmarked for on-station forage management trials.
- 0.25 acres of Calliandra fodder established on station at Kifu, Mukono
- One protocol for tree crop interaction trial developed;
- Indigenous tree germplasm for trial establishment sourced
- Literature on seed tree management and tree seed handling searched and reviewed, identified actors in tree seed value chain in Lake Victoria Crescent AEZ
- Preliminary work on potential certifiable products and CFM activities carried out in Kalinzu CFR
- Technical advice to 15 tree farmers from Rukungiri and Hoima conducted on station.
- Two 30X30m plots mapped for establishment in Nakasongola
- 8kg of J.curcas and 4.8kg of R. communis seeds from Kasese in western Uganda collected.
- Leafy biomass production (from harvesting) of Warburgia ugandensis under farm conditions documented
- 132 cuttings of Zanthoxylum chalybeum placed under non-misting conditions (3 months required to assess rooting success)

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Mother tree identification, marking and seed collection ie 5kg of Albizia and 8kg of Melea

- Ensured availability of tree nursery production for research and planting out in the field in encroached areas

NaLIRRI

- Development, evaluation and dissemination of technologies that reduce climate change-induced shortages in forage and water availability: 2 feedback workshops conducted. Project outputs disseminated to 100 stakeholders (70 females)

- Nine paper presented in three scientific conferences (Grassland conference-1, ASARECA scientific conference-8 and 2nd ASARECA General Assembly and scientific conference (8)

- Development of supplementary feed rations for dairy and beef cattle: 20 sorghum stover and Tithonia samples collected and analysis is underway; A survey was conducted on on Social-economic factors affecting utilization of sorghum stover for feeding animals and statistical analysis of collected data is underway

- Characterisation of productivity of pasture in three selected grazing areas in Nakasongola, Kotido, Amudat and Mbarara during the wet season of October-November: Results of the assessment indicated that pasture biomass ranged from 1500-4500kg/ha-1 with the lowest value occurring in Kotido. The sward legume component ranged between 5-20% of the total basal cover with lowest and highest legume component occurring in Kotido and Mbarara respectively.

- Napier Grass: 7 acres of Napier grass accessions 112, Kakamega 1, Kakamega 2 & 16805 established at NaLIRRI (2), Kamenyamigo(2), Jinja (2) and NaCRRI (1 acre)

- Control of NSD: Data collected from all experimental sites (during wet season of October-November 2013) on effect of manure regimes on severity of NSD. Data analysis is under way.

- Improvement of degraded pasture in Amudat District, using improved technologies: 220 acres of degraded pasture improved in Amudat Moroto District. The activity reduced the basal cover of obnoxious weeds in pasture

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------------------------	---	--

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

from 39 to 7%. The legume component of the pasture was increased by 34% while preliminary assessment of biomass yields indicated a 12.5% increment 2 months post sowing.

- Improving availability of fodder tree planting materials: 3 fodder tree nurseries each with capacity of multiplying 50,000 seedlings established in Abim, Kotido and Kaabong

Livestock Health:

- Management innovations for tick-borne diseases and milk-borne zoonoses: Company to sequence 200 purified DNA samples and characterize *T. parva* identified and procurement of services initiated. Also, Prevalence of *T. parva* per agro-ecological zone
- Characterize *Mycobacterium*, *Brucella* and haemorrhagic *E. coli* for improvement of diagnostic tests: Culture has been done on 320 out of the 600 milk samples collected. From these samples, 5 suspect bacteria were identified - *E. coli*, *Staphylococcus* sp, *Streptococcus* sp, *Lactobacillus* sp and *Pseudomonas*. Of the 321 samples 65 have been analysed for isolation of Enterohaemorrhagic *E. coli*
- 5 isolates of Enterohaemorrhagic *E. coli* have obtained has been isolated from the 65 samples
- 72 milk samples were analysed for the number of colony forming units (CFU) of *E. coli* organisms. Per 100 ml of milk. Results are:
 - Range: 320,000 – 840,000 CFU/100ml. Average/Mean: 590,000CFU/100mL
- Management of ECF: Factors (9) that influenced acaricide resistance by ticks identified: Sex, Age, Grazing system, Method of restraint during acaricide application, Method of acaricide application,
- Source of acaricide, Type of acaricide used, Acaricide reconstitution, Availability of extension services. The results were disseminated during Annual Uganda Veterinary Association Scientific Symposium 2013.
- Establishment of Risk factors responsible for outbreak of CBPP and FMD: Questionnaires were developed and administered to: 441 farmers in 9 districts (17 sub-counties) on risk

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------------------------	---	--

Vote Function: 0151 Agricultural Research

Development Projects

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factors for FMD. Districts included:

Kaberaido, Amuria, Soroti, Lyantonde, Isingiro, Sembabule, Kamuli, Buyende and Kaliro

- 342 farmers in 7 districts (14 sub-counties) on risk factors for CBPP.

Districts included: Lira, Otake, Soroti, Gulu, Napak, Katakwi and Kitgum

- Control of calf and kid mortality:

Three strategies for control of calf and kid mortality developed. The strategies were disseminated in 4 districts

(Kiboga, Kyankwanzi, Nakasongola, Amuria). 1000 fact sheets on control of helminthes (worms) in cattle produced; disseminated to more than 1,000 showgoers during World Food Day exhibition at NaSARRI, Serere

- Evaluation of cattle for performance

ongoing: 170 cows evaluated for conception rates and 87 (51%) found to have conceived after 55-60 day period; 189 elite cows selected for dairy production from 90 (31 female and 59 male) farmers; A total of 250 blood samples were collected from Moroto, Amudat, Kotodo, Katakwi, Kayunga, Nakasongola, Mpigi, Amuia, Kumi, Serere, Kamuli, Mukono,

NASARRI

- 88 BC3 cotton progenies planted on station in replicated trials.

- 50 F4 cotton progenies planted in replicated trials on-station. Data collection on-going

- DUS trials for 10 promising cotton lines maintained at Ngetta, NaSARRI and NaCRRRI

- 30 acres planted for production of foundation cotton seed

- 25 elite lines planted and data collected on resistance against bollworm, lygus and stainers

1. A survey on prevalence of cotton wilt diseases was conducted in northern region (Dokolo, Alebtong, Apac, Pader and Gulu districts.

- Yield potential of 14 Early maturing IITA lines, 11 Medium duration IITA lines and 11 dual purpose IITA lines was determined. The highest yield among the early maturing lines was obtained from IT04K2274 (1361 kg/ha), followed by IT04K2996 and IT07K2/1011. Among the dual purpose elite lines IT06K1471 gave the highest yield (1056 kg/ha) followed by IT07K3182 (917 kg/ha). And among

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------------------------	---	--

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

the medium duration elite lines the highest yield was obtained from IT08K1493 (1,306 kg/ha) followed by IT0K30944 (1250 kg/ha).

2. Five promising cowpea lines selected for multi-location evaluation. K80 which gave yield of 2278 kg/ha, followed by ACC12 (2250 kg/ha), New cowpea (2111 kg/ha) and ACC26. These out yielded SECOW-2W (1944 kg/ha) and were selected for multilocation trials.

- A total of 74 local cow pea accessions planted out and fifteen of them gave yields above 1,000 kg/ha and three of them shown resistance to viral and scab diseases
- 15 crosses with yields above 1,200 kg/ha and five of which showed resistance cowpea scab disease were identified and earmarked for preliminary yield trials at NaSARRI
- Out of 12 lines evaluated, 7 green gram lines including; Filsan gave the highest yield (1,583 kg/ha), followed by Mauritius (1194 kg/ha, Sunshine (1111 kg/ha) then VC61137B-14 (1028 kg/ha), then then KPSI (972 kg/ha) and yellow gram (889 kg/ha) out yielded the local variety (600 kg/ha).
- One experiment with a total of 21 different spacings established. Highest yield (2194 kg/ha) was obtained from a spacing of 50 x 10 cm, followed by spacing of 50 x 20 cm (2097 kg/ha) and 50 x 40 cm (1917 kg/ha) compared to recommended spacing of 60 x 30 cm (1417 kg/ha).

3. Five of the promising lines performed better than the test released variety (SEPI 2) which gave yield of 2188 kg/ha. 2004/17/16/5 (2688 kg/ha) the highest, followed by ICEAP00554 (2667 kg/ha), 2004/16/16/7 (2334 kg/ha), and 2004/17/10/1 (2230 kg/ha)

4. 200 millet accessions characterised and 4 lines resistant to blast identified;

5. Thirteen (13) millet lines with tolerance to drought confirmed;

- Planted trials in 4 locations; Kumi, Ngora, Serere, Anyara. Finger millet responds well to fertilizer application especially to N and P. Preliminary results recommended dose of 40:20:20 kg/ha N:P:K to be applied.

6. Baseline survey to collect information on finger millet production systems, processing methods, market

Vote: 142 National Agricultural Research Organisation

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------------------------	---	--

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

prospects and consumption patterns conducted in Katakwi and Mbale.

7.10 promising pearl millet lines identified

- 75 accessions with desirable attributes selected for further evaluation
- Four best lines for resistance against gall midge and web worm selected for further evaluation
- One hundred sunflower accessions were evaluated on station and 13 lines were identified for further evaluation
- Field trials combining host resistance resistance, crop rotation (groundnut/sorghum/maize) and time of planting planting were established to evaluate these practices on severity of sclerotinia and leaf crinkle diseases
- 7 on-farm trials were planted in hotspots in Tororo and Serere district. Preliminary result from available data showed resistance response in 9 cowpea lines: ACC11, ACC12, ACC26, SECOW 2W, SECOW 3B, K-80, M66 and NC
- 21 cowpea plant spacing options were evaluated for SECOW 2W (most preferred variety). Incidence of scab averaged between 35% and 70%. Only 4 plant spacing options had incidence less than 45%.
- Fifteen (15) promising ARC Sudan lines that are adaptable to Uganda were planted for multi- Locational testing in 3 locations. Twenty five (25) Sub humid dry lands and 25 Sweet sorghum lines introduced from ICRISAT for regional adaptation trials were planted on station during the second rains 2013.
- 10 promising NaSARRI selections and 6 BC3 drought and Striga resistant sorghum lines were replanted in Bukedea, Kumi and Serere trial sites. Results indicate that 2 NaSARRI selections had low Striga incidence while 2 BC3 lines from Sudan were early maturing and high yielding. Data on plant establishment and shoot fly incidence has been collected
- 20 BC1S1 crosses were advanced to BC2S2 generation, 25 BC5 lines were advanced to BC6 generations. During the quarter, the selections were bulked to form populations for further evaluation

8. Pest field screening experiments in four locations of 16 sorghum advanced lines resulted in the identification of four lines resistant to shoot fly attack .

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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------------------------	---	--

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Bulindi ZARDI

- Evaluation performance of key

crops:

- From the 0.2 acres of beans, NABE

4, NABE 16 yielded much better at

634kg/acre and 787kg/acre

respectively than NABE 15 and k132

at 336.2kg/acre and 390kg/acre

respectively). Growth and yield data

from 0.1 acres maize (Longe4, Longe

5, Longe10H, Longe 6H), 0.1 acre rice

(NERICA 1, 4,10 and SUPERICA)

and 0.6 acre groundnut (SERENUT 1-

14) is under analysis

- 1/4 acres of TME14, NASE14,

MH0686, MH2961 cassava varieties

were planted on-station and data

collection on yield under varying

spacing (1m X1m, 1.5m X1.5m, 2m X

2m) is still ongoing

- The 1 acre of demonstration for

Maize; (Longe 5, Longe 4 and Longe

10H), beans (NABE 4, K131, NABE

12C) Rice (NERICA 1, NERICA 4,

NERICA 10, NARIC 1, NARIC

2), Sorghum (Sekedo), Soya

(Namusoy1N, Namusoy2N,

Namusoy3N & Maksoy4M), Sweet

potatoes (NASPOT6, NASPOT8,

NASPOT10, NASPOT7, NASPOT11

& Ejumula) which was previously

established on-station to increase

farmers' knowledge on Good

agronomic Practices and access to

adapted crop cultivars in the LACZ

was visited by 284 students and 49

farmers

- Evaluation of drought tolerance of

forage species: Greenness, vigor,

biomass and fraction of dead to green

determined for November 2013.

Neonotonia wightii and Congo signal

(control) were the most green.

Brachiaria Toledo & B. Hybrid had the

highest biomass (fresh). DM yet to be

determined

- Exploration of cage fish farming

opportunities in the region: A total of

30 bays on lake Albert were surveyed,

water and sediment samples collected

in Hoima, Kibaale and Buliisa

districts. These are: Sabagolo,

Nyawayiga, Nyamula, Nkondo,

Ndokole, Susa, Bugoma, Bugoma –

Kinya (Bagdad), Kinya B, Kisege,

Kayiso, Mbegu, Tonya (Songa

Nyanyama and Songa Mali), and

Mbegu-Lwengabi in Hoima, Pida,

Booma A, Booma B, Booma-

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
------------------------	---	--

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Tugombiri, Kinyamukuta, Butiaba, Walukuba, Somusio, and Bugoigo in Buliisa and Mpeefu, Kabukanga, Kitebere, Ndayiga, Nguse, Rwebigongoro and Kamina bays in Kibaale

- Fruit tree production: Analysis of data collected on current status and factors affecting production of fruit trees in LACZ is ongoing

- Promotion of bee keeping and its products: Baited and deployed 10 KTB. Data collection on rate of colonization and abscondment shows that At least 3 langstroth and 1 Kenya Top bar hives were colonized by bees by the end of the quarter. Unfortunately there was abscondment in 1 langstroth hive. Maintained 2 bee forage species (Calliandra calothyrsus and Oshum) planted at 60m x 40 m on apiculture research and development site as sources of bee forage during experiments and demonstrations.

- IPM of Key Crops: Malathion 57% EC, Dimethoate 40% EC, Cypermethrin 5 % EC lowered bean fly infestation to 4.2%, 5.5%, 6.3% respectively from 8.8% under untreated conditions, mean yield of NABE under similar treatments was not significant giving 744.3kg/acre, 664.5kg/acre and 720.2kg/acre respectively as opposed to 797.9 under untreated conditions suggesting that their application would not significantly improve yield compared to when no application is done.

- Efficacy of selected botanicals against groundnut aphid to manage groundnut rosette: Despite not having aphids recorded, groundnut rosette on plants treated with extracts of Neem, Tephrosia vogelli, red pepper and cypermethrin 5% EC was severe with total folia mosaic and heavy stunting resulting in very low yields of 126.8kg/acre, 105kg/acre, 131.6kg/acre and 160kg/acre respectively. Similarly, plants treated with extracts from Mexican marigold, Nicotiana tabacum and plain water high aphid infestation with severely total leaf mosaic and heavily stunted resulting in very low yields of 126.8kg/acre, 102.9kg/acre and 95.7kg/acre respectively. These findings highlight the inefficiency of botanicals in the control of aphids that cause Groundnut rosette.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

KAZARDI

- Establishment of field trials in Kanungu, kisoro, Mbarara and Kanungu, Data collected on disease incidence and other agronomic characters
- 20 clones selected based on bacterial wilt incidence for further development
- About 198 plantlets of three varieties (Rutuku, Kachpot 1 and Victoria) inoculated for in vitro performance in the laboratory.
- Confirmed the presence of B-gluconidase gene (gus) in 5 lines of Victoria and Rutuku, NPT II marker gene in 3 lines of Kachpot 2, lines of victoria and 1 line of Rutuku
- 1.5 ha of land planted with nuclear seed for basic seed production and seed crop management
- Planting and management of 720 plantlets under convention and aeroponic methods of generating potato seed
- Generated 26,917 plantlets. Planted 12,160 plantlets under aeroponics and conventional techniques. Harvested 16,916 mini tubers, Harvested 300 bags of pre-basic seed
- Data collection was done at all 4 experimental sites (1 in Bugongi, 1 at Kachwekano, 1 at Kalengyere and 1 at MBAZARDI). Maintenance of field plts were by spraying, weeding and manure application was done. Growth data collected showing disease pressure due to apple scab and powdery mildew was collected. James Greives, Shilomit, Fuji, Anna, Golden dorset, Rome beauty, and Winter banana selected for high fruit yield and tolerance to diseases and wider agroecological adaptability.
- 3,140 apple grafted seedlings generated. 1,223 apple rootstock seedlings raised at the central nursery at Bugongi. 640 rootstocks ground layered at Bugongi and a further 2,220 earthed up.
- Backstopped and provided information to apple farmers in Kabale. On farm trainings were done in 10 subcounties in Kabale about tree training, disease and pest control, fertility management and fruit care for optimum productivity.
- Five varieties were planted in single plots for seed increase at Kibimbiri station (1100masl). The varieties are

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

NERICA 4, NERICA 6, NERICA 10, NERICA 14, and NERICA 18. Data was collected on growth parameters and partial analysis done and NERICA 14 had the highest yield of 2.8t/ha.

- Data collection on gain yield components from harvested sorghum advanced yield trial was done at Kachwekano station. Sees treatment, seed packaging for planting 2014 trials was done, 14 varieties selected from previous trial of 2012 were in the trial in addition to local check. Leaf blight, days to flowering was recorded.

Promising early varieties are so far E1291, IS9201, N2, S87, BM27 and Nyundo.

- Information on growth rate parameters for 3 fish species in ponds for 3 months generated and indicate variation per species with Nile tilapia having so far better growth rates followed by Catfish in pond monoculture systems

- One commercial fish farmer promoted and able to produce and sale 14 tonnes of brood fish and 1 tonne of seed fish

- All fishing gear, sites in the 7 water bodies and fishermen experts assembeled

- 6 earthen ponds constructed in Kyanamira sub county Kabale District for aquaculture research

- Preliminary findings indicate that, 50% crosses have better growth rates, resistant to worms and palatability test acceptable by the public than 75%, pure Boer and the local Kigezi goat breeds.

- Major classes of dewormers were found on the market and their mode of administration assembeled. A total of 340 goats were earmarked for the experiment and fecal samples taken for the baseline epg and there after, dewormers were administered on to goat breed levels in the zone.

- 4 pasture legumes, canavalia, lablab, mocuna and desmodium assembeled. First and second land preparations done on-station.

- Preliminary findings indicated that out of 256 goat farmers sampled, 15.8% from the survey districts have dairy goats and the proportion of dairy goats reared reduced by 2.3% on comparison June 2013 to 12 months prior the interview.

Regarding stakeholder's perception

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

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and experiences on selected attributes of dairy goats, over 80% fully agreed that dairy goats have a positive impact on household income, 70.3% of them would choose dairy goat meat compared to another goats meat while 39.5% revealed that dairy goat meat is not like any other meat. Additionally, 89.5% and 79.2% of the respondents agreed that goat milk is for human consumption and they can drink goat milk and can allow any of my their family members to take it while 69.4% revealed that goat milk has very high nutritive value. Over 70% of respondents indicated that dairy goats are highly profitable while 40% revealed ready market for dairy goat meat and live goats. Major constraints to adoption of dairy goat production included; Limited information on advisory services (79.7%), lack of starter stock (57.1%), limited access to dairy goat breeds (17.5%), expensive to invest in (8.4%), physically demanding (4.0%) and 1.8% of them reported limited market for milk and negative attitude .

- 150 foundation/breeding stock goats (25 Boer, 51 of 75% Boer, 19 of 50% Boer and 55 of Kigezi/ Local goats) were maintained by regular spraying, deworming, repair of broken fences and herding of goats

Mbarara ZARDI

- In a survey of 200 households in the zone, it was established that only 7% of farmers conserved fodder. Limited awareness, high cost of inputs, unreliable labour, low quality pasture species and high cattle stocking rates identified as major constraints to on-farm feed conservation. Hay and silage making the only methods used to conserve fodder.
- One monitoring site for best stocking rate and grazing management practices was established in Kiruhura District
- Studies on conventional methods of helminthosis management in the SWAEZ established that high worm burden was in goats under free range and ranching systems than in paddocking and zero grazing. No significant difference in worm burden across different goat breeds (p=0.056).
- Feed Conversion Ratio (FCR) and Specific Growth Rate (SGR) of floating and sinking commercial fish

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

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feeds established that an average growth of 267.03g and SGR of 0.51% for floating pellets and 204.71g and SGR of 0.29% for sinking pellets.

- It was established that Low adoption of commercial fish feeds was due to high costs

- Data was collected on yield performance of mango fruits on-station, promising varieties included Tommy, Kent, Keitt, Parlvn, Zillate, Bire, Glenn, Florigon, Doodo red and Haden (yield ranging between 5-7tons/ha).

- Preliminary results of fungicide and pesticide application regime appropriate for management of major mango, avocado and citrus pests and diseases were obtained. Systemic fungicide sprayed at vegetative, flowering and fruiting stages gave promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocados.

- Experiments were established on-farm and on-station. On-station results best nitrogen fixing shrubs to be Calliandra C., Gliricidia S., Leuceana T. while low results were obtained from Sesbania S. and control with 968,966, 948 while 731 and 816 kgs of bean yield per hectare.

- Soil analyses indicate soil nitrogen and phosphorus being below the critical values of 0.2 % and 15 mg/kg respectively in most soils

Summary of Achievements and Progress

Mukono ZARDI

Aquaculture

- Four ponds completed: Drainage channels completed; 3 inlets and outlets installed

- Three ponds de-silted, banks strengthened and compacted

- Two base population (fast growing brood stock) multiplied and maintained and appropriate tags sourced

- Production of local fish feed: Feed formulation and pellet production is ongoing; types, quantities of antinutritional factors present in selected feed raw materials determined. Pilot production of feed and pellets will take place next quarter

Determination of the effect of intercrop on the soil fertility: This is still ongoing. Results revealed that soils at the

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

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trial sites in Zirobwe and MUZARDI generally had lower nitrogen levels which could have influenced yields.

Rice market chain: Held 3 rice market chain actors' meetings to identify market opportunities in the zone. The report was written and recommendations made which included (1) the need to bring together actors along the rice market chain and form a platform aimed at improving rice marketing (2) Identification of key rice marketing issues that will be dealt with using the PMCA strategy.

Enhancing utilization and genetic biodiversity of indigenous vegetables: Data collected once from trials at the three locations on plant height, plant stand, pests and disease. From the results, plots treated with poultry manure recorded higher yields than plots treated with NPK; plots treated with 7.5 MT/ha of poultry manure recorded the highest yield with an average of ??? ton/ha of Nakati. Under NPK treatment, the highest yield was recorded in plots where 187.5 Kg/Ha was applied with an average of MT of Nakati harvested.

One seed multiplication trial (0.25 acres) for Nakati established at MUZARDI. A total of 30 kg of Nakati seed produced for uptake pathways

Multiplication of cassava foundation seed: A total of 50 acres of cassava foundation seed planted and maintained i.e. 30 acres at Kamenyamiggo, 4 acres at Mityana DATIC, 6 acres at Bukalasa Agricultural College, 10 acres at Nakaseke district

Abi ZARDI

Cassava:

- Trials with landraces were harvested and participatory evaluation conducted in Nyaravuru (Nebbi) and Rhino camp (Arua).
- Adaptive trials of improved varieties in 10 sites were harvested and participatory evaluation conducted with farmers. Results were published in the Journal of Agricultural Science (Abaca et al. Vol. 6, No. 1; 2014. Pp 116-122).
- New adaptive trials and demos were

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

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planted in Maracha, Moyo, Nebbi, Koboko and Arua.

Sorghum:

- Trials were set up in three districts of Nebbi, Arua and Koboko and data was collected; 12 improved varieties were planted both on-station and at DFIs to collect multi-location performance data.

- 16 local (Godo) varieties were established on-station for performance evaluation. Both trials were planted using RCB design with 3 reps and a check.

Maize:

- Trial was established on-station using a Split-plot design; Maize hybrids L6H, L7H, L8H, L9H, FH6150, KH500-43A, PAN67, DH04 obtained from different seed companies and planted on-station. Performance data collected.

- Beans and groundnuts: Crosses were made between five West Nile local and improved varieties such as G2333, PI207262, Cornell and Tu; Trials were established on farmers' fields in Adjumani, Arua and Zombo districts.

Beans:

- Multiplication plots for 12 varieties established at AbiZARDI; Data was collected at 8 and 12 weeks after planting; 11 genotypes from Uganda were successfully sent and acknowledgement of receipt made by Embrapa.

Soil Fertility:

- Six on-farm and two on-station Integrated Nutrient Management (INM) trial timely weeded.

Agro-forestry:

- 60 saplings marked on-farm and 30 saplings collected for hardening on-station; Market Survey on agroforest products carried out in four districts (Nebbi, Zombo, Arua and Nebbi) done.

Aquaculture:

- Six fish cages of low volume high density have been assembled and established in Onigo D fishing bay; Results of reproductive seasonality of A. baremoze over 12-month period showed that: Basing on the observable characteristics during the maturity stages, A. baremoze undergo total spawning as no opaque eggs were noticed to be left in the ovary during the spawning stage; The spawning pattern exhibited by A. baremoze across the twelve months of study

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

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indicate that this species undergo short spawning periods; Results on ovary description of "Angara" published in peer reviewed journals - Stages of ovarian stages of *Alestes baremoze* (Joannis, 1835): A Step towards Understanding Its Reproductive Biology, published in *Frontiers in Science*, Vol. 3 No. 4, pp. 107-113.

- Six fish cages of low volume high density have been assembled and established in Onigo D fishing bay.

Dairy productivity

- (evaluation of forage cultivars): On-station forage-adaptive trial, including 12 forage spp set up. Apart from *Panicum maximum*, all other forages either germinated or sprouted with more than 80% establishment.

Nutrifeed forage sorghum achieved more than 50% flowering after 2.5 months of planting.

Goat Health Management:

- Establishing the performance of Mubende/Boer offspring in the region:

Preliminary results on the growth performance of Mubende goat offspring indicate that Average birth weight of Kids is 2.9kgs, weight at weaning 10.5kgs and Average Daily gain 50g. The birth weight of kids from crosses of Local x Boers is 3.3 kgs while the Average Daily gain was 58g.

- Evaluation of medicinal plants: Two efficacious medicinal plants validated; 3 medicinal plants were screened for phytochemistry, organ toxicity and LD50 determination. A technical report is being compiled.

- Evaluation of Five high yielding forage cultivars: On-station forage-adaptive trial, including 12 forage spp set up. Apart from *Panicum maximum*, all other forages either germinated or sprouted with more than 80% establishment. Nutrifeed forage sorghum achieved more than 50% flowering after 2.5 months of planting.

- 2-acres of lablab, 1 acre of *Brachiaria* and 1 acre of Velvet bean (*Mucuna*) were established

Buginyanya ZARDI

- Establishing Prevalence of Banana Bacterial Wilt: 90 % Bacterial wilt recorded by 45days in plot with BW history compared to Plot in clean field.

- Goat Productivity: 29 indigenous and 37 F1 crosses for breeding maintained and a 594m² boma for

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

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bucks constructed.

- Improving wheat productivity:

- Identification of improved wheat lines: 5 candidate Mut lines for DUS with no stem rust incidence at 5 sites (Kalengyere, Buginyanya, Kachwekano, Kere & Bukwo); 75% failure of M3 Pasalines planted in highly acidic site at at Buginyanya station

- Promising wheat introductions with resistance to Ug99: 4 lines at AYT2 showing low incidence of stem rust at 5MR in Bukwo and Kween, no disease in Kapchorwa; 3 out of 9 wheat lines at PYT2 (Kingbird, Eagle, Wren) showed no disease in Bukwo, Kween and Kapchorwa

- Farmer-preferred soil nutrition amendment options for wheat production: N3P3 fertilizer combination most promising for improved wheat production

- Arabica Coffee: Surveillance of crop nutrition and disease incidence: -Poor coffee crop nutrition observed in 45% of surveyed fields around Bulambuli; leaf miners and coffee berry disease was the most prevalent disease in most of the fields surveyed

- Baseline information on SWC practices in project sites: Survey tool developed and pretested for data collection

- Seed potato: 1800 victoria and 950 Katchpot1 mini-tubers acquired and sprouting for planting in Feb 2014; Video documentary on seed potato multiplication in Bumbo and Mengya recorded

- Improving productivity of beans: Data on Grain yield, pods per plant, grains per pod collected and is being analysed; Grain yield, diseases and pests data collection and analysis is ongoing

- Validation of the Best IWM technique in upland rice validated on-station: Results show that Grain yield under post-emergence application of 4 l/ha of Butanil 70 + 1 hand-hoe weeding most promising technique.

- Rice: Installation of 2 weather stations at Doho Irrigation Scheme and Bar Sub county Lira District

- Development of Drought tolerant maize hybrids: Results of evaluation show that: Varieties CKH10767, CKH10169, 11SADVL-F2, CZH1157 & CZH10191 most high yielding (3.1-

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

4.8 t/ha respectively) cf 2.9 t/ha for Longe 10H.
 - Determining the most cost-effective biochar level in improving maize grain yield: Preliminary results show that Biochar application at 5 and 10 t/ha with more large cobs than no biochar treatments

Nabuin ZARDI

9. Acaricidal activity of 3 selected botanicals against ticks was established in Karamoja and Teso
 Tephrosia vogelii and Albazia coriaria showed 90% and 70% effectiveness, respectively against adult and larvae of Boophilus and Rhipicephalus species from cattle

10. Ethnoveterinary botanicals and knowledge utilised by pastoralists to control ticks and helminths in livestock was documented

- 2 acres of pasture plots for evaluation set up on station in Nabuin
 11. Preliminary laboratory results from screening for Brucellosis was done, seroprevalence of 23.2% Brucella abortus and 1.6% Brucella mellitensis was found, 0.8% (1 camel) was reactive to both Brucella species.

Dissemination of preliminary results to stakeholders was done, 128 participants attended at Alakas primary school on 19th dec 2013. 46 Camels were treated for corynebacterium infection from 17th -19th dec 2013

- Four priority crops including sorghum (12 varieties) & cowpeas (13 varieties) cassava (5 varieties) were tested for drought and yield response. Data is being analysed for selection of best varieties.

- OPV maize variety Vp Max (1.5MT/Ha) exhibited the most drought tolerance expressive traits through leaf folding (300) to reduce evapo-transpiration potential.

- Five varieties exhibited tolerance to groundnut rosette virus and leaf spot and were recommended for advancing to F4 S4 to ground nuts program at NaSARRI. The other five varieties were recommended for back crossing with resistant donor varieties to improve their tolerance to rosette and leaf spot.

- cowpea and green gram varietal trial yield, pest and disease data under processing and analysis

- 5 newly released CBSD resistant

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

cassava varieties are being evaluated for adaptability at on-farm (NabuZARDI)

- 10 acres of rice were established in Kolir, Bukedea District.
- Maize seeds primed 72 hours before planting had 100% crop establishment than the 48 hours seed priming

12. Survey on seed system security assessment was conducted. Results showed that 90% of farmer use food grains as seeds. 60% of farmers sources food grain seeds from mobile markets, 10% obtained from own saved from previous season harvests and 20% obtain seeds from neighbours

Ngetta ZARDI

- 6,000 seedlings established for pasture seed multiplication
- 15 heads of dairy experimental cows maintained on-station for conducting feeding trials
- Crop residue samples obtained for laboratory analysis
- Ponds and fish farm site maintained.
- A cage culture status and potential sites for Lango sub-region was documented.
- Data on performance of different CBSD tolerant varieties in different locations of the NAEZ documented.
- Better option for weed management in rice and beans documented
- Optimum bean plant population under conservation farming documented.

Rwebitaba ZARDI

- On station performance trials for tea clones established on 1.2 acres

- 15,000 clones raised and 23,433 plantlets maintained in the tea nursery. 400,000 cuttings supplied to a nursery operator

- Evaluation trials maintained on station for improved mangoes, citrus oranges and Apples.

- Demonstration trials for Eucalyptus, Maesopsis eminii, Albizia Chinensis and Terminalia species maintained.

- Mother garden of the 7 lines of coffee on station maintained. In addition another 1 acre of Robusta and Arabica coffee lines for demonstration was established

- Maintenance of 4 acres of upland rice (NERICA 1, 4 and 10)

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Maintenance of three (3) forage pasture established bracharia species in the evaluation trial
 - 2 acres of livestock pastures and fodder species (Lab lab and mucuna) established for multiplication on-station. Monitored dairy farmers who received 21,000 splits of Bricharia species under EAAPP project in collaboration with NaLIRRI
 - 20 acres of cassava (Nase 14- 4271 variety) maintained on-station. An additional 40 acres of cassava (NASE 14 variety) on-station under EAAPP maintained
 - Acquired 3000 plantlets of improved banana for multiplication on 7 acres on-station
 - Conducted survey on banana production and marketing constraints conducted in Kabarole, Kyenjojo and Kyegegwa districts
 - 10 traditional and 7 modern bee hives acquired from Nyabubale Bee Keepers Foundation. 11 bee hives out of 37 colonized by bees on-station
 - Maintenance of bee forage plants (Calliandra - 150, Bottle brush - 100, Angels trumpet- 100 and Moringa-100) in the apiary. Raised 350 oscimum seedlings
 - Two fish ponds fully filled with fresh water and stocked with Cat fish (Clarias gariepinus)
 - 13. Preliminary report drafted for tea profitability in Kyenjojo district
- Q1
NACRRI
Oi palm
- Oil palm trials for different soil fertility amendments were maintained. Growth and yield data was collected on-station. Yield increase of 7.5 tons/ha for 11 year old palm and 3 tons/ha for 15 year old oil palm using a combination 4 kg of CAN 3 kg of SSP, 3 kg of MOP, and 0.8 kg of magnesium sulphate /tree was realised. Further assessments are underway.
 - 1) Survey for insect pests in oil palm growing areas was conducted. Preliminary findings in Buvuma and Iganga suggest that mealy bugs, scales and birds were the major pests in the two areas. Further assessment underway

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

NAFORRI

- 2) Raised 20,500 seedlings each of *M. eminii*, *E. grandis* and *M. volkensii*
 - Four siveiculture trials each of *M. eminii*, *E. grandis* and *M. volkensii* established in Buginyanya
 - Collected 96 and 54 soil samples from farmers' woodlots in Lira and Oyam respectively
 - Trials at Mabuye and Mpoma in Kifu assessed: No damage on seedlings in the newly established trials at Kifu. Average damage levels of *C. Cronortii* in Mafuga, Kiirima and Katugo were 23%, 15% and 14% respectively. *C. cronortii* population was highest in Lower (55%), followed by Middle (31.5%) section and upper section (18%). Indigenous natural enemies included: *Crysopa carnea*, *Exhocomus* spp and *arana* in Mafuga and Kiirima respectively. *Chemones propingua*, *arana*, *exchomus* spp were the indigenous natural enemies in Katugo.
- 3) 10,000sqm of land identified and cleared for trial establishment; 20 soil samples collected and being analyzed; germplasm for 5 indigenous tree species collected and being raised in the nursery
- 4) Propagation protocol for tree crop interaction (for five indigenous fodder species) trial developed
- 5) Four indigenous tree species (*Piliostigma thorningii*, *Bridelia micrantha*, *Erythrina abyssinica* and *Vitex doniana*) characterised for medicinal and firewood uses.
 - Literature on tree management reviewed, identified 3 superior seed stands for germplasm collection in Busia
- 6) 2 energy technologies assessed: the three-stone stove mostly used (82%) with energy consumption of 69MJ/cap; Lorena stove was the least used (4%) at 35MJ/cap
 - 4 kg of *J. curcas* and *R. communis* seeds from eastern Uganda collected for oil quality testing.
- 7) 1863 plants identified and botanical data collated for use in selection for domestication
- 8) Leafy biomass harvesting for *Warburgia ugandensis* under farm conditions documented
 - 132 cuttings of *Zanthoxylum chalybeum* placed under non-misting

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

conditions (3 months required to assess rooting success)

NASARRI

9)50 F4 cotton progenies planted in replicated trials on-station.

10)10 promising cotton lines in DUS trials planted in Ngetta, NaSARRI and NaCRRI

- 30 acres planted for production of foundation seed of BPA2002
- BPA 2002 cotton was planted at NaSARRI and procurement plans for at least 10 defoliant made and submitted to NAROSEC for central procurement.

- First three cotton foliar applications of six products (Megacole, Push, New Suryamine, Biopotash, Biophos, and Biozinc) conducted at NaSARRI.

- Four new cotton seed dressing chemicals namely Cruiser Extra, Apron Star, Maxim and Seedplus were procured and trial established in 2 acres at NaSARRI

11)14 early maturing elite lines from IITA were evaluated, highest yield (700 kg/ha) was for IT04K2274), followed by IT07K21011 (617 kg/ha) lines. Three Elite lines performed better than the SECOW 2W (check). 11

medium duration elite lines were evaluated. Four of them performed better than the check variety as follows: IT07K29210 (1045 kg/ha) IT07K211118 (1031kg/ha), IT07K30944 (925 kg/ha), IT08K1493 (895 kg/ha) and SECOW2W (772 kg/ha). 11 dual purpose elite lines were evaluated, the check variety out yielded (775 kg/ha) them. Among the elite lines IT06K1472 gave the highest yield (469 kg/ha).

12)11 elite cowpea lines planted at NaSARRI and yield data was collected. Four of elite lines gave yields over 1000 kg/ha and they out yielded Secow-2W (check). Ngoji gave the highest yield (1,319 kg/ha).

Planting of 11 elites for second rains 2013 was done

13)A total of 54 local cowpea accessions planted out and twenty of them gave yields above 1,000 kg/ha and five of them shown resistance to viral diseases .

14)A total of 52 cowpea crosses planted out and data on yield analyzed ten of them gave yields above 1,000 kg/ha and five of them shown

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

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resistance cowpea scab disease.

15)Twelve lines planted out and yield data analyzed. The yield was severely affected by the drought experienced. Mauritius gave the highest yield (718 kg/ha), followed by VC6173B-10 (648 kg/ha) and then VC61137B-14 (625 kg/ha). They out yielded the local variety (463 kg/ha).

- 600 kg of foundation cowpea seed was obtained. Planting and maintaining two acres of foundation seed multiplication

16)Evaluation completed and 45 cowpea lines resistant to blast and 13 lines with tolerance to drought identified.

17)Selected 40 advanced cowpea lines for further screening;

18)Selected 5 lines drought tolerance for further analysis

- 10 intercropping system established.
- Two acres of 25 promising sesame lines with resistance to gall midge and webworm planted

19)20 sunflower lines selected for further screening

- Multiplication of A and B lines and of the OPV sunfola was done on farmers' fields at appropriate distances from each other in Serere district

- Four successful groundnut crosses were made. About 30 progenies (F3-F6) were planted are undergoing selection for various traits

- Six groundnuts lines with multiple resistance to leafspots were planted and undergoing national performance trials in 5 agro-ecologies of uganda.
- 0.25 acres of groundnut foundation seed were planted.

20)Four cowpea lines B312, ACC11, ACC12, ACC26, were found to be resistant. Among the released varieties SECOW 2W and 3B showed moderate resistance. 5T, NC and 3B23 were tolerant. 1T4W,SS and ACC23 were susceptible.

- 35 BC3 MAS Drought and Striga resistant sorghum lines from ARC Sudan were planted on station, Bukedea and Pallisa. Agronomic data on crop establishment and shoot fly incidence has been collected in 3 locations. Five lines have been identified promising and advanced for further evaluation.

21)10 promising NaSARRI selections and 6 BC3 drought and Striga resistant sorghum lines were replanted in

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Bukedea, Kumi and Serere trial sites. Results indicate that 2 NaSARRI selections had low Striga incidence while 2 BC3 lines from Sudan were early maturing and high yielding. Data on plant establishment and shoot fly incidence has been collected.

22)20 BC2S2 crosses were advanced to BC3S3 generation, 12 BC6 lines were advanced to BC7 generations for bulking and evaluation

- 50 advanced sorghum lines (ASARECA Collections) have been included in the anthracnose and smuts screening nursery in collaboration with Makerere University 3 Msc students.

23)Pest field screening experiments in four locations of 16 sorghum advanced lines resulted in the identification of four lines resistant to shoot fly attack

- .54 lead farmers and 10 Agric extension staff trained on sorghum pest management in the three districts.
- 40 forage sorghum accessions planted on station. Agronomic and data collected during first rains 2013.

24)16 elite forage sorghum lines planted for evaluation in 4 different locations for the first rain season 2013. Agronomic data collected on pest and disease responses. 5 lines identified promising.

25)40 forage sorghum accessions assembled and characterized.16 elite forage sorghum lines planted for evaluation in 4 locations first rain season 2013. Agronomic data collected on pest and disease responses.30 introduced forage lines planted for further advancement.

- 25 new sweet sorghum lines were introduced from ICRISAT and were planted on station for agronomic characterization.

26)4 sweet sorghum varieties were planted 10 demonstration sites in 3 Sub-counties of Kayunga, Baale and Busaana to introduce NaSARRI released sorghum varieties to the farming communities. Data collection and harvesting has been done and two have been identified promising M.O.U signed between NaSARRI and Bio Green investments Kayunga. 400 farmers selected to start producing sweet sorghum for bio- ethanol production. Chinese company given permission by Govt. to start construction of the factory.

27)14 sweet sorghum lines were

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

planted for screening against resistance to major insect pest and diseases and stem sugar composition at NaSARRI, Kayunga and Ikulwe. Data collection and harvesting has been done. 10 identified promising

28)10 Agriculture Extension staff and 47 lead farmers trained on pest and disease management and quality sweet sorghum seed production in Kayunga district.

29)10 promising BC5 populations were bulked to advance to BC6 population Three additional parents with high stem sugar content were incorporated into the breeding program to generate new crosses.

