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V1: Vote Overview

This section sets out the Vote Mission, Strategic Objectives, and provides a description of the vote's services

(i) Snapshot of Medium Term Budget Allocations

Table V1 below summarises the Medium Term Budget allocations for the Vote:

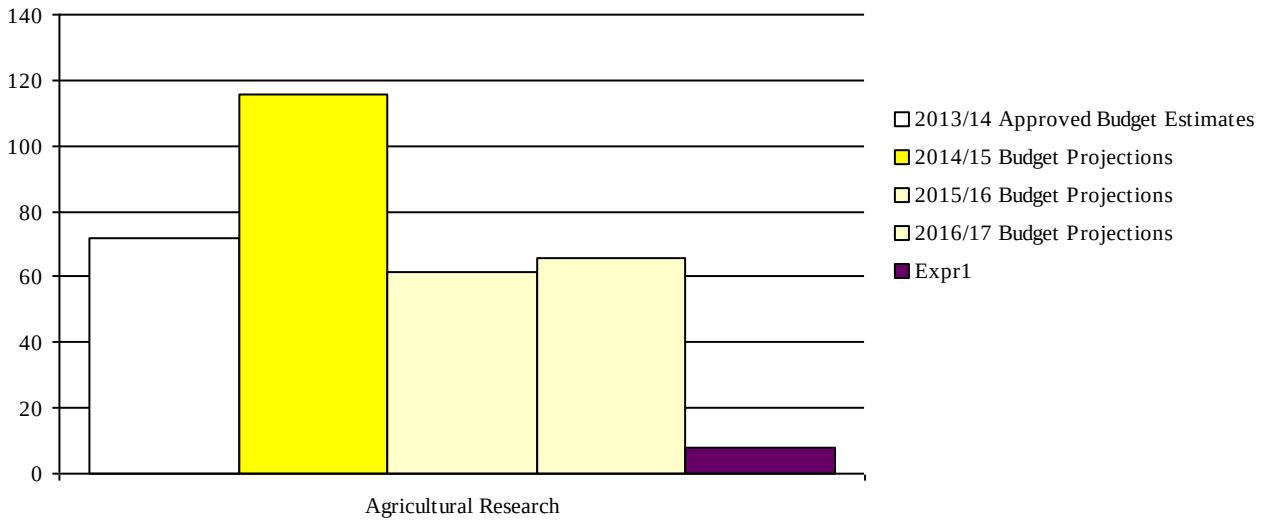
Table V1.1: Overview of Vote Expenditures (UShs Billion)

		2012/13	2013/14		MTEF Budget Projections		
(i) Excluding Arrears, Taxes		Outturn	Approved Budget	Spent by End Dec	2014/15	2015/16	2016/17
Recurrent	Wage	0.000	18.972	9.486	18.972	18.972	24.218
	Non Wage	27.502	8.765	4.292	8.765	9.598	7.744
Development	GoU	7.815	6.130	3.065	9.130	10.683	11.110
	Ext.Fin	0.000	46.192	21.686	78.571	21.937	22.600
GoU Total		**33.716**	**33.868**	**16.844**	**36.868**	**39.253**	**43.072**
Total GoU+Donor (MTEF)		**33.716**	**80.060**	**38.530**	**115.439**	**61.190**	**65.672**
(ii) Arrears and Taxes	*Arrears*	*0.000*	*0.000*	*0.000*	*0.000*	*N/A*	*N/A*
	*Taxes***	*1.600*	*8.000*	*0.000*	*4.000*	*N/A*	*N/A*
Total Budget		**35.316**	**88.060**	**38.530**	**119.439**	**N/A**	**N/A**
(iii) Non Tax Revenue		*0.000*	*5.815*	*0.445*	*4.958*	*3.270*	*3.670*
Grand Total		**35.316**	**93.875**	**38.975**	**124.397**	**N/A**	**N/A**
Excluding Taxes, Arrears		33.716	85.875	38.975	120.397	64.460	69.342

** Donor expenditure data unavailable* *** Non VAT taxes on capital expenditure*

The chart below shows total funding allocations to the Vote by Vote Function over the medium term:

Chart V1.1: Medium Term Budget Projections by Vote Function (UShs Bn, Excluding Taxes, Arrears



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(ii) Vote Mission Statement

The Vote's Mission Statement is:

To generate and disseminate appropriate, safe and cost effective technologies

(iii) Vote Outputs which Contribute to Priority Sector Outcomes

The table below sets out the vote functions and outputs delivered by the vote which the sector considers as contributing most to priority sector outcomes.