Abi ZARDI

- Raising and maintaining of the established seedlings of shea in the nursery
- Market Survey on the potential for agro forestry products carried out in four districts(Nebbi, Zombo, Arua and Nebbi) done

Buginyanya ZARDI

30)Draft report detailing farmers agricultural need, constraints and opportunities in Bukedi sub zone produced

Bulindi ZARDI

31)A survey of 40 households in Masindi district was conducted. Preliminary results indicated that; poor hive performance, low hive colonization, inefficient baiting materials, bee abscondment, decline of bee forage floras, short flowering month of bee forage species, poor honey extraction techniques, bee pests and diseases, poisonous plants to bees and limited capacity of farmers in improved apiary management were the factors limiting honey yield production among bee keepers. The survey has revealed that the most important bee forage plant species and major sources of pollen and nectar in Hoima district are; Calliandra calothyrsus, Albizia coriaria, Coffea species and Grewia millis. The major bee forage species in Masindi district are; Vernonia amygdalina, Acacia spp, Millicia excelsa, Albizia coriaria, Mangifera indica, Sena spectabilis, Coffea spp, Albizia ziggia, Grewia mollis, Combretum molle, Mangifera indica and Combretum collinum.

32)Data has been collected on severity of aphids, plant aphid infestation,

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

groundnut rosette disease severity following application of botanicals extracts of *Tephrosia vogelli*, Mexican marigold, red pepper, *Nicotiana tabacum* (at rate of 500g of plant paste in 4 litres of water per 209 sqm) on groundnut established in a groundnut rosette disease hotspot. Results of the analysis will follow.

- Farming systems and livelihood survey conducted in Kiryandongo, Kibaale and Hoima districts.
- 10,000 seedlings of *Eucalyptus grandis* and 5000 seedlings of *maesopsis* species seedlings raised for uptake by farmers
- Baited and deployed 10 KTB and 10 Langstroth hives and data collection on rate of colonisation and abscondment was initiated. At least 3 langstroth hives were colonised by bees by the end of the quarter. Maintained 2 bee forage species (*Calliandra calothyrsus* and *Osnum*) planted at 60m x 40 m on apiculture research and development site as sources of bee forage during experiments and demonstrations.
- Baited and deployed 10 KTB and 10 Langstroth hives and data collection on rate of colonisation and abscondment was initiated. At least 3 langstroth hives were colonised by bees by the end of the quarter.

Kachwekano ZARDI

- Information on growth parameters was generated and indicated that three genotypes out of 6 that were grown under farmers conditions had good vigour and showed high resistance to late blight. A paper on potato clones with durable field resistance was published in African journal of Agricultural research
- Confirmed the presence of B-gluconidase gene (*gus*) in 5 lines of Victoria and Rutuku, NPT II marker gene in 3 lines of Kachpot 2, lines of victoria and 1 line of Rutuku
- About 216 plantlets of three varieties (Rutuku, Kachpot 1 and Victoria) inoculated for in vitro performance in the laboratory.
- Trial established for Kachpot1 and data collected on the first subculture in the laboratory
- Harvested the 3rd season to generate the last data set. The data set indicate that fertilizer types N and P applied at 0, 100, 150, and 200 kg/ha gave a respective yield response of 12, 14.6,

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

17 and 19 tons/ha.

- Seed plots and positive seed selection trials established, data collected

- 1.5 ha of land planted with nuclear seed for basic seed production and seed crop management

- Planting and management of 720 plantlets under convention and aeroponic methods of generating potato seed

- Information on costs of different techniques (aeroponics and conventional) generated for evaluation

- 5188 minitubers harvested, 24,154 plantlets for Kachpot1, Victoria, Rwangume, Cruza and Rutuku produced. 9,612 transplanted to generate minitubers

- 4 experimental apple orchards (1 in Bugongi, 1 at Kachwekano, 1 at Kalengyere and 1 at Mbazardi) were maintained by spraying, weeding and manure application. Growth data collected showing disease pressure due to apple scab and powdery mildew was collected. Preliminary selections are James Greives, Shilomit, Fuji, Anna, Golden dorset, Rome beauty, and Winter banana for high fruit yield and tolerance to diseases and wider agro ecological adaptability. Anna and Golden dorset are already released varieties and are therefore used as standard checks in these trials. Rome beauty is showing high yield in mid altitude environments and has big and attractive fruits that attract consumers.

- 3,220 apple grafted seedlings generated. 1,000 apple rootstock seedlings raised at the central nursery at Bugongi. 1,240 rootstocks ground layered at Bugongi and a further 2000 earthed up.

Mbarara ZARDI

33) Monitored the performance of improved fruit trials/mother gardens in Mbarara, Sembabule and Kiruhura districts. Fruits yields ranged from 5-7 tons/ha for all varieties. Preliminary findings have suggested that fungicide and pesticide application regimes are appropriate for management of major mango, avocado and citrus pests and diseases. The use of systemic fungicide at vegetative, flowering and fruiting stages give promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocados

34) Dominant agroforestry practices in

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>UShs Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

the zone are being documented. Secondary data indicates that upper storey indigenous woody species scattered in crop fields and along the boundary constitute the prevalent tree-crop management practice in the region. These are mainly for wood production and to a less extent fodder but not soil fertility management in degraded fields.

Mukono ZARDI

35) Monitored the survival, pest & disease resistance of agroforestry technologies. Survival: Kayunga 98% of citrus and Mubende 95% for mangoes. Average fruiting in all citrus varieties was 300, and mangoes 76.

Ngetta ZARDI

- 4 Labour saving technologies tested on-station (ploughs, disc, planter, herbicides) for rice & maize

Rwebitaba ZARDI

- Maintenance of Eucalyptus, *Maesopsis eminii*, *Albizia Chinensis* and *Terminalia* species under evaluation between Rwebitaba ZARDI Agroforestry project and NaFORRI

- Land preparation for improved fallow, soil and water conservation trials/experiments on-station

36) Preliminary technical report on yield performance for improved potato varieties developed

- Maintained the on station apiary unit. Planted bee forage plants (*Calliandra* - 150, *Bottle brush* - 100, *Angels trumpet* - 100 and *Moringa* - 100) in the apiary.

Reasons for Variation in performance

None

Total	1,299,000
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>1,299,000</i>
<i>NTR</i>	<i>0</i>

Output: 01 5102 Research extension interface promoted and strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

		Item	Spent
1.NARO-NAADS Joint workshops and meetings conducted;	NARO Secretariat	221001 Advertising and Public Relations	129,500
2.Stakeholders trained in IAR4D	- Organised and participated in the World Food day celebrations at NASARRI.	221002 Workshops and Seminars	442,000
3.Joint stakeholder Planning/Review/Feedback/ workshops and meetings held;	- Developed and published a newspaper article on Agricultural investment opportunities in Uganda.	221005 Hire of Venue (chairs, projector, etc)	108,500
4.membership to local Associations made and update		221008 Computer supplies and Information Technology (IT)	110,200
5.Networking, Partnership and collaboration stakeholders meetings held;	Abi ZARDI	221011 Printing, Stationery, Photocopying and Binding	205,000
6.stakeholders sensitisation workshops/meetings of conducted;	- Soil fertility: 0.5 tonnes of Mucuna, Lablab and Glycine Cover crops harvested and processed.	224006 Agricultural Supplies	387,000
7.Participate in open days/Farmer field schools/exhibitions/trade fairs/Agricultural show/Field days;	- 2-acres of lablab, 1 acre of Brachiaria and 1 acre of Velvet bean (Mucuna) were established.		
8.Extension and promotional materials developed and disseminated	Buginyanya ZARDI		
	- Arabica Coffee: 3.5t of quality Arabica coffee seed supplied to UCDA		
	- Promotion of SLM technologies: 10, 650 agro forestry trees (Grevillea, Dovyalis (kei apple) and Markhamia planted at Buginyanya, Bulegeni and Ikulwe		
	- Seed potato: Mengya Integrated Farmers' Association in Benet, Kween have improved seed potato storage facility; 60 bags of Naspot 8 vines availed to famers in Busiu, Bukiyi, Nalusala, Bulegeni & Bukhulo SCs/ in Mbale, Sironko, Bulambuliand Mayuge districts.		
	- Capacity building in S/P vine multiplication in Mbale (Busiu S/Cs) and Sironko (B ukhulo,BukiiyiS/Cs); 3 vine multiplication sites established in Busiu, Bukiyi, Nalusala and Bulegeni SCs Mbale, Sironko, Bulambuli districts and brochures availed to 80 farmers		
	- Cassava: 5 bags of cassava availed to farmers in Eastern Uganda; data collected on plant height and vigour of the cassava plantation on farmers' sites; 104 ToTs knowledgeable in cassava agronomy		
	- Rice seed: Established 2 ha of upland rice (of Nerica 1, 4 and 10, for uptake pathways) which is at grain filling stage. Nerica 10 has the most vigorous growth.		
	- Groundnuts: Established 0.6 ha of gnuts (for uptake pathways) which is now at pod forming stage		
	Bulindi ZARDI		
	- Multiplication of seed on station for uptake by farmers:		
	- 4kg of NABE 17 and 20 kg of NABE 15 were harvested from 1/2 acre of		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousands</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

field. This was far below the expected 400kg of bean seed. Growth of these was affected by drought

- 20 acres of cassava (NASE 14) were planted on-station estimated to produce 1600 bags of cuttings of cassava to be availed to farmers for increased productivity of cassava in the LACZ of Uganda
- 1440kg of adapted upland rice varieties (NERICA 1, 4, and 10) as rice seed from 6 acres of multiplication fields to be availed to farmers targeting increased productivity of upland rice in the LACZ of Uganda were harvested
- Established 6 community demonstration fields of 0.2 acres each for NERICA 1, 4 and 10 in Miihya sub-county (Masindi) and Kitoba sub-county (Hoima) but were not followed up due to lack of funds
- Fruit tree multiplication for promotion in the region: Generated 2090 avocado root stocks, 5600 mango root stocks, 500 grafted avocados, 700 mesoopsis seedling and 400 eucalyptus seedlings
- 1 Stakeholder feedback meeting held at BuZARDI

NARL

- Trained 26 farmers of whom 54% were women from Iganga and Jinja districts on proper use of biogas stove prototype
- Trained 29 artisans from Arua, Koboko, Nwoya, Amuru and Maracha districts on fabrication of ox-plough technology
- Trained 27 farmers (of whom 3 women) on use and operation of power tillers in Nankoma S/c in Bugiri district
- Trained 8 mechanics (7 from Bugiri and 1 from Pallisa districts) on repair and maintenance of power tiller
- Promotion of released banana hybrids: Held community meetings around the 121 demonstration plots in Eastern Uganda; planted 200 demonstration plots of M9, FHIA 17 and M2 in central Uganda
- Twenty nine participants (incubatees and non-incubatees) acquired knowledge technologies, business concepts and business plans; One business and 4 technical training workshop held
- Market linkage website developed and functional (www.agribiz.ug)

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Nutritious snacks (cookies, cakes, Pringles) under market testing
- Mushroom spawn and fresh mushrooms put on the local market
- 60 TOTs in ISFM trained in Tororo, Busia and Namayingo
- 30 staff trained at NaCRRI, 60 Extension staff trained at MbaZARDI, and 20 Extension staff and 10 Agro-Input dealers trained at Fort Portal in the use of Fertilizer Optimizer Tool (FOT)

NaLIRRI

- Trained 340 farmers (210 female and 130 male) in Mbarara, Masaka and Wakiso districts on NSD management
- Trained stakeholders in Masaka (30) and Wakiso (30) districts on harvesting and processing forage seed
- A Draft paper on evaluation of different Napier accessions for NSD tolerance developed
- Two manuscripts on utilisation of crop residues for feeding dairy cattle submitted to journals for review and publication
- A draft leaflet on forage seed production produced
- 1 papers titled Evaluation of Napier grass clones for dry matter yield and tolerance to Napier stunt disease was presented in the African Crop Science Society Conference and International Network of Women Engineers and Scientists (INWES) Regional Conference; Another paper on production characteristics of smallholder dairy farmers in lake Victoria crescent was presented in scientific conference in Naivasha, Kenya.
- A leaflet produced on "Napier grass management. The information will enable farmers to improve the management of NSD and increase milk yield"
- 200 kg of Clitoria ternatea seed harvested and distributed to 15 farmers (10 female & 5 male); 250 kg of Lablab purpureus distributed to 20 farmers (10 female & 10 male) in Ntungamo district; 5000 splits of Brachiaria produced
- 3 fodder tree nurseries each with capacity of multiplyinh 50,000 seedlings established in Abim, Kotido and Kaabong
- Two information packages (1000 fact sheets and 2 posters) produced on

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

control of common ticks and tick-borne diseases, especially East Coast Fever

- Three posters on FMD produced
- About 1000 fact sheets on FMD produced
- About 1000 fact sheets on CBPP produced
- About 1000 fact sheets on PPR disease in goats produced
- About 500 fact sheets on control of Trypanosomiasis in cattle produced
- Two perceptions dissemination (stakeholders') workshops on Tsetse fly transition held
- Disseminated to more than 1,000 show goers during World Food Day exhibition at NaSARRI, Serere
- About 1000 fact sheets on control of helminthes (worms) in goats produced; disseminated to more than 1,000 show goers during World Food Day exhibition at NaSARRI, Serere
- About 500 brochures on policy issues of acaricide and livestock drug access and use of by farmers developed and information disseminated in Kiboga and Soroti
- A total of 336 cows artificially inseminated from 195 farmers (42 female and 153 male) herds; a total of 11 cows/heifers artificially inseminated with Friesian semen at NaLIRRI
- A total of 227 farmers (62 female and 165 male) sensitized on-farm on better breeding, record keeping and husbandry practices
- Improvement of indigenous cattle for increased dairy productivity: developed the following information materials: 1000 brochures, 1 poster developed, 2 Radio talk shows (Veritus local radio) held. Disseminated the information through 5 Local meetings, 1 regional show and 2 regional workshops

NaFIRRI

- 1 Press Release placed in the Monitor on 21st November 2013 to mark World Fisheries Day.
- 800 copies of calendars & 600 cards with key messages about NaFIRRI research findings were packaged & disseminated to stakeholders
- Dissemination of research information to stakeholders during the World Food Day celebrations held at NaSARRI.
- 1288 school children from 15

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

schools sensitized on fisheries, water environment & aquaculture issues

- Conducted 1 joint planning meeting with DFR-MAAIF to plan for the joint implementation of a lake-wide Catch Assessment Survey (CAS) data collection on Lake Albert & Albert Nile
- Director attended an LVFO Council of Ministers' meeting in Arusha, Tanzania; Head Aquaculture attended 2 biodiversity meetings in Kisumu & Nairobi

NASARRI

- 400 kg of foundation seed of cowpea and pigeon pea was obtained.
- Trained 12 farmer groups on Integrated Striga Management Technologies and community quality seed production.
- Fourteen (14) demonstration plots established in Kumi and Katakwi districts.
- 54 lead farmers and 10 Agric extension staff trained on sorghum pest management in the three districts.
- Three (3) ISM training manuals developed and 500 copies distributed to uptake pathways
- 70 acres of Cassava seed multiplication fields planted and 5 acres of forage seed fields multiplication planted
- Two acres of banana, coffee, mangoes and oranges demonstration fields maintained

Nabuin ZARDI

- 20 TOTs trained animal traction technologies in Karamoja and Teso sub-regions in Abim district
- 3 on-farm trials (Loregea, lorengechora and Iriri) were established with g-nuts, pearl millet, cowpeas, sorghum and maize.
- Demo fields with 4 crops (maize, sorghum, g-nuts & beans) established in Naitakwai, Nadunget S/County, (Morot District), and Kokeris village in Matany s/county in (Napak District), failed at flowering (Anthsis) growth stage due to prolonged drought spell
- 2 Farms (Amod and Naburi in Lokopo, Napak and Namalu in Nakapiripirit) were identified and established for seed production
- 30 acres of cassava (Nase14) were established and are being managed in Bukedea, Katakwi, Serere and at NabuinZARDI

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- 4 farmer groups (about 67small holder farmers) trained in rapid cassava multiplication and early disease detection in Lokopo subcounty, Napak district
- A map showing the areas under cassava production and distribution of CBSD produced
- Two multiplication/demonstration sites for 15 pasture and fodder species maintained on-station
- 18 acres of MM/96/4271 cassava multiplication fields maintained and 7 more acres of land opened for planting cassava
- 500 brochures printed and disseminated.
- Legume trial and legume seed multiplication fields established.
- Cattle shed constructed at Nabuin station, 1 block of pig sty constructed. Construction of poultry house at Nabuin station

Ngetta ZARDI

- Six on-farm trials for validating one potential IPM strategy for citrus canker disease established in Gulu, Kitgum, Oyam, Dokolo and Lira districts in partnership with NAADS
- Farmers adopt improved agronomic practices including CBSD tolerant varieties.
- Farmers take up seed production as a business. (production of quality

Q1

a)DTPIS

- Organized capacity building workshop in monitoring and evaluation of MSIPS for NARO-NAADS zonal staff. DTPIS staffs were part of the team of facilitators.
- Staff participated in the nationwide agricultural information needs assessment exercise in Mbarara and Kabale districts conducted by the Chief Information Officer
- Developed and published a newspaper article marketing EAAPP achievements in the observer.
- Developed a newspaper supplement for Jinja Nile Agricultural show
- Organized and conducted the UJAS mid-year editorial meeting
- Participated in organizing Jinja Nile Agricultural show at which NARO technologies were demonstrated and marketed to the general public.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Participated in the National expo promotion activities
 - Organized the first meeting of the organizing committee NARO scientific conference, 2014. And has started publicizing the NARO scientific conference, 2014.
 - Organizing and publicizing the World Food day celebrations slated for 16th- October, 2013 to be held at NASARRI, Serere.
 - Participated in organizing a collaboration between NARO- Egyptian agricultural research delegation. Report on areas of collaboration was written and submitted to the Director General.
 - Continued enhancing collaboration activities between Uganda - Korea after the recent KAFACI – general assembly held in Uganda.
 - Continued updating/ re-developing the NARO website development strategy 2014-2016. A draft proposal will be available for open discussion next quarter
 - Developed a draft proposal for developing a Research Information management system. The final document will be available for open discussion next quarter.
 - Developed a prototype database for collection information on farming households. The final version will be available for open discussion before the end of the second quarter.
- NACORRI**
- Eight field trials were identified in Mt. Elgon region. Initial results at Kituza indicate Catimor (NG9257), Indian selections 6 and 5A and Elgon CB most resistant to CLR .A scientific paper of these results has been presented at ACSS 2013 conference.
 - Bioassays on identification of semio-chemical attractants for pp-scaling and out-scaling of phytosanitary methods done through FFSS
- NAFIRRI**
- Held a multi-stakeholder platform termed Public dialogue on Nile perch fishery in Uganda attended by diverse key stakeholders, including Hon Minister for fisheries, MPs, MAAIF, and Local Governments, UFPEA, other private sector, and NARO
 - Hosted 1 radio interactive programme with stakeholders on cage fish farming

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

NASARRI

- Cowpea farming information materials produced. 100 Leaflets and 2 Posters printed

- 54 farmers in Serere District were equipped with skills of cowpea diseases and how to prevent them.

- 50 ISM demonstration plots established in Serere, Soroti Kumi and Katakwi districts. 200 Lead farmers and Agric. Extension staff trained on striga management and community quality sorghum seed production

- 12 demonstrations of forage sorghum established in 3 district . Preliminary data on farmer perceptions of forage sorghum lines was collected and analysed.

Abi ZARDI

- Six improved bean and six improved Gnut varieties were established on-farm with farmer groups in three districts

- Followed up establishment of alleys and vegetative strips in the trials to plant the test crops

- Six on-farm and two on-station INM trial set using maize as test crop with intension of repeating the previous trial

- West Nile Soil fertility status dissemination workshop conducted under WeSFI project and was attended by over 80 participants involving DNCs, DAOs, District Farmer Forum chairpersons, NGOs and Abi ZARDI Scientists among others

- Capacity of 105 Farmers (M-62, F-43) from the Sub Counties of Ariwa, Romogi and Apo built. 346 students (M-145, F-201) from 10 Secondary schools who visited the Institute were taught on soil heath management

Buginyanya ZARDI

- 15,600 agro forestry trees (Grevillea, Dovyalis (kei apple) and Markhamia planted at Buginyanya, Bulegeni and Ikulwe. One tree nursery with capacity of 40,000 seedling per year established at Buluganya PS

- 15kgs of assorted tree seed availed to "champions" in the sub-county

- 7 active farmers and champions of SWC taken for an exposure visit in the National Agricultural Show at Jinja

- 2 brochures (300 copies) and 1 Poster developed and printed for use,

Bulindi ZARDI

- 1 acre of demonstration for Sorghum (Sekedo), Soya (Namusoy1N,

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Namusoy2N, Namusoy3N & Maksoy4M), Sweet potatoes (NASPOT6, NASPOT8, NASPOT10, NASPOT7, NASPOT11 & Ejumula) to increase farmers' knowledge on Good agronomic Practices and access to adapted crop cultivars in the LACZ; 581 students and 86 farmers visited the demonstration plots on station.

- Training of 30 farmer groups and agro processors in 14 in agro processing and 16 in participatory market research regarding cassava, maize rice and poultry in Kiryandongo, Buliisa, Hoima, Masindi and Kibaale
- 100 farmers from 8 farmer field school (FFS) groups in Rugashari and Kyaterekeru subcounties of Kibaale district were equipped with IPM technologies for management of bean fly and snail pests in beans

Kachwekano ZARDI

- Information on growth parameters was generated and indicated that three genotypes out of 6 that were grown under farmers conditions had good vigour and showed high resistance to late blight. A paper on potato clones with durable field resistance was published in African journal of Agricultural research
- Harvested 3 tons of prebasic seed potato .
- Harvested 4 ha of basic seed potato and realised 16 tons
- Backstopped and provided information to apple farmers in Kanungu, Rukungiri, Kabale and Kisoro. Some farmer's orchards have been identified as demonstration sites (e.g Matayo's in Rukungiri, Keith's and Mbarara's farms in Kabale). Farmer in Rukungiri was backstopped while establishing a 15 ha apple orchard in Buyanja subcounty.

Mbarara ZARDI

- Trials to evaluate the effect of different tree root pruning regimes on yield performance of banana and coffee crops established in Sembabule district.
- Trials on proper spacing of upper storey woody species in banana and coffee crops established in Sembabule district.
- Trials to evaluate the effect of different spacing patterns of exotic fodder shrubs on biomass and nutritional value of the species in pure

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

and mixed production systems in Mbarara, Sembabule and Isingiro districts

- Trials to evaluation the nodulation efficiency and performance of seasonal crops under different nitrogen fixing shrubs established in Mbarara, Sembabule and Isingiro districts

- Trials on four improved bean varieties (NABE 2, 4, 15 and 17) established in Sheema and Buhweju District under different soil fertility amendment options.

- Trials on two improved maize varieties (longe 5 and MM3) established on-farm in Insigiro and Ibanda Districts under different soil fertility amendments.

Mukono ZARDI

- Established a total 5 on-farm Nakati trials in Mpigi and Wakiso for determining the most appropriate application rate for poultry manure and NPK.

- Two on-station Nakati (*Solanum aethopicum*) trials i.e. 1 for poultry manure rate and 1 for NPK rate were established

65) Monitored the survival, pest & disease resistance of agroforestry technologies. Survival: Kayunga 98% of citrus and Mubende 95% for mangoes. Average fruiting in all citrus varieties was 300, and mangoes 76.

- 60 rice actors mobilized to a rice market chain actors' workshop. In addition two thematic groups on rice grain and processed products formed.

Ngetta ZARDI

- 6 on-farm and 2 on-station season two trials for testing agronomic performance of 5 CBSD tolerant varieties in Amolatar, Lamwo, Gulu, Otuke, and Agago districts established.

- 6 on-farm and 2 on-station trials sites established for farmer participatory evaluation of management options of pests and diseases of mango and citrus maintained and data collected.

- Established 1 experiment to evaluate 2 IPM strategies (planting date and variety) for simsim gall midge on-station

- Set up 2 on station trials to evaluate performance of different varieties (3) under different weed management conditions.

- Set up 2 on station trials to evaluate performance of different varieties (4) under different weed management

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

conditions
Rwebitaba ZARDI
- Empowered 60 farmers across the zone with sills in pasture seed production, hay and silage making
- Distributed over 21,000 splits of Bricharia species to Dairy farmers
- Demonstrated Tea clones at the National Agricultural show, Jinja district.

Reasons for Variation in performance

None

Total	1,382,200
<i>GoU Development</i>	0
<i>External Financing</i>	1,382,200
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

		<i>Item</i>	<i>Spent</i>
1 - Good Governance and corporate social responsibility ensured and promoted; Leadership and oversight Management of agricultural research provided;	NARO Secretariat Quality Assurance	221003 Staff Training	1,185,000
2 - Staff recruited and trained	- Draft PATs have been peer-reviewed by respective Heads of Department.	221004 Recruitment Expenses	83,500
3 - Stationery and office consumables procured;	- The PATs have been approved by the NARO Council	221006 Commissions and related charges	366,500
4 - Office equipment maintained;	- Midterm Research proposals have been streamlined, refined and approved by the NARO Council.	221009 Welfare and Entertainment	68,000
5 - Water utility bills paid; Electricity utility bills paid; Telephone, Postage and courier services used;	- Financial and human resources necessary for execution of refined Research proposals has been clarified	221012 Small Office Equipment	151,000
6 - Vehicles serviced; Office buildings maintained; Compound maintained;	- Scientific output entries for the National Agricultural Research Laboratories (NARL) has been Completed	221016 IFMS Recurrent costs	192,000
7 - Maintain effective ICT facilities; Subscription for internet paid;	Administration	224002 General Supply of Goods and Services	422,000
8 - Quarterly entity accounts, financial statements, commitment control reports, several manual books of accounts maintained. Bank charges timely paid;	- Attended one court session on Mbarara ZARDI. Court case hearings still on going	225001 Consultancy Services- Short term	292,000
9 - Acquisition of books, agric. Information magazines and newspapers;	- Two negotiation meetings for MuZARDI land, NARL.	227001 Travel inland	500,000
10 - security maintained	- 13 motor vehicles maintained and services, 01 secured with 3rd party stickers, 02 motor cycles serviced	227004 Fuel, Lubricants and Oils	385,000
11 - Break tea and Refreshments provided ;	- Over 30 offices and compound maintained and are operational	228001 Maintenance - Civil	241,100
9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;	NaFIRRI	228002 Maintenance - Vehicles	348,000
10 - Conduct audits in all NARO's processes;	- Conducted a review of work plans and budgets of 6 staff on long term training (5 PhDs, 1 MSc)	228003 Maintenance – Machinery, Equipment & Furniture	113,000
11 - Facilitate and guide the procurement process in NARO;	- 4 support staff transferred to		

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

12 - Backstop research institutes in areas of Public Relations & Development Communication as well as branding concepts;	NaFIRRI from other NARO institutes - Advertisement in the New vision for the positions of 4 Scientists under: Aquaculture, Fish Biology & Stock Assessment, Water quality & Socio Economics	
13 - Participate in Agricultural exhibitions, trade fairs, shows and Open days;	- Approval and defence of PhD (Entitled, "Analysis of the structure & functioning of fishing communities to spread of HIV/AIDS & other water borne diseases & its impacts to fisheries production & management")	
14 - Undertake Corporate Marketing and Promotional activities;	work plans and budgets, schedule of research activities, & study sites in conjunction with the institute training & scientific committees. Outcomes from above meeting shared with University supervisors	
15 - agricultural research finding published (both hard and soft);	- Proposal developed ("Development of improved extension approaches and farmers' livelihoods in Uganda), peer reviewed & submitted to NARO & University Supervisors; Attended 2 short courses: 1) Research methods; 2) Advanced Gender Research Methodology; Developed E-library (Mendeley) of over 100 relevant references for continuous literature review	
16 - Facilitate the approval and registration of all non-PARI research service providers;	- Proposal refined (Entitled, "Profile of the bio-physical & chemical parameters of the saline crater lakes of Western Uganda developed"), reviewed & comments from the supervisors returned & incorporated in the second draft	
17 - Participate in donor dialogues meetings	- Proposal reviewed (Entitled, "Protocol for spawning, larval weaning & nursing <i>Barbus altianalis</i> (Kisinja) developed") & comments from supervisors returned & incorporated into a second draft of the proposal. - 2 staff (1 scientist & 1 technician) attended a training course on data management, storage & presentation organized by NEMA - 3 staff attended Accounting and Auditing courses at MAT - 3 staff meetings held to update staff on research delivery & management matters - 1 Sub contracts committee meeting held in Jinja; contracts awarded to various service providers for supply of stationary, marine insurance, laboratory materials & vehicle repairs - 3 staff meetings held inform staff about issues in the operating environment - 1 Scientific meeting to review the	

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

workplans & progress of staff on long term training

- Internet bills paid & connectivity maintained
- Payments made for electricity, water & communication services
- 50 reams of paper, 50 box files, 4 packets of binding covers, 6 cartridges, 4 toners, 5 counter books, 12 packets of pens, 9 cash books purchased
- Fuel procured for standby generator during power blackouts, field vehicles & commuting vans
- Small Laboratory equipment (2 hollow cathode lamps, Triton Analytical grade) procured
- 2 pickups, 3 station wagons & 1 Research vessel repaired & serviced
- Two buildings repaired, 2 water tanks installed

NASARRI

- Connect 35% of all offices to internet and internal network system.
- Internet subscription to service provider paid, domain registered and website uploaded, Electronic board prototype developed. Prototype of the system developed and authorized staff are able to view accounts information and balances for ATAAS, GOU- Recurrent and Development releases
- Three discs and furrow wheel procured, Tractor mower repaired

Nabuin ZARDI

- Routine support and administrative activities and operations conducted
- Utility bills paid
- Repairs for three motor vehicles and one tractor
- Two staff accommodation units under construction at nabuin ZARDI station
- 37 corporate shirts printed

Buginyanya ZARDI

- Work in progress for 2 houses under renovation & institute estate maintained.
- Vehicles, UAJ 529X, UAJ, UG 0383A, 646X, UAJ 249X, UAA 516F, UAA 125Y&UAR 125Y repaired & maintained, 6 computers and 4 printers.
- Institute property protected
- 2 PhD and 1 MSC staff training on going

Bulindi ZARDI

- Two ponds (150 m2 and 250 m2)

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

constructed and maintained

- Repairs and maintenance of Vehicles done; Fuel and lubricants procured
- 1 Participatory monitoring and evaluation exercise conducted by Director, Finance Officer, Internal Auditor and Scientists to project sites
- 3 Participatory monitoring exercise conducted by Scientists to project sites
- 1 Directors' forum meeting held at the station
- 2 Management meeting held at BuZARDI
- Procure Electricity supply services

NaLIRRI

- Development, evaluation and dissemination of technologies that reduce climate change-induced shortages in forage and water availability: Final MSc. Thesis from the project submitted for examination
- Supported training of PhD student in epidemiological data analysis
- Establishment of 1 on-station experimental unit for goats in progresses.
- Two paddocks under construction at NaLIRRI

Q1

a)DRC

- 120 priority projects that address issues of national importance identified
- Supported review and planning meetings in two institutes
- 16 institutes have been guided to finalise and so far 12 have re-submitted for consolidation
- 168 concept notes received, pre-screened and 68 identified for full proposals

b)Corporate Services - Administration

- Office environment maintained (clean, secure and fully and 90% continuously operational). Office space availed to 3 newly recruited staff.
- NARO secretariat fleet (of 13 motor vehicles) maintained to road worth
- Conducted supervisory missions to ascertain the current status of PARI land resources. Status reports on KAZARDI generated.

C)Finance

- Entity reports generated, consolidated and reports submitted to the external auditors.

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Request for site support awaiting approval
- 6 Finance and 2 Procurement staff participated in IFMS Upgrading training organised by MoFPED in modules ie Budgeting, accounts payable, and Procurement Modules
- Visited 3 institutes Nabuin, Buginyanya and Nasarri
- World Bank Financial Reports for Quarter One prepared and submitted to World Bank
- Financial Management System to be reviewed immediately after the audit
- Entity Audit for financial year 2012-2013 coordinated in all NARO Institutes and Draft Audit report in final stage by the External Auditors
- d) Internal Audit
 - Audited salary edits and other payments at NAROSEC with a view of ascertaining the adequacy of internal controls.
 - Witness and physically verified items delivered at NAROSEC
 - Monitored the implementation of procurement regulations, human resource regulations, and financial regulations at NAROSEC.
 - Visited Rwebitaba ZARDI, Mbarara ZARDI, NaFORRI and NaFIRRI to follow up implementation of AG's recommendations and to get responses for the issues raised in his reports.
- E) Human Resources
 - Advertised and recruited staff in the positions of Director Corporate Services, Director Bulindi, Director Kachwekano, Senior Corporate Services Officer, Council Secretary, Senior Quality Assurance Officer and Quality Assurance Officer
 - NARO Governing Council approved nominated persons to serve on PARI Advisory Committees. A total of 64 Advisory Committee members' appointment will take effect from 1st January 2014.
 - Rotation of Staff in line with the Presidential Directive and Accountant General's advice to rotate certain categories of staff. The internal auditors were rotated based on an assessment administered by the Institute of Internal Auditors. The accounts assistants were rotated across NARO Institutes.
 - The organization processed and promptly paid staff salaries. By September 2013, 850 members of staff

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- received salaries.
- A total of 50 Programme Leader were appointed and inducted into their roles and responsibilities as head of research programmes
 - A total of 82 new scientists were inducted.
 - Training and Capacity Building: Staff were supported to attend long term courses. These included 40 staff for PhD programmes (32 under ATAAS, 8 under EAPP); 16 staff for MSc programmes (6 under ATAAS; 10 under EAAPP). 7 were support to attend short courses for skills improvement.
 - NARO insured 850 staff against injuries against accidents for period October 2013 –September 2014. 670 staff were insured under Group Accident Policy while 180 were insured under workers compensation.
 - Settlement of Terminal Benefits for staff whose contracts were not renewed. Their contracts expired on 30th June 2013.
- NAFIRRI
- Procured a Huminbird fish finger for use in profiling aquatic substrate and habitat characteristics
 - Assorted stationary, field consumables (paper, cartridges, batteries, buckets, buveras) procured NAFORRI
 - Quick and timely movement of staff for research and support activities
 - Increased administrative support activities to research
 - Availability of space and equipments for research
 - Maintained and serviced photo copier and other assorted office equipments
 - Smooth communication and engagement with NAROSEC and stakeholders
 - Services to institute were available on time
 - Efficient communication research issues and administrative support
 - NaFORRI participated and contributed to regional planning and review including Director's for a and other policy dialogues.
 - Ensured availability of tree nursery production for research and planting out in the field in encroached areas
 - Assessed and maintained encroached areas of on station experiments in Kifu forest reserve by planting at least 3,

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- 000 tree seedlings
- 12 weekly meetings, 1 on contracts committee were held to procure stationery and vehicle repairs.
- Stationery and toiletries provision enabled the smooth running of the research and support activities hygienic environment.
- NASARRI
- 7.5 kilometers of road opened and graded
- 35% of office buildings painted on the outside
- 4 vehicles repaired and serviced
- 10 meetings and workshops attended by administrative staff
- Electronic board prototype developed
- 20% of training of staff done
- Prototype of the system developed and authorized staff are able to view accounts information and balances for ATAAS, GOU-Recurrent and Development released
- 40% of Institute offices are connected to LAN and internet. Quarterly internet subscription fully paid to the Internet service provider (ISP)
- 6 acres of compound mowed and trimmed, offices cleaned

- Buginyanya ZARDI
- 2 houses renovated, a toilet constructed at Ikulwe and office created or partitioned at Buginyanya & estate maintained
- Vehicles, UAJ 529X, UAJ, UG 0383A, 646X, UAJ 249X, UAA 516F, UAA 125Y & UAR 125Y repaired & maintained, & 6 computers, 4 printers, 1 photocopier
- Institute property protected
- Provided telephone, Internet and electricity services & stationery at Buginyanya, Ikulwe and Bulegeni stations
- The Annual Review and Planning meeting 2013/14 was conducted
- Financial monthly reports for the 4th quarter submitted to NAROSEC
- 6 technicians trained on data management at IMSAT, Mbale
- 2 PhD and 1 MSC staff training on going
- Staff attended a meeting on midterm work plans and review
- The quarter's financial requirements were well managed
- Bulindi ZARDI
- BuZARDI Website fully operational (www.buzardi.go.ug) to increase

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

access of stakeholders to information, technologies developed and promoted at BUZARDI

- 1 computer server installed and configured
- Stationery procured
- some stationery procured
- 4,000 Information brochures printed for dissemination to farmers on various technologies developed and/or promoted at BUZARDI to increase food security and incomes of farming households in the LACZ of Uganda
- 1 Directors' forum meeting attended
- new Security Services procured-APS)
- Travel inland facilitated
- Telephone services procured
- Electricity bills paid to zero balance
- Internet Services & Entertainment procured
- Salaries & Wages paid to-date
- 1 Joint planning meeting held with NAADS zonal team
- Repairs and maintenance of 4 Vehicles done
- Fuels and lubricants procured
- Office Consumables and office stationery procured
- 1000 brochures printed

Kachwekano ZARDI

- 15,000m2 of compound slashed and all administrative building kept conducive for staff

Mbarara ZARDI

- All institute property secured
- 1 administrative vehicle and 1 administrative generator serviced and fuel and lubricants availed for administration of research activities
- 3 field vehicles and 1 Laboratory generator serviced and fuel and lubricants availed for administration of research activities
- 1 UTL internet connection serviced and 4 voice telephone lines maintained
- 1 AFSAT & 1 UTL internet connection serviced
- assorted welfare items procured to ensure conducive working conditions for staff
- 3 water and 3 electricity accounts serviced

Mukono ZARDI

- Print 50 corporate wear shirts for staff
- Printed 200 Brochures for AR.
- Purchase of Institute Video camera
- Institute signpost was restored
- Compile articles for Newsletter
- 1 article on Rice market actors and

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- CGS Pineapple produced in Bukedde.
- Purchase of Sports items for Publicity.
- Full time internet service provided at the Institute
- subscription fees paid up
- updated the Institute website for
- maintained the electronic board
- More information loaded on to the e-board
- Specifications were compiled and kept
- Maintained the old photocopier
- Maintained the other tools in the kit
- Maintained the old intercom system.

Reasons for Variation in performance

None

Total	5,282,100
<i>GoU Development</i>	0
<i>External Financing</i>	5,282,100
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

Bean	NaCRRI
1)Fungi and bacteria with potential to reduce bean pests and diseases isolated	- Bean disease surveys conducted in 10 districts including Mityana, Mubende and Kyegegwa
2)The incidence and severity of major bean pests and diseases determined; Presence or absence of new pathotypes/biotypes determined; Yield losses attributed to ALS and	- 3 On-farm trials established in Mpigi to determine disease severities and yield losses on farmers' fields
	- Established PYT, IYT, AYT and NPT –trials of the available advanced climbing bean genotypes and also recorded data on their agronomic performance
	- Field evaluation conducted and 14 lines earmarked for selection and advancement to AYT and PVS trials
	- 25 new families established from 25 new different seeds
	- AYT data obtained on 3 promising bean lines (MYA 2, MYA 3 &MYA 5).
	- 41.815 MT of of quality declared seed produced by 19 farmer groups
	- Data from NTP trials for 8 nutrient bean genotypes at NaCCRRI, Ngeta ZARDI ABiZARDI, RwebitaZARDI, Nakabango,Buginyanya-ZARDI and KaZARDI obtained and 8 lines selected
	- A total of 525kg for bush genotypes

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

obtained

- Data from PVS trials obtained with genotypes Nyiramuhondo & Kivuzo for Climbers and RWR 2154, HM 21-7, RWR 10 for bush showing superior performance

- 40 other PVS trials established in the districts of Hoima, Mubende,

Gulu, Lira, Arua, Masaka, Kabale, Kisoro and Kamuli

- There was production of 17.6 Tons of Quality declared seed from the data so far collected. Production activities are still ongoing in other locations.

- 12 demonstrations on weed, soil fertility, pest and disease and management were successfully conducted in Wakiso, Mpigi and Bushenyi.

- 10 trials to test different potential staking options were established in kabale and Kisoro. They are still ongoing and data collection is progressing well.

- Samples of 19 bean varieties were analysed for micro nutrient and other nutrient in Kawanda and in Makerere university. Nutrient data is now available.

- 78 Stakeholders (16 Males and 62 females) were trained in Bushenyi and Wakiso on the utilization of different bean based products.

- The bean based product recipe book was completed and is in press for printing.

- Brochures were developed and translated into five languages. Printing is ongoing and upto 25,000 brochures will be produced for different regions of the country.

- Promotion of bean based products and other technologies was done on world food day and its estimated that over 60,000 persons were reached.

- Data was collected and reviewed and insights into the factors that affect the operations of innovative bean platforms established.

Rice

- Harvested 700 Kgs of NERICA 2

- Distributed 100 rice production manuals and 500 NERICA posters

- Produced NERICA policy brief

NARL

Bananas

- Collected data on the performance of Black sigatoka incidence and agronomic at pre-flowering stage;

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Incidence of Black Sigatoka on hybrids determined at the pre flowering stage in the PYT at Kawanda,
 - Submitted two matooke hybrids (for M19 and M20) to Variety release committee
 - BBW: Selected 10 lines replanted in Confined Field Trial, to establish resistance to BBW
 - Nematode resistance: Collected pre-flowering agronomic performance of transgenic lines in the confined field trial
 - Enhanced nutritive value: Generated 50 transgenic lines of M9 with Provitamin A enhancing genes
 14.Promotion of IPM packages for management of BBW: Through the promotion of IPM packages, BBW incidence reduced to below 10% in most of the affected areas in Ankole and Kigezi

NaFIRRI

15.Determination of nutrient levels & biophysical factors influencing fish production levels:
 - In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1}
 - Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment
 - Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits
 16.Development of options for management of aquatic weeds:
 - Field data was collected from 18 geo-referenced sites in the western zone of Lake Kyoga (i.e. Kibuye, Kokoyilo, Mukotte, Ninga, Kachanga, Kasambya, Iruma, Kyalusaka, Muwunami, Kasenyi, Kiguli, Mbwiko, Namasale, Kayago, Muchora, Oripchan, Lwampanga & Zengebe). Major aquatic weeds of importance in the western zone of the lake were *Najas horrida* (445 ha); *Salvinia molesta* (300 ha); water hyacinth (232 ha); & *Hydrilla verticillata* (199 ha). Of these, local fishers reported *Salvinia molesta* to be the most devastating to various water-based activities especially gill net fishing.

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

17.Livelihood Analysis of fishing communities: Prioritized & socially acceptable livelihood options for Lake Edward fishers were identified

18.Map on aquaculture production in Central region completed: Data on aquaculture production collected from 137 fish farms in Lira & Alebtong districts in Northern region (a database on aquaculture production in the Northern region is being developed)

19.Development of topographic maps & designs of aquaculture reservoir fed systems in Western region: Appropriate site was established in Kagango dam in Isingiro district. Consensus was obtained from farmers & district officials following a consultative & sensitisation meeting in preparation for formulation of MoU

20.Development of selected fish species for ornamental fish culture: Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)

21.Determination of Appropriate Gillnet Mesh Sizes: Conducted 3 monthly gillnet size selectivity experiments (Oct – Dec) during the wet season on the Northern part of Lake Albert. Preliminary analysis revealed the 2.5 inch mesh size gillnets as appropriate for sustainable harvest of *A. baremose* & *H. Forskahlii* in the deep open waters of Lake Albert

22.Update on current status of fishing effort on the Kyoga basin lakes: A census of all fishing inputs (effort) on lakes Kyoga and Kwania (Oct 2013) was conducted, showing an increase in undersize gillnets and fishers by 25% and 18% respectively between 2008 & 2013. A 5% decline in number of fish landing sites due to resurgence of water hyacinth, rendering inaccessibility & subsequent closure was registered

23.Update on current fish production levels, income (beach values) & contribution to livelihoods & GDP from Lake Albert & Albert Nile fisheries: Undertook a lake-wide CAS (Nov – Dec) on Lake Albert & Albert Nile. Conducted 3 monthly CAS on 2 fish landings in vicinity of the lower Victoria (Murchison) Nile. Comparing with the previous quarter (Jul – Sep), there was a 10% decline in fish catch (from 500 t to 450 t), 20% decline in

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

beach value (from 1.1 bn to 800 m) of catch landed at the two fish landing sites. Analysis of the lake-wide CAS data for the period Nov – Dec is still ongoing but initial results indicate up to 40 fish species of economic importance to commercial fisheries of the Albert system

24.Undertook monthly experimental surveys on fish populations in the Victoria Nile Ramsar site area of MFNP to identify critical habitats for fish avoidance during seismic & other oil related exploratory activities & to generate baseline data for post seismic monitoring. Up to 160 habitats important to fish as breeding & nursery grounds have been identified & mapped in the area. A total of 45 species of socio-ecological importance that need protection from oil seismic activities have been recorded. 3

technical reports have been prepared & submitted to Total E & P detailing technical advice on avoidance & protection strategies for the identified critical fish habitats & fish species

25.Baseline information/ database energy returns from natural fish food organisms in Lake Edward: Study reports on energy returns & fatty acid profiling are still under compilation by MAK collaborator

26.Development of technologies for sustained mass production of micro-algae, rotifers & Moina, two live larval feeds, rotifers & Moina: Prototypes of culture media & systems for micro-algae, rotifers & Moina using available fibre glass tanks was tried out successfully. Preliminary results of the trials showed Chlorella spp to be the best micro-algal food for Moina.

27.Development of feed formulation for grower feed for tilapia & 3 grower feeds for catfish: Proximate composition of at least 8 local feed ingredients determined

- Draft report & map indicating locations of fish breeding/ nursery areas on Lake Victoria produced

28.Determination of major fish disease pathogens from 5 commercial fish farms/hatcheries:

29.Laboratory characterization of parasites collected from hatcheries and 3 grow out fish farms in Serere, Lira, Gulu & Lacor. Parasitology revealed & confirmed presence of Trichodina sp, Acanthocephalus sp, Bolbophorus sp,

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

monogeneans – Cichildogyrus
Euclinostomum sp & Gyrogactyrus sp
infecting tilapia and catfish. DNA
from bacterial samples was isolated &
shipped to ILRI, Nairobi for molecular
identification.

30. Studies are on going on breeding
Nile Perch and African catfish. Breed
1260 juveniles pureline Lake Edward
Nile tilapia strains on station for use in
breeding programme. Morphometrics
data & genetic samples from 100 Nile
tilapia samples from 100 Nile tilapia
samples of Lake Kyoga collected. 132
Nile tilapia parent stock of Nile tilapia
from Lake Kyoga acclimatized on
station for use in breeding programme
31. Undertook 1 field environment
assessment of SON Fish farm: Water
parameters indicated good conditions
for aquaculture production: Dissolved
oxygen (6.8 – 8.0 mg/L); Temperature
(24.9 – 26.20C); pH (6.9 – 7.3); Blue
green algae were dominant with high
biomass (8000µg/L); Cage sites had
high zooplankton densities.

NARL

Bananas

- Collected data on the performance of
Black sigatoka incidence and
agronomic at pre-flowering stage;
Incidence of Black Sigatoka on
hybrids determined at the pre
flowering stage in the PYT at
Kawanda,

- Submitted two matooke hybrids (for
M19 and M20) to Variety release
committee

- BBW: Selected 10 lines replanted in
Confined Field Trial, to establish
resistance to BBW

- Nematode resistance: Collected pre-
flowering agronomic performance of
transgenic lines in the confined field
trial

- Enhanced nutritive value: Generated
50 transgenic lines of M9 with
Provitamin A enhancing genes

14. Promotion of IPM packages for
management of BBW: Through the
promotion of IPM packages, BBW
incidence reduced to below 10% in
most of the affected areas in Ankole
and Kigezi

NaFIRRI

15. Determination of nutrient levels &
biophysical factors influencing fish
production levels:

- In-situ Physio-chemical parameters

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>UShs Thousand</i>
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Development Projects

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measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1}

- Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment
- Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits

16. Development of options for management of aquatic weeds:

- Field data was collected from 18 geo-referenced sites in the western zone of Lake Kyoga (i.e. Kibuye, Kokoyilo, Mukotte, Ninga, Kachanga, Kasambya, Iruma, Kyalusaka, Muwunani, Kasenyi, Kiguli, Mbwiko, Namasale, Kayago, Muchora, Oripchan, Lwampanga & Zengebe). Major aquatic weeds of importance in the western zone of the lake were *Najas horrida* (445 ha); *Salvinia molesta* (300 ha); water hyacinth (232 ha); & *Hydrilla verticillata* (199 ha). Of these, local fishers reported *Salvinia molesta* to be the most devastating to various water-based activities especially gill net fishing.

17. Livelihood Analysis of fishing communities: Prioritized & socially acceptable livelihood options for Lake Edward fishers were identified

18. Map on aquaculture production in Central region completed: Data on aquaculture production collected from 137 fish farms in Lira & Alebtong districts in Northern region (a database on aquaculture production in the Northern region is being developed)

19. Development of topographic maps & designs of aquaculture reservoir fed systems in Western region:

Appropriate site was established in Kagango dam in Isingiro district. Consensus was obtained from farmers & district officials following a consultative & sensitisation meeting in preparation for formulation of MoU

20. Development of selected fish species for ornamental fish culture: Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)

21. Determination of Appropriate Gillnet Mesh Sizes: Conducted 3 monthly gillnet size selectivity

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

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experiments (Oct – Dec) during the wet season on the Northern part of Lake Albert. Preliminary analysis revealed the 2.5 inch mesh size gillnets as appropriate for sustainable harvest of *A. baremose* & *H. Forskahlii* in the deep open waters of Lake Albert

22.Update on current status of fishing effort on the Kyoga basin lakes: A census of all fishing inputs (effort) on lakes Kyoga and Kwania (Oct 2013) was conducted, showing an increase in undersize gillnets and fishers by 25% and 18% respectively between 2008 & 2013. A 5% decline in number of fish landing sites due to resurgence of water hyacinth, rendering inaccessibility & subsequent closure was registered

23.Update on current fish production levels, income (beach values) & contribution to livelihoods & GDP from Lake Albert & Albert Nile fisheries: Undertook a lake-wide CAS (Nov – Dec) on Lake Albert & Albert Nile. Conducted 3 monthly CAS on 2 fish landings in vicinity of the lower Victoria (Murchison) Nile. Comparing with the previous quarter (Jul – Sep), there was a 10% decline in fish catch (from 500 t to 450 t), 20% decline in beach value (from 1.1 bn to 800 m) of catch landed at the two fish landing sites. Analysis of the lake-wide CAS data for the period Nov – Dec is still ongoing but initial results indicate up to 40 fish species of economic importance to commercial fisheries of the Albert system

24.Undertook monthly experimental surveys on fish populations in the Victoria Nile Ramsar site area of MFNP to identify critical habitats for fish avoidance during seismic & other oil related exploratory activities & to generate baseline data for post seismic monitoring. Up to 160 habitats important to fish as breeding & nursery grounds have been identified & mapped in the area. A total of 45 species of socio-ecological importance that need protection from oil seismic activities have been recorded. 3 technical reports have been prepared & submitted to Total E & P detailing technical advice on avoidance & protection strategies for the identified critical fish habitats & fish species

25.Baseline information/ database energy returns from natural fish food

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Vote Function: 0151 Agricultural Research

Development Projects

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organisms in Lake Edward: Study reports on energy returns & fatty acid profiling are still under compilation by MAK collaborator

26. Development of technologies for sustained mass production of micro-algae, rotifers & Moina, two live larval feeds, rotifers & Moina: Prototypes of culture media & systems for micro-algae, rotifers & Moina using available fibre glass tanks was tried out successfully. Preliminary results of the trials showed Chlorella spp to be the best micro-algal food for Moina.

27. Development of feed formulation for grower feed for tilapia & 3 grower feeds for catfish: Proximate composition of at least 8 local feed ingredients determined

- Draft report & map indicating locations of fish breeding/ nursery areas on Lake Victoria produced

28. Determination of major fish disease pathogens from 5 commercial fish farms/hatcheries:

29. Laboratory characterization of parasites collected from hatcheries and 3 grow out fish farms in Serere, Lira, Gulu & Lacor. Parasitology revealed & confirmed presence of Trichodina sp, Acanthocephalus sp, Bolbophorus sp, monogeneans – CichlidoGYRUS Euclinostomum sp & Gyrogactyrus sp infecting tilapia and catfish. DNA from bacterial samples was isolated & shipped to ILRI, Nairobi for molecular identification.

30. Studies are on going on breeding Nile Perch and African catfish. Breed 1260 juveniles pureline Lake Edward Nile tilapia strains on station for use in breeding programme. Morphometrics data & genetic samples from 100 Nile tilapia samples from 100 Nile tilapia samples of Lake Kyoga collected. 132 Nile tilapia parent stock of Nile tilapia from Lake Kyoga acclimatized on station for use in breeding programme

31. Undertook 1 field environment assessment of SON Fish farm: Water parameters indicated good conditions for aquaculture production: Dissolved oxygen (6.8 – 8.0 mg/L); Temperature (24.9 – 26.20C); pH (6.9 – 7.3); Blue green algae were dominant with high biomass (8000µg/L); Cage sites had high zooplankton densities.

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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

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NACORRI

Coffee

1)12 promising candidates selected according to yield

2)17 CWD resistant hybrid progenies identified

3)Distributed 1114 TC derived plantlets to nursery operators

- Maintained all the mother bushes
- Maintained 304 plantlets ready for distribution to nursery operators.

- Maintained 1058 plants under hardening for distribution next rain season

- Maintained 4338 cultures of leaf explants on petri dishes for embryo and callus induction

- Maintained 1704 cultures in culture tubes for embryo induction

- Maintained 43 cultures in flasks on orbital shaker for embryo induction

- Embryos extracted from explants and flasks were nurtured in 601 RITAs for development into plantlets

- Weaned and maintained 19916

plantlets in poly-boxes under humidity cages for further development into plantlets

- Weaned 14342 plantlets into pots

- Maintained 3948 plants under hardening

- 160 Arabica samples among the Elgon A, Germplasm collection and Elgon Hybrids collected On-station and processed for bean and cup quality analysis.

- 160 lines of Elgon A, Germplasm collection and Elgon Hybrids evaluated for bean size and weight /filling (ratio of floaters and outturn) at fresh cherry and parchment stage On-station.

- 50 CWD-R samples collected On-station for bean and cup quality analysis.

- 50 CWD-R Robusta lines evaluated for bean size and weight /filling (ratio of floaters and outturn) at fresh cherry and parchment stage On-station.

- 40 CWD-R samples collected on On-farm (Kamuli) for bean and cup quality analysis.

- In Kapchorwa and Kween districts the dominant shade species in coffee were Cordia africana 63 %, Gravillea Robusta 27 %, Ficus mucosoa 18%, others with less than 10 % incidences were Ficus natalensis, Jacaranda, Pine.

4)The morphology of shade species varied with shade species with the largest canopy being shown by Ficus

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

ovate and Cordia africana and least by pine

- Soil samples taken from Robusta coffee areas submitted to Kawanda NARLI for analysis
- Trial on in-vitro rearing of BCTB using cuttings initiated in lab. At Kituza.

NACRRI

Beans

- Surveys on virulence of bean root rot pathogens conducted in 9 districts. Morphological characterization of S. rolfsii commence
- Surveys of Angular leaf spot disease of common beans conducted in Gulu, Amuru and Oyam
- 5) Determination of disease and yield losses caused by ALS and Rust on-farm with 3 farmers' fields in Wakiso district
- 6) 22 climbing bean genotypes which appeared very outstanding during the season from the PYT, IYT and IYT trials have been identified and selected. Most of the remaining genotypes had intermediate performance and 7 genotypes were completely rejected
- Data from AYT trials for 10 nutrient bean genotypes at NaCCRI, Ngeta ZARDI ABIZARDI, Nakabango and KaZARDI obtained and 8 lines selected
- 7) 430 kg of seed obtained from 10 genotypes from 10 nutrient dense bean lines
- 318 accessions with tolerance to drought and multiple pathogen resistance prepared for further testing
- 8 promising segregating populations tolerant to drought selected for further testing (in the field).
- Multiplied seed for the four new bean lines.
- Advanced yield trials established for 3 new promising bean lines.
- 2,790 Kg of foundation bean seed was produced and multiplication of more is on going.
- 15.4 Tons of Quality declared seed produced by partners
- 6 trials to test different potential staking options were established.
- The bean based product recipe book was revised but is still in its draft form.
- 40 stakeholders were in Bushenyi were empowered on the utilization of different bean based products.
- An MOU was signed with FIT (U) Ltd for them to offer market

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Vote Function: 0151 Agricultural Research

Development Projects

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information and business development training and mentoring to farmers.

- A total of 6000 Brochures was printed.

8)bean innovation platforms established.

Maize

- Harvested 1100 S3 lines from previous line nurseries and prepared seed for 1100 S3 lines for planting.

- Planted nurseries for 490 lines for test crossing to 2 testers of A and B at Namulonge

9)23 hybrids selected from previous regional trials and planted for second evaluation.

- 36 hybrid and 35 inbred line laboratory analysed for aflatoxin
10)8 hybrids selected through PVS at farmers filed

11)Application for release of at least 4 varieties submitted

12)Applied for release of highland maize 3 candidate varieties

- At least 165 hybrids evaluated to select the best hybrids pedigree population formation and Dh line induction

- 321 diallel hybrids generated

- 300Kg of breeder seed of each OPV produced

- Produced 5kg of breeder seed of released varieties

- Harvested and distributed 0.21t of Breeder seed

- Harvested 14 t of foundation seed from NaCRRI and Pearl Seeds

- Established 1.5 hectares of breeder and foundation seed at NaCRRI

13)Distributed 0.6t of certified seed to the 3 IPTA

- A total of 21 demonstration plots established in the participating IPTA

- 215 IPTA members empowered in QPM production

- Participated in Agricultural show conducted in July in Jinja and exhibited QPM Value added products and demonstrations on improved management of QPM varieties

- Participated in Agri-business Expo conducted in June in Masindi and exhibited QPM products together with participating IPTA stakeholders

- Cooking and Chemical properties 20 maize varieties determined

Horticulture

Mango

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Mango fields for different cultivars under different spacing were maintained on station
- Mango fields for fertilizer trial maintained and monitored in Serere and Tororo
- 2500 fruit seedlings for generating rootstocks were planted
- Empowered 147 nursery operators in six districts
- 6 sets of fruit promotion materials were developed. These included Brochures for commercial crops which included Avocado, Citrus & Mango pests, disease & production.

Cassava

- In order to generate varieties with desired storage root qualities, a total of 80 storage root samples rich in β -carotene were collected from multicoational trial and analysed for pro-vitamin content,
- Additionally, 3,000 storage root samples from 2 varieties in the AYT were collected and analysed for dry matter and starch yield,
- One data set generated on biotic stress from a seedling trial planted for evaluating families of cassava for adaptation to highland regions in Buginyanya, the selected adapted varieties will be recommended to expand cassava production to highland regions
- Started sequential storage root sampling for analysis of β -carotene accumulation over time. These generates useful information for β -carotene rich cassava
- Established a trial at NaCRRI with 8 clean varieties to generate information for understanding the extend of degeneration caused by CBSD over time, generated 2 data sets.
- Completed harvesting of elite cultivars of cassava from 5 remaining locations,
- Planted UYT with 4 cultivars at 5 locations (NaCRRI, Kamuli, Tororo, Kaberamaido and Abii) to generate performance stability data for variety release
- In order to develop high yielding disease resistant varieties with improved storage root quality, 5 data sets were collected each from partial in breds (SET & CET) expressing CBSD resistance triat, Collected 60 leaf samples from 60 genotypes

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

assayed in the field for quantification of CBSD associated viruses,

- Furthermore, genotype by sequencing (GBS) analysis of the lines generated from crosses between Namikonga and elite varieties begun at BECA to identify SNPs associated with CBSD resistance,
- Established a seedling evaluation trial with 23 families expressing β -carotene trait at Abii for studies on effect of inbreeding on β -carotene content, and collected first data set on vigor and key diseases,
- Very high establishment rate achieved from the trial for diallel studies on β -carotene content
- 14) Thesis on molecular characterisation of partial inbreds for CBSD resistance submitted to Makerere University for examination
- A total of 19 species of wild cassava were introduced from Brazil for improving Ugandan cassava germplasm, a total of the 187 seedlings raised from these 19 species in the nursery have been planted in field at NaCRRI for adaptation
- Generated 3 data sets from multilocational trial aimed at understanding effect of environments on flowering of cassava varieties, this will generate information for improving cassava breeding
- Collected 3 clean cassava varieties for greenhouse based pathogenic study. The generated diversity information will help in development of informed CBB management package
- Planted new CBSD epidemiology trials with 6 varieties at four locations and yield loss trial at Loro with 4 varieties (both clean and diseased) to generate information package for managing CBSD and other cassava diseases
- Collected 200 soil samples from 2 regions to establish types of soil in major cassava growing regions Uganda for recommending best production practices
- Established a trial at 3 locations to understand response of various varieties to varying fertiliser levels and generated one data set.
- A market survey on improving cassava marketing and processing in Uganda was conducted. A total of 1,600 respondents were interviewed in

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

48 districts.

NAFIRRI

15) A technical report on physico-chemical conditions of the environment were suitable for fish production based and status of heavy metal pollutants for Lake Kyoga was produced. It shows that compared to NEMA/WHO Standards i.e. dissolved oxygen was $\geq 3\text{mg/L}$; pH was 6.3-10.6 compared to 6-8 of WHO/NEMA Standard; with the parameters conductance, temperature salinity, within NEMA/WHO but turbidity (0-1,152 FTU compared to 5FTU of NEMA/WHO) and redox potential (652.6-918 mV compared to +125-200mV of NEMA/WHO) that were beyond the standards of NEMA and WHO. Heavy metal pollutants within acceptable limits were copper ($\leq 1\text{ppm}$) and zinc ($\leq 5\text{ppm}$). Those above WHO permissible limits were Manganese ($>0.1\text{ppm}$), Ni ($>0.1\text{ppm}$) and iron (0.1ppm)

16) Revised a section in the technical report detailing major aquatic weeds on Lake Kyoga (Eichhornia crassipes, Najas horrida and Hydrilla verticillata) and their hotspots which become more pronounced in the east-west direction i.e. become prominent in the western zone and almost non in the east. Major hot spots for aquatic weeds were identified and mapped for the three major weeds

17) Established major anthropogenic activities that drive water quality on Lake Kyoga. The include: animal grazing (12.0%), cultivation (11.6%), brick making (11.4%), bush burning (11.3%), wetland destruction (11.7%), poor waste disposal (10.4%), settlements on sudds (10.6%), alcohol brewing (10.7%), and charcoal burning (10.3%)

18) Ecological characterisation and capture of geographical coordinates for potential fish breeding /nursery grounds on Lake Victoria.

19) Aquaculture field surveys covering of 2 hatcheries and 3 grow out fish farms. 2. The description of morphometric and physiochemical of disease pathogens in cultured fish from 5 farms

20) Undertook census of fishing effort on upper Victoria Nile (September 2013) indicating a reduction in effort compared to the April 2013 period.

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

The major reduction was in the number of boats and fishers depicting the migratory nature of fishers

21) Conducted monthly CASs on two fish landing sites in vicinity of the lower Victoria (Murchison) Nile and one quarterly assessment of production and value on the Upper River Nile. An increase in Nile perch catches was observed on the upper Nile while a total of 505 tonnes of fish valued at 1.1 billion Uganda shillings was landed (July-September, 2013) to support local livelihoods compared to the 434 tonnes valued at 0.7 billion in the previous quarter

22) Gape calibration of the bottom and pelagic trawl net to improve biomass calculation revealed that the bottom trawl opening earlier reported to be 3.5 m (LVFO, SOP) is actually 2.8 m at a trawl speed of 3 knots while the Pelagic net opening at an average speed of 2.2 knots was 10.5 m instead of earlier assumed 8 m. This increases certainty on fish stock size calculation

23) Gillnet selectivity experiments undertaken on the Victoria Nile delta (Murchison falls national park) to generate information to guide exploitation and conservation of the key stone species in the delta show that the major species; *Alestes baremose*, *Hydrocinus forskalli*, *Barbus bynni*, can be effectively harvested using 2.5" gillnets while the small *Brycinus nurse* requires a 1.5" net.

- Annual review workshop held at NaFIRRI Kajjansi where NaFIRRI workplans were evaluated and areas of research prioritised that fed into NARO-wide prioritisation of the research projects

Abi ZARDI

Fish

24) A rapid site suitability survey to identify potential areas for cage farming along the Nile River in the Adjumani area indicated that Onigo D fishing bay is most suitable for establishment of fish cages with following parameters Depth (3.06m), Temp(26.560C)pH (6.03), DO (4mgL-1) Conductivity (240us/cm), salinity (0.12ppt)

25) Observable studies indicate that *Alestes baremose* seems to respond well to sinking pellets than floating fish pellets because of its bottom feeding characteristics. An average

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

weight increase of 0.6g/day has been noted for the last 5 months of stocking

Dairy/Beef/Meat

- 3.75 acres of Lablab, Mucuna and Glycine cover crops well established and maintained in six on-farm and one on-station sites.

- Three (3) local medicinal plants (Cassia nigricans, Aristolochia bracteolata & Chamaecrista nigricans) have been screened in the lab for phytochemistry, median lethal dose & organ toxicity

- A new set of trial for B. mulato established in Zombo DFI, preliminary data on potential biomass yield of B. mulato and B. brizantha (local) collected in Moyo and Zombo DFIs, Fields for on-station trials prepared and ready for planting

- Some locally available feed resources were identified in the districts of Arua, Zombo and Nebbi

- Six mubende bucks were delivered to 4 farmer groups for adaptive trials in 4 districts of Moyo, Yumbe, Arua and Nebbi

Cassava

- 4 adaptive trials planted in the districts of Maracha, Koboko, Moyo and Nebbi

- Maintained 69 acres of cassava variety NASE 14 already planted and fencing of sites was conducted,

- Established 4 NARO-NAADS collaborative Demonstrations and 4 Adaptive trials sets in five districts of West Nile

- Conducted in collaboration with Zonal NAADS to train 41 cassava farmers in improved processing technologies

Maize

- Maize and beans crops planted on-station under different Nitrogen and Phosphorus fertilizer levels

- Two On-station trials and three out of station trials were established at 3 DFIs with improved sorghum varieties.

Local varieties were only evaluated on-station

- Eight hybrid maize varieties were established in on-station and out of station trials at DFIs. Maize hybrids included L6H, L7H, L8H, L9H, FH6150, KH500-43A, PAN67, DH04 obtained from different seed companies

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Maize varieties Longe 5 and Longe4 were multiplied

Bean

- Six improved bean and six improved Gnut varieties were established on-farm with farmer groups in three districts

- Followed up establishment of alleys and vegetative strips in the trials to plant the test crops

- Six on-farm and two on-station INM trial set using maize as test crop with intension of repeating the previous trial Buginyanya ZARDI

Coffee

- 3.5t of quality seed expected from 8ha coffee fields

26)The status of pest and disease prevalence of Arabica coffee was determined. Coffee leaf rust at >5% on station, 80% of fields in Bulambuli with symptoms of Nitrogen deficiency and suffering dieback due to overbearing

Cassava

- 1.4 ha of NASE 14 cassava variety at physiological maturity stage (approx. One year old)

- 1.4 ha of Nase 14 cassava vty at 1 m height

- 8 ha of Nase 14 cassava variety at 4 months old

Rice

- 1 ton of upland rice seed harvested

- On station rice multiplication completed. Nerica 10 (0.4 t), Nerica 4 (0.3 t), Nerica 1 (0.3 t)

- Excellent (98%) germination of Nerica 4 rice in the new IWM trial

Maize

- Two maize farmer groups in Buluguyi and Bugiri empowered on good agronomic practices

- 250Kg of UW400 seed harvested from 0.4ha of land in Sebei

- Longe 9H (7.5t/ha), Longe 6H (6.8 t/ha), Longe 7H (5.6 t/ha) most farmer preferred hybrids. Longe 5 (3.5 t/ha) most preferred OPV. Field for establishment of new VPT prepared

- Varieties 11SADVL-F2, CZH1157 and CZH1136 so far with the lowest disease incidence, highest vigour & short ASI out of 20 elite lines.

- 1st season data showed that Biochar, a soil organic amendment made from

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QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

maize stalks, when applied at 5 t/ha resulted in grain yield advantage of 2.7 t/ha, i.e 1.35 m/- profit

Beans

- Climbing bean variety trial on 0.2 ha currently at 3 leaf stage at Bulegeni. Germination rate for all varieties above 80% .

- On-farm evaluation sites established in Mbale (Busoba and Ruhonge) and Sironko (sironko town council and Nalusala)

- Germination rate above 80 % and the varieties are at 3 leaf stage at Bulegeni in the trial on 0.2ha.

- Two hand hoe weedings so far the most cost effective (1.99 m/= profit) followed by post-emergence application of 4 l/ha of Butanil 70 + 1 hand-hoe weeding (1.2 m/= profit).

Bulindi ZARDI

- On station trials to establish the best management practices demonstration for improved varieties were maintained. These include 0.1 acres maize (Longe4, Longe 5, Longe10H, Longe 6H), 0.2 acres bean (NABE 4, 15, K132, NABE 16), 1/4 acre cassava (NASE14, TME14 and 0686) and 0.1 acre rice (NERICA 1, 4,10 and SUPERICA) and 0.6 acre groundnut (SERENUT 1-14).

- 1/4 acres of of cassava varieties TME14, NASE14, MH0686, MH2961.

- 1 acre of demonstration for Maize; (Longe 5, Longe 4 and Longe 10H), beans (NABE 4, K131,NABE 12C)

Rice (NERICA 1, NERICA 4, NERICA 10, NARIC 1, NARIC

2),Sorghum (Sekedo), to increase farmers' knowledge on Good

agronomic Parctices and access to adapted crop cultivars in the LACZ; 581 students and 86 farmers visited the demonstration plots onstation.

- 1/2 acre of NABE 17 and NABE 15 was planted for seed multiplication and not yet mature for harvesting expecting an estimated 400kg of bean seed

- 27 acres of adapted cassava (NASE 14) planted onstation estimated to produce 2160 cuttings of cassava to be availed to farmers for increased productivity of cassava in the LACZ of Uganda

- All the 6.5 acres of multiplication fields for adapted upland rice varieties (NERICA 1, 4, and 10) established.

- On farm trials of 1.6 acres each of

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousands</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

beans, maize, cassava established in Kibaale and Buliisa districts were monitored.

- On farm upland rice trials on 9 acres involving 18 farmers in Hoima and Masindi were maintained and monitored. Analysis of results is underway.
- Established 7 community upland demonstration fields of 0.2 acres each for NERICA 1, 4 and 10 in Miirya subcounty (Masindi) and Kitoba subcounty (Hoima)
- Routine maintenance of onfarm forage trial established in Buliisa and Kiryandongo districts for evaluating drought tolerance (trends in vigor, level of greenness, fraction of dead material, biomass) of 12 introduced forages (Brachiaria brizantha cv Toledo green, Desmanthus virgatus, Sweet lupin (Lupinus angustifolius), Desmodium uncinatum (cv silver leaf), Cratylia argentea, Canavalia brasiliensis, Vicia villosa, Desmodium intortum, Burgundy bean (macroptilium bracteatum), Brachiaria hybrid cv mulato II), Brachiaria brizantha.
- Empowering 30 farmer groups and agro processors in 14 in agro processing and 16 in participatory market research regarding cassava, maize rice and paoultry in Kiryandongo, Buliisa, Hoima, Masindi and Kibaale
- Participatory economic evaluation of Beans, Maize and cassava enterprises conducted in Kibaale, Hoima, Masindi, Kiryandongo, and Buliisa district.
- Two fish ponds (150 m² by 250 m²) were constructed and maintained
- Data has been collected on bean fly/stem maggot infestation, plant stem damage, bean fly larvae counts and number of dead plants following standard rate application of Cypermethrin 5 % EC, Dimethoate 40% EC and Malathion 57%EC on NABE 4 variety growing in a bean fly hotspot.
- Data has been collected on severity of aphids, plant aphid infestation, groundnut rosette disease severity following application of botanicals extracts of Tephrosia vogelli, Mexican marigold, red pepper, Nicotiana tabacum (at rate of 500g of plant paste in 4 litres of water per 209 sqm) on

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

groundnut established in a groundnut rosette disease hotspot. Results of the analysis will follow.

- 100 farmers from 8 farmer field school (FFS) groups in Rugashari and Kyaterekera subcounties of Kibaale district were equipped with IPM technologies for management of bean fly and snail pests in beans

Kachwekano ZARDI

- Planted 4 acres of cassava cuttings for Multiplication and generation of foundation cassava seed in Kihihi

- Conducted participatory rural appraisal, and established that cassava is forth most important food security crop especially in the mid altitude areas of the SWHAEZ, and key production challenges are CMV virus and lack of planting materials. We acquired 17 new cassava CMV

Accession from NACRI and planted them at Kachwekano for highland adaptability study

- Data was collected on growth parameters and the rice trial was harvested in last week of June 2013. Grain yield is being processed and results will be available after analysis. Six varieties were planted in RCBD, replicated three times. The varieties are NERICA 4, ERICA 6, NERICA 10, NERICA 14, NERICA 18 and local farmer variety called WHITE as the control.

- 16 experimental fish holding facilities were renovated. One experimental protocol formulated and shared with the experimenters/farmers in the zone. Three feeding charts designed. One water quality testing kit accessed. 3 fish seed species; Mirror carp, Nile tilapia and African catfish, totalling to 17,000 seed, sourced and stocked in the experimental facilities in the zone

- One aquaculture research facility (5 ponds at Kyanamira Sub county Kabale District) acquired for use by KAZARDI and work on-going for rehabilitation

- Following the rapid survey all the major classes of dewormers were found on the market and so the commercially available ones were procured and experimental units selected. A total of 340 goats were earmarked for the experiment and fecal samples taken for the baseline epg.

- Earlier established fodder gardens

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

maintained and new gardens opened for multiplication of improved pastures for uptake pathways. 5 legume species are in the process of being procured for 2013B planting

- 150 goats (25 Boer, 51 of 75% Boer, 19 of 50% Boer and 55 of Kigezi/ Local goats) were maintained by regular spraying, deworming, repair of broken fences and herding of goats Mbarara ZARDI
- Monitored the monthly weight gain and feed consumed in monoculture African catfish from 11 ponds within Mbarara, Ntungamo, Mitooma, Bushenyi and Ibanda districts. Current results show average growth of 253.08g for floating pellets with Specific Growth Rate (SGR)= 0.57% and 216.38g for sinking pellets with SGR= 0.38%
- Trials to evaluate the effect of different tree root pruning regimes on yield performance of banana and coffee crops established in Sembabule district.
- Trials on proper spacing of upper storey woody species in banana and coffee crops established in Sembabule district.
- Trials to evaluate the effect of different spacing patterns of exotic fodder shrubs on biomass and nutritional value of the species in pure and mixed production systems in Mbarara, Sembabule and Isingiro districts
- Trials to evaluation the nodulation efficiency and performance of seasonal crops under different nitrogen fixing shrubs established in Mbarara, Sembabule and Isingiro districts
- Trials on four improved bean varieties (NABE 2, 4, 15 and 17) established in Sheema and Buhweju District under different soil fertility amendment options.
- Trials on two improved maize varieties (longe 5 and MM3) established on-farm in Isingiro and Ibanda Districts under different soil fertility amendments.
- A mother garden of 326 coffee wilt resistant varieties maintained and ready for cloning activities in October 2013.
- Earmarked 15 acres at each of Rakai and Ibanda prison farms for NASE14 multiplication
- Data on disease prevalence has been

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

collected and analyzed. Preliminary results indicate that the disease prevalence in the zone is as follows; FMD-60%, ECF-97%, NCD-90%, LSD-80%, Brucellosis-50%, Helminthosis-100%, ASF-50%. The major disease risk factors in the zone include; proximity to national park, porous nature of the boarders, improper use of drugs, high cost of veterinary inputs.

- A total of 160 farmers have been interviewed. 700 faecal samples have been collected from four districts to determine the efficiency and effectiveness of the conventional methods that are used in helminthes control.

- ECF survey findings were availed to stakeholders during the annual review and planning meeting.

Mukono ZARDI

27) Construction of 4 (four) fish ponds on station at Kamenyamiggo was completed. Drainage channels completed; 3 inlets and outlets installed. In addition 3 fish ponds were de-silted, banks strengthened Compacted and limed.

- Tilapia broodstock (Victoria) F1 (1200 raised to 257g at MUZARDI), while Tilapia F2 (>10,000) raised to 100g at MUZARDI

- 60 rice actors mobilized to a rice market chain actors' workshop. In addition two thematic groups on rice grain and processed products formed.

Ngetta ZARDI

28) 3 formulations for the supplementation packages developed using locally available materials in the dry seasons

- 3 acres of lablab established and maintained on-station

- 1 maize + napier grass intercrop trial established and maintained on-station.

- 4 Labour saving technologies tested on-station (ploughs, disc, planter, herbicides) for rice & maize

- On-station ex-situ trial was maintained by means of strip weeding.

- On-station propagation experiments at the nursery were maintained through regular watering and insect pest control.

- 6 on-farm and 2 on-station season two trials for testing agronomic performance of 5 CBSD tolerant varieties in Amolatar, Lamwo, Gulu, Otuke, and Agago districts established.

Vote: 142 National Agricultural Research Organisation

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Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- 6 on-farm and 2 on-station trials sites established for farmer participatory evaluation of management options of pests and diseases of mango and citrus maintained and data collected.

- Established 1 experiment to evaluate 2 IPM strategies (planting date and variety) for simsim gall midge on-station

- Set up 2 on station trials to evaluate performance of different varieties (3) under different weed management conditions.

- Set up 2 on station trials to evaluate performance of different varieties (4) under different weed management conditions

- Set up 1 on station experiment to evaluate plant population in conservation farming basins
Rwebitaba ZARDI

Tea

- 15,000 planting materials raised and 23,433 maintained in the nursery. Maintained the tea gene bank.

Maintained 20 tea fields and mother gardens

- Priority clones identified and labeled on-station in field 17. Data collection on susceptibility of some tea clones to pests conducted on-station and in Kyenjojo district.

Coffee

- Soil samples from Kyenjojo with coordinates were collected to determine soil fertility status (Nitrogen (N), Phosphorus (P), Potassium (K), Magnesium (Mg), Calcium (Ca) Soil pH and Soil Organic matter (SOM) in 15 tea field

- 320 plantlets of 7 Robusta coffee lines acquired from NARL-COREC Tissue culture Unit.

- Acquired 126 plantlets of Robusta coffee lines for evaluation trial acquired from CoRRI

- Acquired coffee plantlets- 450 Robusta and 450 Arabica) from Zonal NAADS office

- Demonstrated Tea clones at the National Agricultural show, Jinja district.

Banana

- Maintained 7 acres of banana multiplication field on station

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Soil samples (48 samples) collected from three banana growing (Kabarole, Kyegegwa & Kyenjojo) districts

Rice

- Maintained 4 acres of upland rice (NERICA 1, 4 and 10) on-farm in Mubuku Irrigation Scheme

- Institute cattle herd maintained and increased with 3 acquired in-calf Friesian heifers

Dairy

- Cattle crush rehabilitated

- Seeds collected from on-station pasture album of 15 fodder species

- Training of 60 farmers across the zone in pasture seed production, hay and silage making

- Maintenance of three (3) established Bricharia species in the evaluation trial

- Collection of plant tissue analysis samples from Bricharia trial

- Results acquired from soil analysis in the Bricharia species.

- Conducted survey on livestock production opportunities and constraints in Kabarole and Kamwenge districts

- Distributed over 21,000 splits of Bricharia species to Dairy farmers

- Preliminary technical report on yield performance for improved potato varieties developed

- 34 acres of cassava (Nase 14- 4271 variety) maintained on-station

Fish

- Maintained the 3 established fish ponds of 10 m x 20 m dimension;

- Constructed a water reservoir of 10mx30m dimension; Constructed 12 dykes

Reasons for Variation in performance

None

Total	4,000,000
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>4,000,000</i>

Vote: 142 National Agricultural Research Organisation**QUARTER 2: Cumulative Outputs and Expenditure by End of Quarter**

Annual Planned Outputs	Cumulative Outputs Achieved by End of Quarter (Quantity and Location)	Cumulative Expenditures made by the End of the Quarter to Deliver Cumulative Outputs <i>US\$ Thousand</i>
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Vote Function: 0151 Agricultural Research*Development Projects***Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded**

GRAND TOTAL	38,975,256
<i>Wage Recurrent</i>	9,486,114
<i>Non Wage Recurrent</i>	4,292,305
<i>GoU Development</i>	3,065,247
<i>External Financing</i>	21,686,300
<i>NTR</i>	445,290

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs	
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 01 Headquarters

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

		Item	Spent
quarterly GOU subscriptions transferred to international organisations (ASARECA, CGIAR, etc)	Partial GOU subscriptions transferred to ASARECA, CGIAR.	262101 Contributions to International Organisations (Current)	134,548
		264101 Contributions to Autonomous Institutions	1,000

Reasons for Variation in performance

Late release of funds.

Total	135,548
Wage Recurrent	0
Non Wage Recurrent	135,548
NTR	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		Item	Spent
Competitive grants scheme research agenda developed;	- Supported review and planning meetings in Kachwekano and Mbarara ZARDIs.	211103 Allowances	1,620
2. Competitive research projects processed and implemented	- 5 institutes have been guided to finalise consolidation research projects	221011 Printing, Stationery, Photocopying and Binding	6,628
- research programmes monitored in the NARS	- 70 principle Investigators trained in writing winning proposals.	222001 Telecommunications	2,516
- RMIS institutionalized		223005 Electricity	5,040
- UJAS editorial committee meetings facilitated; 4 volumes of UJAS p		223006 Water	460
		224002 General Supply of Goods and Services	44,188
		227004 Fuel, Lubricants and Oils	7,000

Reasons for Variation in performance

Experienced late release of funds

Total	67,451
Wage Recurrent	0
Non Wage Recurrent	67,451
NTR	0

Output: 01 5102 Research extension interface promoted and strengthened

		Item	Spent
DG's office:	- Organized a capacity building workshop in monitoring and evaluation of MSIPS for 40 NARO-NAADS zonal staff. DTPIS staffs were part of the team of facilitators.	221002 Workshops and Seminars	3,183
Good governance and corporate social responsibility ensured and promoted.		221008 Computer supplies and Information Technology (IT)	1,000
NARO's contribution towards national Agricultural Research .	- Organized and conducted the UJAS end of year editorial meeting	227001 Travel inland	16,000
Networking, Partnership and collaboration stakeholders meetings held;	- Participated in organizing Jinja Nile Agricultural show at which NARO technologies were demonstrated and marketed to the general public.		
Stakeholders sensitisation meetings conducted.			

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 01 Headquarters

- Participated in the National expo promotion activities
- Organized the second meeting of the organizing committee NARO scientific conference, 2014.
- Organized the World Food day celebrations on 16th October 2013 in NASARRI, Serere.

Reasons for Variation in performance

Experienced late release of funds.