Table V1.2: Sector Outcomes, Vote Functions and Key Outputs

Sector Outcome 1:	**Sector Outcome 2:**	**Sector Outcome 3:**
Agricultural Production and Productivity	***Improved markets and increase in value addition***	***Improvement in the enabling environment & Institutional strengthening***
Vote Function: 01 51 Agricultural Research		
Outputs Contributing to Outcome 1:	***Outputs Contributing to Outcome 2:***	***Outputs Contributing to Outcome 3:***
Outputs Provided	None	None
015101 Generation of agricultural technologies		
015102 Research extension interface promoted and strengthened		
015105 Generation of technologies for priority commodities		

V2: Past Vote Performance and Medium Term Plans

This section describes past and future vote performance, in terms of key vote outputs and plans to address sector policy implementation issues.

(i) Past and Future Planned Vote Outputs

2012/13 Performance

1. - Crop varieties released: 7 bean varieties released: NABE 17 ,18,19,20, 21, 22 & NABE 23; 2 – Bananas (M19 and M20), 11 – Maize, 4 rice

2. - Crop varieties submitted for release: 4 - Climbing beans (1) F4: 834ML-14/4 (dark red mottled), (2) F4:834ML-2/3 (Pinkish), (3) F5:8 90ML-2/1/3a, (Light red mottled) and (4) F6:8 90 ML-5/13 (Red); 1-cassava, 7- rice upland, 5 - rice paddy, 3 - wheat

3. - Used MAS to select resistant bean plants to anthracnose, angular leaf spot and phythium root rot diseases for introgression into climbing bean variety NABE 12C to generate 2nd backcross hybrid.

4. - Determined bean genotypes BRB 194, MORE 88002, NUA 99, NUA69, RWR 2154, and RWR 2245 most resistant to angular leaf spot, common bacterial blight and flower leaf spot across many locations in order to promote nutrient dense bean lines.

5. - Identified 100 prioritised core research projects to be undertaken in the PARIs once they have passed ESMF screening and/or those with fully developed mitigation measures.

6. - Developed a proposal for eradication of Banana Bacterial Wilt (BBW) in Uganda. A task force has been put in place, and PARIs within the Lake Victoria Crescent Agro-ecological zones have been encouraged to integrate research on BBW in their work plans.

7. - Conducted a one – month banana bacterial wilt control campaign in 13 districts

8. - National launch of the banana bacterial wilt control in Uganda was launched in Mbarara. BBW Management committees (platforms) were established in all the 8 hotspots in the 4 districts of the Kigezi region

9. - Planted 121 demonstration plots of M9, FHIA 17 and M2 in Eastern Uganda (Iganga, Bugiri, Kamuli, Sironko, Mayuge and Mbale)

10. - Supported the 13 on-going Competitive Grant Scheme studies which are due for completion. New