Total	20,182
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	20,182
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

HR:	Staff Salaries and other contract salaries paid for period October-December 2013.	Item	Spent
1. Staff Salaries and other contract salaries paid	paid	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	4,746,456
2. Good Governance and corporate social responsibility ensured and promoted; Leadership and oversight Management of agricultural research provided;	Security services and utility services paid.	212101 Social Security Contributions	410,382
3. Staff recruited and trained		213001 Medical expenses (To employees)	20,000
4. Stationery and other office supplies procured.		213002 Incapacity, death benefits and funeral expenses	20,000
		213004 Gratuity Expenses	240,433
		221003 Staff Training	3,380
		221004 Recruitment Expenses	5,000
		221005 Hire of Venue (chairs, projector, etc)	1,514
		221006 Commissions and related charges	6,446
		221007 Books, Periodicals & Newspapers	2,091
		221008 Computer supplies and Information Technology (IT)	4,018
		221009 Welfare and Entertainment	2,694
		221012 Small Office Equipment	4,165
		221016 IFMS Recurrent costs	15,887
		222002 Postage and Courier	1,072
		222003 Information and communications technology (ICT)	4,240
		223004 Guard and Security services	7,200
		224002 General Supply of Goods and Services	3,998
		226001 Insurances	300
		228002 Maintenance - Vehicles	9,813
		228004 Maintenance - Other	1,050
		Total	5,510,138
		<i>Wage Recurrent</i>	4,746,456
		<i>Non Wage Recurrent</i>	763,682
		<i>NTR</i>	0

Reasons for Variation in performance

Experienced late release of funds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		Item	Spent
1. Evaluate the collected germplasm on station	NaCRRI Horticulture	211103 Allowances	1,440
	- Planting 2500 fruit seeds for generating rootstocks	221002 Workshops and Seminars	1,630
	- Visits to oil palm farms planted in 2001 revealed that farmers in Hoima were harvesting 2-3 times a month.	221011 Printing, Stationery, Photocopying and Binding	8,204
	- Trip to oil palm farms in Buvuma did not reveal any major disease	222001 Telecommunications	1,440
	- After confirmation of Armillaria root rot in some areas of Kalangala preventive practices were demonstrated to farmers	223005 Electricity	12,600
	- 6 nurseries of quality fruit trees were constructed and 18 mother gardens established	227004 Fuel, Lubricants and Oils	16,080
	- 2 sets of brochure and i production manual on quality fruit trees have been produced		

Reasons for Variation in performance

Experienced late release of funds

Total	41,393
Wage Recurrent	0
Non Wage Recurrent	41,393
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

		Item	Spent
1.2 residential buildings repaired.	- Security Services procured	221001 Advertising and Public Relations	730
2. One Nursery Shade repaired..	- Travel inland facilitated	221003 Staff Training	3,440
5 tones & 38 bags of fertilizers purchased.	- Telephone services procured	221006 Commissions and related charges	1,920
4. 1 Staff attended Finance course.	- Electricity bills paid to zero balance	221008 Computer supplies and Information Technology (IT)	4,800
5. Required items for office used are purchased for Namulonge and COREC.	- Internet Services & Entertainment procured	221009 Welfare and Entertainment	2,044
6.8 Trial sites, COREC satellite, Kiige Monitored & all Institute meetings & activities within & Outside station carried out.	- Salaries & Wages paid to-date	221011 Printing, Stationery, Photocopying and Binding	2,400
7.4 Trial sites visited and Evaluation done.	- 10 kilometers of on station road maintained	221012 Small Office Equipment	1,882
8. Materials, accessories & services procured.	- 20 of office buildings painted on the outside	222002 Postage and Courier	168
9. Electricity supplied to all NaCRRI units.	- 4 vehicles repaired and serviced	224002 General Supply of Goods and Services	10,432
10. Teas, Meals & refreshments Provided.	- 10 meetings and workshops attended by administrative staff	226001 Insurances	400
11. The Institute Effectively Connected to outside organisation..	- 6 acres of compound mowed and trimmed, offices cleaned	227001 Travel inland	6,000
		227004 Fuel, Lubricants and Oils	4,000
		228002 Maintenance - Vehicles	2,400
		228003 Maintenance - Machinery, Equipment & Furniture	3,200

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

12. Procured Stationery & office Supplies..
13. Institute compound maintained in habitable state
14. Repair 3 Vehicles, 1 Generators, 2 Tractor & 2 Computers.
15. NaCRRRI & COREC access Roads made accessible, Electricity line maintained & Sewerage system maintained.
17. Security materials purchased.
18. Water & electricity Materials purchased.
18. One office block repaired..

Reasons for Variation in performance

Experienced late release of funds

Total	43,814
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	43,814
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

	NaCRRRI	Item	Spent
1. At least Tolerance of 2 germplasma to 2 major pest assessed in the quarter.	- Bean disease surveys conducted in 10 districts including Mityana, Mubende and Kyegegwa	224001 Medical and Agricultural supplies	29,504
2. At least Tolerance of 10 germplasma to 2 major diseases assessed in the quarter .	- 3 On-farm trials established in Mpigi to determine disease severities and yield losses on farmers' fields		
3. At least One Nursery repaired	- Established PYT, IYT, AYT and NPT trials of the available advanced climbing bean genotypes and also recorded data on their agronomic performance		
	- Field evaluation conducted and 14 lines earmarked for selection and advancement to AYT and PVS trials		
	- 25 new families established from 25 new different seeds		
	- AYT data obtained on 3 promising bean lines (MYA 2, MYA 3 & MYA 5).		
	- 41.815 MT of quality declared seed produced by 19 farmer groups		
	- Data from NTP trials for 8 nutrient bean genotypes at NaCCRI, Ngeta ZARDI ABiZARDI, RwebitaZARDI, Nakabango, Buginyanya-ZARDI and KaZARDI obtained and 8 lines selected		
	- A total of 525kg for bush genotypes obtained		
	- Data from PVS trials obtained with genotypes Nyiramuhondo & Kivuzo		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

for Climbers and RWR 2154, HM 21-7, RWR 10 for bush showing superior performance

- 40 other PVS trials established in the districts of Hoima, Mubende, Gulu, Lira, Arua, Masaka, Kabale, Kisoro and Kamuli

- There was production of 17.6 Tons of Quality declared seed from the data so far collected. Production activities are still ongoing in other locations.

- 12 demonstrations on weed, soil fertility, pest and disease and management were successfully conducted in Wakiso, Mpigi and Bushenyi.

- 10 trials to test different potential staking options were established in kabale and Kisoro. They are still ongoing and data collection is progressing well.

- Samples of 19 bean varieties were analysed for micro nutrient and other nutrient in Kawanda and in Makerere university. Nutrient data is now available.

- 78 Stakeholders (16 Males and 62 females) were trained in Bushenyi and Wakiso on the utilization of different bean based products.

- The bean based product recipe book was completed and is in press for printing.

- Brochures were developed and translated into five languages. Printing is ongoing and upto 25,000 brochures will be produced for different regions of the country.

- Promotion of bean based products and other technologies was done on world food day and its estimated that over 60,000 persons were reached.

- Data was collected and reviewed and insights into the factors that affect the operations of innovative bean platforms established.

Rice

- Harvested 700 Kgs of NERICA 2

- Distributed 100 rice production manuals and 500 NERICA posters

- Produced NERICA policy brief

Reasons for Variation in performance

Experienced late release of funds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

Total	29,504
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	29,504
<i>NTR</i>	0

Programme 08 National Fisheries Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Fish technologies generated and disseminated.

- In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1} ,
 - Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment
 - Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits.

Item	Spent
211103 Allowances	1,123
221002 Workshops and Seminars	900
221011 Printing, Stationery, Photocopying and Binding	1,152
222001 Telecommunications	1,440
223005 Electricity	5,280
223006 Water	2,400
227004 Fuel, Lubricants and Oils	3,642

Reasons for Variation in performance

Late release of funds

Total	15,937
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	15,937
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

- Improved awareness in ways of increasing fish production.
 - Capacity for producing dissemination outreach materials using ICT facilities.
 - Coordinated research management

1 Press Release placed in the Monitor on 21st November 2013 to mark World Fisheries Day.

Item	Spent
221007 Books, Periodicals & Newspapers	1,201
221008 Computer supplies and Information Technology (IT)	760
227001 Travel inland	1,522

Reasons for Variation in performance

Late and inadequate release of funds.

Total	3,482
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	3,482
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 08 National Fisheries Research

		Item	Spent
- Human Resource identified and appropriately utilised and managed	- 2 office buildings rehabilitated	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	6,400
- Critical competent staff in the Institute recruited and motivated	- 3 vehicles repaired and serviced	221003 Staff Training	2,840
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Kajansi and Jinja compounds maintained	221004 Recruitment Expenses	1,280
- Institute physical facilities managed and maintained.	- Electricity bills paid to zero balance	221006 Commissions and related charges	3,200
	- Internet Services & Entertainment procured	221008 Computer supplies and Information Technology (IT)	1,140
	- Salaries & Wages paid to-date	221009 Welfare and Entertainment	875
	- Security Services procured	221012 Small Office Equipment	712
	- Telephone services procured	222002 Postage and Courier	420
	- Travel inland facilitated	225001 Consultancy Services- Short term	480
		226001 Insurances	180
		228002 Maintenance - Vehicles	4,446
		228003 Maintenance – Machinery, Equipment & Furniture	1,877
		228004 Maintenance – Other	875
		Total	24,725
		Wage Recurrent	6,400
		Non Wage Recurrent	18,325
		NTR	0

Reasons for Variation in performance

Late release of funds.

Output: 01 5105 Generation of technologies for priority commodities

		Item	Spent
- Fish technologies developed and disseminated	- In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1} ,	224001 Medical and Agricultural supplies	15,715
	- Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment		
	- Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits.		

Reasons for Variation in performance

Late release of funds

Total	15,715
Wage Recurrent	0
Non Wage Recurrent	15,715
NTR	0

Programme 09 National Forestry Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 09 National Forestry Research

		Item	Spent
1.Improved management of On-station experiments and Kifu research forest.	•Raised 25,000 seedlings each for M. eminii, E. Grandis and M. volkensii	211103 Allowances	1,248
2.NaFORRI Kifu Forest Management plan developed	•Established one Nelder trial for M. Eminii in Buginyanya	221001 Advertising and Public Relations	1,692
3.Quality of research and research output enhanced	•Thaumasticoris perigrinus a pest previously in S.Africa and Kenya identified in Uganda. The pest incidence in Wanale and Budwale sub-counties Mbale district was 39% and 42% respectively. Low pest incidence observed in Manafa, Bududa, Tororo and Busia districts. Established high incidence of deaths among Pines ranging from (8%-98%) in thirteen(13) woodlots surveyed in S. Western Uganda	221007 Books, Periodicals & Newspapers	488
4.Regional and international partnership enhanced		221008 Computer supplies and Information Technology (IT)	500
		221011 Printing, Stationery, Photocopying and Binding	600
		221012 Small Office Equipment	200
		224002 General Supply of Goods and Services	9,618
		227001 Travel inland	2,400
		227004 Fuel, Lubricants and Oils	4,804

Reasons for Variation in performance

Late release of funds

Total	21,550
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	21,550
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

		Item	Spent
1.Regional and international partnership enhanced	In collaborative arrangements 29 prospective forage species identified on 100 smallholder dairy farms in Masaka district. - Forage production (6), processing (2), and preservation (1) options identified on 100 smallholder dairy farms in Masaka district. Candidate practices (8) earmarked for on-station forage management trials.	221002 Workshops and Seminars	3,000

Reasons for Variation in performance

Late release of funds.

Total	3,000
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	3,000
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 09 National Forestry Research

		Item	Spent
1.4 old research trials maintained and 4 km Forest boundary planted with live markers.	- Security Services procured and paid	222001 Telecommunications	1,400
2. Vehicles, Motorcycles and Generator s maintained and serviced	- Utility services procured and paid	222002 Postage and Courier	16
3.10,000m2 of compound kept neat and .NaFORRI property and estate secured.	- Travel inland facilitated	222003 Information and communications technology (ICT)	2,640
4. Electricity & telephone connectivity bills serviced; Water lines and pumps serviced and maintained	- 3 vehicles repaired and serviced	223005 Electricity	3,600
5. Potting, pricking out, root pruning and planting out/transplanting of seedlings achieved	- Salaries & Wages paid to-date	226001 Insurances	200
6. Access to current information enhanced	- Internet Services & Entertainment procured	228002 Maintenance - Vehicles	3,190
7. IEC materials e.g calendars and brochures, printed and distributed	- Electricity bills paid to zero balance	228003 Maintenance – Machinery, Equipment & Furniture	600
8. Management committee and contract committees facilitated	- One acres of compound mowed and trimmed, offices cleaned		
9. Sawmill and carpentry equipment maintained			
10. Tree Nursery and greenhouse maintained and enhanced for production			
11. NaFORRI Guest House and Eco-tourism enhanced for generation of NTR			
12. Management of activities, projects, and resources improved			

Reasons for Variation in performance

Late release of funds

Total	11,645
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	11,645
<i>NTR</i>	0

Programme 10 National Livestock Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		Item	Spent
Livestock technologies developed	•Management innovations for tick-borne diseases and milk-borne zoonoses: Company to sequence 200 purified DNA samples and characterize T. parva identified and procurement of services initiated. Also, Prevalence of T. parva per agro-ecological zone •Characterize Mycobacterium, Brucella and haemorrhagic E. coli for	221002 Workshops and Seminars	464
		221011 Printing, Stationery, Photocopying and Binding	1,891
		222001 Telecommunications	1,440
		223005 Electricity	2,400
		223006 Water	900
		224001 Medical and Agricultural supplies	5,540
		224002 General Supply of Goods and Services	583

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 10 National Livestock Research

improvement of diagnostic tests: Culture has been done on 320 out of the 600 milk samples collected. From these samples, 5 suspect bacteria were identified - E. coli, Staphylococcus sp, Streptococcus sp, Lactobacillus sp and Pseudomonas. Of the 321 samples 65 have been analysed for isolation of Enterohaemorrhagic E. coli •5 isolates of Enterohaemorrhagic E. coli have obtained has been isolated from the 65 samples •72 milk samples were analysed for the number of colony forming units (CFU) of E. coli organisms. per 100 ml of milk. Results are: •Range: 320,000 – 840,000 CFU/100ml. Average/Mean: 590,000CFU/100mL	227004 Fuel, Lubricants and Oils	4,451
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Reasons for Variation in performance

late release of funds

Total	17,669
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	17,669
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

NaLIRRI research activities and functions demystified	<ul style="list-style-type: none"> •Trained 340 farmers (210 female and 130 male) in Mbarara, Masaka and Wakiso districts on NSD management •Trained stakeholders in Masaka (30) and Wakiso (30) districts on harvesting and processing forage seed 	<i>Item</i>	<i>Spent</i>
		221001 Advertising and Public Relations	300

Reasons for Variation in performance

Late release of funds

Total	300
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	300
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 10 National Livestock Research

		Item	Spent
- Human Resource identified and appropriately utilised and managed	- Security Services procured	221003 Staff Training	4,200
- Critical competent staff in the Institute recruited and motivated	- Telephone services procured	221006 Commissions and related charges	5,520
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Travel inland facilitated	221007 Books, Periodicals & Newspapers	876
- Institute physical facilities managed and maintained.	- 1 residential buildings painted outside	221008 Computer supplies and Information Technology (IT)	3,620
	- 5 vehicles repaired and serviced	221009 Welfare and Entertainment	936
	- Salaries & Wages paid to-date	228002 Maintenance - Vehicles	6,040
	- Internet Services & Entertainment procured		
	- Electricity bills paid to zero balance		
	- 4 acres of farm land fenced		

Reasons for Variation in performance

late release of funds

Total	21,191
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	21,191
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

		Item	Spent
- On station dairy and beef animals managed and maintained	•Development of supplementary feed rations for dairy and beef cattle: 20 sorghum stover and Tithonia samples collected and analysis is underway; A survey was conducted on on Social-economic factors affecting utilization of sorghum stover for feeding animals and statistical analysis of collected data is underway	224001 Medical and Agricultural supplies	15,125
- Livestock technologies developed and disseminated.	•Characterisation of productivity of pasture in three selected grazing areas in Nakasongola, Kotido, Amudat and Mbarara during the wet season of October-November: Results of the assessment indicated that pasture biomass ranged from 1500-4500kg/ha-1 with the lowest value occurring in Kotido. The sward legume component ranged between 5-20% of the total basal cover with lowest and highest legume component occurring in Kotido and Mbarara respectively.		

Reasons for Variation in performance

late release of funds

Total	15,125
<i>Wage Recurrent</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 10 National Livestock Research

<i>Non Wage Recurrent</i>	15,125
<i>NTR</i>	0

Programme 11 National Semi arid Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Germplasm collected ,characterized and evaluated, variety maintenance, seed multiplication of priority crops (cotton.sorghum,finger millet, sun flower, sesame, groundnuts and cow peas).

3.Five of the promising lines performed better than the test released variety (SEPI 2) which gave yield of 2188 kg/ha. 2004/17/16/5 (2688 kg/ha) the highest, followed by ICEAP00554 (2667 kg/ha), 2004/16/16/7 (2334 kg/ha), and 2004/17/10/1 (2230 kg/ha)
4.200 millet accessions characterised and 4 lines resistant to blast identified;
5.Thirteen (13) millet lines with tolerance to drought confirmed;

Item	Spent
221002 Workshops and Seminars	904
221007 Books, Periodicals & Newspapers	500
221011 Printing, Stationery, Photocopying and Binding	2,104
222001 Telecommunications	600
223005 Electricity	626
224001 Medical and Agricultural supplies	6,192
224002 General Supply of Goods and Services	9,640
227004 Fuel, Lubricants and Oils	2,602

Reasons for Variation in performance

Late release of funds

Total	23,167
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	23,167
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

1.NARO-NAADS Joint workshops and meetings conducted;
2.Capacity development workshops for IARD;
3.Planning/Review/Feedback/ workshops and meetings held;
4.Make contributions to NGOs and CBOs; subscribe to associations;
5.Networking ,Partnerships and collaborations managed and maintained

•Trained 12 farmer groups on Integrated Striga Management Technologies and community quality seed production.

Item	Spent
221002 Workshops and Seminars	1,104
221005 Hire of Venue (chairs, projector, etc)	200
221007 Books, Periodicals & Newspapers	500
221008 Computer supplies and Information Technology (IT)	2,100

Reasons for Variation in performance

Late release of funds

Total	3,904
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	3,904
<i>NTR</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 11 National Semi arid Research

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
 - Critical competent staff in the Institute recruited and motivated
 - Adequate financial resources mobilised, appropriately utilised and duly accounted for
 - Institute physical facilities managed and maintained.

- Security Services procured and paid
 - Utility services procured and paid
 - Travel inland facilitated
 - 3 vehicles repaired and serviced
 - Salaries & Wages paid to-date
 - Internet Services & Entertainment procured
 - Electricity bills paid to zero balance
 - One acres of compound mowed and trimmed, offices cleaned

Item	Spent
211102 Contract Staff Salaries (Incl. Casuals, Temporary)	14,400
221001 Advertising and Public Relations	1,080
221003 Staff Training	3,000
221004 Recruitment Expenses	400
221006 Commissions and related charges	3,170
221009 Welfare and Entertainment	1,627
221012 Small Office Equipment	700
226001 Insurances	120
228002 Maintenance - Vehicles	5,000
228003 Maintenance – Machinery, Equipment & Furniture	2,196
228004 Maintenance – Other	244

Reasons for Variation in performance

Late release of funds.

Total	31,936
Wage Recurrent	14,400
Non Wage Recurrent	17,536
NTR	0

Programme 12 National Laboratories Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

1. - Improved fertiliser recommendation and extension packages in place
 2. Options for CA demonstrated
 3. Increased centralized germplasm base collection for target species.
 4. Maintenance of cover crop demonstrations at NARL

- use of ISFM practices improved gnuts performance. The 2013A data showed optimum rates to be: 8.73 kg P/ha for serenut 3 and 4.37+2 t FYM/ha for red beauty.

Item	Spent
221002 Workshops and Seminars	3,004
222001 Telecommunications	4,000
223005 Electricity	16,000
223006 Water	700
227001 Travel inland	22,860
227004 Fuel, Lubricants and Oils	4,400

Reasons for Variation in performance

Late and inadequate release of funds

Total	50,962
Wage Recurrent	0
Non Wage Recurrent	50,962
NTR	0

Output: 01 5102 Research extension interface promoted and strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 12 National Laboratories Research

1 staff AGM, 1 Budget retreat and one 1 staff AGM,
budget conference by June 2014.
NARO research results, outputs,
products and services published
promoted and disseminated
appropriately

Item	Spent
221002 Workshops and Seminars	2,000
221005 Hire of Venue (chairs, projector, etc)	180
221008 Computer supplies and Information Technology (IT)	400
221011 Printing, Stationery, Photocopying and Binding	400

Reasons for Variation in performance

Late release of funds

Total	2,979
Wage Recurrent	0
Non Wage Recurrent	2,979
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
- Critical competent staff in the Institute recruited and motivated
- Adequate financial resources mobilised, appropriately utilised and duly accounted for
- Institute physical facilities managed and maintained

- Security Services procured and paid
- Utility services procured and paid
- Travel inland facilitated
- 3 vehicles repaired and serviced
- Salaries & Wages paid to-date
- Internet Services & Entertainment procured
- Electricity bills paid to zero balance
- One acres of compound mowed and trimmed, offices cleaned

Item	Spent
211102 Contract Staff Salaries (Incl. Casuals, Temporary)	27,693
213002 Incapacity, death benefits and funeral expenses	1,290
221001 Advertising and Public Relations	1,120
221003 Staff Training	1,000
221004 Recruitment Expenses	139
221006 Commissions and related charges	1,894
221009 Welfare and Entertainment	1,600
221011 Printing, Stationery, Photocopying and Binding	400
221012 Small Office Equipment	400
221016 IFMS Recurrent costs	100
222002 Postage and Courier	400
223005 Electricity	4,000
225001 Consultancy Services- Short term	640
226001 Insurances	210
227004 Fuel, Lubricants and Oils	3,529
228002 Maintenance - Vehicles	17,600
228003 Maintenance – Machinery, Equipment & Furniture	4,000
228004 Maintenance – Other	1,480

Reasons for Variation in performance

Late release of funds

Total	67,489
Wage Recurrent	27,693
Non Wage Recurrent	39,796
NTR	0

Output: 01 5105 Generation of technologies for priority commodities

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 12 National Laboratories Research

	Item	Spent
Banana hybrids tolerance stress, high yielding and with consumer acceptable qualities generated and technologies that enhance the banana value chain developed and promoted	- Collected data on the performance of Black sigatoka incidence and agronomic at pre-flowering stage; Incidence of Black Sigatoka on hybrids determined at the pre flowering stage in the PYT at Kawanda, 224001 Medical and Agricultural supplies	18,407

Reasons for Variation in performance

Late and inadequate release of funds

Total	18,407
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	18,407
<i>NTR</i>	0

Programme 13 Abi ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	Item	Spent
Vehicles in running condition in the institute at all times	221002 Workshops and Seminars	2,079
3 monthly hired labour contracts paid by October 2013	221006 Commissions and related charges	2,479
Sufficient computer supplies available in the institute at all times	221011 Printing, Stationery, Photocopying and Binding	800
6 utility bills paid by October 2013	222001 Telecommunications	240
Maintenance of trials a	224002 General Supply of Goods and Services	4,480
	227004 Fuel, Lubricants and Oils	2,022

Reasons for Variation in performance

Late release of funds.

Total	12,100
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	12,100
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 13 Abi ZARDI

		Item	Spent
1 Management and PARI Directors Forum meetings attended by December 2013	- Security Services procured and paid	221003 Staff Training	1,800
	- Utility services procured and paid	221009 Welfare and Entertainment	1,480
	- Travel inland facilitated	227001 Travel inland	3,325
	- 3 vehicles repaired and serviced	228002 Maintenance - Vehicles	1,234
1 quarterly verification and value for money audit carried out by January 2014	- Salaries & Wages paid to-date		
	- Internet Services & Entertainment procured		
	- Electricity bills paid to zero balance		
1 quarterly stores report prepared and submitted to NAROSEC by January 2014	- One acres of compound mowed and trimmed, offices cleaned		
2 monthly procurem			

Reasons for Variation in performance

Late release of funds

Total	7,838
Wage Recurrent	0
Non Wage Recurrent	7,838
NTR	0

Output: 01 5105 Generation of technologies for priority commodities

		Item	Spent
On-station trials and demonstrations of priority commodities harvested and data collected for season B 2013.	Cassava:	224001 Medical and Agricultural supplies	1,000
	- Trials with landraces were harvested and participatory evaluation conducted in Nyaravuru (Nebbi) and Rhino camp (Arua).		
	- Adaptive trials of improved varieties in 10 sites were harvested and participatory evaluation conducted with farmers. Results were published in the Journal of Agricultural Science (Abaca et al. Vol. 6, No. 1; 2014. Pp 116-122).		
	- New adaptive trials and demos were planted in Maracha, Moyo, Nebbi, Koboko and Arua.		
	Aquaculture:		
	- Six fish cages of low volume high density have been assembled and established in Onigo D fishing bay; Results of reproductive seasonality of A. baremoze over 12-month period showed that: Basing on the observable characteristics during the maturity stages, A. baremoze undergo total spawning as no opaque eggs were noticed to be left in the ovary during the spawning stage; The spawning pattern exhibited by A. baremoze across the twelve months of study indicate that this species undergo short spawning periods; Results on ovary description of "Angara" published in		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 13 Abi ZARDI

peer reviewed journals - Stages of ovarian stages of *Alestes baremoze* (Joannis, 1835): A Step towards Understanding Its Reproductive Biology, published in *Frontiers in Science*, Vol. 3 No. 4, pp. 107-113.

- Six fish cages of low volume high density have been assembled and established in Onigo D fishing bay.

Dairy productivity

- (evaluation of forage cultivars): On-station forage-adaptive trial, including 12 forage spp set up. Apart from *Panicum maximum*, all other forages either germinated or sprouted with more than 80% establishment.

Nutrifed forage sorghum achieved more than 50% flowering after 2.5 months of planting.

Reasons for Variation in performance

Late release of funds

Total	1,000
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	1,000
<i>NTR</i>	0

Programme 14 Bulindi ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	<i>Item</i>	<i>Spent</i>
1. Strategies for improving livestock productivity in the mid western zone of Uganda developed and promoted.	•Evaluation performance of key crops: •From the 0.2 acres of beans, NABE 4, NABE 16 yielded much better at 634kg/acre and 787kg/acre respectively than NABE 15 and k132 at 336.2kg/acre and 390kg/acre respectively)., Growth and yield data from 0.1 acres maize (Longe4, Longe 5, Longe10H, Longe 6H), 0.1 acre rice (NERICA 1, 4,10 and SUPERICA) and 0.6 acre groundnut (SERENUT 1-14) is under analysis	221002 Workshops and Seminars 1,008
2. Improved livestock breeds introduced and evaluated in the MWZ		221011 Printing, Stationery, Photocopying and Binding 400
3. Maintenance of On-Station Casual Labour		222001 Telecommunications 1,000
4. Mechanisms for efficient institutional management strengthened		223005 Electricity 1,200
		224002 General Supply of Goods and Services 1,623
		227004 Fuel, Lubricants and Oils 4,000

Reasons for Variation in performance

Late release of funds

Total	9,230
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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 14 Bulindi ZARDI

<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	9,230
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

- Strategies for improving access to knowledge developed,
- Promotion of improved technologies and enhancing farmers skills

•The 1 acre of demonstration for Maize; (Longe 5, Longe 4 and Longe 10H), beans (NABE 4, K131,NABE 12C) Rice (NERICA 1, NERICA 4, NERICA 10, NARIC 1, NARIC 2),Sorghum (Sekedo), Soya (Namusoy1N, Namusoy2N, Namusoy3N & Maksoy4M),Sweet potatoes (NASPOT6, NASPOT8, NASPOT10, NASPOT7, NASPOT11 & Ejumula) which was previously established on-station to increase farmers' knowledge on Good agronomic Practices and access to adapted crop cultivars in the LACZ was visited by 284 students and 49 farmers

Item

221008 Computer supplies and Information Technology (IT)

Spent

800

Reasons for Variation in performance

late release of funds

Total	800
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	800
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
- Critical competent staff in the Institute recruited and motivated
- Adequate financial resources mobilised, appropriately utilised and duly accounted for
- Institute physical facilities managed and maintained.

- Security Services procured and paid
- Utility services procured and paid
- Travel inland facilitated
- 3 vehicles repaired and serviced
- Salaries & Wages paid to-date
- Internet Services & Entertainment procured
- Electricity bills paid to zero balance
- One acres of compound mowed and trimmed, offices cleaned

Item

221006 Commissions and related charges

221009 Welfare and Entertainment

228002 Maintenance - Vehicles

Spent

2,575

1,424

1,420

Reasons for Variation in performance

Late and inadequate release of funds

Total	5,418
<i>Wage Recurrent</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 14 Bulindi ZARDI

Non Wage Recurrent 5,418
NTR 0

Output: 01 5105 Generation of technologies for priority commodities

		Item	Spent
- The improved dairy and fish technologies maintained	•The 1 acre of demonstration for Maize; (Longe 5, Longe 4 and Longe 10H), beans (NABE 4, K131,NABE 12C) Rice (NERICA 1, NERICA 4, NERICA 10, NARIC 1, NARIC 2),Sorghum (Sekedo), Soya (Namusoy1N, Namusoy2N, Namusoy3N & Maksoy4M),Sweet potatoes (NASPOT6, NASPOT8, NASPOT10, NASPOT7, NASPOT11 & Ejumula) which was previously established on-station to increase farmers' knowledge on Good agronomic Practices and access to adapted crop cultivars in the LACZ was visited by 284 students and 49 farmers	224001 Medical and Agricultural supplies	3,732
- Farming information materials developed and distributed.	•Evaluation of drought tolerance of forage species: Greenness, vigor, biomass and fraction of dead to green determined for November 2013. Neonotonia wightii and Congo signal (control) were the most green. Brachiaria Toledo & B. Hybrid had the highest biomass (fresh). DM yet to be determined		
	•Exploration of cage fish farming opportunities in the region: A total of 30 bays on lake Albert were surveyed, water and sediment samples collected in Hoima, Kibaale and Buliisa districts. These are: Sabagolo, Nyawayiga, Nyamula, Nkondo, Ndokole, Susa, Bugoma, Bugoma – Kinya (Bagdad), Kinya B, Kisege, Kayiso, Mbegu, Tonya (Songa Nyanyama and Songa Mali), and Mbegu-Lwengabi in Hoima, Pida, Booma A, Booma B, Booma-Tugombiri, Kinyamukuta, Butiaba, Walukuba, Somusio, and Bugoigo in Buliisa and Mpeefu, Kabukanga, Kitebere, Ndayiga, Nguse, Rwebigongoro and Kamina bays in Kibaale		
	•Fruit tree production: Analysis of data collected on		

Reasons for Variation in performance

late and inadequate release of funds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 14 Bulindi ZARDI

Total	3,732
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	3,732
<i>NTR</i>	0

Programme 15 Kacwekano

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		<i>Item</i>	<i>Spent</i>
Improved technologies introduced, validated and promoted.	- Establishment of field trials in Kanungu, kisoro, Mbarara and Kanungu, Data collected on disease incidence and other agronomic characters	221007 Books, Periodicals & Newspapers	10
	- 20 clones selected based on bacterial wilt incidence for further development	221011 Printing, Stationery, Photocopying and Binding	926
	- About 198 plantlets of three varieties (Rutuku, Kachpot 1 and Victoria) inoculated for in vitro performance in the laboratory.	222001 Telecommunications	320
	- Confirmed the presence of B-gluconidase gene (gus) in 5 lines of Victoria and Rutuku, NPT II marker gene in 3 lines of Kachpot 2, lines of victoria and 1 line of Rutuku	223005 Electricity	1,800
	- Maintained 1.5 ha of land planted with nuclear seed for basic seed production and seed crop management	223006 Water	576
		227004 Fuel, Lubricants and Oils	2,927

Reasons for Variation in performance

Late and inadequate release of funds

Total	6,559
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	6,559
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

		<i>Item</i>	<i>Spent</i>
- Human Resource identified and appropriately utilised and managed	- Security Services procured and paid	221004 Recruitment Expenses	1,688
- Critical competent staff in the Institute recruited and motivated	- Utility services procured and paid	221006 Commissions and related charges	3,134
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Travel inland facilitated	221008 Computer supplies and Information Technology (IT)	1,860
- Institute physical faci	- 3 vehicles repaired and serviced	221009 Welfare and Entertainment	501
	- Salaries & Wages paid to-date	226001 Insurances	60
	- Internet Services & Entertainment procured	227001 Travel inland	2,247
	- Electricity bills paid to zero balance	228002 Maintenance - Vehicles	580
	- One acres of compound mowed and trimmed, offices cleaned		

Reasons for Variation in performance

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 15 Kacwekano

late and inadequate release of funds	228003 Maintenance – Machinery, Equipment & Furniture	1,500
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Total	11,570
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	11,570
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

	<i>Item</i>	<i>Spent</i>
- The quality fish technologies maintained		
- Publications of technology development and dissemination developed		
- Process of dissemination and adoption of the fish technologies monitored		
- fish technologies developed and disseminated		
- 3,140 apple grafted seedlings generated. 1,223 apple rootstock seedlings raised at the central nursery at Bugongi. 640 rootstocks ground layered at Bugongi and a further 2,220 earthed up.	224001 Medical and Agricultural supplies	1,550

Reasons for Variation in performance

Late and inadequate release of funds

Total	1,550
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	1,550
<i>NTR</i>	0

Programme 16 Mukono ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	<i>Item</i>	<i>Spent</i>
1. At least 3 vehicles repaired and serviced.	221011 Printing, Stationery, Photocopying and Binding	2,889
Payment of at least of electricity & telephone bill	222001 Telecommunications	720
At least 398 litres of fuels for research and administrative work purchased	223005 Electricity	2,208
Bank transitions done	224002 General Supply of Goods and Services	2,279
Print at least 100 Institute christmas car	227004 Fuel, Lubricants and Oils	1,415

Reasons for Variation in performance

Late and inadequately release of funds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 16 Mukono ZARDI

Total	9,511
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	9,511
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

At least 2 sources of information (books, journals etc) purchased
Subscription to at least 1 scientific journals

At least four sets of news papers purchased
Purchase atleast 1 magazine folder

- Monitored the 5 established on-farm Nakati trials in Mpigi and Wakiso.
There was commendable progress.

Item	Spent
221007 Books, Periodicals & Newspapers	1,000

Reasons for Variation in performance

Late and inadequate release of funds

Total	1,000
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	1,000
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

Subscribe at least once for internet and 2 mobile internet modems

- Security Services procured and paid
- Utility services procured and paid
- Travel inland facilitated

Acquire atleast 1 package for updating and upgrading the Intranet web
Website updated at least once
Servicing at least 1 Pbx machine, and servicing at least 1 photocopier

- 3 vehicles repaired and serviced
- Salaries & Wages paid to-date
- Internet Services & Entertainment procured
- Electricity bills paid to zero balance
- One acres of compound mowed and trimmed, offices cleaned

Item	Spent
221006 Commissions and related charges	1,065
221008 Computer supplies and Information Technology (IT)	2,768
221009 Welfare and Entertainment	3,907
221012 Small Office Equipment	97
227001 Travel inland	804

Acquire

Reasons for Variation in performance

Late and inadequate release of funds

Total	8,641
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	8,641
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 16 Mukono ZARDI

		Item	Spent
- The improved banana, maize, rice, cassava and fish technologies maintained on station.	Four fished ponds were partially stocked	224001 Medical and Agricultural supplies	4,013
- Publications of improved technologies and dissemination developed			
- Process of dissemination and adoption of the banana, maize, rice, cassava and fish technologies monitored.			

Reasons for Variation in performance

Late and inadequate release of funds

Total	4,013
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	4,013
<i>NTR</i>	0

Programme 17 Ngetta ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		Item	Spent
Introduction and validation of improved technologies in the zone.	- Maintained 6,000 seedlings established for pasture seed multiplication on station.	221011 Printing, Stationery, Photocopying and Binding	896
		222001 Telecommunications	1,037
		223005 Electricity	1,200
		223006 Water	1,373
		224002 General Supply of Goods and Services	1,574
		227004 Fuel, Lubricants and Oils	1,368

Reasons for Variation in performance

Late and inadequate release of funds

Total	7,448
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	7,448
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

1.Promotion and dissemination of research finding made	None
2.Utilisation of improved practices enhanced	

Reasons for Variation in performance

NA

Total	0
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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 17 Ngetta ZARDI

<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	0
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed	- Security Services procured and paid	<i>Item</i>	<i>Spent</i>
- Critical competent staff in the Institute recruited and motivated	- Utility services procured and paid	221001 Advertising and Public Relations	624
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Travel inland facilitated	221003 Staff Training	2,240
- Institute physical facilities appropriately maintained.	- 3 vehicles repaired and serviced	221008 Computer supplies and Information Technology (IT)	436
	- Salaries & Wages paid to-date	221009 Welfare and Entertainment	1,550
	- Internet Services & Entertainment procured	221012 Small Office Equipment	74
	- Electricity bills paid to zero balance	227001 Travel inland	2,800
	- One acres of compound mowed and trimmed, offices cleaned	228002 Maintenance - Vehicles	2,610

Reasons for Variation in performance

Late and inadequate release of funds

Total	10,333
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	10,333
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

- The quality of the developed cassava, fish, dairy technologies maintained	•A cage culture status and potential sites for Lango sub-region was documented.	<i>Item</i>	<i>Spent</i>
- Publications of technology development and dissemination developed	•Data on performance of different CBSD tolerant varieties in different locations of the NAEZ documented.	224001 Medical and Agricultural supplies	2,664
- Process of dissemination and adoption of the cassava, fish, dairy technologies monitored.	•Better option for weed management in rice and beans documented		

Reasons for Variation in performance

Late and inadequate release of funds

Total	2,664
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	2,664
<i>NTR</i>	0

Programme 18 Nabium ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 18 Nabium ZARDI

Management practices that affect the performance of goats assessed and appropriate interventions recommended in Teso and Karamoja sub-regions. Efficative botanicals in controlling crop pests and diseases identified. Appropriate water harvesting (two)	Ethnoveterinary botanicals and knowledge utilised by pastoralists to control ticks and helminths in livestock was documented	Item	Spent
		221002 Workshops and Seminars	400
		221007 Books, Periodicals & Newspapers	160
		221011 Printing, Stationery, Photocopying and Binding	412
		222001 Telecommunications	80
		223005 Electricity	96
		223006 Water	80
		227004 Fuel, Lubricants and Oils	832
		Total	2,058
		Wage Recurrent	0
		Non Wage Recurrent	2,058
		NTR	0

Reasons for Variation in performance

Late and inadequate release of funds

Output: 01 5102 Research extension interface promoted and strengthened

At least 2 Apiary demo sites established and maintained at Nabuin and Serere. At least 3 farmer trainings on apiary management held in the zone. At least 10 TOTS in each district in Karamoja and Teso backstopped on Apiary management.	*5 newly released CBSD resistant cassava varieties are being evaluated for adaptability at on-farm (NabuZARDI)	Item	Spent
		221002 Workshops and Seminars	1,289
		227001 Travel inland	1,280
		Total	2,569
		Wage Recurrent	0
		Non Wage Recurrent	2,569
		NTR	0

Reasons for Variation in performance

Inadquate release of funds

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed - Critical competent staff in the Institute recruited and motivated - Adequate financial resources mobilised, appropriately utilised and duly accounted for	- Security Services procured and paid - Utility services procured and paid - Travel inland facilitated - 3 vehicles repaired and serviced - Salaries & Wages paid to-date - Internet Services & Entertainment procured - Electricity bills paid to zero balance - One acres of compound mowed and trimmed, offices cleaned	Item	Spent
		211102 Contract Staff Salaries (Incl. Casuals, Temporary)	1,823
		221003 Staff Training	1,916
		221004 Recruitment Expenses	400
		221006 Commissions and related charges	2,474
		221008 Computer supplies and Information Technology (IT)	151
		227001 Travel inland	260
		228002 Maintenance - Vehicles	800
		Total	2,569
		Wage Recurrent	0
		Non Wage Recurrent	2,569
		NTR	0

Reasons for Variation in performance

Late and inadequate release of funds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 18 Nabium ZARDI

Total	7,823
<i>Wage Recurrent</i>	1,823
<i>Non Wage Recurrent</i>	6,000
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

	<i>Item</i>	<i>Spent</i>
- The quality cassava, fish, dairy, beef technologies maintained	- 10 acres of rice were maintained in Kolir, Bukedea District.	
- Publications of technology development and dissemination developed	224001 Medical and Agricultural supplies	7,796
- Process of dissemination and adoption of the cassava, fish, dairy, beef technologies monitored		

Reasons for Variation in performance

Late and inadequate release of funds and prolonged drought

Total	7,796
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	7,796
<i>NTR</i>	0

Programme 19 Mbarara ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

	<i>Item</i>	<i>Spent</i>
Validation and evaluation of agricultural technologies in the Zone supported.	•Preliminary results of fungicide and pesticide application regime appropriate for management of major mango, avocado and citrus pests and diseases were obtained. Systemic fungicide sprayed at vegetative, flowering and fruiting stages gave promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocados.	
	221011 Printing, Stationery, Photocopying and Binding	1,000
	222001 Telecommunications	800
	223005 Electricity	2,000
	227004 Fuel, Lubricants and Oils	1,280

Reasons for Variation in performance

Late and inadequate release of funds

Total	5,079
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	5,079
<i>NTR</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 19 Mbarara ZARDI

Output: 01 5102 Research extension interface promoted and strengthened

		Item	Spent
Computers serviced and maintained	<ul style="list-style-type: none"> Experiments were established on-farm and on-station. On-station results best nitrogen fixing shrubs to be Calliandra C., Gliricidia S., Leuceana T. while low results were obtained from Sesbania S. and control with 968,966, 948 while 731 and 816 kgs of bean yield per hectare. Soil analyses indicate soil nitrogen and phosphorus being below the critical values of 0.2 % and 15 mg/kg respectively in most soils 	221008 Computer supplies and Information Technology (IT)	640

Reasons for Variation in performance

late and inadequate release of funds.

Total	640
Wage Recurrent	0
Non Wage Recurrent	640
NTR	0

Output: 01 5104 Agricultural research capacity strengthened

		Item	Spent
Management of physical, human, financial and information resources of the Mbarara zonal agricultural research and development institute.	<ul style="list-style-type: none"> Security Services procured and paid Utility services procured and paid Travel inland facilitated 3 vehicles repaired and serviced Salaries & Wages paid to-date Internet Services & Entertainment procured Electricity bills paid to zero balance One acres of compound mowed and trimmed, offices cleaned 	221006 Commissions and related charges 221009 Welfare and Entertainment 227001 Travel inland 228002 Maintenance - Vehicles 228003 Maintenance – Machinery, Equipment & Furniture	1,600 1,000 6,080 1,367 600

Reasons for Variation in performance

Late and inadequate release of funds

Total	10,646
Wage Recurrent	0
Non Wage Recurrent	10,646
NTR	0

Output: 01 5105 Generation of technologies for priority commodities

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 19 Mbarara ZARDI

		Item	Spent
- The quality beans, bananas, fish and dairy technologies maintained	•In a survey of 200 households in the zone, it was established that only 7% of farmers conserved fodder. Limited awareness, high cost of inputs, unreliable labour, low quality pasture species and high cattle stocking rates identified as major constraints to on-farm feed conservation. Hay and silage making the only methods used to conserve fodder.	224001 Medical and Agricultural supplies	3,234
- Publications of technology development and dissemination developed			
- Process of dissemination and adoption of the beans, bananas, fish and dairy technologies monitored			
- bean			

Reasons for Variation in performance

Late and inadequate release of funds

Total	3,234
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	3,234
<i>NTR</i>	0

Programme 20 Buginyaya ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		Item	Spent
1.1: Farming systems and livelihood characteristics including farmers' agricultural needs, constraints and opportunities in the Busoga subzone validated and documented.	- Baseline information on SWC practices in project sites: Survey tool developed and pretested for data collection	221002 Workshops and Seminars	450
		221011 Printing, Stationery, Photocopying and Binding	2,360
		222001 Telecommunications	776
		223005 Electricity	480
		227001 Travel inland	4,088
		227004 Fuel, Lubricants and Oils	2,463

Reasons for Variation in performance

late and inadequate release of funds

Total	10,618
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	10,618
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

		Item	Spent
Physical, human, financial and information resources of the Buginyanya zonal agricultural research and development institute of managed and maintained.	- Security Services procured and paid - Utility services procured and paid - Travel inland facilitated - 3 vehicles repaired and serviced - Salaries & Wages paid to-date - Internet Services & Entertainment procured - Electricity bills paid to zero balance - One acres of compound mowed and trimmed, offices cleaned	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	6,034
		221003 Staff Training	2,123
		221006 Commissions and related charges	1,333
		221007 Books, Periodicals & Newspapers	227
		221009 Welfare and Entertainment	785
		227001 Travel inland	1,553
		228002 Maintenance - Vehicles	1,200

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 20 Buginyaya ZARDI

Reasons for Variation in performance

Late and inadequate release of funds

228003 Maintenance – Machinery, Equipment & Furniture

697

Total	13,952
<i>Wage Recurrent</i>	6,034
<i>Non Wage Recurrent</i>	7,918
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

Development, multiplication, packaging and dissemination of high quality/improved technologies for beans, maize, cassava and coffee to uptake pathways in the eastern highlands and low lands

•Arabica Coffee: Surveillance of crop nutrition and disease incidence: -Poor coffee crop nutrition observed in 45% of surveyed fields around Bulambuli; leaf miners and coffee berry disease was the most prevalent disease in most of the fields surveyed

Item

224001 Medical and Agricultural supplies

Spent

4,078

Reasons for Variation in performance

Late and inadequate release of funds

Total	4,078
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	4,078
<i>NTR</i>	0

Programme 21 Rwebitaba ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Materials for repair of water pump at Kyembogo for constant water supply

- Evaluation trials maintained on station for improved mangoes, citrus oranges and Apples.
- Demonstration trials for Eucalyptus, Maesopsis eminii, Albizia Chinensis and Terminalia species maintained.

Item

221002 Workshops and Seminars

Spent

440

221011 Printing, Stationery, Photocopying and Binding

1,200

222001 Telecommunications

600

223005 Electricity

240

224002 General Supply of Goods and Services

977

227001 Travel inland

2,000

227004 Fuel, Lubricants and Oils

800

Reasons for Variation in performance

Late release of funds

Total	6,256
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	6,256
<i>NTR</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 21 Rwebitaba ZARDI

Output: 01 5102 Research extension interface promoted and strengthened

	Actual Outputs Achieved in Quarter	Item	Spent
1-Atleast one brochure of priority commodity development(Diary)	Nil	221008 Computer supplies and Information Technology (IT)	180
2.Atleast 2 computers service and antivirus installed			

Reasons for Variation in performance

NA

Total	180
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	180
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

	Actual Outputs Achieved in Quarter	Item	Spent
1-Institute assets protected	- Security Services procured and paid	211102 Contract Staff Salaries (Incl. Casuals, Temporary)	666
2-Quarterly reports prepared and submitted in time	- Utility services procured and paid	221003 Staff Training	856
3-Offices equipped with small equipments for better staff performance	- Travel inland facilitated	221006 Commissions and related charges	400
4-1 Staff attending Finance Workshop	- 3 vehicles repaired and serviced	221009 Welfare and Entertainment	400
5-Constant supply of electricity	- Salaries & Wages paid to-date	221011 Printing, Stationery, Photocopying and Binding	466
6-Effective daily mail deliv	- Internet Services & Entertainment procured	221012 Small Office Equipment	264
	- Electricity bills paid to zero balance	222001 Telecommunications	120
	- One acres of compound mowed and trimmed, offices cleaned	222002 Postage and Courier	32
		227001 Travel inland	768
		227004 Fuel, Lubricants and Oils	960
		228002 Maintenance - Vehicles	1,000
		228003 Maintenance – Machinery, Equipment & Furniture	560

Reasons for Variation in performance

Late release of funds

Total	6,490
<i>Wage Recurrent</i>	666
<i>Non Wage Recurrent</i>	5,824
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

	Actual Outputs Achieved in Quarter	Item	Spent
1. Mother gardens/ fields and genebank at Rwebitaba maintained	Rwebitaba ZARDI	224001 Medical and Agricultural supplies	3,199
2. Nursery potting materials for 20,000 seedlings procured in the quarter	- On station performance trials for tea clones established on 1.2 acres		
	- 15,000 clones raised and 23,433 plantlets maintained in the tea nursery.		
	400,000 cuttings supplied to a nursery operator		
	- Mother garden of the 7 lines of coffee on station maintained. In addition another 1 acre of Robusta and Arabica coffee lines for demonstration		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 21 Rwebitaba ZARDI

was established

- Maintenance of 4 acres of upland rice (NERICA 1, 4 and 10)
- Maintenance of three (3) forage pasture established bracharia species in the evaluation trial
- 2 acres of livestock pastures and fodder species (Lab lab and mucuna) established for multiplication on-station. Monitored dairy farmers who received 21,000 splits of Bricharia species under EAAPP project in collaboration with NaLIRRI
- 20 acres of cassava (Nase 14- 4271 variety) maintained on-station. An additional 40 acres of cassava (NASE 14 variety) on-station under EAAPP maintained
- Acquired 3000 plantlets of improved banana for multiplication on 7 acres on-station
- Conducted survey on banana production and marketing constraints conducted in Kabarole, Kyenjojo and Kyegegwa districts
- Maintenance of bee forage plants (Calliandra - 150, Bottle brush - 100, Angels trumpet- 100 and Moringa-100) in the apiary. Raised 350 oscimum seedlings
- Two fish ponds fully filled with fresh water and stocked with Cat fish (Clarias gariepinus)

13. Preliminary report drafted for tea profitability in Kyenjojo district

Reasons for Variation in performance

late and inadequate release of funds

Total	3,199
<i>Wage Recurrent</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>3,199</i>
<i>NTR</i>	<i>0</i>

Programme 26 NARO Internal Audit

Outputs Provided

Output: 01 5103 Internal Audit

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 26 NARO Internal Audit

		Item	Spent
- Internal Controls reviewed and key risks controlled.	- Audited salary edits october-december 2013 and other payments at NAROSEC with a view of ascertaining the adequacy of internal controls during the reporting period.	221002 Workshops and Seminars	4,000
- Adherence to laid down regulations and policies.	- witness and physically verified items delivered at NAROSEC	221003 Staff Training	700
- Minimized cases of disagreements with auditors and management arising from their reports.	- monitored the implementation of procurement regulations, human resource regulations, and financial regulations at NAROSEC.	221016 IFMS Recurrent costs	1,800
- Payroll embracing all NARO staff audited.		227001 Travel inland	5,000

Reasons for Variation in performance

Delayed approval of funds to undertake planned activities

Total	11,500
<i>Wage Recurrent</i>	0
<i>Non Wage Recurrent</i>	11,500
<i>NTR</i>	0

Development Projects

Project 0382 Support for NARO

Capital Purchases

Output: 01 5175 Purchase of Motor Vehicles and Other Transport Equipment

na Nil

Reasons for Variation in performance

Nil

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5176 Purchase of Office and ICT Equipment, including Software

na Nil

Reasons for Variation in performance

Nil

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

NTR 0

Output: 01 5177 Purchase of Specialised Machinery & Equipment

NA Nil

Reasons for Variation in performance

Nil

Total **0**
GoU Development 0
External Financing 0
NTR 0

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

Payment to CGIAR international organisations made	Partial payment or CGIAR contribution.	Item	Spent
		262101 Contributions to International Organisations (Current)	194,570
		264101 Contributions to Autonomous Institutions	960

Reasons for Variation in performance

The funds were released late

Total **195,530**
GoU Development 195,530
External Financing 0
NTR 0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Research programmes in the NARS monitored; RMIS institutionalized; 4 UJAS editorial committee meetings facilitated; 4 volumes of UJAS published; Innovations systems initiated; Multi stakeholder Innovation platforms supported	Biotechnology •Development of biotechnology tools and processes: Regeneration process and media composition for g-nut and passion fruit determined; Regeneration has been archived in all 4 varieties with average 4 shoots per explants.	Item	Spent
		211103 Allowances	8,781
		221007 Books, Periodicals & Newspapers	8,451
		222001 Telecommunications	9,603
		227004 Fuel, Lubricants and Oils	43,215

Reasons for Variation in performance

Delayed release of funds

Total **70,050**
GoU Development 70,050

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

External Financing 0
NTR 0

Output: 01 5102 Research extension interface promoted and strengthened

		Item	Spent
- Value chain actors and MSIPs established	- Organised and participated in the World Food day celebrations at NASARRI.	221005 Hire of Venue (chairs, projector, etc)	19,206
- infrastructural and informational needs of NARO/NAADS and the proposed Joint ICT platform established	- Developed and published a newspaper article on Agricultural investment opportunities in Uganda.	221008 Computer supplies and Information Technology (IT)	28,810
	- Supported the Africa Crop science conference	227001 Travel inland	53,778
	Supported the six international Nitrogen conference.		
	- Supported Uganda Veterinary Association conference		
	- Trained 340 farmers (210 female and 130 male) in Mbarara, Masaka and Wakiso districts on NSD management		
	- Trained stakeholders in Masaka (30) and Wakiso (30) districts on harvesting and processing forage seed		
	- A Draft paper on evaluation of different Napier accessions for NSD tolerance developed		
	- A draft leaflet on forage seed production produced		
	- About 1000 fact sheets on FMD produced		
	- About 1000 fact sheets on CBPP produced		

Reasons for Variation in performance

Delayed released

Total 101,795
GoU Development 101,795
External Financing 0
NTR 0

Output: 01 5104 Agricultural research capacity strengthened

		Item	Spent
1 - Good Governance and corporate social responsibility ensured and promoted; Leadership and oversight Management of agricultural research provided;	1 - NARO council facilitated;	221001 Advertising and Public Relations	15,365
2 - Staff recruited and trained	2 - Staff recruited and trained	221003 Staff Training	67,223
3 - Stationery and office consumables procured;	3 - Stationery and office consumables procured;	221004 Recruitment Expenses	28,810
4 - Office equipment maintained;	4 - Office equipment maintained;	221006 Commissions and related charges	67,223
5 - Water utility bills paid; Electricity utility bills paid; Telephone, Postage and courier services used;	5 - Water utility bills paid; Electricity utility bills paid; Telephone, Postage and courier services used;	221009 Welfare and Entertainment	28,810
6 - Vehicles serviced; Office buildings maintained; Compound maintained;	6 - Vehicles serviced; Office buildings maintained; Compound maintained;	221012 Small Office Equipment	15,365
7 - Maintain effective ICT facilities;	7 - Maintain effective ICT facilities;	221016 IFMS Recurrent costs	48,016
		222002 Postage and Courier	5,762

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs	
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

and courier services used;	Subscription for internet paid;	222003 Information and communications technology (ICT)	11,524
6 - Vehicles serviced; Office buildings maintained; Compound maintained;	8 - Quarterly entity accounts, financial statements, commitment control reports, several manual books of accounts maintained. Bank charges timely paid;	223004 Guard and Security services	11,524
7 - Maintain effective ICT facilities;	9 - Acquisition of books, agric. Information magazines and newspapers;	223901 Rent – (Produced Assets) to other govt. units	5,762
Subscription for internet paid;	10 - security maintained	224002 General Supply of Goods and Services	76,634
8 - Quarterly entity accounts, financial statements, commitment control reports, several manual books of accounts maintained. Bank charges timely paid;	11 - Break tea and Refreshments provided ;	225001 Consultancy Services- Short term	24,992
9 - Acquisition of books, agric. Information magazines and newspapers;	9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;	226001 Insurances	9,234
10 - security maintained	10 - Conduct audits in all NARO's processes;	227001 Travel inland	107,557
11 - Break tea and Refreshments provided ;	11 - Facilitate and guide the procurement process in NARO;	227002 Travel abroad	6,689
9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;	12 - Participate in Jinja Agricultural show;	228001 Maintenance - Civil	23,269
10 - Conduct audits in all NARO's processes;	13 - Undertake Corporate Marketing and Promotional activities;	228002 Maintenance - Vehicles	29,012
11 - Facilitate and guide the procurement process in NARO;	14 - UJAS editorial board facilitated.	228004 Maintenance – Other	6,056
12 - Backstop research institutes in areas of Public Relations & Development Communication as well as branding concepts;			
13 - Participate in Agricultural exhibitions, trade fairs, shows and Open days;			
14 - Undertake Corporate Marketing and Promotional activities;			
15 - agricultural research finding published (both hard and soft);			
16 - Facilitate the approval and registration of all non-PARI research service providers;			
17 - Participate in donor dialogues meetings			

Reasons for Variation in performance

There was a delay in funds disbursement

Total	588,828
<i>GoU Development</i>	588,828
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

		Item	Spent
Beans	NARL		
NACRRI	Bananas	224001 Medical and Agricultural supplies	221,261
1. Released and near release bean varieties produced and maintained (Breeder, basic and foundation seeds of all released varieties and segregating population produced)	<ul style="list-style-type: none"> Collected data on the performance of Black sigatoka incidence and agronomic at pre-flowering stage; Incidence of Black Sigatoka on hybrids determined at the pre flowering stage in the PYT at Kawanda, Submitted two matooke hybrids (for M19 and M20) to Variety release committee BBW: Selected 10 lines replanted in Confined Field Trial, to establish resistance to BBW Nematode resistance: Collected pre-flowering agronomic performance of transgenic lines in the confined field trial Enhanced nutritive value: Generated 50 transgenic lines of M9 with Provitamin A enhancing genes 		
2. Introduction, collection and identification of weevil resistant	<ul style="list-style-type: none"> Promotion of IPM packages for management of BBW: Through the promotion of IPM packages, BBW incidence reduced to below 10% in most of the affected areas in Ankole and Kigezi 		
	NaFIRRI		
	15. Determination of nutrient levels & biophysical factors influencing fish production levels:		
	<ul style="list-style-type: none"> In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1} Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits 		
	16. Development of options for management of aquatic weeds:		
	<ul style="list-style-type: none"> Field data was collected from 18 geo-referenced sites in the western zone of Lake Kyoga (i.e. Kibuye, Kokoyilo, Mukotte, Ninga, Kachanga, Kasambya, Iruma, Kyalusaka, Muwunami, Kasenyi, Kiguli, Mbwiko, Namasale, Kayago, Muchora, Oripchan, Lwampanga & Zengebe). Major aquatic weeds of importance in the western zone of the lake were <i>Najas horrida</i> (445 ha); <i>Salvinia molesta</i> (300 ha); water hyacinth (232 ha); & 		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Hydrilla verticillata (199 ha). Of these, local fishers reported *Salvinia molesta* to be the most devastating to various water-based activities especially gill net fishing.

17.Livelihood Analysis of fishing communities: Prioritized & socially acceptable livelihood options for Lake Edward fishers were identified

18.Map on aquaculture production in Central region completed: Data on aquaculture production collected from 137 fish farms in Lira & Alebtong districts in Northern region (a database on aquaculture production in the Northern region is being developed)

19.Development of topographic maps & designs of aquaculture reservoir fed systems in Western region:

Appropriate site was established in Kagango dam in Isingiro district. Consensus was obtained from farmers & district officials following a consultative & sensitisation meeting in preparation for formulation of MoU

20.Development of selected fish species for ornamental fish culture:

Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)

21.Determination of Appropriate Gillnet Mesh Sizes: Conducted 3 monthly gillnet size selectivity experiments (Oct – Dec) during the wet season on the Northern part of Lake Albert. Preliminary analysis revealed the 2.5 inch mesh size gillnets as appropriate for sustainable harvest of *A. baremose* & *H. forskahlii* in the deep open waters of Lake Albert

22.Update on current status of fishing effort on the Kyoga basin lakes: A census of all fishing inputs (effort) on lakes Kyoga and Kwania (Oct 2013) was conducted, showing an increase in undersize gillnets and fishers by 25% and 18% respectively between 2008 & 2013. A 5% decline in number of fish landing sites due to resurgence of water hyacinth, rendering inaccessibility & subsequent closure was registered

23.Update on current fish production levels, income (beach values) & contribution to livelihoods & GDP from Lake Albert & Albert Nile fisheries: Undertook a lake-wide CAS (Nov – Dec) on Lake Albert & Albert Nile. Conducted 3 monthly CAS on 2

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

fish landings in vicinity of the lower Victoria (Murchison) Nile. Comparing with the previous quarter (Jul – Sep), there was a 10% decline in fish catch (from 500 t to 450 t), 20% decline in beach value (from 1.1 bn to 800 m) of catch landed at the two fish landing sites. Analysis of the lake-wide CAS data for the period Nov – Dec is still ongoing but initial results indicate up to 40 fish species of economic importance to commercial fisheries of the Albert system

24.Undertook monthly experimental surveys on fish populations in the Victoria Nile Ramsar site area of MFNP to identify critical habitats for fish avoidance during seismic & other oil related exploratory activities & to generate baseline data for post seismic monitoring. Up to 160 habitats important to fish as breeding & nursery grounds have been identified & mapped in the area. A total of 45 species of socio-ecological importance that need protection from oil seismic activities have been recorded. 3 technical reports have been prepared & submitted to Total E & P detailing technical advice on avoidance & protection strategies for the identified critical fish habitats & fish species

25.Baseline information/ database energy returns from natural fish food organisms in Lake Edward: Study reports on energy returns & fatty acid profiling are still under compilation by MAK collaborator

26.Development of technologies for sustained mass production of micro-algae, rotifers & Moina, two live larval feeds, rotifers & Moina: Prototypes of culture media & systems for micro-algae, rotifers & Moina using available fibre glass tanks was tried out successfully. Preliminary results of the trials showed Chlorella spp to be the best micro-algal food for Moina.

27.Development of feed formulation for grower feed for tilapia & 3 grower feeds for catfish: Proximate composition of at least 8 local feed ingredients determined

•Draft report & map indicating locations of fish breeding/ nursery areas on Lake Victoria produced

28.Determination of major fish disease pathogens from 5 commercial fish farms/hatcheries:

29.Laboratory characterization of

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

parasites collected from hatcheries and 3 grow out fish farms in Serere, Lira, Gulu & Lacor. Parasitology revealed & confirmed presence of Trichodina sp, Acanthocephalus sp, Bolbophorus sp, monogean – Cichildogyrus Euclinostomum sp & Gyrogactyrus sp infecting tilapia and catfish. DNA from bacterial samples was isolated & shipped to ILRI, Nairobi for molecular identification.

30. Studies are on going on breeding Nile Perch and African catfish. Breed 1260 juveniles pureline Lake Edward Nile tilapia strains on station for use in breeding programme. Morphometrics data & genetic samples from 100 Nile tilapia samples from 100 Nile tilapia samples of Lake Kyoga collected. 132 Nile tilapia parent stock of Nile tilapia from Lake Kyoga acclimatized on station for use in breeding programme

31. Undertook 1 field environment assessment of SON Fish farm: Water parameters indicated good conditions for aquaculture production: Dissolved oxygen (6.8 – 8.0 mg/L); Temperature (24.9 – 26.20C); pH (6.9 – 7.3); Blue green algae were dominant with high biomass (8000µg/L); Cage sites had high zooplankton densities.

Reasons for Variation in performance

There was a delay in funds disbursement

Total	221,261
<i>GoU Development</i>	221,261
<i>External Financing</i>	0
<i>NTR</i>	0

Project 1138 EAAPP

Capital Purchases

Output: 01 5172 Government Buildings and Administrative Infrastructure

Submission for approval by local authorities.

- The consultant for civil works Arch Consults (U) Ltd is now on board
- Architectural drawings for CCRoE were developed . Bids were opened on 3rd January 2014 and evaluation exercise has been finalized. It is expected that contract will signed by end of February, 2014 after input from

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

clearance from Contracts committee and Office of the Solicitor General

- Rehabilitation of Food Biosciences laboratory at NARL: Bidding process has been finalized. However the firm, Crossholdings Ltd that had won the bid was later discovered to have tendered a forged bid security. The second best has therefore been proposed for the work. Arrangements are underway to communicate to PPDA and The World Bank in order to blacklist this firm.

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5177 Purchase of Specialised Machinery & Equipment

Purchase and installation of liquid nitrogen plan and AI equipment

Nitrogen plant delivered at NAGRIC-DB. The shed for for the plant was completed. The plant is awaiting installation and commissioning.

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

NA

Partial contribution to ASARECA, MAAIF, NAGRIC.

Reasons for Variation in performance

None

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Information on cassava production to consumption continuum generated, disseminated and utilized
- Knowledge on biology and ecology of pests and diseases increased .
- Cassava varieties with desirable attributes developed.
- Capacity for cassava tissue culture, genetic transformation and conservation systems developed.
- Knowledge on markets, profitability, adoption and impact of cassava technologies generated.
- Knowledge on adaptability and tolerance of rice landraces to major pests and diseases generated
- New rice genotypes with improved tolerance to rice blast and drought stress generated
- Information on rice field management practices in RYMV prone areas catalogued
- Information on rice field management practices in AfRGM prone areas catalogued
- Information on economic importance of RYMV determined
- Putative vectors of RYMV identified
- Determine biotypes of AfRGM
- Capacity of stakeholders who are active in use and maintenance of rice water harvesting and improved production mechanization increased
- Appropriate AfRGM control package developed
- Segregation populations arising from crosses of local materials and introductions generated
- Promising wheat introductions with resistance to Ug99 identified
- Promising introductions with heat and drought tolerance identified
- Promising appropriate packages for production of Ug99 resistant wheat identified.
- Technologies and innovations that enhance food safety, shelf life, and market value of cassava, rice, wheat and dairy based value added products, generated.
- Technologies for management of

- Wheat Research
- 6 lines from M3 selected from Acidic test block at Buginyanya station
- 1 Kg Nkungu and 1kg UW400 submitted for irradiation at IAEA

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

environmental pollutants from cassava, wheat, rice and dairy value-addition processes developed

- Increased availability of feed resources in smallholder dairy systems through utilization of Napier stunt tolerant varieties
- Increased availability of feed resources in the smallholder dairy system through utilization of crop residues/wastes and agro-industrial by-products.
- Improved control of ECF in small holder dairy farming system in Uganda
- Improved detection and control of drug residues
- Improved control of milk-borne zoonoses
- Indigenous cattle with desirable dairy production traits identified
- Genetic diversity of indigenous cattle assessed
- Pedigree database created
- Pure breed exotic cattle selected and procured
- Farmers trained on cattle breeding and improvement
- Superior Indigenous cattle evaluated on-station and on-farm
- Dairy Nucleus herds established
- Capacity of NAGRC&DB Embryo Transfer (ET) unit built
- 4 registry centres equipped with herd recording hardware and software (computers and accessories)
- Farmers sensitised on national breeding plan and guidelines
- Dairy breeders selected
- Dairy breeders certified and registered
- Capacity built for breeding activities.
- Breeding activities regulated
- Seed Companies technically assisted
- Breeder seed in public research institutes multiplied (ZARDIS)
- Production of seed/planting materials of cassava, rice, wheat and pastures among farmers' groups supported (NAADS)
- Seed Entrepreneurs given skills on development of business plans
- Seed enterprises established
- Rural networks of seed and other agro-inputs established
- Studies on policy dialogue with relevant government agencies performed
- Seed policy awareness created
- PVP regulations put in place
- Seed Regulations awareness created

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

- Plant protection and Health awareness created
- Strategy and action plan for control of CBSD put in place
- Government labs strengthened .
- Seed Inspectorate strengthened
- Varitey Testing Unit strengthened.
- National, regional and International Seed collaboration/ networks strengthened.
- Logistical Operation support provided.

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

- | | |
|---|--|
| <p>1.Promising technologies of the four priority enterprises promoted</p> <p>2.Innovation Plaforms developed and exsiting ones strengthened.</p> <p>3.Production and Value Addition Technologies and value added products promoted</p> <p>4.New learning platforms established and existing ones strengthened</p> <p>5.Advisory services/extension strengthened</p> <p>6.Capacity built among dairy stakeholders regarding NSD control</p> <p>7.4. Strategic Public - Private Partnerships and networks for increased market access of cassava, rice, wheat and dairy value added products fostered</p> | <p>- 2378 stakeholders (1450 female) in Masaka, Mbarara, Kiruhura, Soroti, Kampala, Wakiso, Mukono, Gulu and Jinja districts were trained on NSD control/management strategies.</p> <p>- On-farm sensitization of 317 farmers (92 female and 225 male) was conducted in various livestock production aspects which included selection, breeding, record keeping and husbandry practices and over 400 on breed characteristics during blood sampling processes.</p> <p>- Workshops to mentor Farmer Organisations in production, Bulking and processing of EAAPP commodities were conducted. Nabuin ZARDI mentored 50 executive members 30M, 20F of cassava platform. Bulindi: ZARDI, mentored 146 AASPs and DARST on Cassava Value chain and products promotion in the five Districts of Buliisa, Hoima, Kibaale, Kiryandongo and Masindi.</p> <p>- Low Cost Processing Technologies and Promising Products of EAAPP Priority Commodities were promoted. 2 Cassava Graters, 1 Press for 1 farmer group were procured. Nabuin ZARDI procured 2 modern processors for Rice for Katakwi, and is in the process of roofing five procuring 3 cassava processors in Soroti. The processing</p> |
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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

demonstration equipment is targeted at the MSIPs initiated groups being developed in the districts following zonal and district level platforms..

- Education materials were printed and disseminated to stakeholders.

Thirty thousand brochures and posters have since been printed and distributed during shows in country and outside events such as the NANE NANE show in Dodoma. The NAADS team compiled technical information for The East African newspaper. 4 appearances on the East African Newspaper has so far been made.

- EAAPP and its stakeholders participated in in-country and other regional events. KPF a farmer group multiplying cassava displayed improved cassava technologies in country and in Dodoma NANE NANE show.

- 87 Youth and leaders were taken for a study tour in Kenya. They visited KARI EAAPP Centre of Excellence, KAGRIC, Dairy Farmers in Uthinguru, Young farmer Njoroge near Nairobi and several flower and mixed farmers in Kenya. The trip lasted 1 week and was an eye opener on the opportunities for the youth in Uganda.

- A follow up practical training for 40 youth at Njeru stock farm on feed making techniques was undertaken. The training module was highly commended by the ministry and NAADS administration and will be adopted for training special groups in all NARO centres throughout the country.

- Bulindi: conducted short courses for 90 AASPS from the five District of Buliisa, Hoima, Kibaale, Kiryandongo and Masindi on extension methodologies and Cassava agronomy. The course organised for rice farmers in Tanzania could not be conducted.

- The training on environment and social safeguards that took place in Addis Ababa, Ethiopia. The concepts are already being used by the T&D team during verification of field projects such as cassava multiplication and rice sites. In Kiryandongo, the new proposed cassava multiplication site has had to be moved to avoid deforestation of over 10 acres of forest land that had been identified by the farmers for clearing.

Availability of seed and improved planting materials

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

- 85 acres of Rice NERICA 1, 4 and 10 are under multiplication at NACRRI. Seed was produced in Buginyanya, Kachwekano, Mbarara, Nabuin, Ngetta, Rwabitaba, Mukono, Bulindi, and Abi ZARDIs.

- 480 acres of cassava NASE14 have been bulked at ZARDIs. 16,068 Bags equivalent to over about 1000 have been distributed to farmers who are expected to pass over 70% of the received to their neighbours. There is an additional 187 acres by small scale and big multipliers who have given out over 500,000 cuttings equivalent to while 12 applicants are being considered for multiplication of cassava under 154 acres.

- 1ha of land under wheat variety UW400 multiplication.

- Cassava multiplication has been conducted through the ZARDIS, NGOs, and other farmer organizations. In the ZARDIs, the following has been achieved. 16,068 bags have been distributed, which gives rise to 9,640,800 cuttings distributed implying 2,678 acres planted from 64,272,000 stem cuttings Multiplied.

- Cassava multiplication through Small scale seed companies has had successes. 4 SSSCs have established a total of 50 acres from 331,800 cuttings given. They have 1,872,000 cuttings multiplied (equivalent to 267 ha) and 1265 repaid (bags) and 759000 stems recovery. 187 new sites (acres) have been established

- KPF a SSSC has expanded from 40 acres to 90 acres through their sister group called Dolphins based in Luwero

- KPF recovered 200 bags equivalent to the 7 million shillings due to NAADS as per the MOUs signed. The materials were sent to Mbarara and planted 30 acres in 10 sites

- BUKADEF re paid 175 bags from the 8 acres they established in 2012. This planted a total of 30 acres in Masaka district.

- Nabuin ZARDI, 20 acres of rice multiplication were established at Kidetok Mission Demonstration farm. The varieties demonstrated include NERICA 4, NERICA 10 and NERICA 1. Harvest is ongoing and the seed will be accessed to more farmers in the area in February/march 2014

Availability of improved Pastures

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

- EAAPP has been made every effort in upscaling pasture technologies. 55 acres of forage for seed production established at NaLIRRI.
- Over 200kg of lablab seed equivalent to over 80 acres given out to multipliers and 48 acres of assorted pastures have been bulked at ZARDIs.
- 700 kgs of Clitoria ternatea and Chloris Guyana equivalent 135 acres have been distributed to farmers.
- The capacity for 1027 farmers (675F) has been built in forage seed and fodder production
- Availability of improved breeding stock under NAGRC &DB
- Synchronization and Artificial insemination using procured semen under EAAPP continued to be undertaken. Over percent of the 136 heifers are pregnant imported under EAAPP and a good number of these in advanced pregnancy. A total of 7 calves have been born to date, 7 (1 bull, 6 heifers). These include Calves born out of sexed semen-5 heifers (2 Ayrshire, 2 Jersey, 1 Guernsey); Calves born out of natural mating-1 (Jersey x Friesian) bull; Calves born using non sexed semen-1 Sahiwal.
- 387 indigenous cattle were synchronized and inseminated with non-sexed semen. Out of previous synchronization programs, 332 calves were born. There are about 230 adult crosses are ready to be given to farmers.
- 146 Ankole X Friesian crosses were synchronized and inseminated with imported dairy semen July 2013 under NAGRC&DB cross-breeding program.
- Improvement of Njeru Stock Farm through repairs of old fencing lines, fenced off 80 acres and established 85 acres of maize for silage.
- 5,038 doses of semen produced and 7,246 doses of semen delivered to 73 AI subcentres.
- 3061 inseminations undertaken by AI centers to dairy cattle under smallholder farmers. Delivery of 261 (145 heifer) calves was reported by field staff.
- 87 doses and 120 doses were sold to DRC and Tanzania respectively.
- The first batch of 150 heifers have been selected for purchase by farmers under NAGRC-NAADS arrangement.
- Over 4000 brochures on cassava varieties and cassava products

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

- Over 2000 brochures on cassava products
- 3500 booklets produced on CBSD
- Over 1,200 Map posters produced on CBSD spread in Uganda.
- Strengthening capacity of NAGRC&DB to deliver AI and embryo transfer technologies
 - Construction of Plant house completed
 - Liquid nitrogen plant delivered in December, yet to be installed
 - Last batch of LN2 containers (10 liquid nitrogen cylinders) delivered
 - A total of 7,181 litres of LN produced-July to December 2013.
 - 33 out of the targeted 60 centres supported have been supported with semen and training.
 - Eleven (11) AI subcentres in Eastern Uganda were revived and equipped in June 2013
 - 11 AI technicians were selected and trained for the South Western Milk shed
 - 4 AI technicians were trained for NAGRC&DB breeding programs and 6 for Buginyanya under NAADS.
 - ET lab rehabilitated by 80% and works on ET crush have started
 - Equipment for ET soon to be delivered. LC has been worked upon.
 - Mechanisation (3 tractors, 3 tine tillers, 1 baler, 3 slashers, 1 plough have been delivered to NAGRC&Db under the project
 - Data base for Dairy breeders periodically updated.
 - Consultative workshops in the midwest (Kibale, Kyenjojo, Kasese,Kabarole, Ntoroko, Kamwenge, Bulisa, Hoima); and Eastern (Kamuli, Kaliro, Tororo, Mbale, Pallisa, Soroti) milk sheds to input in drafting of breeding guidelines.
 - Continued support to RELINE farmers platform in form of breeding management, drafting of breeding guidelines and herd recording.
 - Draft seed policy reviewed and Top Policy Management of MAAIF has approved it. A cabinet memo is to be prepared for submission.
 - Draft copy of strategy to support of seed companies was produced by consultant. Unfortunately the consultant passed on and effort to complete work are being sought.
- Support to National Seed Certification
 - An assortment of laboratory

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

equipment delivered

- All quality management manuals were submitted to ISTA and were approved.
- All dues for to ISTA subscription have been paid under EAAPP, we are now up to date , need to pay for 2014 subscription
- Most of the necessary lab equipment has been acquired.
- A new department of seed certification has been created in MAAIF. It is hoped that with this new department issues of seed like Personnel will be addressed.
- Training of famers in seed multiplication and certification of seed continued. 100 seed multipliers (35 f) of cassava and pasture seed were trained in Masaka and Mbarara.
- 6 field trips to undertake certification were carried out and 18 seedlots were certified. (1 seed lot ranges between 10-15 tons) . .
- Inspections were conducted in 1Zardi for rice varieties Namche 1,2,5,6 established as Foundation seed in ZARDIs)& In some farmer groups.
- Plant Variety Protection Act 2013 passed on 13Dec 2013. It had remained a bill for a long time.
- seed policy consultant recruited. Consultative S/holder meeting was held-policy reviewed. It was presented to the MAAIF Top management and it was proved.
- Food safety consultancy completed.

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>
<i>NTR</i>	<i>0</i>

Output: 01 5104 Agricultural research capacity strengthened

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

<ul style="list-style-type: none"> - Critical mass of well trained staff in various disciplines built. - Rice- Formal training for 2 PhD degree commence. - Rice- Formal training for 1 MSc degree commence. - Rice- Short courses - Rice- Vehicle purchased and maintained. - Rice- omunication facilities purchased and used. - Capacities in wheat research and improvement enhanced. - Institutional research capacity improved in animal nutrition - Institutional research capacity built by training one PhD student - Institutional research capacity built by training one MSc student - Institutional research capacity improved im molecular pathogen identification and characterization - Institutional research capacity improved in animal breeding - Annaual Dairy Breeders For a/Platform held - Artificial Insemination technicians trained - Training and backstopping registered breeders undertaken - Vist to Dairy RCoE by NAGRC techncal Staff undertaken. - Vist to Dairy RCoE by Dairy breeders undertaken - Short course on Planning and Management of National Breeding Program undertaken - Short course on advanced technologies on AI & MOET - Short course on Finance Management undertaken - Short cource on Procurement Management Undertaken - International For a on Animal Genetic resources attended - Masters in Livestock Planning and Development and in Agriculture Economics at MU K started - Coordination of EAAPP activities meant for NAGRC&DB undertaken - DAPM activities coordinated - Regional research and training and dissemination activities implemented according to plan - Harmonized M&E system for RCoEs in cooperation with ASARECA developed, adopted and implemented - Harmonized M&E system for RCoEs in cooperation with ASARECA developed, adopted and implemented . 	<p>a)EAAPP Management and Coordination</p> <p>The Project Coordination Unit continued to coordinate EAAPP activities both nationally and regionally through meetings and generation of reports. These meetings and reports are itemized below:</p> <ul style="list-style-type: none"> - 1 regional meeting for Cassava RCoE was held. Significant progress was registered in the 5 regional projects while write-ups for 3 new projects were improved upon. - Actions for areas identified as weaknesses in the 6th World Bank Implementation Support Mission continue to be undertaken. Subsequently, contract management has improved, burn rate improved and accountability requirements by implementing agencies fulfilled. For civil works at NaCRRI, Contracts Management Committee chaired by Director of Research, NaCRRI is in place, consultant for designs in place, and designs have been finalized and are awaiting clearance from Town Councils as a requirement. Activities of VAC have been reviewed to reflect market linkages. - Scaling up of dairy technologies had been undertaken with improvements in pasture seed production and Artificial insemination activities. Health and safety of cassava products have been prioritized under selection of germplasm and also at value addition. - Regional visits continued with Tanzania, Kenya and Ethiopia with Rice and NAADS teams to Tanzania; Dairy teams to Naivasha and VAC team to Ethiopia. Scientists, farmers and other stakeholders shared platforms for information updates. A WAAP team visited Uganda under the ASARECA arrangements. - Regional Collaboration also continued with collaboration with other RCoEs in information sharing, participation in field days and review meetings. For the purpose, three visits were made to the Dairy RCoE, and one to Rice RCoE. PCU has also participated in 3 ASARECA organized meetings and workshops on Monitoring and Evaluation (PMP), and policy harmonization. <p>Procurement</p> <ul style="list-style-type: none"> - An aassorted laboratory equipment
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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

<ul style="list-style-type: none"> - Improved means of transport to carry out research activities - RCoE – Cassava CAPACITY ENHANCED. 	<ul style="list-style-type: none"> and suppliers under NaCRRI, liquid nitrogen plant and plant house at NAGRC&DB, 2 tractors and implements, and a mixer for Value Addition Component. Civil Works <ul style="list-style-type: none"> - The consultant for civil works Arch Consults (U) Ltd is now on board - Architectural drawings for CCRoE were developed . Bids were opened on 3rd January 2014 and evaluation exercise has been finalized. It is expected that contract will signed by end of February, 2014 after input from clearance from Contracts committee and Office of the Solicitor General - Rehabilitation of Food Biosciences laboratory at NARL: Bidding process has been finalized. However the firm, Crossholdings Ltd that had won the bid was later discovered to have tendered a forged bid security. The second best has therefore been proposed for the work. Arrangements are underway to communicate to PPDA and The World Bank in order to blacklist this firm. Training <ul style="list-style-type: none"> - A workshop for Environmental and Social Safeguards (ESS) was held in Addis Ababa under ASARECA where 12 Ugandans under the project were trained in the ESS requirements. Since then they have guided their sub-projects for ESS compliance. - 13 MSc and 8 PhD students have continued well with their training. MSc Students have finalized course work and 2 have submitted draft thesis. - 7 staff have attended courses in ICT and laboratory management - 2 PhD students trained in rice pathology by IRRI in Burundi - Rice team staff attend the recently concluded AfricaRice congress in Cameroon - 2 MSc. Students attend rice breeding course
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Reasons for Variation in performance

None

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

Cassava lines resistant to stress with desirable attributes released, Virus disease maps generated, Early warning systems developed, nutrient-use-efficiencies of elite cassava genotypes determined

Stress tolerant rice varieties released, released rice varieties purified, pests & diseases yield loss determined & performance of new upland and rain fed low land rice lines determined Tse-tse fly and ticks management options, Forage management, Pest and disease management

New cassava varieties resistant to CMD and CBSV; with other farmer-preferred attributes developed

New rice varieties availed to farming communities and Farmers trained on recommended agronomic and post-harvesting techniques of rice

High yielding forage cultivars disseminated, Performance of 5 cross breed calves determined, Concentrates for supp. feeding developed

High quality farmer preferred cassava varieties multiplied for uptake pathways in the mid altitude areas of the SEAEZ and Disease tolerant cassava varieties identified and validated

Promising Integrated weed management options in rice validated with farmer groups

High yielding and high quality rice varieties and lines for small scale farmers are selected, seed systems developed & disseminated

Cassava:

- 15 clones at AYT & 13 more clones for GxE study at 3 locations (NaCRRI, AbiZARDI & BuZARDI)

- 6 elite genotypes on-farm at 9 locations

- 1 candidate variety (TZ- 130) being bulked at RwaZARDI

- Harvesting of on-farm trials involving the candidate variety (TZ 130) at nine locations: Uganda: Arua, Lira, Hoima, Nakasongola, Kayunga, Mukono, Busia, Kamuli, & Kumi

- 840 isolates collected, DNA /RNA extracted, live cultures maintained for further characterization. PhD Student is expected to characterize these isolates under her study.