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CGS call profiles have been developed and are to be advertised. Forty new studies are expected to be implemented.
11. - Under Soil and Land LM trial on optimising fertiliser application recommendations on maize and rice in Kasese and Nakasongola was established during 2012B.
12. - Developed a decision support tool for Integrated soil fertility management
13. - Contributed to 11 regional projects as by-ins to previous and some on-going studies. These include 1 (soil management options)-ASARECA; 1 (Fertiliser optimiser decision support tool)-AGRA, 1 (Crop/livestock integration for sustainable management of natural resources)-ASARECA; and 8 (EAAPP: cassava, rice, wheat and dairy regional projects).
14. - Climate change adaptation innovations mapped, i.e. in agriculture: water harvesting, small scale irrigation, use of organic pesticides. And in the energy sector - use of wind, solar energy, & biological waste to generate energy, e.g. biogas
15. - One 2000-m3 earthen pond prepared for happa fry nursing and brood stock holding.
16. - Established breeding levels in Lake Edward. Fishes in the river-mouth habitat showed the highest level of breeding.
17. - Three reconnaissance surveys were conducted in the inshore waters of the Ugandan part of Lake Victoria.
18. - 147 fish breeding nursery areas of Lake Victoria were identified, characterized and mapped targeting protection of Nile perch, Tilapia and Mukene
19. - Established pollution levels and their impacts on the environment and aquatic biota in the northern part of Lake Victoria. Eutrophication results in algal blooms and proliferation of water hyacinth were generated.
20. - Established status of the hydrology and hydrometeorology; physico-chemical parameters and lake productivity processes; composition, diversity and relative abundance of fishes, fishery and fishery yield, biological and ecological characteristics of fishes; livelihoods and adaptation strategies for the Lakes Wamala and Kawi.
21. - Geo-referenced map and database on trends and impacts (profitability and constraints) if fish farming to livelihoods in Central Uganda were generated for 90% (820 fish farmers). The output allows fish farmers and government to enhance profitability while intervention is moved to other regions.
22. - Three water reservoirs (constructed for cattle use) were identified as suitable for stocking with fish and more reservoirs to be identified will be forwarded to MAAIF for implementation (fish stocking of commercial dams) in Isingiro, Sembabule and Nile Districts.
23. - The Central and Eastern parts of Lake Victoria were surveyed to identify suitable cage culture sites out of which, 17 bays were investigated, from which, 10 sites were physico-chemically characterized, with six found suitable for cage culture and Low Volume High Density (2x2x2 to 5x5x2.5m) cage operations, and four (>5x5x5m cages) for bigger operations which can be started following permit (i.e NEMA, DFR, DWD) applications
24. - Lake Victoria: An increase in fishing factors (boats, fishers, gears) from 2010 to 2012 and influx of under-size nets and hoots (380% increase) requires much more vigilance by enforcement agencies th rough curbing of illegal fishing practices that may require seasonal closures. Similar patterns were observed from the studies on Lake George, Edward and Kazinga Channel as well as Lake Albert and Albert Nile. All these output results have been packaged as draft reports for peer review and presentation to wider audiences.
25. - Natural feed (insects and plankton) availability in Lakes Edward and George were determined as adequate to sustain the suppressed fish populations in those lakes while ingredients for feed formulations were identified in three zones (Central, Eastern and Northern Uganda).
26. - 55 potential fish breeding and nursery areas on Lakes Edward-George system were identified, characterized and mapped for targeting their gazettement
27. - Two candidate ornamental fish species from Lake Victoria were identified for development into cultured species
28. - Completed on-station induced spawning of Barbus altianalis (Kisinga) with 203 larvae

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29. - Characterized fish disease pathogens form 12 fish farms and two hatcheries
30. - 120 brood fish of Nile tilapia where acclimatised on-station as parent stock
31. - A draft policy brief on heavy metals (Lead, Zinc, Copper, Iron, Manganese and Nickel) in Lake Victoria was started based on findings in sediments and bottom waters of the lake.
32. - Two Geo-referenced maps were prepared showing aquatic weed sports in the Western and Central zones of Lake Kyoga, and the north-western part of Lake Kyoga
33. - Estimates of annual profits, break even points and payback periods for investments in Tilapia, Nile perch and muziri/ragoge fisheries enterprises on Lake Albert generated by March 2013
34. - Key market destinations, demand, prices and drivers for Nile perch, tilapia and ragoge/muziri from Lake Albert assessed by June, 2013
35. - Baseline information on fishers' livelihoods around Lake Edward-George established
36. - Farmers trained on commercialization of orphan crop commodities and farming
37. - Market linkages between traders' and farmers' groups facilitated through consultations and meetings
38. - Adoption surveys for the minor crops promoted
39. - Produced a distribution map on the genetic diversity of Shea tree butter trees.
40. - 167 superior plus Shea butter trees for use in improvement programmes identified in West Nile, Teso and northern agro-ecological zones.
41. - One progeny trial of Faidherbia albida to assess parent offspring relationship established on-station (Kifu – Mukono).
42. - Three trees of M. Volkensii, 2 trees of G. Robusta, 2 trees of M. Lutea selected and marked as superior phenotypes in West Nile AEZ.
43. - Two harvesting methods (Debarking and root extraction) for indigenous medicinal trees assessed: Debarking and root extraction for medicinal products threatens the sustainability of indigenous tree species, Alternate debarking recommended over ring barking to enhance sustainable harvesting.
44. - Survival rate of Pinus caribea and P. caribea caribaea from Cinara cronortii established at Mabuye and Mpoma (Kifu) studies were 83% and 92% respectively indicating that P. caribea is more robust to dry conditions.
45. - Assessment of the trials at Mabuye and Mpoma in Kifu showed absence of attack from C. cronortii indicating that very early stages of Pinus spp are not preferred by C. Cronortii. Assessments in Kiriima and Mafuga forest reserves showed average damage levels of C. Cronortii as 15%, and 12% respectively. Assessments also showed C. cronortii population as highest in Lower (50.5%), followed by Middle (28.5%) and 21% upper section of crown implying that the pest is a shade loving pest.
46. - Have identified an exotic parasitoid schlereides neseri for management of the Eucalyptus gall wasp (L.invasa) and in collaboration with Forest Invasive Species Network for Africa(FISNA) intend to import and release it agaisnt the pest.
47. - Produced 30,000 seedlings of Measopsis, 10,000 seedlings kg of E. grandis and 10,000 seedlings of Albizia chinensis for trial establishment and rehabilitation of degraded areas of Kifu forest.
48. - Established 3 trial plots of Measopsis, Eucalyptus grandis and A. chinensis in Sironko. Maintained and assessed 8 trials in Kifu and 3 trials in Kyembogo. Results of 1 year show no significant differences in height between spacing regimes.
49. - Database of 1826 plants for health, nutrition and incomes developed.
50. - Above ground carbon and below ground carbon for 2 farming systems established: 9503 t/ha found in Masaka (Banana coffee farming system), while below ground carbon (BGC) for Kamuli was 6920t/ha) Kamuli (Cotton-millet farming system) (AGC = 91t/ha Soil Carbon was 3500t/ha), 2 more trials were established in the Kamuli and Masaka experimental sites.
51. - A report on forest products extraction and the forest law in Namatale CFR developed
52. - Six policies affecting dairy, indigenous chicken and vegetable value chains (the feeds policy, delivery of Veterinary Services, Animal Breeding Policy, Control of Agro-chemicals Statute, National Veterinary Drug Policy and Dairy Industry Act and Animal welfare) were identified and analyzed. They were reviewed

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with stakeholders. Constraints limiting policy implementation and recommendations for amendments documented.

53. - Strains of Theileria parva circulating in the different agro-ecological zones in Uganda have been characterised. This is useful information in improving the ECF (Muguga cocktail) vaccine for prevention and protection of cattle against East Coast fever disease in Uganda. It has also helped us to understand the role of buffalos in the maintenance of Theileria parva and control of East Coast fever.

54. - A parasite pathogen bank for Theileria parva has been established at NaLIRRI. It now easy to conduct immunology and molecular of study on the organism for development of either vaccine or drugs.

55. - The genetic structure G. f. fuscipes in the Lake Victoria basin has been established. Since this is one of the most important tsetse flies in the country, it has made it easy to develop intervention strategies for control of tsetse flies in tsetse infested areas in Uganda.

56. - The distribution maps for tsetse species and trypanosomiasis outbreaks in Uganda have been updated. This has helped in determining the selection of priority study areas in the country.

57. - Causes of calf and kid mortality in the agro-pastoral farming system, as perceived by the farmers, have been established. This has provided useful information in determining the diseases and conditions to investigate in the immediate future.