- 10 CBB isolates tested using 6 primer pairs for future sequencing
- 42 CBB isolates collected from Central Uganda, live cultures established invitro, DNA extracted & 2 data sets collected from Kasese, Serere, Oyam, Abi and NaCRRI experiment. One data set Oyam

32. Final response of 27 clones to CBSD determined and data analysed.

Value addition component

33. Performance evaluation of food-grade motorized chipper undertaken. Chipper found to be efficient on chipping recovery (78%) and fuel consumption (Ug Shs 86/kg)

- Modification to reduce clearance between the chipping element and the feeding embarked upon.

- Anti-nutrients profiling initiated at Msc level focusing on tannins and phytates in the cassava varieties of Nase 3, Nase14, Nyaraboke, MH02-073HS, CPCR-24B-10.

- Proximate analysis of cassava leaf and peels samples initiated and test data collected for analysis.

- Feed protocepts for the different stages of the various livestock being initiated and data collected for solid and powder protocepts.

34. Draft cassava market survey report has been produced; the results indicate the four main marketing channels for

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

cassava and cassava products. These are: 1. Farmer-Middleman-Wholesaler-Retailer-Consumer (27%). 2. Farmer-Wholesaler-Consumer (18%). 3. Farmer-Retailer-Consumer (15%). 4. Farmer-Wholesaler-Processor-Consumer (17%).

35. Refined profitability trial report for 2011/12; the report highlights include: Nase 19 and Nam 130 had the highest average market value of fresh roots of shs 37,000 per plot each followed by 52-TME 14 with shs 35,000, Nase 16, Nase 18 and Nase 14 in that order). At the on station conditions, the average costs per plot are the same, therefore profitability of the varieties follow the same order.

36. The average technical efficiency of cassava producers/farmers was found to be 54%, minimum being 27% and maximum was 74%. This implies cassava farmers allocated inputs in cassava production sub-optimally, cassava farmers have an allowance of 46% to improve on efficiency level of the production. Based on above results, farmers should be encouraged to increase area under cassava since small scale farmers were technically inefficient compared to their large scale counterparts, in addition improved high yielding cassava varieties should be planted by these farmers

37. Mother stock of CGM and CM established in cages in the screen house at NaCRRI for infestation of cassava trees

38. The highest number of CGM (34 mites leaf) was recorded in Arua district on the local cassava variety Bismenge and 45 mites /leaf on Bao in Northern Uganda. Densities of T. aripo ranged from 0-0.25 actives /tip and recoveries were on TME 14, NASE 13 and Omongole cassava varieties

39. Combined average parasitism by two indigenous parasitoid species ranged from 14.6-15.6% with the highest recorded in the West Nile Farmlands (Yumbe and Koboko districts) and the lowest in the Lake Victoria Crescent and Mbale Farmlands (Iganga, Busia and Jinja districts).

- One parasitoid species predominant with the highest parasitism level 14.8% compared with 8.7% for the other parasitoid species

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

40. Cassava varieties TME 14 and NASE 13 supported the highest parasitism rate (over 17%) for the predominant parasitoid species

- Pure fungal isolates were recovered from dead white fly nymphal stages in cassava fields at Yumbe, Nebbi and Kamuli districts

41. 65 local varieties and four wild relatives of cassava collected, initiated in tissue culture and maintained at NaCCRI. Indigenous farmer knowledge related to the collected varieties documented.

2. Rice:

42. A total of 208 lines comprising (200 lines generated with new rice population background and 8 lines with high vegetative value) acquired from Korea. Preliminary observations show that up to 85% of the lines do not show symptoms of the prevalent problem in the country of RYMV and rice blast diseases. However, these are japonica type that are typically short and bold making as opposed to the East African varieties that are medium in size.

- Another set of 2,100 lines were received from AfricaRice comprising of (1,700 lines at the F4-F7 generation, 72 Multi-environment upland lines, 32 upland PET, 32 PET rainfed lowland lines) were received from AfricaRice and established at Namulonge for evaluation.
- During the reporting period, a total of 427 lines developed for irrigated conditions (143), rice blast resistance (65), bacterial blight resistance (68), preferred grains qualities (117) and upland lines (34) from IRRI were established at NaCCRI.

43. A total of 72 F2 lines generated waiting testing for transmission of aroma characteristics.

- Overall, there is an increase from previous value of 124 to 2,765 entries

44. The 20 irrigated lines have been established in 6 locations in the country. 10 best performing ones were selected and submitted to MAAIF for DUS

45.4 Sustainable ISFM and plant nutrients management strategies in rice ecosystems which account for farmers of different resource endowment developed and evaluated.

46. The distribution of AFRGM was determined. The insect was found in

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

both cultivated and wild rice throughout the year. Higher levels on cultivated rice were between Feb and June and July to November. Parasitoids were more from September to December

A survey on the main rice seed value chain actors was conducted.

Preliminary results show the actors to include: seed companies, contractual farmers, community seed producers/farmer groups, individual farmers mainly large scale producers, breeders (research), inspectors, stockists/traders, Non-Governmental Organizations/Community based organizations and District Production Offices. These are promoting rice seed related projects within the community. There is weak linkage among these actors (breeders-inspectors, seed company-contractual farmers). Some actors are not knowledgeable in the varietal differences, resulting to varietal mixing.

- Farmers contracted by seed companies received training on seed production and management through the seed companies that contracted them.

- Differential lines received namely Gigante, BE90.2, TOE5672, TOE5674, BOUAKE 189, TOE 5681 and IR64; and are undergoing multiplication for screening against RYMV on Station at NaCRRI, Namulonge.

3Dairy Research

- The continued evaluation of napier clones from Kenya have confirmed that Kakamega 1 and Kakamega 2 produces the highest dry matter yield of 40 to 42.0 kg/ha. Accessions 105, 112, 16702, 16789, 16805, 16815, 19, 75, Kakamega 1, and Kakamega 2 did not show disease symptoms up to 4th harvest.

47. All the accessions gave a relatively high NDF ranging between 55% and 60% and low crude protein content (6.8% and 9.2%). Kakamega 1, Kakamega 2, 112, 16702 and 16805 were recommended for multiplication in NSD "hot spot" areas as a way to improve feed availability. Over 30 acres of forage seed have been established at NaLIRRI.

48. The effects of NSD on dairy enterprise farm performance through resource re-allocation and cash flow

Vote: 142 National Agricultural Research Organisation

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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

changes were assessed using financial analysis based on partial budgeting techniques. The disease led to reduction in area under Napier grass by about 40 per cent.

- Two thousand three hundred and seventy eight (2378) stakeholders (1450 female) in Masaka, Mbarara, Kiruhura, Soroti, Kampala, Wakiso, Mukono, Gulu and Jinja districts were trained on NSD control/management strategies and use of alternative forages through agricultural shows, field visits, scientific conferences and farmer workshops.

- Under animal breeding synchronization and AI was conducted twice. The first was done in early July 2013 covering Teso sub-region a total of 170 cows (from 101 farmers herds) received insemination out of 243 examined from 127 farmers herds. The second was conducted in late November 2013 covering Katakwi the sub-counties of Toroma, Kapujan and Omodoi where a total of 166 cows were artificially inseminated (263 cows examined from 107 household herds but only 188 cows synchronised and 166 successfully inseminated from 94 farmers' herds).

- Direct interaction and sensitization of over 700 farmers and stakeholders were made including on-farm sensitization of 317 farmers (92 female and 225 male) sensitized on-farm on selection, breeding, record keeping and husbandry practices and over 400 on breed characteristics during blood sampling processes.

- The project disseminated information to farmers and stakeholders at various by producing 1000 brochures.

- A total of 250 blood samples from local cattle were collected for genetic analysis from the districts of Katakwi, Serere, Amuria and Kumi for the Small Zebu cattle; Moroto, Amudat and Kotido for the Large Zebu cattle; Mukono, Mpigi, Kamuli and Kayunga for the Nganda cattle; and Nakasongola for the Ankole cattle.

Reasons for Variation in performance

None

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Capital Purchases

Output: 01 5172 Government Buildings and Administrative Infrastructure

- Design and development of drawings and bills of quantities for office, laboratories and farm buildings at NACRRI, NAFIRRI, Bulindi ZARDI, Ngetta ZARDI; Rehabilitation of office, laboratories and farm buildings NACRRI, NAFIRRI, Bulindi ZARDI, Nabuin & Ngetta ZARDI	Preparation for engaging a consultant to design and development of drawings and bills of quantities for construction/rehabilitation office, laboratories, farm and field structures are in final stages.
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Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5175 Purchase of Motor Vehicles and Other Transport Equipment

NAFORRI - Motor vehicles and Motorcycles - Purchased BUZARDI- 3 vehicle pickups procured; 1 vehicle station Wagon procured; 4 motorcycles procured; 2 generators procured	All 15 Station wagon vehicles, 3 vans and 2 trucks were delivered and distributed	Item 231004 Transport equipment	Spent 1,350,000
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Reasons for Variation in performance

None

Total	1,350,000
<i>GoU Development</i>	0
<i>External Financing</i>	1,350,000
<i>NTR</i>	0

Output: 01 5176 Purchase of Office and ICT Equipment, including Software

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- ICT requirements identified	NARO Secretariat CCTV Cameras have been procured and installed Buginyanya ZARDI • Provided telephone, internet and electricity services and stationery at Buginyanya, Ikulwe and Bulegeni stations Bulindi ZARDI • Assorted stationery procured • Telephone services procured • Internet Services and entertainment procured • Office Consumables and office stationery procured NaLIRRI • Laptop computer procured
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Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5177 Purchase of Specialised Machinery & Equipment

NAROSEC- Necessary equipments & tools procured .	Bulindi ZARDI Received one tractor with farm implements
NaCRRRI - Laboratory equipment purchased	
NaFORRI - Specialized Machinery & Equipment for research activities acquired.	
Kachwekano ZARDI - 1 digital and 1 bench type PH meter procure	

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Output: 01 5178 Purchase of Office and Residential Furniture and Fittings

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

NAROSEC- 2 glass fitted book selves procured
 NaCRRI - Laboratory furniture & fittings purchased.
 Kachwekano ZARDI -
 Conference/dinning room furnished with 8 tables and 50 modern chairs;
 Resource center furnished with shelves, lockers,

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

na Partial payment to CGIAR effected.

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

		<i>Item</i>	<i>Spent</i>
Performance of the livestock breeds (multipurpose Sahiwal cattle breed, Pigs, Chicken, Boer goats) and their crosses with local breeds determined; Appropriate management methods for livestock established and promoted; appropriate pasture management options for dry season feeding determined and; Better performing pasture accessions and management practices determined and promoted; Appropriate technologies for water harvesting/harnessing and storage for livestock use developed and promoted. Occurrence and magnitude of spread of major livestock pests and Disease in	NaCRRI Horticulture	224001 Medical and Agricultural supplies	210,000
	- Planting 2500 fruit seeds for generating rootstocks - Visits to oil palm farms planted in 2001 revealed that farmers in Hoima were harvesting 2-3 times a month. - Trip to oil palm farms in Buvuma did not reveal any major disease - After confirmation of Armillaria root rot in some areas of Kalangala preventive practices were demonstrated to farmers - 6 nurseries of quality fruit trees were constructed and 18 mother gardens established	224002 General Supply of Goods and Services	489,000

Vote: 142 National Agricultural Research Organisation

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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

the zone established. Setup and maintain on station and on farm trials; Documentation of support tools for the rapid assessment of feed ingredients developed; Lab analysis of formulated feeds.

High yielding, early maturing crop varieties with desired market attribute tested and promoted; Integrated Pest Management options for control weeds identified and promoted; Identifying , adaption and promotion of cover crops which have multipurpose utilisation with famers Establishing optimum application rates of fertilizers, Identifying water and promoting and water harvesting techniques in the Agroecological zones; Better performing tree and shrub species for soil fertility replenishment, food, forage and fodder on station and on-farm identified and promoted; Propagation methods for various adaptable tree species determined and promoted; adequate amounts of quality planting materials (seed) of improved crop varieties produced.

- 2 sets of brochure and i production manual on quality fruit trees have been produced

NARL

Agricultural Engineering:

- Partially completed the design of a sheep hoof compactor. The design is to be completed next quarter

- Completed 1st prototype of diffuser aerator design; five collaborative farmer groups (30 farmers) identified and their

- critical engineering needs in pond construction and management established

- Draft Digital elevation modeling (DEM) based map of Uganda showing locations where ram pumps can work.

The final version of the map is to be generated next quarter

- 3 ram pumps fabricated; installation of ram pump for pumping water for irrigation in Mbale (Bungokho-Mutoto)

- Partially completed the development of a motorized maize sheller prototype for 5-19 hectare maize farm. The prototype is to be completed next quarter.

Postharvest:

- Postharvest losses during harvesting and threshing of swamp rice from the northern hub

- Data collected on loss levels during harvesting from 10 farmers in Lira and 10 farmers in Hoima

- Data collected on loss levels during threshing from 5 farmers in Lira and 5 farmers in Hoima

- Evaluation of motorised chipper: Chipping efficiency in terms of chipping losses, fuel consumption, throughput, determined

- Evaluation of chipper design: Grating and pressing efficiency in terms of size reduction, fuel consumption, throughput and detoxification, determined

- Partial design of a centrifugal fan for conveying drying air; To be completed next quarter.

Value-added products:

- Three formulations (ratios: 10,5,85; 20,5,75; and 30: 5: 65 of beans, soy and maize.) evaluated on station and in two districts by 150 people showed higher acceptance for 20,5,75

bean:soy:maize combination

- One formulation (fish crisp: 5:3:2 of fish, wheat and cassava) developed, tested for consumer acceptance and

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

willingness to pay (N.bredoi had an unacceptable colour)

- Establishing a profile and composition of nutrients in fresh water fishes (before and after processing (smoking, salting, frying and drying)): Frying resulted in loss of 20% Zn, 15% Mn and 12% P in majority of spp. Retention of only 25% of DHA (fatty acid) in 4 fried spp.; 90% of consumers around Kampala peri-urban centres preferred fried products
- Determination of level of Omega 3 & 6 compounds in fermented N. bredoi products: Levels of Omega 3 & 6 and docosahexanoic acid (DHA) in powdered and fermented N. bredoi products was 13mg/100 and 12.89mg/100
- One brochure developed (in English) and a draft technical report on powdered Mukene product
- All four tamarind products market tested and nutrient profiled; Tannin levels and aflatoxins determined in four products; Tamarind pulper developed and tested for efficiency
- Development of cassava-based product: Gari-bar formulated
- Development of interventions to ensure safety of fish products: Smoke filters (with different cyclone filter depth and arrangements) tested on station; Top introduction of smoke into cyclone and bottom introduction smoke into cyclone

Postharvest

- Final report on bean value chain in Oyam compiled. Key findings: Majority of farmers used local seed. Pests and diseases the major constraint during production and storage
- Maize storage pest management options evaluated
- A paper on legume storage presented at the ACSS conference
- 1 leaflet and 1 poster on maize storage generated
- Production of cassava biodegradable packaging materials: A method for producing powders and films developed

Scaling up integrated soil fertility management (ISFM):

- Use of ISFM practices improved gnuts performance. The 2013A data showed optimum rates to be: 8.73 kg P/ha for serenut 3 and 4.37+2 t FYM/ha for red beauty.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Establish on-station trials on conservation farming, including soil cover, permanent planting basins (PPBs), rip lines and intercropping at NARL-Kawanda and NgeZARDI: Preliminary results for maize and beans show Yield increases of about 30% for planting basins both at NgeZARDI and NARL-Kawanda
- Bio control
 - Control of cassava white flies and spiraling white flies: Field parasitism of 2 species of indigenous whiteflies in 5 districts of West Nile region ranged between 0.28 % and 18.11% indicating the need for introduction of exotic parasitoids
 - Control of CM and CGM and release of releases of bio agents: Multiplication Sites identified along River Nile in Nebbi, Arua, Koboko, Yumbe and Moyo districts where cassava varieties sustained high population of T. aripo
 - Use as bio pesticides and bio fertilizers for management of insect pests and disease: 4 Trichoderma spp isolates showed inhibition potential ranging from 50% to 80% on colony growth of Rhizoctonia spp and Fusarium oxysporium cubense and Pythium spp
- Biotechnology
 - Development of biotechnology tools and processes: Regeneration process and media composition for g-nut and passion fruit determined; Regeneration has been archived in all 4 varieties with average 4 shoots per explants.

NAFORRI

- Raised 25,000 seedlings each for M. eminii, E. Grandis and M. volkensii
- Established one Nelder trial for M. Eminii in Buginyanya
- Thaumisticoris perigrinus a pest previously in S.Africa and Kenya identified in Uganda. The pest incidence in Wanale and Budwale sub-counties Mbale district was 39% and 42% respectively. Low pest incidence observed in Manafa, Bududa, Tororo and Busia districts. Established high incidence of deaths among Pines ranging from (8%-98%) in thirteen(13) woodlots surveyed in S. Western Uganda
- 29 prospective forage species identified on 100 smallholder dairy

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

farms in Masaka district.

- Forage production (6), processing (2), and preservation (1) options identified on 100 smallholder dairy farms in Masaka district. Candidate practices (8) earmarked for on-station forage management trials.
- 0.25 acres of Calliandra fodder established on station at Kifu, Mukono
- One protocol for tree crop interaction trial developed;
- Indigenous tree germplasm for trial establishment sourced
- Literature on seed tree management and tree seed handling searched and reviewed, identified actors in tree seed value chain in Lake Victoria Crescent AEZ
- Preliminary work on potential certifiable products and CFM activities carried out in Kalinzu CFR
- Technical advice to 15 tree farmers from Rukungiri and Hoima conducted on station.
- Two 30X30m plots mapped for establishment in Nakasongola
- 8kg of *J. curcas* and 4.8kg of *R. communis* seeds from Kasese in western Uganda collected.
- Leafy biomass production (from harvesting) of *Warburgia ugandensis* under farm conditions documented
- 132 cuttings of *Zanthoxylum chalybeum* placed under non-misting conditions (3 months required to assess rooting success)
- Mother tree identification, marking and seed collection ie 5kg of *Albizia* and 8kg of *Melea*
- Ensured availability of tree nursery production for research and planting out in the field in encroached areas

NaLIRRI

- Development, evaluation and dissemination of technologies that reduce climate change-induced shortages in forage and water availability: 2 feedback workshops conducted. Project outputs disseminated to 100 stakeholders (70 females)
- Nine paper presented in three scientific conferences (Grassland conference-1, ASARECA scientific conference-8 and 2nd ASARECA General Assembly and scientific conference (8)
- Development of supplementary feed rations for dairy and beef cattle: 20

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

sorghum stover and Tithonia samples collected and analysis is underway; A survey was conducted on on Social-economic factors affecting utilization of sorghum stover for feeding animals and statistical analysis of collected data is underway

- Characterisation of productivity of pasture in three selected grazing areas in Nakasongola, Kotido, Amudat and Mbarara during the wet season of October-November: Results of the assessment indicated that pasture biomass ranged from 1500-4500kg/ha-1 with the lowest value occurring in Kotido. The sward legume component ranged between 5-20% of the total basal cover with lowest and highest legume component occurring in Kotido and Mbarara respectively.

- Napier Grass: 7 acres of Napier grass accessions 112, Kakamega 1, Kakamega 2 & 16805 established at NaLIRRI (2) , Kamenyamigo(2), Jinja (2) and NaCRRI (1 acre)

- Control of NSD: Data collected from all experimental sites (during wet season of October-November 2013) on effect of manure regimes on severity of NSD. Data analysis is under way.

- Improvement of degraded pasture in Amudat District, using improved technologies: 220 acres of degraded pasture improved in Amudat Moroto District. The activity reduced the basal cover of obnoxious weeds in pasture from 39 to 7%. The legume component of the pasture was increased by 34% while preliminary assessment of biomass yields indicated a 12.5% increment 2 months post sowing.

- Improving availability of fodder tree planting materials: 3 fodder tree nurseries each with capacity of multiplying 50,000 seedlings established in Abim, Kotido and Kaabong

Livestock Health:

- Management innovations for tick-borne diseases and milk-borne zoonoses: Company to sequence 200 purified DNA samples and characterize T. parva identified and procurement of services initiated. Also, Prevalence of T. parva per agro-ecological zone

- Characterize Mycobacterium, Brucella and haemorrhagic E. coli for improvement of diagnostic tests:

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Culture has been done on 320 out of the 600 milk samples collected. From these samples, 5 suspect bacteria were identified - E. coli, Staphylococcus sp, Streptococcus sp, Lactobacillus sp and Pseudomonas. Of the 321 samples 65 have been analysed for isolation of Enterohaemorrhagic E. coli

- 5 isolates of Enterohaemorrhagic E. coli have obtained has been isolated from the 65 samples

- 72 milk samples were analysed for the number of colony forming units (CFU) of E. coli organisms. Per 100 ml of milk. Results are:

- Range: 320,000 – 840,000

CFU/100ml. Average/Mean:

590,000CFU/100mL

- Management of ECF: Factors (9) that influenced acaricide resistance by ticks identified: Sex, Age, Grazing system, Method of restraint during acaricide application, Method of acaricide application,

- Source of acaricide, Type of acaricide used, Acaricide reconstitution, Availability of extension services. The results were disseminated during Annual Uganda Veterinary Association Scientific Symposium 2013.

- Establishment of Risk factors responsible for outbreak of CBPP and FMD: Questionnaires were developed and administered to: 441 farmers in 9 districts (17 sub-counties) on risk factors for FMD. Districts included: Kaberamaido, Amuria, Soroti, Lyantonde, Isingiro, Sembabule, Kamuli, Buyende and Kaliro

- 342 farmers in 7 districts (14 sub-counties) on risk factors for CBPP. Districts included: Lira, Otuke, Soroti, Gulu, Napak, Katakwi and Kitgum

- Control of calf and kid mortality: Three strategies for control of calf and kid mortality developed. The strategies were disseminated in 4 districts (Kiboga, Kyankwanzi, Nakasongola and Amuria). 1000 fact sheets on control of helminthes (worms) in cattle produced; disseminated to more than 1,000 show goers during World Food Day exhibition at NaSARRI, Serere

- Evaluation of cattle for performance ongoing: 170 cows evaluated for conception rates and 87 (51%) found to have conceived after 55-60 day period; 189 elite cows selected for dairy production from 90 (31 female

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

and 59 male) farmers ; A total of 250 blood samples were collected from Moroto, Amudat, Kotodo, Katakwi, Kayunga, Nakasongola, Mpigi, Amuia, Kumi, Serere, Kamuli, Mukono,

NASARRI

- 88 BC3 cotton progenies planted on station in replicated trials.
- 50 F4 cotton progenies planted in replicated trials on-station. Data collection on-going
- DUS trials for 10 promising cotton lines maintained at Ngetta, NaSARRI and NaCRRRI
- 30 acres planted for production of foundation cotton seed
- 25 elite lines planted and data collected on resistance against bollworm,lygus and stainers
- 1.A survey on prevalence of cotton wilt diseases was conducted in northern region (Dokolo, Alebtong, Apac, Pader and Gulu districts.
- Yield potential of 14 Early maturing IITA lines, 11 Medium duration IITA lines and 11 dual purpose IITA lines was determined.The highest yield among the early maturing lines was obtained from IT04K2274 (1361 kg/ha), followed by IT04K2996 and IT07K2/1011. Among the dual purpose elite lines IT06K1471 gave the highest yield (1056 kg/ha) followed by IT07K3182 (917 kg/ha. And among the medium duration elite lines the highest yield was obtained from IT08K1493 (1,306 kg/ha) followed by IT0K30944 (1250 kg/ha).
- 2.Five promising cowpea lines selected for multi-location evaluation. K80 which gave yield of 2278 kg/ha, followed by ACC12 (2250 kg/ha), New cowpea (2111 kg/ha) and ACC26. These out yielded SECOW-2W (1944 kg/ha) and were selected for multilocation trials.
- A total of 74 local cow pea accessions planted out and fifteen of them gave yields above 1,000 kg/ha and three of them shown resistance to viral and scab diseases
- 15 crosses with yields above 1,200 kg/ha and five of which showed resistance cowpea scab disease were identified and earmarked for preliminary yield trials at NaSARRI
- Out of 12 lines evaluated, 7 green gram lines including; Filsan gave the

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

highest yield (1,583 kg/ha), followed by Mauritius (1194 kg/ha, Sunshine (1111 kg/ha) then VC61137B-14 (1028 kg/ha), then then KPSI (972 kg/ha) and yellow gram (889 kg/ha) out yielded the local variety (600 kg/ha).

- One experiment with a total of 21 different spacings established. Highest yield (2194 kg/ha) was obtained from a spacing of 50 x 10 cm, followed by spacing of 50 x 20 cm (2097 kg/ha) and 50 x 40 cm (1917 kg/ha) compared to recommended spacing of 60 x 30 cm (1417 kg/ha).

3. Five of the promising lines performed better than the test released variety (SEPI 2) which gave yield of 2188 kg/ha. 2004/17/16/5 (2688 kg/ha) the highest, followed by ICEAP00554 (2667 kg/ha), 2004/16/16/7 (2334 kg/ha), and 2004/17/10/1 (2230 kg/ha)

4. 200 millet accessions characterised and 4 lines resistant to blast identified;

5. Thirteen (13) millet lines with tolerance to drought confirmed;

- Planted trials in 4 locations; Kumi, Ngora, Serere, Anyara. Finger millet responds well to fertilizer application especially to N and P. Preliminary results recommended dose of 40:20:20 kg/ha N:P:K to be applied.

6. Baseline survey to collect information on finger millet production systems, processing methods, market prospects and consumption patterns conducted in Katakwi and Mbale.

7. 10 promising pearl millet lines identified

- 75 accessions with desirable attributes selected for further evaluation

- Four best lines for resistance against gall midge and web worm selected for further evaluation

- One hundred sunflower accessions were evaluated on station and 13 lines were identified for further evaluation

- Field trials combining host resistance resistance, crop rotation

(groundnut/sorghum/maize) and time of planting planting were established to evaluate these practices on severity of sclerotina and leaf crinkle diseases

- 7 on-farm trials were planted in hotspots in Tororo and Serere district.

Preliminary result from available data showed resistance response in 9 cowpea lines: ACC11, ACC12,

ACC26, SECOW 2W, SECOW 3B, K-

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

80, M66 and NC
 - 21 cowpea plant spacing options were evaluated for SECOW 2W (most preferred variety). Incidence of scab averaged between 35% and 70%. Only 4 plant spacing options had incidence less than 45%.
 - Fifteen (15) promising ARC Sudan lines that are adaptable to Uganda were planted for multi- Locational testing in 3 locations. Twenty five (25) Sub humid dry lands and 25 Sweet sorghum lines introduced from ICRISAT for regional adaptation trials were planted on station during the second rains 2013.
 - 10 promising NaSARRI selections and 6 BC3 drought and Striga resistant sorghum lines were replanted in Bukedea, Kumi and Serere trial sites. Results indicate that 2 NaSARRI selections had low Striga incidence while 2 BC3 lines from Sudan were early maturing and high yielding. Data on plant establishment and shoot fly incidence has been collected
 - 20 BC1S1 crosses were advanced to BC2S2 generation, 25 BC5 lines were advanced to BC6 generations. During the quarter, the selections were bulked to form populations for further evaluation
 8. Pest field screening experiments in four locations of 16 sorghum advanced lines resulted in the identification of four lines resistant to shoot fly attack .

Bulindi ZARDI

- Evaluation performance of key crops:
 - From the 0.2 acres of beans, NABE 4, NABE 16 yielded much better at 634kg/acre and 787kg/acre respectively than NABE 15 and k132 at 336.2kg/acre and 390kg/acre respectively). Growth and yield data from 0.1 acres maize (Longe4, Longe 5, Longe10H, Longe 6H), 0.1 acre rice (NERICA 1, 4,10 and SUPERICA) and 0.6 acre groundnut (SERENUT 1-14) is under analysis
 - 1/4 acres of TME14, NASE14, MH0686, MH2961 cassava varieties were planted on-station and data collection on yield under varying spacing (1m X1m, 1.5m X1.5m, 2m X 2m) is still ongoing
 - The 1 acre of demonstration for Maize; (Longe 5, Longe 4 and Longe 10H), beans (NABE 4, K131, NABE

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

12C) Rice (NERICA 1, NERICA 4, NERICA 10, NARIC 1, NARIC 2), Sorghum (Sekedo), Soya (Namusoy1N, Namusoy2N, Namusoy3N & Maksoy4M), Sweet potatoes (NASPOT6, NASPOT8, NASPOT10, NASPOT7, NASPOT11 & Ejumula) which was previously established on-station to increase farmers' knowledge on Good agronomic Practices and access to adapted crop cultivars in the LACZ was visited by 284 students and 49 farmers

- Evaluation of drought tolerance of forage species: Greenness, vigor, biomass and fraction of dead to green determined for November 2013. Neonotonia wightii and Congo signal (control) were the most green. Brachiaria Toledo & B. Hybrid had the highest biomass (fresh). DM yet to be determined
- Exploration of cage fish farming opportunities in the region: A total of 30 bays on lake Albert were surveyed, water and sediment samples collected in Hoima, Kibaale and Buliisa districts. These are: Sabagolo, Nyawayiga, Nyamula, Nkondo, Ndokole, Susa, Bugoma, Bugoma – Kinya (Bagdad), Kinya B, Kisege, Kayiso, Mbegu, Tonya (Songa Nyanyama and Songa Mali), and Mbegu-Lwengabi in Hoima, Pida, Booma A, Booma B, Booma-Tugombiri, Kinyamukuta, Butiaba, Walukuba, Somusio, and Bugoigo in Buliisa and Mpeefu, Kabukanga, Kitebere, Ndayiga, Nguse, Rwebigongoro and Kamina bays in Kibaale
- Fruit tree production: Analysis of data collected on current status and factors affecting production of fruit trees in LACZ is ongoing
- Promotion of bee keeping and it products: Baited and deployed 10 KTB. Data collection on rate of colonization and abscondment shows that At least 3 langstroth and 1 Kenya Top bar hives were colonized by bees by the end of the quarter. Unfortunately there was abscondment in 1 langstroth hive. Maintained 2 bee forage species (Calliandra calothyrsus and Osnum) planted at 60m x 40 m on apiculture research and development site as sources of bee forage during experiments and demonstrations.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- IPM of Key Crops: Malathion 57% EC, Dimethoate 40% EC, Cypermethrin 5 % EC lowered bean fly infestation to 4.2%, 5.5%, 6.3% respectively from 8.8% under untreated conditions, mean yield of NABE under similar treatments was not significant giving 744.3kg/acre, 664.5kg/acre and 720.2kg/acre respectively as opposed to 797.9 under untreated conditions suggesting that their application would not significantly improve yield compared to when no application is done.

- Efficacy of selected botanicals against groundnut aphid to manage groundnut rosette: Despite not having aphids recorded, groundnut rosette on plants treated with extracts of Neem, Tephrosia vogelli, red pepper and cypermethrin 5% EC was severe with total folia mosaic and heavy stunting resulting in very low yields of 126.8kg/acre, 105kg/acre, 131.6kg/acre and 160kg/acre respectively. Similarly, plants treated with extracts from Mexican marigold, Nicotiana tabacum and plain water high aphid infestation with severely total leaf mosaic and heavily stunted resulting in very low yields of 126.8kg/acre, 102.9kg/acre and 95.7kg/acre respectively. These findings highlight the inefficiency of botanicals in the control of aphids that cause Groundnut rosette.

KAZARDI

- Establishment of field trials in Kanungu, Kisoro, Mbarara and Kanungu, Data collected on disease incidence and other agronomic characters

- 20 clones selected based on bacterial wilt incidence for further development

- About 198 plantlets of three varieties (Rutuku, Kachpot 1 and Victoria) inoculated for in vitro performance in the laboratory.

- Confirmed the presence of B-gluconidase gene (gus) in 5 lines of Victoria and Rutuku, NPT II marker gene in 3 lines of Kachpot 2, lines of Victoria and 1 line of Rutuku

- 1.5 ha of land planted with nuclear seed for basic seed production and seed crop management

- Planting and management of 720 plantlets under conventional and aeroponic methods of generating

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

potato seed

- Generated 26,917 plantlets. Planted 12,160 plantlets under aeroponics and conventional techniques. Harvested 16,916 mini tubers, Harvested 300 bags of pre-basic seed
- Data collection was done at all 4 experimental sites (1 in Bugongi, 1 at Kachwekano, 1 at Kalengyere and 1 at Mbazardi). Maintenance of field plots were by spraying, weeding and manure application was done. Growth data collected showing disease pressure due to apple scab and powdery mildew was collected. James Greives, Shilomit, Fuji, Anna, Golden dorset, Rome beauty, and Winter banana selected for high fruit yield and tolerance to diseases and wider agroecological adaptability.
- 3,140 apple grafted seedlings generated. 1,223 apple rootstock seedlings raised at the central nursery at Bugongi. 640 rootstocks ground layered at Bugongi and a further 2,220 earthed up.
- Backstopped and provided information to apple farmers in Kabale. On farm trainings were done in 10 subcounties in Kabale about tree training, disease and pest control, fertility management and fruit care for optimum productivity.
- Five varieties were planted in single plots for seed increase at Kibimbiri station (1100masl). The varieties are NERICA 4, NERICA 6, NERICA 10, NERICA 14, and NERICA 18. Data was collected on growth parameters and partial analysis done and NERICA 14 had the highest yield of 2.8t/ha.
- Data collection on gain yield components from harvested sorghum advanced yield trial was done at Kachwekano station. Seed treatment, seed packaging for planting 2014 trials was done, 14 varieties selected from previous trial of 2012 were in the trial in addition to local check. Leaf blight, days to flowering was recorded. Promising early varieties are so far E1291, IS9201, N2, S87, BM27 and Nyundo.
- Information on growth rate parameters for 3 fish species in ponds for 3 months generated and indicate variation per species with Nile tilapia having so far better growth rates followed by Catfish in pond monoculture systems

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- One commercial fish farmer promoted and able to produce and sale 14 tonnes of brood fish and 1 tonne of seed fish
- All fishing gear, sites in the 7 water bodies and fishermen experts assembeled
- 6 earthen ponds constructed in Kynanamira sub county Kabale District for aquaculture research
- Preliminary findings indicate that, 50% crosses have better growth rates, resistant to worms and palatability test acceptable by the public than 75%, pure Boer and the local Kigezi goat breeds.
- Major classes of dewormers were found on the market and their mode of administration assembeled. A total of 340 goats were earmarked for the experiment and fecal samples taken for the baseline epg and there after, dewormers were administered on to goat breed levels in the zone.
- 4 pasture legumes, canavalia, lablab, mocuna and desmodium assembeled. First and second land preparations done on-station.
- Preliminary findings indicated that out of 256 goat farmers sampled, 15.8% from the survey districts have dairy goats and the proportion of dairy goats reared reduced by 2.3% on comparison June 2013 to 12 months prior the interview.

Regarding stakeholder's perception and experiences on selected attributes of dairy goats, over 80% fully agreed that dairy goats have a positive impact on household income, 70.3% of them would choose dairy goat meat compared to another goats meat while 39.5% revealed that dairy goat meat is not like any other meat. Additionally, 89.5% and 79.2% of the respondents agreed that goat milk is for human consumption and they can drink goat milk and can allow any of my their family members to take it while 69.4% revealed that goat milk has very high nutritive value. Over 70% of respondents indicated that dairy goats are highly profitable while 40% revealed ready market for dairy goat meat and live goats. Major constraints to adoption of dairy goat production included; Limited information on advisory services (79.7%), lack of starter stock (57.1%), limited access to dairy goat breeds (17.5%),

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

expensive to invest in (8.4%), physically demanding (4.0%) and 1.8% of them reported limited market for milk and negative attitude .

- 150 foundation/breeding stock goats (25 Boer, 51 of 75% Boer, 19 of 50% Boer and 55 of Kigezi/ Local goats) were maintained by regular spraying, deworming, repair of broken fences and herding of goats

Mbarara ZARDI

- In a survey of 200 households in the zone, it was established that only 7% of farmers conserved fodder. Limited awareness, high cost of inputs, unreliable labour, low quality pasture species and high cattle stocking rates identified as major constraints to on-farm feed conservation. Hay and silage making the only methods used to conserve fodder.
- One monitoring site for best stocking rate and grazing management practices was established in Kiruhura District
- Studies on conventional methods of helminthosis management in the SWAEZ established that high worm burden was in goats under free range and ranching systems than in padocking and zero grazing. No significant difference in worm burden across different goat breeds ($p=0.056$).
- Feed Conversion Ratio (FCR) and Specific Growth Rate (SGR) of floating and sinking commercial fish feeds established that an average growth of 267.03g and SGR of 0.51% for floating pellets and 204.71g and SGR of 0.29% for sinking pellets.
- It was established that Low adoption of commercial fish feeds was due to high costs
- Data was collected on yield performance of mango fruits on-station, promising varieties included Tommy, Kent, Keitt, Parlvin, Zillate, Bire, Glenn, Florigon, Doodo red and Haden (yield ranging between 5-7tons/ha).
- Preliminary results of fungicide and pesticide application regime appropriate for management of major mango, avocado and citrus pests and diseases were obtained. Systemic fungicide sprayed at vegetative, flowering and fruiting stages gave promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocados.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Experiments were established on-farm and on-station. On-station results best nitrogen fixing shrubs to be Calliandra C., Gliricidia S., Leuceana T. while low results were obtained from Sesbania S. and control with 968,966, 948 while 731 and 816 kgs of bean yield per hectare.
- Soil analyses indicate soil nitrogen and phosphorus being below the critical values of 0.2 % and 15 mg/kg respectively in most soils

Abi ZARDI

Cassava:

- Trials with landraces were harvested and participatory evaluation conducted in Nyaravuru (Nebbi) and Rhino camp (Arua).
- Adaptive trials of improved varieties in 10 sites were harvested and participatory evaluation conducted with farmers. Results were published in the Journal of Agricultural Science (Abaca et al. Vol. 6, No. 1; 2014. Pp 116-122).
- New adaptive trials and demos were planted in Maracha, Moyo, Nebbi, Koboko and Arua.

Sorghum:

- Trials were set up in three districts of Nebbi, Arua and Koboko and data was collected; 12 improved varieties were planted both on-station and at DFIs to collect multi-location performance data.
- 16 local (Godo) varieties were established on-station for performance evaluation. Both trials were planted using RCB design with 3 reps and a check.

Maize:

- Trial was established on-station using a Split-plot design; Maize hybrids L6H, L7H, L8H, L9H, FH6150, KH500-43A, PAN67, DH04 obtained from different seed companies and planted on-station. Performance data collected.
- Beans and groundnuts: Crosses were made between five West Nile local and improved varieties such as G2333, PI207262, Cornell and Tu; Trials were established on farmers' fields in Adjumani, Arua and Zombo districts.
- Beans:
 - Multiplication plots for 12 varieties established at AbiZARDI; Data was collected at 8 and 12 weeks after planting; 11 genotypes from Uganda

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
----------------------------	------------------------------------	---

US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

were successfully sent and acknowledgement of receipt made by Embrapa.

Soil Fertility:

- Six on-farm and two on-station Integrated Nutrient Management (INM) trial timely weeded.

Agro-forestry:

- 60 saplings marked on-farm and 30 saplings collected for hardening on-station; Market Survey on agroforest products carried out in four districts (Nebbi, Zombo, Arua and Nebbi) done.

Aquaculture:

- Six fish cages of low volume high density have been assembled and established in Onigo D fishing bay; Results of reproductive seasonality of *A. baremoze* over 12-month period showed that: Basing on the observable characteristics during the maturity stages, *A. baremoze* undergo total spawning as no opaque eggs were noticed to be left in the ovary during the spawning stage; The spawning pattern exhibited by *A. baremoze* across the twelve months of study indicate that this species undergo short spawning periods; Results on ovary description of "Angara" published in peer reviewed journals - Stages of ovarian stages of *Alestes baremoze* (Joannis, 1835): A Step towards Understanding Its Reproductive Biology, published in *Frontiers in Science*, Vol. 3 No. 4, pp. 107-113.

- Six fish cages of low volume high density have been assembled and established in Onigo D fishing bay.

Dairy productivity

- (evaluation of forage cultivars): On-station forage-adaptive trial, including 12 forage spp set up. Apart from *Panicum maximum*, all other forages either germinated or sprouted with more than 80% establishment. Nutrifed forage sorghum achieved more than 50% flowering after 2.5 months of planting.