58. - The worm burden in kids in both the wet (13% strongyloides and 3.5% tapeworms) and dry (36% strongyloides and 14.5%) seasons in one of the districts in Uganda has been determined. Also established is the nutritional content of up to 25 pastures and shrubs on which goats feed. Additionally, the relationship between dry and wet season feeding and worm burden has been established. It has made it easy to develop feeding and worm control strategies that farmers can use to reduce the worm burden during each season of the year.

59. - Humoral immunity titres of poultry sera against influenza A viruses has been determined for the West (8.8%) and East (3.7%) parts of the country. We have now confirmed that influenza A viruses occur in different regions of Uganda, although at different levels of prevalence. It is now easy to develop measures to prevent further occurrence or transmission away from wetlands.

60. - Twenty two (22) Napier grass clones tolerant to Napier stunt disease were obtained from Kenya Agricultural Research Institute and screened for tolerance to Napier stunt disease at NaCRRI. Four tolerant Napier grass clones have been identified and are being multiplied for further distribution to farmers.

61. - Farmers' awareness on Napier stunt disease control methods has increased- This has led to a decline in disease incidence from 60% to 20%.

62. - A nutrient Feed Block was developed using farm waste and agro-industrial by-products. The cost of the block is lower (UGX 2,000) than imported mineral blocks (UGX 3,500). The Protein content of the Nutrient feed block is 16% and Metabolizable energy is 11MJ.

63. - The potential of Ugandan Calcium bentonite in animal nutrition was evaluated. Bentonite supplemented cows gave more (10 litres/cow/day) milk than animals supplemented with commercial concentrates (8 litres/cow/day).The aflatoxin and mycotoxin absorbing properties of bentonite also help in reducing the negative impacts of aflatoxin on feed utilization, growth and milk yield of animals. This ration based on maize stover-calcium bentonite has a potential to increase milk yield increased by 20%

64. - Brachiaria mulato promoted on 25 farms as an alternative feed resource

65. - A case study "Climate change technologies for improved livelihoods of smallholder crop-livestock farmers in Eastern and Central Africa region", an output from the project activities is one of the top case studies selected for the "Finals of the 2012-2013 All Africa-Wide Women in Science Competition which will take place in Ghana, 15th to 20th July 2013.

66. - Over 200 household cattle herds have been screened and 400 cows and heifers with superior dairy traits selected from these herds for genetic improvement through crossbreeding. The selected animals will now kick-start the synchronisation and artificial insemination (AI) using semen from proven Ayrshire and Jersey bulls by NAGRC collaborating partner organization.

67. - On-station herd of Small East African Zebu cattle established at NaLIRRI with an initial stock of 10

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cows and 6 calves under EAAPP. Infrastructure for holding the animals, pastures, paddocks and water and health management systems are being put in place. An exotic herd of 5 Ayrshire heifers for NaLIRRI is held at NAGRC pending completion of infrastructural placements to handles them. The animals will be synchronized and artificially inseminated to produce crossbred offspring for dairy production.
68. - On-station experimental unit has established at NaLIRRI. Procurements of experimental goats in progress from NAGRC for studies on meat characteristics of indigenous goats and their Boer crossbreds.
69. - Genomic selection studies have been initiated for goats with the establishment of 12 goat experimental sites in Katakwi and Mpigi. Phenotypic, performance and pedigree data collection is on-going and will be used to select superior goats using younger animals for faster genetic gain using genomic selection tools.
70. - Genomic selection studies continued for chickens at 11 experimental sites with more data on phenotypic, performance and pedigree information being collected for genomic selection in younger animals.
71. - A tool for characterization of guinea fowls and turkeys has been developed in a participatory manner by involving district extension staff and farmers through a discussion workshop and pre-testing process. The tool which includes questionnaires and sampling protocol are now ready for use in both phenotypic and blood sampling surveys.
72. - Stakeholders have been sensitized and study sites identified in the districts of Pallisa, Mukono, Masaka and Kiboga as initial phase for characterizing pig breeds and their management system.
73. - Selective breeding of honeybees for increased production of honey and other bee products
74. - Honeybee colonies have been set at Bulindi ZARDI and NaLIRRI demonstration apiaries to start with bee breeding experiments. This project intends to come up with bee strains resistant to Varroa and small hive beetles.
75. - Molecular characterisation of honeybee races and evaluation of their productivity in Uganda
76. - A total of 200 samples of honeybees for characterisation of Ugandan honeybees have been collected and preserved awaiting analysis. This project will identify bee species that are productive and easy to manage.
77. - Molecular identification and characterisation of honeybee diseases in Uganda
78. - Samples of bees for disease identification have been collected and preserve awaiting analysis
79. - On-station evaluation of the model biogas cooking stove appliance completed and on-farm evaluation in progress (Farmer selection done in Jinja and Iganga districts).
80. - One open-sun drying technology for local rice varieties developed and established on-farm and farmer selection done in Hoima district.
81. - One model stove prototype for utilisation of rice husks fabricated and being tested on-station; Farmers for on-farm evaluation selected.
82. - One fireless cooker prototype under fabrication. Farmers for on-farm testing selected in Masaka and Hoima districts.
83. - 9 mouldboards for walking tractor ploughs have been fabricated and under field performance evaluation by farmers in Nankoma, Bugiri district.
84. - 1st prototypes of planter and weeder tested on-farm in Mairerwe, Hoima district. Both planter and weeder undergoing modifications for further evaluation
85. - Surface irrigation: Assessment of research needs and works on restoration of Mobuku, Agoro and Doho irrigation schemes
86. - One prototype of efficient animal-drawn planter for selected small and large grain seeded crops developed
87. - On-farm evaluation is in progress of a prototype of stainless steel hopper and cutting surfaces for grating and chipping cassava
88. - Three water storage tanks (Lined with HDPE) Constructed in Masaka district for vegetable production.
89. - Finalizing fabrication of a pond aerator prototype (diffuser type).

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1. - Priority setting conducted at Rwebitaba ZARDI with stakeholders and key areas for research intervention identified.
2. - Reviewed and updated NARO priority setting guidelines for demand articulation, and the draft document is ready for submission to NARO Council.
3. - Established MSIPs during the reporting period: 2 in Rwebitaba ZARDI (1-cassava 1-banana), 1 Buginyanya ZARDI (coffee), and 1 on livestock control in Mbarara ZARDI. Maize in Kapchorwa, Beans in Wakiso, rice in Ngetta, Coffee in Buginyanya, , Rice and 1 platform in Soroti (cassava). A rice market chain actors from the districts of Luwero, Kayunga and Kiboga is being established
4. - Conducted 3 MSIPs capacity strengthening workshops for NARO an NAADS staff at the zonal level
5. - 100 ha of cassava and 60 ha rice multiplication sites established at NaCRRI and all ZARDIs
6. - Established 5.7 ha of breeder seeds for three rice commercial varieties: NERICA 1, NERICA 4 and NERICA 10.
7. - Distributed to seed companies and farmer groups 4,825 and 3,500 kg of foundation bean seed, respectively.
8. - Promoting improved technologies weer promoted Mukono ZARDI delivered 553 Bags for 79 Acres of NASE 14 in 7 districts ,Abi Zardi : re-distributed 965 bags of NASE 14 for planting, 600 bags of NASE 14 redistributed in Ngetta zardi; 15 acre multiplication site established in Kidetok Serere District; Ngetta: 3,048 bags (509 acres); Bulindi:900 bags (150 acres); Mukono: 553 bags (79 acres); Abi ZARDIi: 60 bags(15 acres)
9. - A total of 86 farmer groups trained in bean seed production.
10. - Distributed 2,323 kg of foundation bean seed (NABE 4, 12C, 15, 16 and K 132) to farmers in Kabale, Kisoro, Kamwenge, Mpigi, Wakiso, Rakai and Bushenyi.
11. - Distributed 2 mt of rice seed to zonal institutes for multiplication
12. - 15-cassava based cottage businesses mapped in Soroti & Masindi districts
13. - Capacity to promote GMP of over 80 extension staff built
14. - Capacity of over 65 artisans to comply to good practices to fabricate cassava processing equipment and hermetic metallic silos built
15. - Presented cassava-based starch for industrial testing by East African Packaging industries; and Uganda Pulp & paper Industry
16. - Protocepts of glucose syrups from cassava were developed and presented to partners. The quality meets up to 60% the required standard.
17. - 9-food formulations for different products developed. Cassava starch of high purity and potential for various uses developed (comparable and in some cases better than cereal starch in some attributes). Riham & Variety Plus Ltd has evaluated a few protocepts.
18. - Production of foundation bean seed by partners was undertaken and cleaning of harvets is ongoing. Certified and Quality declared seed production was undertaken CEDO and Farmer associations respectively.
19. - 86 bags of Naspot 8 (Clean/Improved planting materials) multiplied and availed to uptake pathways;
20. - On-farm trials 75 conducted various ZARDIs across the country
21. - Technology demonstrations held on station and technology parks - 30 demons held by the PARIs;
22. - Capacity of Farmers and Farmer Groups to make choices and implement decisions that affect their livelihoods enhanced-2500 in different commodities;
23. - Dissemination and training workshops held for subject matter specialists and other service providers - 20 different workshops;
24. - Twenty four radio talk shows were conducted.
25. - Scientific, extension, dissemination and farming manuals materials were developed and some published. These include