Goat Health Management:

- Establishing the performance of Mubende/Boer offspring in the region: Preliminary results on the growth performance of Mubende goat offspring indicate that Average birth weight of Kids is 2.9kgs, weight at weaning 10.5kgs and Average Daily gain 50g. The birth weight of kids from crosses of Local x Boers is 3.3 kgs while the Average Daily gain was 58g.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- Evaluation of medicinal plants: Two efficacious medicinal plants validated; 3 medicinal plants were screened for phytochemistry, organ toxicity and LD50 determination. A technical report is being compiled.
- Evaluation of Five high yielding forage cultivars: On-station forage-adaptive trial, including 12 forage spp set up. Apart from Panicum maximum, all other forages either germinated or sprouted with more than 80% establishment. Nutrifeed forage sorghum achieved more than 50% flowering after 2.5 months of planting.
- 2-acres of lablab, 1 acre of Brachiaria and 1 acre of Velvet bean (Mucuna) were established

Buginyanya ZARDI

- Establishing Prevalence of Banana Bacterial Wilt: 90 % Bacterial wilt recorded by 45days in plot with BW history compared to Plot in clean field.
- Goat Productivity: 29 indigenous and 37 F1 crosses for breeding maintained and a 594m2 boma for bucks constructed.
- Improving wheat productivity:
 - Identification of improved wheat lines: 5 candidate Mut lines for DUS with no stem rust incidence at 5 sites (Kalengyere, Buginyanya, Kachwekano, Kere & Bukwo); 75% failure of M3 Pasalines planted in highly acidic site at at Buginyanya station
 - Promising wheat introductions with resistance to Ug99: 4 lines at AYT2 showing low incidence of stem rust at 5MR in Bukwo and Kween, no disease in Kapchorwa; 3 out of 9 wheat lines at PYT2 (Kingbird, Eagle, Wren) showed no disease in Bukwo, Kween and Kapchorwa
 - Farmer-preferred soil nutrition amendment options for wheat production: N3P3 fertilizer combination most promising for improved wheat production
 - Arabica Coffee: Surveillance of crop nutrition and disease incidence: -Poor coffee crop nutrition observed in 45% of surveyed fields around Bulambuli; leaf miners and coffee berry disease was the most prevalent disease in most of the fields surveyed
 - Baseline information on SWC practices in project sites: Survey tool developed and pretested for data

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

collection

- Seed potato: 1800 victoria and 950 Katchpot1 mini-tubers acquired and sprouting for planting in Feb 2014; Video documentary on seed potato multiplication in Bumbo and Mengya recorded
- Improving productivity of beans: Data on Grain yield, pods per plant, grains per pod collected and is being analysed; Grain yield, diseases and pests data collection and analysis is ongoing
- Validation of the Best IWM technique in upland rice validated on-station: Results show that Grain yield under post-emergence application of 4 l/ha of Butanil 70 + 1 hand-hoe weeding most promising technique.
- Rice: Installation of 2 weather stations at Doho Irrigation Scheme and Bar Sub county Lira District
- Development of Drought tolerant maize hybrids: Results of evaluation show that: Varieties CKH10767, CKH10169, 11SADVL-F2, CZH1157 & CZH10191 most high yielding (3.1-4.8 t/ha respectively) cf 2.9 t/ha for Longe 10H.
- Determining the most cost-effective biochar level in improving maize grain yield: Preliminary results show that Biochar application at 5 and 10 t/ha with more large cobs than no biochar treatments

Summary of Achievements and Progress

Mukono ZARDI

Aquaculture

- Four ponds completed: Drainage channels completed;3 inlets and outlets installed
- Three ponds de-silted, banks strengthened and compacted
- Two base population (fast growing brood stock) multiplied and maintained and appropriate tags sourced
- Production of local fish feed: Feed formulation and pellet production is ongoing; types, quantities of antinutritional factors present in selected feed raw materials determined. Pilot production of feed and pellets will take place next quarter

Determination of the effect of intercrop on the soil fertility: This is still ongoing. Results revealed that soils at the trial sites in Zirowe and MUZARDI

Vote: 142 National Agricultural Research Organisation

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Development Projects

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generally had lower nitrogen levels which could have influenced yields.

Rice market chain: Held 3 rice market chain actors' meetings to identify market opportunities in the zone. The report was written and recommendations made which included (1) the need to bring together actors along the rice market chain and form a platform aimed at improving rice marketing (2) Identification of key rice marketing issues that will be dealt with using the PMCA strategy.

Enhancing utilization and genetic biodiversity of indigenous vegetables: Data collected once from trials at the three locations on plant height, plant stand, pests and disease. From the results, plots treated with poultry manure recorded higher yields than plots treated with NPK; plots treated with 7.5 MT/ha of poultry manure recorded the highest yield with an average of ??? ton/ha of Nakati. Under NPK treatment, the highest yield was recorded in plots where 187.5 Kg/Ha was applied with an average of MT of Nakati harvested.

One seed multiplication trial (0.25 acres) for Nakati established at MUZARDI. A total of 30 kg of Nakati seed produced for uptake pathways

Multiplication of cassava foundation seed: A total of 50 acres of cassava foundation seed planted and maintained i.e. 30 acres at Kamenyamiggo, 4 acres at Mityana DATIC, 6 acres at Bukalasa Agricultural College, 10 acres at Nakaseke district

Nabuin ZARDI
9. Acaricidal activity of 3 selected botanicals against ticks was established in Karamoja and Teso
Tephrosia vogelii and Albazia coriaria showed 90% and 70% effectiveness, respectively against adult and larvae of Boophilus and Rhipicephalus species from cattle

10. Ethnoveterinary botanicals and knowledge utilised by pastoralists to control ticks and helminths in livestock was documented

- 2 acres of pasture plots for evaluation set up on station in Nabuin

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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Development Projects

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11. Preliminary laboratory results from screening for Brucellosis was done, seroprevalence of 23.2% Brucella abortus and 1.6% Brucella mellitensis was found, 0.8% (1 camel) was reactive to both Brucella species. Dissemination of preliminary results to stakeholders was done, 128

participants attended at Alakas primary school on 19th dec 2013. 46 Camels were treated for corynebacterium infection from 17th -19th dec 2013

- Four priority crops including sorghum (12 varieties) & cowpeas (13 varieties) cassava (5 varieties) were tested for drought and yield response. Data is being analysed for selection of best varieties.

- OPV maize variety Vp Max (1.5MT/Ha) exhibited the most drought tolerance expressive traits through leaf folding (300) to reduce evapo-transpiration potential.

- Five varieties exhibited tolerance to groundnut rosette virus and leaf spot and were recommended for advancing to F4 S4 to ground nuts program at NaSARRI. The other five varieties were recommended for back crossing with resistant donor varieties to improve their tolerance to rosette and leaf spot.

- cowpea and green gram varietal trial yield, pest and disease data under processing and analysis

- 5 newly released CBSD resistant cassava varieties are being evaluated for adaptability at on-farm (NabuZARDI)

- 10 acres of rice were established in Kolir, Bukedea District.

- Maize seeds primed 72 hours before planting had 100% crop establishment than the 48 hours seed priming

12. Survey on seed system security assessment was conducted. Results showed that 90% of farmer use food grains as seeds. 60% of farmers sources food grain seeds from mobile markets, 10% obtained from own saved from previous season harvests and 20% obtain seeds from neighbours

Ngetta ZARDI

- 6,000 seedlings established for pasture seed multiplication

- 15 heads of dairy experimental cows maintained on-station for conducting feeding trials

- Crop residue samples obtained for

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

laboratory analysis

- Ponds and fish farm site maintained.
- A cage culture status and potential sites for Lango sub-region was documented.
- Data on performance of different CBSD tolerant varieties in different locations of the NAEZ documented.
- Better option for weed management in rice and beans documented
- Optimum bean plant population under conservation farming documented.

Rwebitaba ZARDI

- On station performance trials for tea clones established on 1. 2 acres

- 15,000 clones raised and 23,433 plantlets maintained in the tea nursery. 400,000 cuttings supplied to a nursery operator

- Evaluation trials maintained on station for improved mangoes, citrus oranges and Apples.

- Demonstration trials for Eucalyptus, Maesopsis eminii, Albizia Chinensis and Terminalia species maintained.

- Mother garden of the 7 lines of coffee on station maintained. In addition another 1 acre of Robusta and Arabica coffee lines for demonstration was established

- Maintenance of 4 acres of upland rice (NERICA 1, 4 and 10)

- Maintenance of three (3) forage pasture established bracharia species in the evaluation trial

- 2 acres of livestock pastures and fodder species (Lab lab and mucuna) established for multiplication on-station. Monitored dairy farmers who received 21,000 splits of Bricharia species under EAAPP project in collaboration with

NaLIRRI

- 20 acres of cassava (Nase 14- 4271 variety) maintained on-station. An additional 40 acres of cassava (NASE 14 variety) on-station under EAAPP maintained

- Acquired 3000 plantlets of improved banana for multiplication on 7 acres on-station

- Conducted survey on banana production and marketing constraints conducted in Kabarole, Kyenjojo and

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Kyegegwa districts
 - 10 traditional and 7 modern bee hives acquired from Nyabubale Bee Keepers Foundation. 11 bee hives out of 37 colonized by bees on-station
 - Maintenance of bee forage plants (Calliandra - 150, Bottle brush - 100, Angels trumpet- 100 and Moringa-100) in the apiary. Raised 350 oscimum seedlings
 - Two fish ponds fully filled with fresh water and stocked with Cat fish (Clarias gariepinus)
 13.Preliminary report drafted for tea profitability in Kyenjojo district

Reasons for Variation in performance

None

Total	699,000
<i>GoU Development</i>	0
<i>External Financing</i>	699,000
<i>NTR</i>	0

Output: 01 5102 Research extension interface promoted and strengthened

		<i>Item</i>	<i>Spent</i>
1.NARO-NAADS Joint workshops and meetings conducted;	NARO Secretariat	221001 Advertising and Public Relations	9,500
2.Stakeholders trained in IAR4D	- Organised and participated in the World Food day celebrations at NASARRI.	221002 Workshops and Seminars	109,000
3.Joint stakeholder Planning/Review/Feedback/ workshops and meetings held;	- Developed and published a newspaper article on Agricultural investment opportunities in Uganda.	221005 Hire of Venue (chairs, projector, etc)	49,500
4.membership to local Associations made and update		221008 Computer supplies and Information Technology (IT)	11,200
5.Networking, Partnership and collaboration stakeholders meetings held;	Abi ZARDI	221011 Printing, Stationery, Photocopying and Binding	205,000
6.stakeholders sensitisation workshops/meetings of conducted;	- Soil fertility: 0.5 tonnes of Mucuna, Lablab and Glycine Cover crops harvested and processed.	224006 Agricultural Supplies	387,000
7.Participate in open days/Farmer field schools/exhibitions/trade fairs/Agricultural show/Field days;	- 2-acres of lablab, 1 acre of Brachiaria and 1 acre of Velvet bean (Mucuna) were established.		
8.Extension and promotional materials developed and disseminated	Buginyanya ZARDI		
	- Arabica Coffee: 3.5t of quality Arabica coffee seed supplied to UCDA		
	- Promotion of SLM technologies: 10, 650 agro forestry trees (Grevillea, Dovyalis (kei apple) and Markhamia planted at Buginyanya, Bulegeni and Ikulwe		
	- Seed potato: Mengya Integrated Farmers' Association in Benet, Kween have improved seed potato storage facility; 60 bags of Naspot 8 vines availed to famers in Busiu, Bukiyi,		

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

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Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Nalusala, Bulegeni & Bukhulo SCs/ in Mbale, Sironko, Bulambuli and Mayuge districts.

- Capacity building in S/P vine multiplication in Mbale (Busiu S/Cs) and Sironko (Bukhulo, Bukiyi S/Cs); 3 vine multiplication sites established in Busiu, Bukiyi, Nalusala and Bulegeni SCs Mbale, Sironko, Bulambuli districts and brochures availed to 80 farmers
- Cassava: 5 bags of cassava availed to farmers in Eastern Uganda; data collected on plant height and vigour of the cassava plantation on farmers' sites; 104 ToTs knowledgeable in cassava agronomy
- Rice seed: Established 2 ha of upland rice (of Nerica 1, 4 and 10, for uptake pathways) which is at grain filling stage. Nerica 10 has the most vigorous growth.
- Groundnuts: Established 0.6 ha of gnuts (for uptake pathways) which is now at pod forming stage

Bulindi ZARDI

- Multiplication of seed on station for uptake by farmers:
 - 4kg of NABE 17 and 20 kg of NABE 15 were harvested from 1/2 acre of field. This was far below the expected 400kg of bean seed. Growth of these was affected by drought
 - 20 acres of cassava (NASE 14) were planted on-station estimated to produce 1600 bags of cuttings of cassava to be availed to farmers for increased productivity of cassava in the LACZ of Uganda
 - 1440kg of adapted upland rice varieties (NERICA 1, 4, and 10) as rice seed from 6 acres of multiplication fields to be availed to farmers targeting increased productivity of upland rice in the LACZ of Uganda were harvested
 - Established 6 community demonstration fields of 0.2 acres each for NERICA 1, 4 and 10 in Miirya sub-county (Masindi) and Kitoba sub-county (Hoima) but were not followed up due to lack of funds
 - Fruit tree multiplication for promotion in the region: Generated 2090 avocado root stocks, 5600 mango root stocks, 500 grafted avocados, 700 mesiopsis seedling and 400 eucalyptus seedlings
 - 1 Stakeholder feedback meeting held

Vote: 142 National Agricultural Research Organisation

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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

at BuZARDI

NARL

- Trained 26 farmers of whom 54% were women from Iganga and Jinja districts on proper use of biogas stove prototype
- Trained 29 artisans from Arua, Koboko, Nwoya, Amuru and Maracha districts on fabrication of ox-plough technology
- Trained 27 farmers (of whom 3 women) on use and operation of power tillers in Nankoma S/c in Bugiri district
- Trained 8 mechanics (7 from Bugiri and 1 from Pallisa districts) on repair and maintenance of power tiller
- Promotion of released banana hybrids: Held community meetings around the 121 demonstration plots in Eastern Uganda; planted 200 demonstration plots of M9, FHIA 17 and M2 in central Uganda
- Twenty nine participants (incubatees and non-incubatees) acquired knowledge technologies, business concepts and business plans; One business and 4 technical training workshop held
- Market linkage website developed and functional (www.agribiz.ug)
- Nutritious snacks (cookies, cakes, Pringles) under market testing
- Mushroom spawn and fresh mushrooms put on the local market
- 60 TOTs in ISFM trained in Tororo, Busia and Namayingo
- 30 staff trained at NaCRRI, 60 Extension staff trained at MbaZARDI, and 20 Extension staff and 10 Agro-Input dealers trained at Fort Portal in the use of Fertilizer Optimizer Tool (FOT)

NaLIRRI

- Trained 340 farmers (210 female and 130 male) in Mbarara, Masaka and Wakiso districts on NSD management
- Trained stakeholders in Masaka (30) and Wakiso (30) districts on harvesting and processing forage seed
- A Draft paper on evaluation of different Napier accessions for NSD tolerance developed
- Two manuscripts on utilisation of crop residues for feeding dairy cattle submitted to journals for review and publication
- A draft leaflet on forage seed production produced

Vote: 142 National Agricultural Research Organisation

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Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- 1 papers titled Evaluation of Napier grass clones for dry matter yield and tolerance to Napier stunt disease was presented in the African Crop Science Society Conference and International Network of Women Engineers and Scientists (INWES) Regional Conference; Another paper on production characteristics of smallholder dairy farmers in lake Victoria crescent was presented in scientific conference in Naivasha, Kenya.
- A leaflet produced on "Napier grass management. The information will enable farmers to improve the management of NSD and increase milk yield"
- 200 kg of Clitoria ternatea seed harvested and distributed to 15 farmers (10 female & 5 male); 250 kg of Lablab purpureus distributed to 20 farmers (10 female & 10 male) in Ntungamo district; 5000 splits of Brachiaria produced
- 3 fodder tree nurseries each with capacity of multiplyinh 50,000 seedlings established in Abim, Kotido and Kaabong
- Two information packages (1000 fact sheets and 2 posters) produced on control of common ticks and tick-borne diseases, especially East Coast Fever
- Three posters on FMD produced
- About 1000 fact sheets on FMD produced
- About 1000 fact sheets on CBPP produced
- About 1000 fact sheets on PPR disease in goats produced
- About 500 fact sheets on control of Trypanosomiasis in cattle produced
- Two perceptions dissemination (stakeholders') workshops on Tsetse fly transition held
- Disseminated to more than 1,000 show goers during World Food Day exhibition at NaSARRI, Serere
- About 1000 fact sheets on control of helminthes (worms) in goats produced; disseminated to more than 1,000 show goers during World Food Day exhibition at NaSARRI, Serere
- About 500 brochures on policy issues of acaricide and livestock drug access and use of by farmers developed and information disseminated in Kiboga and Soroti
- A total of 336 cows artificially

Vote: 142 National Agricultural Research Organisation

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Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

inseminated from 195 farmers (42 female and 153 male) herds; a total of 11 cows/heifers artificially inseminated with Friesian semen at NaLIRRI

- A total of 227 farmers (62 female and 165 male) sensitized on-farm on better breeding, record keeping and husbandry practices
- Improvement of indigenous cattle for increased dairy productivity: developed the following information materials: 1000 brochures, 1 poster developed, 2 Radio talk shows (Veritus local radio) held. Disseminated the information through 5 Local meetings, 1 regional show and 2 regional workshops

NaFIRRI

- 1 Press Release placed in the Monitor on 21st November 2013 to mark World Fisheries Day.
- 800 copies of calendars & 600 cards with key messages about NaFIRRI research findings were packaged & disseminated to stakeholders
- Dissemination of research information to stakeholders during the World Food Day celebrations held at NaSARRI.
- 1288 school children from 15 schools sensitized on fisheries, water environment & aquaculture issues
- Conducted 1 joint planning meeting with DFR-MAAIF to plan for the joint implementation of a lake-wide Catch Assessment Survey (CAS) data collection on Lake Albert & Albert Nile
- Director attended an LVFO Council of Ministers' meeting in Arusha, Tanzania; Head Aquaculture attended 2 biodiversity meetings in Kisumu & Nairobi

NASARRI

- 400 kg of foundation seed of cowpea and pigeon pea was obtained.
- Trained 12 farmer groups on Integrated Striga Management Technologies and community quality seed production.
- Fourteen (14) demonstration plots established in Kumi and Katakwi districts.
- 54 lead farmers and 10 Agric extension staff trained on sorghum pest management in the three districts.
- Three (3) ISM training manuals developed and 500 copies distributed to uptake pathways

Vote: 142 National Agricultural Research Organisation

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Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- 70 acres of Cassava seed multiplication fields planted and 5 acres of forage seed fields multiplication planted
- Two acres of banana, coffee, mangoes and oranges demonstration fields maintained

Nabuin ZARDI

- 20 TOTs trained animal traction technologies in Karamoja and Teso sub-regions in Abim district
- 3 on-farm trials (Loregea, lorengechora and Iriri) were established with g-nuts, pearl millet, cowpeas, sorghum and maize.
- Demo fields with 4 crops (maize, sorghum, g-nuts & beans) established in Naitakwai, Nadunget S/County, (Morot District), and Kokeris village in Matany s/county in (Napak District), failed at flowering (Anthesis) growth stage due to prolonged drought spell
- 2 Farms (Amod and Naburi in Lokopo, Napak and Namalu in Nakapiripirit) were identified and established for seed production
- 30 acres of cassava (Nase14) were established and are being managed in Bukedea, Katakwi, Serere and at NabuinZARDI
- 4 farmer groups (about 67 small holder farmers) trained in rapid cassava multiplication and early disease detection in Lokopo subcounty, Napak district
- A map showing the areas under cassava production and distribution of CBSD produced
- Two multiplication/demonstration sites for 15 pasture and fodder species maintained on-station
- 18 acres of MM/96/4271 cassava multiplication fields maintained and 7 more acres of land opened for planting cassava
- 500 brochures printed and disseminated.
- Legume trial and legume seed multiplication fields established.
- Cattle shed constructed at Nabuin station, 1 block of pig sty constructed. Construction of poultry house at Nabuin station

Ngetta ZARDI

- Six on-farm trials for validating one potential IPM strategy for citrus canker disease established in Gulu, Kitgum, Oyam, Dokolo and Lira districts in

Vote: 142 National Agricultural Research Organisation

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Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- partnership with NAADS
- Farmers adopt improved agronomic practices including CBSD tolerant varieties.
 - Farmers take up seed production as a business. (production of quality

Reasons for Variation in performance

None

Total	771,200
<i>GoU Development</i>	0
<i>External Financing</i>	771,200
<i>NTR</i>	0

Output: 01 5104 Agricultural research capacity strengthened

		<i>Item</i>	<i>Spent</i>
1 - Good Governance and corporate social responsibility ensured and promoted; Leadership and oversight Management of agricultural research provided;	NARO Secretariat Quality Assurance	221003 Staff Training	1,092,000
2 - Staff recruited and trained	- Draft PATs have been peer-reviewed by respective Heads of Department.	221004 Recruitment Expenses	17,500
3 - Stationery and office consumables procured;	- The PATs have been approved by the NARO Council	221006 Commissions and related charges	295,500
4 - Office equipment maintained;	- Midterm Research proposals have been streamlined, refined and approved by the NARO Council.	221009 Welfare and Entertainment	68,000
5 - Water utility bills paid; Electricity utility bills paid; Telephone, Postage and courier services used;	- Financial and human resources necessary for execution of refined Research proposals has been clarified	221012 Small Office Equipment	55,000
6 - Vehicles serviced; Office buildings maintained; Compound maintained;	- Scientific output entries for the National Agricultural Research Laboratories (NARL) has been Completed	221016 IFMS Recurrent costs	127,000
7 - Maintain effective ICT facilities; Subscription for internet paid;	Administration	224002 General Supply of Goods and Services	422,000
8 - Quarterly entity accounts, financial statements, commitment control reports, several manual books of accounts maintained. Bank charges timely paid;	- Attended one court session on Mbarara ZARDI. Court case hearings still on going	225001 Consultancy Services- Short term	237,000
9 - Acquisition of books, agric. Information magazines and newspapers;	- Two negotiation meetings for MuZARDI land, NARL.	227001 Travel inland	382,000
10 - security maintained	- 13 motor vehicles maintained and services, 01 secured with 3rd party stickers, 02 motor cycles serviced	227004 Fuel, Lubricants and Oils	321,000
11 - Break tea and Refreshments provided ;	- Over 30 offices and compound maintained and are operational	228001 Maintenance - Civil	211,100
9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;	NaFIRRI	228002 Maintenance - Vehicles	275,000
10 - Conduct audits in all NARO's processes;	- Conducted a review of work plans and budgets of 6 staff on long term training (5 PhDs, 1 MSc)	228003 Maintenance - Machinery, Equipment & Furniture	38,000
11 - Facilitate and guide the procurement process in NARO;	- 4 support staff transferred to NaFIRRI from other NARO institutes		
12 - Backstop research institutes in areas of Public Relations & Development Communication as well as branding concepts;	- Advertisement in the New vision for the positions of 4 Scientists under: Aquaculture, Fish Biology & Stock		

Vote: 142 National Agricultural Research Organisation

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Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

13 - Participate in Agricultural exhibitions, trade fairs, shows and Open days;	Assessment, Water quality & Socio Economics
14 - Undertake Corporate Marketing and Promotional activities;	- Approval and defence of PhD (Entitled, "Analysis of the structure & functioning of fishing communities to spread of HIV/AIDS & other water borne diseases & its impacts to fisheries production & management")
15 - agricultural research finding published (both hard and soft);	work plans and budgets, schedule of research activities, & study sites in conjunction with the institute training & scientific committees. Outcomes from above meeting shared with University supervisors
16 - Facilitate the approval and registration of all non-PARI research service providers;	- Proposal developed ("Development of improved extension approaches and farmers' livelihoods in Uganda), peer reviewed & submitted to NARO & University Supervisors; Attended 2 short courses: 1) Research methods; 2) Advanced Gender Research Methodology; Developed E-library (Mendeley) of over 100 relevant references for continuous literature review
17 - Participate in donor dialogues meetings	- Proposal refined (Entitled, "Profile of the bio-physical & chemical parameters of the saline crater lakes of Western Uganda developed"), reviewed & comments from the supervisors returned & incorporated in the second draft
	- Proposal reviewed (Entitled, "Protocol for spawning, larval weaning & nursing <i>Barbus altianalis</i> (Kisinja) developed") & comments from supervisors returned & incorporated into a second draft of the proposal.
	- 2 staff (1 scientist & 1 technician) attended a training course on data management, storage & presentation organized by NEMA
	- 3 staff attended Accounting and Auditing courses at MAT
	- 3 staff meetings held to update staff on research delivery & management matters
	- 1 Sub contracts committee meeting held in Jinja; contracts awarded to various service providers for supply of stationary, marine insurance, laboratory materials & vehicle repairs
	- 3 staff meetings held inform staff about issues in the operating environment
	- 1 Scientific meeting to review the workplans & progress of staff on long term training
	- Internet bills paid & connectivity maintained

Vote: 142 National Agricultural Research Organisation

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- Payments made for electricity, water & communication services
- 50 reams of paper, 50 box files, 4 packets of binding covers, 6 cartridges, 4 toners, 5 counter books, 12 packets of pens, 9 cash books purchased
- Fuel procured for standby generator during power blackouts, field vehicles & commuting vans
- Small Laboratory equipment (2 hollow cathode lamps, Triton Analytical grade) procured
- 2 pickups, 3 station wagons & 1 Research vessel repaired & serviced
- Two buildings repaired, 2 water tanks installed

NASARRI

- Connect 35% of all offices to internet and internal network system.
- Internet subscription to service provider paid, domain registered and website uploaded, Electronic board prototype developed. Prototype of the system developed and authorized staff are able to view accounts information and balances for ATAAS, GOU- Recurrent and Development releases
- Three discs and furrow wheel procured, Tractor mower repaired

Nabuini ZARDI

- Routine support and administrative activities and operations conducted
- Utility bills paid
- Repairs for three motor vehicles and one tractor
- Two staff accommodation units under construction at nabuini ZARDI station
- 37 corporate shirts printed

Buginyanya ZARDI

- Work in progress for 2 houses under renovation & institute estate maintained.
- Vehicles, UAJ 529X, UAJ, UG 0383A, 646X, UAJ 249X, UAA 516F, UAA 125Y & UAR 125Y repaired & maintained, 6 computers and 4 printers.
- Institute property protected
- 2 PhD and 1 MSC staff training on going

Bulindi ZARDI

- Two ponds (150 m2 and 250 m2) constructed and maintained
- Repairs and maintenance of Vehicles done; Fuel and lubricants procured

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- 1 Participatory monitoring and evaluation exercise conducted by Director, Finance Officer, Internal Auditor and Scientists to project sites
- 3 Participatory monitoring exercise conducted by Scientists to project sites
- 1 Directors' forum meeting held at the station
- 2 Management meeting held at BuZARDI
- Procure Electricity supply services

NaLIRRI

- Development, evaluation and dissemination of technologies that reduce climate change-induced shortages in forage and water availability: Final MSc. Thesis from the project submitted for examination
- Supported training of PhD student in epidemiological data analysis
- Establishment of 1 on-station experimental unit for goats in progress.
- Two paddocks under construction at NaLIRRI

Reasons for Variation in performance

None

Total	3,541,100
<i>GoU Development</i>	0
<i>External Financing</i>	3,541,100
<i>NTR</i>	0

Output: 01 5105 Generation of technologies for priority commodities

Bean

1) Fungi and bacteria with potential to reduce bean pests and diseases isolated
 2) The incidence and severity of major bean pests and diseases determined; Presence or absence of new pathotypes/biotypes determined; Yield losses attributed to ALS and

NaCRRRI

- Bean disease surveys conducted in 10 districts including Mityana, Mubende and Kyegegwa
- 3 On-farm trials established in Mpigi to determine disease severities and yield losses on farmers' fields
- Established PYT, IYT, AYT and NPT – trials of the available advanced climbing bean genotypes and also recorded data on their agronomic performance
- Field evaluation conducted and 14 lines earmarked for selection and advancement to AYT and PVS trials
- 25 new families established from 25 new different seeds

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- AYT data obtained on 3 promising bean lines (MYA 2, MYA 3 & MYA 5).
- 41.815 MT of of quality declared seed produced by 19 farmer groups
- Data from NTP trials for 8 nutrient bean genotypes at NaCCRI, Ngeta ZARDI ABiZARDI, RwebitaZARDI, Nakabango, Buginyanya-ZARDI and KaZARDI obtained and 8 lines selected
- A total of 525kg for bush genotypes obtained
- Data from PVS trials obtained with genotypes Nyiramuhondo & Kivuzo for Climbers and RWR 2154, HM 21-7, RWR 10 for bush showing superior performance
- 40 other PVS trials established in the districts of Hoima, Mubende, Gulu, Lira, Arua, Masaka, Kabale, Kisoro and Kamuli
- There was production of 17.6 Tons of Quality declared seed from the data so far collected. Production activities are still ongoing in other locations.
- 12 demonstrations on weed, soil fertility, pest and disease and management were successfully conducted in Wakiso, Mpigi and Bushenyi.
- 10 trials to test different potential staking options were established in kabale and Kisoro. They are still ongoing and data collection is progressing well.
- Samples of 19 bean varieties were analysed for miro nutrient and other nutrient in Kawanda and in Makerere university. Nutrient data is now available.
- 78 Stakeholders (16 Males and 62 females) were trianed in Bushenyi and Wakiso on the utilization of different bean based products.
- The bean based product receipe book was completed and is in press for printing.
- Brochures were developed and translated into five languages. Printing is ongoing and upto 25,000 brochures will be produced for differebt regions of the country.
- Promotion of bean based products and other technologies was done on world food day and its estimated that over 60,000 persons were reached.
- Data was collected and reviewed and insights into the factors that affect the operations of innovative bean platforms established.

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Rice

- Harvested 700 Kgs of NERICA 2
- Distributed 100 rice production manuals and 500 NERICA posters
- Produced NERICA policy brief

NARL

Bananas

- Collected data on the performance of Black sigatoka incidence and agronomic at pre-flowering stage; Incidence of Black Sigatoka on hybrids determined at the pre flowering stage in the PYT at Kawanda,
- Submitted two matooke hybrids (for M19 and M20) to Variety release committee
- BBW: Selected 10 lines replanted in Confined Field Trial, to establish resistance to BBW
- Nematode resistance: Collected pre-flowering agronomic performance of transgenic lines in the confined field trial
- Enhanced nutritive value: Generated 50 transgenic lines of M9 with Provitamin A enhancing genes
- 14.Promotion of IPM packages for management of BBW: Through the promotion of IPM packages, BBW incidence reduced to below 10% in most of the affected areas in Ankole and Kigezi

NaFIRRI

15.Determination of nutrient levels & biophysical factors influencing fish production levels:

- In-situ Physio-chemical parameters measured & were deemed suitable for fish productivity. Conductivity ranged from 120 – 420 μScm^{-1}
- Nutrient status determined (Total phosphorous ranged from 37 - 82 μgL^{-1}) indicating a less polluted environment
- Heavy metal concentrations (Fe, Cu, Mn, Zn, Ni & Pb) were determined in sediment, fish flesh & gills & were found to be within NEMA/WHO recommended limits

16.Development of options for management of aquatic weeds:

- Field data was collected from 18 geo-referenced sites in the western zone of Lake Kyoga (i.e. Kibuye, Kokoyilo, Mukotte, Ninga, Kachanga, Kasambya, Iruma, Kyalusaka, Muwunami, Kasenyi, Kiguli, Mbwiko, Namasale,

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Kayago, Muchora, Oripchan, Lwampanga & Zengebe). Major aquatic weeds of importance in the western zone of the lake were *Najas horrida* (445 ha); *Salvinia molesta* (300 ha); water hyacinth (232 ha); & *Hydrilla verticillata* (199 ha). Of these, local fishers reported *Salvinia molesta* to be the most devastating to various water-based activities especially gill net fishing.

17.Livelihood Analysis of fishing communities: Prioritized & socially acceptable livelihood options for Lake Edward fishers were identified

18.Map on aquaculture production in Central region completed: Data on aquaculture production collected from 137 fish farms in Lira & Alebtong districts in Northern region (a database on aquaculture production in the Northern region is being developed)

19.Development of topographic maps & designs of aquaculture reservoir fed systems in Western region:

Appropriate site was established in Kagango dam in Isingiro district. Consensus was obtained from farmers & district officials following a consultative & sensitisation meeting in preparation for formulation of MoU

20.Development of selected fish species for ornamental fish culture: Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)

21.Determination of Appropriate Gillnet Mesh Sizes: Conducted 3 monthly gillnet size selectivity experiments (Oct – Dec) during the wet season on the Northern part of Lake Albert. Preliminary analysis revealed the 2.5 inch mesh size gillnets as appropriate for sustainable harvest of *A. baremose* & *H. Forskahlii* in the deep open waters of Lake Albert

22.Update on current status of fishing effort on the Kyoga basin lakes: A census of all fishing inputs (effort) on lakes Kyoga and Kwania (Oct 2013) was conducted, showing an increase in undersize gillnets and fishers by 25% and 18% respectively between 2008 & 2013. A 5% decline in number of fish landing sites due to resurgence of water hyacinth, rendering inaccessibility & subsequent closure was registered

23.Update on current fish production

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousands

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

levels, income (beach values) & contribution to livelihoods & GDP from Lake Albert & Albert Nile fisheries: Undertook a lake-wide CAS (Nov – Dec) on Lake Albert & Albert Nile. Conducted 3 monthly CAS on 2 fish landings in vicinity of the lower Victoria (Murchison) Nile. Comparing with the previous quarter (Jul – Sep), there was a 10% decline in fish catch (from 500 t to 450 t), 20% decline in beach value (from 1.1 bn to 800 m) of catch landed at the two fish landing sites. Analysis of the lake-wide CAS data for the period Nov – Dec is still ongoing but initial results indicate up to 40 fish species of economic importance to commercial fisheries of the Albert system

24. Undertook monthly experimental surveys on fish populations in the Victoria Nile Ramsar site area of MFNP to identify critical habitats for fish avoidance during seismic & other oil related exploratory activities & to generate baseline data for post seismic monitoring. Up to 160 habitats important to fish as breeding & nursery grounds have been identified & mapped in the area. A total of 45 species of socio-ecological importance that need protection from oil seismic activities have been recorded. 3 technical reports have been prepared & submitted to Total E & P detailing technical advice on avoidance & protection strategies for the identified critical fish habitats & fish species

25. Baseline information/ database energy returns from natural fish food organisms in Lake Edward: Study reports on energy returns & fatty acid profiling are still under compilation by MAK collaborator

26. Development of technologies for sustained mass production of micro-algae, rotifers & Moina, two live larval feeds, rotifers & Moina: Prototypes of culture media & systems for micro-algae, rotifers & Moina using available fibre glass tanks was tried out successfully. Preliminary results of the trials showed Chlorella spp to be the best micro-algal food for Moina.

27. Development of feed formulation for grower feed for tilapia & 3 grower feeds for catfish: Proximate composition of at least 8 local feed ingredients determined

- Draft report & map indicating

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

locations of fish breeding/ nursery areas on Lake Victoria produced 28.Determination of major fish disease pathogens from 5 commercial fish farms/hatcheries:

29.Laboratory characterization of parasites collected from hatcheries and 3 grow out fish farms in Serere, Lira, Gulu & Lacor. Parasitology revealed & confirmed presence of Trichodina sp, Acathecephalus sp, Bolbophorus sp, monogean – Cichildogyrus Euclinostomum sp & Gyrogactyrus sp infecting tilapia and catfish. DNA from bacterial samples was isolated & shipped to ILRI, Nairobi for molecular identification.

30.Studies are on going on breeding Nile Perch and African catfish. Breed 1260 juveniles pureline Lake Edward Nile tilapia strains on station for use in breeding programme. Morphometrics data & genetic samples from 100 Nile tilapia samples from 100 Nile tilapia samples of Lake Kyoga collected. 132 Nile tilapia parent stock of Nile tilapia from Lake Kyoga acclimatized on station for use in breeding programme

31.Undertook 1 field environment assessment of SON Fish farm: Water parameters indicated good conditions for aquaculture production: Dissolved oxygen (6.8 – 8.0 mg/L); Temperature (24.9 – 26.20C); pH (6.9 – 7.3); Blue green algae were dominant with high biomass (8000µg/L); Cage sites had high zooplankton densities.

NARL

Bananas

- Collected data on the performance of Black sigatoka incidence and agronomic at pre-flowering stage; Incidence of Black Sigatoka on hybrids determined at the pre flowering stage in the PYT at Kawanda,
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- Enhanced nutritive value: Generated 50 transgenic lines of M9 with Provitamin A enhancing genes

14.Promotion of IPM packages for

Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

management of BBW: Through the promotion of IPM packages, BBW incidence reduced to below 10% in most of the affected areas in Ankole and Kigezi

NaFIRRI

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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

consultative & sensitisation meeting in preparation for formulation of MoU

20. Development of selected fish species for ornamental fish culture: Produced a draft report of the feeding biology of selected ornamental species from Kyoga satellite lakes (lakes Nawampasa, Bisina, Agu, Nyagu)

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Vote: 142 National Agricultural Research Organisation

QUARTER 2: Outputs and Expenditure in Quarter

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

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- Draft report & map indicating locations of fish breeding/ nursery areas on Lake Victoria produced

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31. Undertook 1 field environment

Vote: 142 National Agricultural Research Organisation**QUARTER 2: Outputs and Expenditure in Quarter**

Outputs Planned in Quarter	Actual Outputs Achieved in Quarter	Expenditures incurred in the Quarter to deliver outputs
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US\$ Thousand

Vote Function: 0151 Agricultural Research*Development Projects***Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded**

assessment of SON Fish farm: Water parameters indicated good conditions for aquaculture production: Dissolved oxygen (6.8 – 8.0 mg/L); Temperature (24.9 – 26.20C); pH (6.9 – 7.3); Blue green algae were dominant with high biomass (8000µg/L); Cage sites had high zooplankton densities.

Reasons for Variation in performance

None

Total	0
<i>GoU Development</i>	0
<i>External Financing</i>	0
<i>NTR</i>	0
GRAND TOTAL	13,935,499
<i>Wage Recurrent</i>	4,803,472
<i>Non Wage Recurrent</i>	1,593,264
<i>GoU Development</i>	1,177,463
<i>External Financing</i>	6,361,300
<i>NTR</i>	0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	<i>US\$ Thousand</i>		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 01 Headquarters

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

Quarterly GOU subscriptions transferred to international organisations (ASARECA, CGIAR, etc)

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Competitive grants scheme research agenda developed;
- 40 Competitive research projects funded and implemented

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Output: 01 5102 Research extension interface promoted and strengthened

DG's office:
Good governance and corporate social responsibility ensured and promoted.
NARO's contribution towards national Agricultural Research .
Networking, Partnership and collaboration stakeholders meetings held;
Stakeholders sensitisation

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Output: 01 5104 Agricultural research capacity strengthened

HR:
1. Staff Salaries and other contract salaries paid
2. Good Governance and corporate social responsibility ensured and promoted;
Leadership and oversight Management of agricultural research provided;
3. Staff recruited and trained
4. Stationery

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Programme 07 National Crops Research

Outputs Provided

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

Output: 01 5101 Generation of agricultural technologies

- Cassava and sweet potatoe varieties for enhanced productivity with customer attributes developed	Total	0	0	0
- Maize and rice varieties with appropriate consumer attributes developed	Wage Recurrent	0	0	0
- Horticulture enhancement technologies developed	Non Wage Recurrent	0	0	0
- Bean varieties with acceptable market qualities, high yield and resistance to major stresses				
	NTR	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

1.2 residential buildings repaired.				
2.One Nursery Shade repaired..				
3.5 tones & 38 bags of fertilizers purchased..	Total	-20,302	0	-20,302
4. 1 Staff attended Finance course.	Wage Recurrent	0	0	0
5.Required items for office used are purchased for Namulonge and COREC.	Non Wage Recurrent	0	0	0
6.8 Trial sites,COREC satellittee,Kiige Monitored & all Institute meetings & activities within & Outside station carried out.				
7.4 Trial sites visted and Evaluation done.				
8 Materials,accessories & services procured.				
9. One Management Committee meeting held.				
10.Electricity supplied to all NaCRRI units..				
11.Teas, Meals & refreshments Provided..				
12.The Institute Effectively Connected to outside organisation..				
13.Procured Stationery & office Supplies.				
14.Institute compound maintained in habitable state.				
15.Service 5 Vehicles,3 Generators,2 Tractor & 6 Computers.				
16.NaCRRI & COREC access Roads made accessible,Electricity line maintained & Sewerage system maintained..				
17.Secity materials purchased .				
18.Water & electricity Materials purchased.				
19.One office block repaired.				
	NTR	-20,302	0	-20,302

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 07 National Crops Research

Output: 01 5105 Generation of technologies for priority commodities

- Cassava and sweet potatoe varieties for enhanced productivity with customer attributes developed	Total	0	0	0
- Maize and rice varieties with appropriate consumer attributes developed	<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
- Horticulture enhancement technologies developed	<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
- Bean varieties with acceptable market qualities, high yield and resistance to major stresses				
	NTR	0	0	0

Programme 08 National Fisheries Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

<input type="checkbox"/> Periodic levels of fish stocks established	Total	0	0	0
<input type="checkbox"/> Appropriate harvesting technologies identified	<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<input type="checkbox"/> Factors that influence optimal production and productivity level established	<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<input type="checkbox"/> Feeding interactions established and best practices promoted				
	NTR	0	0	0

Output: 01 5102 Research extension interface promoted and strengthened

- Improved awareness in ways of increasing fish production.	Total	0	0	0
- Capacity for producing dissemination outreach materials using ICT facilities.	<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
- Coordinated research management	<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
	NTR	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed	Total	-23,104	0	-23,104
- Critical competent staff in the Institute recruited and motivated	<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
- Adequate financial resources mobilised, appropriately utilised and duly accounted for	<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
- Institute physical facilities maintained.				
	NTR	-23,104	0	-23,104

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 08 National Fisheries Research

Output: 01 5105 Generation of technologies for priority commodities

- Periodic levels of fish stocks established				
- Appropriate harvesting technologies identified				
- Factors that influence optimal production and productivity level established				
- Feeding interactions established and best practices promoted				
	Total	0	0	0
	Wage Recurrent	0	0	0
	Non Wage Recurrent	0	0	0
	NTR	0	0	0

Programme 09 National Forestry Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Forest Conservation options determined and promoted				
- Economic value and growth potentials of forest trees established				
- Appropriate IPM technologies identified and promoted				
- Efficient bioenergy technologies developed				
- Carbon sequestration capacities of different tree species identified				
- Options for improved gum Arabica production identified				
	Total	0	0	0
	Wage Recurrent	0	0	0
	Non Wage Recurrent	0	0	0
	NTR	0	0	0

Output: 01 5102 Research extension interface promoted and strengthened

- Forest Conservation options promoted				
- Appropriate IPM technologies promoted				
- Efficient bioenergy technologies developed				
- Carbon sequestration capacities of different tree species promoted				
- Options for improved gum Arabica production promoted				
	Total	0	0	0
	Wage Recurrent	0	0	0
	Non Wage Recurrent	0	0	0
	NTR	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

1.2 local council sensitisation meeting for Kiyunga and Nalwana				
2.4 old research trials maintained and 4 km Forest boundary planted with live markers				
Availability of electricity supply ensured				
3.Vehicles, Motorcycles and Generator s maintained and serviced				
4.Electricity & telephone connectivity bills serviced; Water lines and pumps serviced and maintained				
5.10,000m2 of compound kept neat and .NaFORRI property and estate secured.				
6.Tree seeds sowed in the nursery				
7.Access to current information and issues				
	Total	-276	0	-276
	Wage Recurrent	0	0	0
	Non Wage Recurrent	0	0	0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 09 National Forestry Research

- enhanced
- 8.Management committee and contract committees facilitated
- 9.Staff motivated for better outputs
- 10.10 Short term contracts supported for 3 months
- 11.Sawmill and carpentry equipment maintained
- 12.Tree Nursery and greenhouse maintained and enhanced for production
- 13.NaFORRI Guest House and Eco-tourism enhanced for generation of NTR
- 14.Management of activities, projects, and resources improved
- 15.