a. Training material on CBSD, CMD and whiteflies developed
b. 10 maps showing prevalence of CBSD and CMD, generated

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c. One fact sheet on CBSD spread in Uganda produced and shared with stakeholders nationally and Regionally
d. Draft guidelines for groundnuts production were developed.
e. Draft guidelines for cowpea and sorghum production were developed.
f. Two training manuals for the use of forage sorghum for livestock feeding developed.
g. Integrated Pest Management (Fruit fly management): About 1200 brochures produced on the ecology of mango fruit flies and distributed to stakeholders. Posters produced and shared with stakeholders
h. Published information on situation analysis of agro-chemical use in Central Region
i. Draft review script on agro-chemical use in Uganda
j. Draft training manual for dairy farmers in Uganda
k. 2 Information materials developed on 'Use of metal silo' and translated in Lunyoro and Langi
l. Draft guidelines groundnuts production & marketing developed
m. Sample brochures and leaflets on CBSD management produced and await printing and distribution
n. A recipe book for available bean based products and a post-harvest management guide is being developed
o. Developed the rice communication strategy
p. Cassava curriculum developed participatory with farmers in the EAEZ
q. Rice curriculum developed participatory with farmers in the EAEZ
r. Manual on Passion fruit Production: Complementary Notes for Extension Workers was repackaged
s. Draft paper produced on options for AfRGM management practices

Preliminary 2013/14 Performance

July-september 2013 Achievements and progress

a) No of Varieties submitted to the Variety release committee/No of Prototypes which include 3-wheat,7-maize (4 highland, 3 lowland), 4-rice(irrigation), 3 protoypes

b) No of production technologies generated in Crops-7 final, 47 interim, Fish-11 final, Forestry-6 final, Livestock -3 final

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 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 thorningii, 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 documeted
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
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 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),

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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.
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 diseaseresponses. 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 intoduced forage lines planted for further advancement.
26)4 sweet sorghum varieties were planted 10 demostration sites in 3 Sub-counties of Kayunga, Baale and Busaana to introduce NaSARRI released sorghum varieties to the farming communities. Data collection and haresting has been done and two have been identified promising M.O.U signed between NaSARRI and Bio Green investiments Kayunga. 400 farmers selected to start producing sweet sorghum for bio- ethanol production. Chineese company given permision 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 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