NTR -276 0 -276

Programme 10 National Livestock Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Animal breeds with superior qualities identified and promoted and management systems characterised, major constraints identified and new production practices promoted
- Cost effective methods for preventing and controlling major livestock diseases, pests and viruses identified and promoted
- Appropriate and cost effective livestock feeding options identified and promoted
- Bee breeds for increased production of honey and other bee products identified

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>

NTR 0 0 0

Output: 01 5102 Research extension interface promoted and strengthened

- Animal breeds with superior qualities identified and promoted and management systems characterised, major constraints identified and new production practices promoted
- Cost effective methods for preventing and controlling major livestock diseases, pests and viruses promoted
- Appropriate and cost effective livestock feeding options promoted
- Bee breeds for increased production of honey and other bee products promoted

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>

NTR 0 0 0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 10 National Livestock Research

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed

- Critical competent staff in the Institute recruited and motivated

- Adequate financial resources mobilised, appropriately utilised and duly accounted for

- Institute physical facilities rehabilitated

Total	-1,245	0	-1,245
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
NTR	-1,245	0	-1,245

Output: 01 5105 Generation of technologies for priority commodities

- The quality dairy and beef technologies maintained

- Publications of technology development and dissemination developed

- Process of dissemination and adoption of the dairy and beef technologies monitored

- dairy and beef technologies developed and disseminated appropriately

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
NTR	0	0	0

Programme 11 National Semi arid Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Germplasm collected ,characterized and evaluated, variety maintenance, seed

multiplication of priority crops (cotton.sorghum,finger millet, sun flower,

sesame, groundnuts and cow peas).

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
NTR	0	0	0

Output: 01 5102 Research extension interface promoted and strengthened

1.NARO-NAADS Joint workshops and meetings conducted;

2.Capacity development workshops for IARD;

3.Planning/Review/Feedback/ workshops and meetings held;

4.Make contributions to NGOs and CBOs; subscribe to associations;

5.Networking ,Partnerships and collaborative arrangements maintained.

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
NTR	0	0	0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 11 National Semi arid Research

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
- Critical competent staff in the Institute recruited and motivated
- Adequate financial resources mobilised, appropriately utilised and duly accounted for
- Institute physical facilities maintained

Total	-256	0	-256
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	-256	0	-256

Programme 12 National Laboratories Research

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

1. - Improved fertiliser recommendation and extension packages in place
2. Options for CA demonstrated
3. Increased centralized germplasm base collection for target species.
4. Maintenance of cover crop demonstrations at NARL.

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	0	0	0

Output: 01 5102 Research extension interface promoted and strengthened

- 1 Science conference, 1 open day, 1 Annual review planning workshop, 4 peer review seminars, 1 staff AGM, 1 Budget retreat and one budget conference by June 2014. NARO research results, outputs, products and services published promoted and disseminated.

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
- Critical competent staff in the Institute recruited and motivated
- Adequate financial resources mobilised, appropriately utilised and duly accounted for
- Institute physical facilities maintained.

Total	-36,202	0	-36,202
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	-36,202	0	-36,202

Output: 01 5105 Generation of technologies for priority commodities

- Banana hybrids tolerance stress, high yielding and with consumer acceptable qualities generated and technologies that enhance the banana value chain developed and promoted

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 12 National Laboratories Research

NTR 0 0 0

Programme 13 Abi ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Vehicles in running condition in the institute at all times

	Total	0	0	0
	<i>Wage Recurrent</i>	0	0	0
	<i>Non Wage Recurrent</i>	0	0	0

3 monthly hired labour contracts paid by October 2013

Sufficient computer supplies available in the institute at all times

6 utility bills paid by October 2013

Maintenance of trials a

NTR 0 0 0

Output: 01 5104 Agricultural research capacity strengthened

1 Management and PARI Directors Forum meetings attended by March 2014

	Total	-9,677	0	-9,677
	<i>Wage Recurrent</i>	0	0	0
	<i>Non Wage Recurrent</i>	0	0	0

2 financial reports prepared and submitted by March 2014

1 Interim accounts prepared and submitted by January 2014

1 Accounts staff workshops attended by March 2014

1 quart

NTR -9,677 0 -9,677

Output: 01 5105 Generation of technologies for priority commodities

On-station trials and demonstrations of priority commodities established for season A 2014.

	Total	0	0	0
	<i>Wage Recurrent</i>	0	0	0
	<i>Non Wage Recurrent</i>	0	0	0

On-staion trials and demonstrations of priority commodities weeded and data collected for season A 2014

NTR 0 0 0

Programme 14 Bulindi ZARDI

Outputs Provided

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 14 Bulindi ZARDI

Output: 01 5101 Generation of agricultural technologies

- Evaluation of promising technologies for enhancing farmer capacity to adapt to climate change in CCAFS Hoima site

- Evaluating for adaption of best agronomic practices and integrated management of key pests and diseases priority crops (maize, beans, groundnuts, rice) in the LACZ

- Multiplying seed and planting materials for key strategic commodities; rice, Pasture and cassava for the Lake Albert Crescent zone

- Promotion of Resilient in roots crops, fruit trees, soil and water conservation approaches for increased food security, nutrition and income in the Hoima learning site"

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0

NTR 0 0 0

Output: 01 5102 Research extension interface promoted and strengthened

1. Increased public awareness and access to knowledge, skills and technologies generated by BuZARDI

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed

- Critical competent staff in the Institute recruited and motivated

- Adequate financial resources mobilised, appropriately utilised and duly accounted for

- Institute physical facilities maintained

Total	-701	0	-701
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0

NTR -701 0 -701

Output: 01 5105 Generation of technologies for priority commodities

- Evaluation of promising technologies for enhancing farmer capacity to adapt to climate change in CCAFS Hoima site

- Evaluating for adaption of best agronomic practices and integrated management of key pests and diseases priority crops (maize, beans, groundnuts, rice) in the LACZ

- Multiplying seed and planting materials for key strategic commodities; rice, Pasture and cassava for the Lake Albert Crescent zone

- Promotion of Resilient in roots crops, fruit trees, soil and water conservation approaches for increased food security, nutrition and income in the Hoima learning site"

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0

NTR 0 0 0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 14 Bulindi ZARDI

Programme 15 Kacwekano

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Evaluation, adaptation and promotion of aquaculture and capture fisheries technologies
- Evaluation, adaptation and promotion of pests and disease management options for improved of goats productivity
- Evaluation, adaptation and promotion of potato varieties for resistance to pests and diseases
- Multiplication of foundation seed potato
- Evaluation, adaptation and promotion of suitable temperate fruit cultivars
- Evaluation, adaptation and promotion of suitable Cassava and rice technologies

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
- Critical competent staff in the Institute recruited and motivated
- Adequate financial resources mobilised, appropriately utilised and duly accounted for
- Institute physical facilities maintained

Total	-4,817	0	-4,817
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	-4,817	0	-4,817

Output: 01 5105 Generation of technologies for priority commodities

- Evaluation, adaptation and promotion of aquaculture and capture fisheries technologies
- Evaluation, adaptation and promotion of pests and disease management options for improved of goats productivity
- Evaluation, adaptation and promotion of suitable temperate fruit cultivars
- Evaluation, adaptation and promotion of suitable Cassava and rice technologies

Total	-2,584	0	-2,584
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	-2,584	0	-2,584
NTR	0	0	0

Programme 16 Mukono ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Evaluating different agronomic and management practices for enhance production and utilisation of indigenous vegetables in the zone
- Evaluation and adaptation of different rice based intercropping systems in the zone
- Establishing trials for promoting of

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 16 Mukono ZARDI

- agroforestry technologies in the zone
 - Promotion of irrigation technologies to enhance agricultural productivity among small scale farmers
 - Evaluation of factors for technology transfer / diffusion using coffee innovation platforms
 - Evaluation of the level of utilisation of local feed and seed for boosting aquaculture production in the zone
 - Evaluation of different integrated and efficient chicken management strategies for commercial poultry production in the zone

NTR 0 0 0

Output: 01 5102 Research extension interface promoted and strengthened

At least 1 sources of information (books, journals etc) purchased

Total 0 0 0

At least four sets of news papers purchased

Wage Recurrent 0 0 0

Non Wage Recurrent 0 0 0

NTR 0 0 0

Output: 01 5104 Agricultural research capacity strengthened

Subscribe at least once for internet and 2 mobile internet modems

Acquire atleast 1 package for updating and upgrading the Intranet web

Website updated at least once

Servicing at least 1 Pbx machine, acquisition of at least 1 software

Total -229,449 0 -229,449

Wage Recurrent 0 0 0

Non Wage Recurrent 0 0 0

Purchase o

NTR -229,449 0 -229,449

Output: 01 5105 Generation of technologies for priority commodities

- Evaluation and adaptation of different rice based intercropping systems in the zone
- Promotion of irrigation technologies to enhance agricultural productivity among small scale farmers
- Evaluation of factors for technology transfer / diffusion using coffee innovation platforms
- Evaluation of the level of utilisation of local feed and seed for boosting aquaculture production in the zone

Total 0 0 0

Wage Recurrent 0 0 0

Non Wage Recurrent 0 0 0

NTR 0 0 0

Programme 17 Ngetta ZARDI

Outputs Provided

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 17 Ngetta ZARDI

Output: 01 5101 Generation of agricultural technologies

- Domestication and promotion of the shea tree (vitellaria paradoxa) in northern uganda.
- Evaluation of performance of tilapia and cat fish under polyculture
- Adaptation and promotion of technologies for enhancing spawning in catfish and tilapia.
- Evaluation and promotion of labour saving technologies for increased crop production in the northern agro-ecological zone
- Development of cost effective methods for control/management of pests and diseases of priority livestock
- Development, adaptation and promotion of alternative feed resources for livestock for dry season feeding.
- Evaluation of management options of pests and diseases of cassava, simsim and fruit trees

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	0	0	0

Output: 01 5102 Research extension interface promoted and strengthened

1. Disemination of research findings made
2. Utilisation of improved farming practices enhanced

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed
- Critical competent staff in the Institute recruited and motivated
- Adequate financial resources mobilised, appropriately utilised and duly accounted for
- Institute physical facilities maintained

Total	-15,260	0	-15,260
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
NTR	-15,260	0	-15,260

Output: 01 5105 Generation of technologies for priority commodities

- Evaluation of performance of tilapia and cat fish under polyculture
- Adaptation and promotion of technologies for enhancing spawning in catfish and tilapia.
- Development of cost effective methods for control/management of pests and diseases of priority livestock
- Development, adaptation and promotion of alternative feed resources for livestock for dry season feeding.
- Evaluation of management options of pests and diseases of cassava and fruit trees

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 17 Ngetta ZARDI

<i>NTR</i>	0	0	0
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Programme 18 Nabium ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Management practices that affect the performance of goats assessed and appropriate interventions recommended in Teso and Karamoja sub-regions.

Efficative botanicals in controlling crop pests and diseases identified.

Appropriate water harvesting (two)

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
<i>NTR</i>	0	0	0

Output: 01 5102 Research extension interface promoted and strengthened

At least 2 Apiary demo sites established and maintained at Nabuin and Serere.

At least 3 farmer trainings on apiary management held in the zone.

At least 10 TOTS in each district in Karamoja and Teso backstopped on Apiary management.

Honey processing

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
<i>NTR</i>	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

- Human Resource identified and appropriately utilised and managed

- Critical competent staff in the Institute recruited and motivated

- Adequate financial resources mobilised, appropriately utilised and duly accounted for

- Institute physical facilities maintained.

Total	-4,678	0	-4,678
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0
<i>NTR</i>	-4,678	0	-4,678

Output: 01 5105 Generation of technologies for priority commodities

- Improved strategies for market access for fresh fruits, vegetables, tubers and animal products in the North Eastern zone identified and disseminated

- Appropriate breeding, feeding and health management practices identified and promoted

- Forage production strategies in the northeastern agro-ecological region of Uganda identified

- appropriate technologies for controlling wax moth in Apiaries in Teso and Karamoja identified and scaled up

- Testing and validation of appropriate labour saving technologies (ox-drawn planters and seeders) and scaling out weeding Technology

- Appropriate agroforestry trees and shrubs and

Total	0	0	0
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	0	0	0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 18 Nabium ZARDI

natural regeneration strategies identified and promoted

- Appropriate options for soil fertility management and water harvesting developed, validated and disseminated.

NTR 0 0 0

Programme 19 Mbarara ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Technology end user needs and promotion strategies identified

- Improved priority commodity crop technologies identified adapted and promoted

- Appropriate agro forestry technologies suitable for the SWAEZ identified, adapted and disseminated

- Strategies for improving management and utilization of livestock forage resources in the south western rangelands zone identified and promoted

- Strategies for improving fish feeding and water management in ponds and reservoirs within the SWAEZ – Uganda identified and promoted

Total 0 0 0
Wage Recurrent 0 0 0
Non Wage Recurrent 0 0 0

NTR 0 0 0

Output: 01 5102 Research extension interface promoted and strengthened

Computers serviced and maintained

Total 0 0 0
Wage Recurrent 0 0 0
Non Wage Recurrent 0 0 0
NTR 0 0 0

Output: 01 5104 Agricultural research capacity strengthened

Management of physical, human, financial and information resources of the Mbarara zonal agricultural research and development institute.

Total -83,835 0 -83,835
Wage Recurrent 0 0 0
Non Wage Recurrent 0 0 0
NTR -83,835 0 -83,835

Output: 01 5105 Generation of technologies for priority commodities

- Technology end user needs and promotion strategies identified

- Improved priority commodity crop technologies identified adapted and promoted

- Appropriate agro forestry technologies suitable for the SWAEZ identified, adapted and

Total 0 0 0
Wage Recurrent 0 0 0
Non Wage Recurrent 0 0 0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 19 Mbarara ZARDI

disseminated

- Strategies for improving management and utilization of livestock forage resources in the south western rangelands zone identified and promoted

- Strategies for improving fish feeding and water management in ponds and reservoirs within the SWAEZ – Uganda identified and promoted

NTR 0 0 0

Programme 20 Buginyaya ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Suitable goats crossbreeds identified and promoted in the region/zone

- Best and appropriate agronomic and management practices that enhance the maize productivity identified and disseminated in the zone

- Best and appropriate agronomic and management practices that enhance the rice productivity identified and disseminated in the zone

- Improved bean and legumes technologies identified and promoted in the zone

- Improved sweet potato varieties identified and promoted in the mid altitude sub zone

- Appropriate agronomic practices for enhancing Arabica coffee production identified and promoted

- High quality potato seed multiplied and availed too farmers

- Wheat technologies suitable for the different wheat zone in Uganda identified and promoted

- Temperate fruits growing introduced and demonstrated for promoted in the zone

Appropriate soil and water management practices identified and promoted in the zone

Total	0	0	0
Wage Recurrent	0	0	0
Non Wage Recurrent	0	0	0

NTR 0 0 0

Output: 01 5104 Agricultural research capacity strengthened

Management of physical, human, financial and information resources of the Buginyanya zonal agricultural research and development institute.

Total	-146	0	-146
Wage Recurrent	0	0	0
Non Wage Recurrent	0	0	0
NTR	-146	0	-146

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 20 Buginyaya ZARDI

Output: 01 5105 Generation of technologies for priority commodities

- Suitable goats crossbreeds identified and promoted in the region/zone				
- Best and appropriate agronomic and management practices that enhance the maize productivity identified and disseminated in the zone				
- Best and appropriate agronomic and management practices that enhance the rice productivity identified and disseminated in the zone				
- Improved bean and legumes technologies identified and promoted in the zone				
- Appropriate agronomic practices for enhancing Arabica coffee production identified and promoted				
- Temperate fruits and tropical growing introduced and demonstrated for promoted in the zone				
	Total	0	0	0
	Wage Recurrent	0	0	0
	Non Wage Recurrent	0	0	0
	NTR	0	0	0

Programme 21 Rwebitaba ZARDI

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Water supply connected to production unit at Kyembogo				
	Total	0	0	0
	Wage Recurrent	0	0	0
	Non Wage Recurrent	0	0	0
	NTR	0	0	0

Output: 01 5102 Research extension interface promoted and strengthened

1-Atleast one brochure of priority commodity development -Tea				
2-Atleast 2 computers service and antivirus installed				
	Total	0	0	0
	Wage Recurrent	0	0	0
	Non Wage Recurrent	0	0	0
	NTR	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

1-Institute assets protected				
2-Quarterly reports prepared and submitted in time				
3-Offices equipped with small equipments for better staff performance				
4-1 Staff attending Procurement Workshop				
5-Constant supply of electricity				
6-Effective daily mail d				
	Total	-15,342	0	-15,342
	Wage Recurrent	0	0	0
	Non Wage Recurrent	0	0	0
	NTR	-15,342	0	-15,342

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	<i>US\$ Thousand</i>		
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Vote Function: 0151 Agricultural Research

Recurrent Programmes

Programme 21 Rwebitaba ZARDI

Output: 01 5105 Generation of technologies for priority commodities

1. Mother gardens/ fields and genebank at

Rwebitaba maintained

2.

Nursery potting materials for 20,000 seedlings

procured in the quarter

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Programme 26 NARO Internal Audit

Outputs Provided

Output: 01 5103 Internal Audit

- Internal Controls reviewed and key risks controlled.

- Adherence to laid down regulations and policies.

- Minimized cases of disagreements with auditors and management arising from their reports.

- Payroll embracing all NARO staff audited.

Total	0	0	0
<i>Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Non Wage Recurrent</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Development Projects

Project 0382 Support for NARO

Capital Purchases

Output: 01 5175 Purchase of Motor Vehicles and Other Transport Equipment

Nil

Total	0	0	0
<i>GoU Development</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Output: 01 5176 Purchase of Office and ICT Equipment, including Software

Nil

Total	0	0	0
<i>GoU Development</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Output: 01 5177 Purchase of Specialised Machinery & Equipment

Nil

Total	0	0	0
<i>GoU Development</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>External Financing</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>NTR</i>	<i>0</i>	<i>0</i>	<i>0</i>

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

Payment to international organisations made

Total	0	0	0
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	0	0	0
<i>NTR</i>	0	0	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Research programmes in the NARS monitored;
RMIS institutionalized; 4 UJAS editorial
committee meetings facilitated; 4 volumes of
UJAS published; Innovations systems initiated;
Multi stakeholder Innovation platforms
supported

Total	0	0	0
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	0	0	0
<i>NTR</i>	0	0	0

Output: 01 5102 Research extension interface promoted and strengthened

- Value chain actors and MSIPs established
- infrastructural and informational needs of
NARO/NAADS and the proposed Joint ICT
platform established

Total	0	0	0
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	0	0	0
<i>NTR</i>	0	0	0

Output: 01 5104 Agricultural research capacity strengthened

1 - Good Governance and corporate social
responsibility ensured and promoted;
Leadership and oversight Management of
agricultural research provided;
2 - Staff recruited and trained
3 - Stationery and office consumables procured;
4 - Office equipment maintained;
5 - Water utility bills paid; Electricity utility
bills paid; Telephone, Postage and courier
services used;
6 - Vehicles serviced; Office buildings
maintained; Compound maintained;
7 - Maintain effective ICT facilities;
Subscription for internet paid;
8 - Quarterly entity accounts, financial
statements, commitment control reports, several
manual books of accounts maintained. Bank
charges timely paid;
9 - Acquisition of books, agric. Information
magazines and newspapers;
10 - security maintained
11 - Break tea and Refreshments provided ;
9 - Facilitate Technical meetings (Heads of

Total	0	0	0
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	0	0	0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Development Projects

Project 0382 Support for NARO

- Units) and other stakeholder workshops;
- 10 - Conduct audits in all NARO's processes;
- 11 - Facilitate and guide the procurement process in NARO;
- 12 - Backstop research institutes in areas of Public Relations & Development Communication as well as branding concepts;
- 13 - Participate in Agricultural exhibitions, trade fairs, shows and Open days;
- 14 - Undertake Corporate Marketing and Promotional activities;
- 15 - agricultural research finding published (both hard and soft);
- 16 - Facilitate the approval and registration of all non-PARI research service providers;
- 17 - Participate in donor dialogues meetings

NTR 0 0 0

Output: 01 5105 Generation of technologies for priority commodities

- Breeding for required attributes, establishing trials, data collection and analysis.
- Development of adapted maize and rice varieties that meet consumer demands
- Development of casava, beans, rice and commercial fruit technologies with market desired qualities
- Development of bio-control technologies, monitoring and management of been pests & diseases,

Total 0 0 0
GoU Development 0 0 0
External Financing 0 0 0

NTR 0 0 0

Project 1138 EAAPP

Capital Purchases

Output: 01 5172 Government Buildings and Administrative Infrastructure

- Offices and laboratories rehabilitated (Cassava RCoE at Namulonge, Bulindi, Abi, Ngetta ZARDIs)

Total 0 0 0
GoU Development 0 0 0
External Financing 0 0 0

NTR 0 0 0

Output: 01 5177 Purchase of Specialised Machinery & Equipment

- An assortment of lab equipment procured, delivered and installed

Total 0 0 0
GoU Development 0 0 0
External Financing 0 0 0

NTR 0 0 0

Outputs Funded

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand	
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

Payments to International Organisation
(ASARECA)

	Total	700,000	0	700,000
<i>GoU Development</i>		0	0	0
<i>External Financing</i>		700,000	0	700,000
<i>NTR</i>		0	0	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

- Information on cassava production to consumption continuum generated, disseminated and utilized
- Knowledge on biology and ecology of pests and diseases increased .
- Cassava varieties with desirable attributes developed.
- Capacity for cassava tissue culture, genetic transformation and conservation systems developed.
- Knowledge on markets, profitability, adoption and impact of cassava technologies generated.
- Knowledge on adaptability and tolerance of rice landraces to major pests and diseases generated
- New rice genotypes with improved tolerance to rice blast and drought stress generated
- Information on rice field management practices in RYMV prone areas catalogued
- Information on rice field management practices in AfRGM prone areas catalogued
- Information on economic importance of RYMV determined
- Putative vectors of RYMV identified
- Determine biotypes of AfRGM
- Capacity of stakeholders who are active in use and maintenance of rice water harvesting and improved production mechanization increased
- Appropriate AfRGM control package developed
- Segregation populations arising from crosses of local materials and introductions generated
- Promising wheat introductions with resistance to Ug99 identified
- Promising introductions with heat and drought tolerance identified
- Promising appropriate packages for production of Ug99 resistant wheat identified.
- Technologies and innovations that enhance food safety, shelf life, and market value of cassava, rice, wheat and dairy based value added products, generated.
- Technologies for management of environmental pollutants from cassava, wheat,

	Total	67,000	0	67,000
<i>GoU Development</i>		0	0	0
<i>External Financing</i>		67,000	0	67,000

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

- rice and dairy value-addition processes developed
- Increased availability of feed resources in smallholder dairy systems through utilization of Napier stunt tolerant varieties
 - Increased availability of feed resources in the smallholder dairy system through utilization of crop residues/wastes and agro-industrial by-products.
 - Improved control of ECF in small holder dairy farming system in Uganda
 - Improved detection and control of drug residues
 - Improved control of milk-borne zoonoses
 - Indigenous cattle with desirable dairy production traits identified
 - Genetic diversity of indigenous cattle assessed
 - Pedigree database created
 - Pure breed exotic cattle selected and procured
 - Farmers trained on cattle breeding and improvement
 - Superior Indigenous cattle evaluated on-station and on-farm
 - Dairy Nucleus herds established
 - Capacity of NAGRC&DB Embryo Transfer (ET) unit built
 - 4 registry centres equipped with herd recording hardware and software (computers and accessories)
 - Farmers sensitised on national breeding plan and guidelines
 - Dairy breeders selected
 - Dairy breeders certified and registered
 - Capacity built for breeding activities.
 - Breeding activities regulated
 - Seed Companies technically assisted .
 - Breeder seed in public research institutes multiplied (ZARDIS)
 - Production of seed/planting materials of cassava, rice, wheat and pastures among farmers' groups supported (NAADS)
 - Seed Entrepreneurs given skills on development of business plans
 - Seed enterprises established
 - Rural networks of seed and other agro-inputs established
 - Studies on policy dialogue with relevant government agencies performed
 - Seed policy awareness created
 - PVP regulations put in place
 - Seed Regulations awareness created
 - Plant protection and Health awareness created
 - Strategy and action plan for control of CBSD put in place
 - Government labs strengthened .
 - Seed Inspectorate strengthened
 - Variety Testing Unit strengthened.
 - National, regional and International Seed collaboration/ networks strengthened.

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

- Logistical Operation support provided.

NTR 0 0 0

Output: 01 5102 Research extension interface promoted and strengthened

1. Promising technologies of the four priority enterprises promoted
2. Innovation Platforms developed and existing ones strengthened.
3. Production and Value Addition Technologies and value added products promoted
4. New learning platforms established and existing ones strengthened
5. Advisory services/extension strengthened
6. Capacity built among dairy stakeholders regarding NSD control
- 7.4. Strategic Public - Private Partnerships and networks for increased market access of cassava, rice, wheat and dairy value added products fostered

Total	11,000	0	11,000
<i>GoU Development</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>External Financing</i>	<i>11,000</i>	<i>0</i>	<i>11,000</i>

NTR 0 0 0

Output: 01 5104 Agricultural research capacity strengthened

- Critical mass of well trained staff in various disciplines built.
- Rice- Formal training for 2 PhD degree commence.
- Rice- Formal training for 1 MSc degree commence.
- Rice- Short courses
- Rice- Vehicle purchased and maintained.
- Rice- communication facilities purchased and used.
- Capacities in wheat research and improvement enhanced.
- Institutional research capacity improved in animal nutrition
- Institutional research capacity built by training one PhD student
- Institutional research capacity built by training one MSc student
- Institutional research capacity improved in molecular pathogen identification and characterization
- Institutional research capacity improved in animal breeding
- Annual Dairy Breeders Forum/Platform held
- Artificial Insemination technicians trained
- Training and backstopping registered breeders undertaken
- Visit to Dairy RCoE by NAGRC technical Staff undertaken.
- Visit to Dairy RCoE by Dairy breeders undertaken
- Short course on Planning and Management of National Breeding Program undertaken

Total	99,000	0	99,000
<i>GoU Development</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>External Financing</i>	<i>99,000</i>	<i>0</i>	<i>99,000</i>

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	<i>US\$ Thousand</i>		
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

- Short course on advanced technologies on AI & MOET
- Short course on Finance Management undertaken
- Short course on Procurement Management Undertaken
- International For a on Animal Genetic resources attended
- Masters in Livestock Planning and Development and in Agriculture Economics at MU K started
- Coordination of EAAPP activities meant for NAGRC&DB undertaken
- DAPM activities coordinated
- Regional research and training and dissemination activities implemented according to plan
- Harmonized M&E system for RCoEs in cooperation with ASARECA developed, adopted and implemented
- Harmonized M&E system for RCoEs in cooperation with ASARECA developed, adopted and implemented .
- Improved means of transport to carry out research activities
- RCoE – Cassava CAPACITY ENHANCED.

NTR 0 0 0

Output: 01 5105 Generation of technologies for priority commodities

Cassava lines resistant to stress with desirable attributes released, Virus disease maps generated, Early warning systems developed, nutrient-use-efficiencies of elite cassava genotypes determined

Stress tolerant rice varieties released, released rice varieties purified, pests & diseases yield loss determined & performance of new upland and rain fed low land rice lines determined

Tse-tse fly and ticks management options, Forage management, Pest and disease management

New cassava varieties resistant to CMD and CBSV; with other farmer-preferred attributes developed

New rice varieties availed to farming communities and Farmers trained on recommended agronomic and post-harvesting techniques of rice

High yielding forage cultivars disseminated, Performance of 5 cross breed calves determined, Concentrates for supp. feeding developed

High quality farmer preferred cassava varieties multiplied for uptake pathways in the mid altitude areas of the SEAEZ and Disease tolerant cassava varieties identified and validated

Promising Integrated weed management

Total	1,400,000	0	1,400,000
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	1,400,000	0	1,400,000

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1138 EAAPP

options in rice validated with farmer groups
High yielding and high quality rice varieties
and lines for small scale farmers are selected,
seed systems developed & disseminated

NTR 0 0 0

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Capital Purchases

Output: 01 5172 Government Buildings and Administrative Infrastructure

- Design and development of drawings and bills
of quantities for office, laboratories and farm
buildings at NACRRI, NAFIRRI, Bulindi
ZARDI, Ngetta ZARDI; Rehabilitation of
office, laboratories and farm buildings
NACRRI, NAFIRRI, Bulindi ZARDI, Nabuin
& Ngetta ZARDI

Total	150,000	0	150,000
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	150,000	0	150,000

NTR 0 0 0

Output: 01 5175 Purchase of Motor Vehicles and Other Transport Equipment

NAFORRI - Motor vehicles and Motorcycles -
Purchased
BUZARDI- 3 vehicle pickups procured; 1
vehicle station Wagon procured; 4 motorcycles
procured; 2 generators procured

Total	230,000	0	230,000
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	230,000	0	230,000
<i>NTR</i>	0	0	0

Output: 01 5176 Purchase of Office and ICT Equipment, including Software

- Power requirements identified
- Prerequisite training.
ICT specialists identified and recruited.
- Infrastructure and equipment procured.
- Mobile applications , user info needs and
Software requirements identified.

Total	0	0	0
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	0	0	0

NTR 0 0 0

Output: 01 5177 Purchase of Specialised Machinery & Equipment

NAROSEC- Necessary equipments & tools
procured .
NaCRRI - Laboratory equipment purchased
NaFORRI - Specialized Machinery &
Equipment for research activities acquired.
Kachwekano ZARDI - 1 digital and 1 bench
type PH meter procure

Total	95,000	0	95,000
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	95,000	0	95,000

NTR 0 0 0

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

Output: 01 5178 Purchase of Office and Residential Furniture and Fittings

NAROSEC- 2 glass fitted book selves procured
NaCRRI - Laboratory furniture & fittings purchased.

Kachwekano ZARDI - Conference/dinning room furnished with 8 tables and 50 modern chairs; Resource center furnished with shelves, lockers,

Total	200,000	0	200,000
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	200,000	0	200,000
NTR	0	0	0

Outputs Funded

Output: 01 5151 Payments to International Organisations (CGIAR, ASARECA, WARDA)

n/a

Total	0	0	0
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	0	0	0
NTR	0	0	0

Outputs Provided

Output: 01 5101 Generation of agricultural technologies

Performance of the livestock breeds (multipurpose Sahiwal cattle breed, Pigs, Chicken, Boer goats) and their crosses with local breeds determined; Appropriate management methods for livestock established and promoted; appropriate pasture management options for dry season feeding determined and; Better performing pasture accessions and management practices determined and promoted; Appropriate technologies for water harvesting/harnessing and storage for livestock use developed and promoted. Occurrence and magnitude of spread of major livestock pests and Disease in the zone established. Setup and maintain on station and on farm trials; Documentation of support tools for the rapid assessment of feed ingredients developed; Lab analysis of formulated feeds.

High yielding, early maturing crop varieties with desired market attribute tested and promoted; Integrated Pest Management options for control weeds identified and promoted; Identifying , adaption and promotion of cover crops which have multipurpose utilisation with famers Establishing optimum application rates of fertilizers, Identifying water and promoting and water harvesting techniques in the Agroecological zones; Better performing tree and shrub species for soil fertility replenishment, food, forage and fodder on

Total	101,000	0	101,000
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	101,000	0	101,000

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	US\$ Thousand		
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

station and on-farm identified and promoted;
Propagation methods for various adaptable tree
species determined and promoted; adequate
amounts of quality planting materials (seed) of
improved crop varieties produced.

NTR 0 0 0

Output: 01 5102 Research extension interface promoted and strengthened

- 1.NARO-NAADS Joint workshops and meetings conducted;
- 2.Stakeholders trained in IAR4D
- 3.Joint stakeholder Planning/Review/Feedback/ workshops and meetings held;
- 4.membership to local Associations made and update
- 5.Networking, Partnership and collaboration stakeholders meetings held;
- 6.stakeholders sensitisation workshops/meetings of conducted;
- 7.Participate in open days/Farmer field schools/exhibitions/trade fairs/Agricultural show/Field days;
- 8.Extension and promotional materials developed and disseminated

Total	61,800	0	61,800
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	61,800	0	61,800

NTR 0 0 0

Output: 01 5104 Agricultural research capacity strengthened

- 1 - Good Governance and corporate social responsibility ensured and promoted; Leadership and oversight Management of agricultural research provided;
- 2 - Staff recruited and trained
- 3 - Stationery and office consumables procured;
- 4 - Office equipment maintained;
- 5 - Water utility bills paid; Electricity utility bills paid; Telephone, Postage and courier services used;
- 6 - Vehicles serviced; Office buildings maintained; Compound maintained;
- 7 - Maintain effective ICT facilities; Subscription for internet paid;
- 8 - Quarterly entity accounts, financial statements, commitment control reports, several manual books of accounts maintained. Bank charges timely paid;
- 9 - Acquisition of books, agric. Information magazines and newspapers;
- 10 - security maintained
- 11 - Break tea and Refreshments provided ;
- 9 - Facilitate Technical meetings (Heads of Units) and other stakeholder workshops;
- 10 - Conduct audits in all NARO's processes;
- 11 - Facilitate and guide the procurement process in NARO;

Total	632,400	0	632,400
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	632,400	0	632,400

Vote: 142 National Agricultural Research Organisation

QUARTER 3: Revised Workplan

Planned Outputs for the Quarter (Quantity and Location)	Estimated Funds Available in Quarter (from balance brought forward and actual/expected releases)	UShs Thousand	
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Vote Function: 0151 Agricultural Research

Development Projects

Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded

- 12 - Backstop research institutes in areas of Public Relations & Development Communication as well as branding concepts;
- 13 - Participate in Agricultural exhibitions, trade fairs, shows and Open days;
- 14 - Undertake Corporate Marketing and Promotional activities;
- 15 - agricultural research finding published (both hard and soft);
- 16 - Facilitate the approval and registration of all non-PARI research service providers;
- 17 - Participate in donor dialogues meetings

NTR 0 0 0

Output: 01 5105 Generation of technologies for priority commodities

- Breeding for required attributes, establishing trials, data collection and analysis.
- Development of adapted maize and rice varieties that meet consumer demands
- Development of horticultural technologies with market desired qualities
- Development of bio-control technologies, monitoring and management of been pests & diseases,

Total	5,000,000	0	5,000,000
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	5,000,000	0	5,000,000

NTR 0 0 0

GRAND TOTAL	8,299,326	0	8,299,326
<i>Wage Recurrent</i>	0	0	0
<i>Non Wage Recurrent</i>	-2,584	0	-2,584
<i>GoU Development</i>	0	0	0
<i>External Financing</i>	8,747,200	0	8,747,200
<i>NTR</i>	-445,290	0	-445,290

Vote: 142 National Agricultural Research Organisation

QUARTER 4: Revised Cashflow Plan

Non-Wage Recurrent

	Annual budget	Release to end of Q3	% Budget Released	Q4 Cash Requirement	
				Total	% Budget
PAF	0	0.7000027	0.0%	0.7	0.0%
Statutory	0	0	0.0%	0	0.0%
Other	8.765017198	6.742095375	76.9%	6.7	76.4%
Total	8.765017198	7.442098075	84.9%	7.4	84.4%

Reasons for cash requirement greater than 1/4 of the budget: N/A

GoU Development

	Annual budget	Release to end of Q3	% Budget Released	Q4 Cash Requirement	
				Total	% Budget
PAF	0	0.467048	0.0%	0	0.0%
Other	6.130493562	1.420735318	23.2%	1.53	25.0%
Total	6.130493562	1.887783318	30.8%	1.53	25.0%

Reasons for cash requirement greater than 1/4 of the budget: N/A

Grand Total

	Annual budget	Release to end of Q3	% Budget Released	Q4 Cash Requirement	
				Total	% Budget
Grand Total	14.89551076	9.329881393	62.6%	8.93	60.0%

Vote: 142 National Agricultural Research Organisation

Checklist for OBT Submissions made during QUARTER 3

This is an automated checklist which shows whether data has been entered into the areas which are required for a complete quarterly submission. It does not verify the quality of the data that has been entered. A complete checklist is therefore a necessary, but not sufficient condition for a satisfactory submission to MoFPED.

Project and Programme Quarterly Performance Reports and Workplans (Step 2)

The table below shows whether output information, and where relevant donor and ntr data has been entered into the required areas for the quarterly performance reports and quarterly workplans under step 2.

Output Information

Vote Function, Project and Program	Q2 Report	Q3 Workplan
0151 Agricultural Research		
○ <i>Recurrent Programmes</i>		
- 26 NARO Internal Audit	Data In	Data In
- 20 Buginyaya ZARDI	Data In	Data In
- 14 Bulindi ZARDI	Data In	Data In
- 01 Headquarters	Data In	Data In
- 15 Kacwekano	Data In	Data In
- 19 Mbarara ZARDI	Data In	Data In
- 13 Abi ZARDI	Data In	Data In
- 18 Nabium ZARDI	Data In	Data In
- 12 National Laboratories Research	Data In	Data In
- 07 National Crops Research	Data In	Data In
- 08 National Fisheries Research	Data In	Data In
- 09 National Forestry Research	Data In	Data In
- 10 National Livestock Research	Data In	Data In
- 11 National Semi arid Research	Data In	Data In
- 17 Ngetta ZARDI	Data In	Data In
- 21 Rwebitaba ZARDI	Data In	Data In
- 16 Mukono ZARDI	Data In	Data In
○ <i>Development Projects</i>		
- 0382 Support for NARO	Data In	Data In
- 1138 EAAPP	Data In	Data In
- 1139 ATAAS (Grant) EU, WB and DANIDA Funded	Data In	Data In

Donor Releases and Expenditure

Vote Function, Project and Program	Q2 Report	Q3 Workplan
0151 Agricultural Research		
○ <i>Development Projects</i>		
- 1139 ATAAS (Grant) EU, WB and DANIDA Funded	Data In	Data In
- 1138 EAAPP	Data In	Data In

NTR Releases and Expenditure

Vote Function, Project and Program	Q2 Report	Q3 Workplan
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Vote: 142 National Agricultural Research Organisation

Checklist for OBT Submissions made during QUARTER 3

0151 Agricultural Research			
○ Recurrent Programmes			
- 14	Bulindi ZARDI	Data In	Data In
- 07	National Crops Research	Data In	Data In
- 08	National Fisheries Research	Data In	Data In
- 09	National Forestry Research	Data In	Data In
- 10	National Livestock Research	Data In	Data In
- 11	National Semi arid Research	Data In	Data In
- 01	Headquarters	Data In	Data In
- 13	Abi ZARDI	Data In	Data In
- 21	Rwebitaba ZARDI	Data In	Data In
- 15	Kacwekano	Data In	Data In
- 16	Mukono ZARDI	Data In	Data In
- 17	Ngetta ZARDI	Data In	Data In
- 18	Nabium ZARDI	Data In	Data In
- 19	Mbarara ZARDI	Data In	Data In
- 20	Buginyaya ZARDI	Data In	Data In
- 12	National Laboratories Research	Data In	Data In

The table below shows whether data has been entered in the fields for key variances in budget execution under step 2.2 and 2.3:

Vote Performance Summary (Step 3)

The table below shows whether information has been entered into the required fields in the vote performance summary tables for each vote functions under step 3.1:

Vote Function	Perf. Indicators	Output Summary	Actions
0151 Agricultural Research	Data In	Data In	Data In

The table below shows whether data has been entered into the vote narrative fields under step 3.2:

Narrative	Narrative
Narrative	Data In

Quarterly Cash Requests (Step 4)

The table below shows whether data has been entered into the cash request under step 4:

Cash Request	Cash Request
Cash Request	Data In