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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 amygadalina, Acacia spp, Millicia excelsa, Albizia coriaria, Mangifera indica, Sena spectablis, 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, Nicotania 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 at vegetative, flowering and fruiting stages give promising results towards managing anthracnose and powdery mildew diseases in mangoes and avocadoes
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 cirtus and Mubende 95% for mangoes. Avearge fruiting in all cirtrus varities was 300, and mangoes 76.
36)Preliminary technical report on yield performance for improved potato varieties developed in Rwebitaba ZARDI

c) No. of technological innovation platforms established/supported
1. Multistakeholder innovation platforms established or supported; 43 (3 new, 40 supported)

d) No of technnological innovations delivery to uptake pthways
1)Foundation and basic seed provided to farmers, farmer groups and seed companies; (600kgs-cowpeas; 2.31 tons-maize; 17 tons-beans; 9 tons of basic seed potato)
2)Clean/Improved planting materials multiplied and availed to uptake pathways; 2735 bags-cassava; 1,000 apple seedlings; 37,000 tree seedlings; 1114-coffee; 2500 fruit seedlings; Pasture seed (400 kg- Chloris Guyana; 300 kg -Clitoria ternatea; 126 kg -lablab seed, 21,000 splits of Bricharia species)
3)On-farm trials conducted; 35 trials
4)Technology demonstrations held on station and technology parks; 20 demonstration established (excluding on-station and show demos)
5)Capacity of Farmers and Farmer Groups to make choices and implement decisions that affect their livelihoods enhanced; Farmers empowered in 12 areas(seed production, IPM, QPM production, forage seed and fodder production, pest and disease management and quality sweet sorghum seed production,good agronomic practices for maize and rice,Fruit nursery operations,value addition; agroprocessing)
6)Dissemination and Training workshops held for subject matter specialists and other service providers; 10 agriculral extension workers
7)Scientific conferences, dissemination workshops and seminars for scientists, extension agents and policy makers conducted; 2 –extension agents; 1-policy dialogue

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8)Scientific & extension dissemination materials developed and published; 4 scientific, 10 sets of extension materials
9)Design and development of Farming manuals; 0
10)Publicity and News articles developed and published, 2
11)Audio Visuals in English and local languages developed and availed to uptake pathways; 0
12)Radio talk shows conducted; 2

Table V2.1: Past and 201/12 Key Vote Outputs*

Vote, Vote Function Key Output	2013/14 Approved Budget and Planned outputs	2013/14 Spending and Outputs Achieved by End Dec	2014/15 Proposed Budget and Planned Outputs
Vote: 142 National Agricultural Research Organisation			
Vote Function: 0151 Agricultural Research			
Output: 015101	**Generation of agricultural technologies**		
Description of Outputs:	Technologies for enhancing production and productivity of crops (new, intermediate), Livestock (new and intermediate), Forestry (new and intermediate) and natural resource management Cross cutting outputs to include but not limited to the Environment, HIV/AIDS New varieties of submitted for release New CGS studies conducted	Crops-7 final, 47 interim, Fish-11 final, Forestry-6 final, Livestock -3 final. - 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 in the two areas. Further assessment underway; - Raised 20,500 seedlings each of M. eminii, E. grandis and M. volkensii - 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 - Propagation protocol for tree crop interaction (for five indigenous fodder species) trial developed - Four indigenous tree species (Piliostigma thorningii, Bridelia micrantha, Erythrina abyssinica and Vitex doniana) characterised for medicinal and firewood uses. - 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 - 1863 plants identified and	- Technologies for enhancing production and productivity of crops (new, intermediate), Livestock (new and intermediate), Forestry (new and intermediate) and natural resource management - Cross cutting outputs to include but not limited to the Environment, HIV/AIDS - New varieties of submitted for release - New CGS studies conducted and on-going CGS studies maintained

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Vote Summary

Vote, Vote Function Key Output	2013/14 Approved Budget and Planned outputs	2013/14 Spending and Outputs Achieved by End Dec	2014/15 Proposed Budget and Planned Outputs
		botanical data collated for use in selection for domestication - Leafy biomass harvesting for Warburgia ugandensis under farm conditions documeted - 50 F4 cotton progenies planted in replicated trials on-station. - 10 promising cotton lines in DUS trials planted in Ngetta, NaSARRI and NaCRRI - 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). - 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; - 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 . - A total of 52 cowpea crosses planted out and data on yield analyzed ten of them gave yields	

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Vote Summary

Vote, Vote Function Key Output	2013/14 **Approved Budget and Planned outputs**	2013/14 **Spending and Outputs Achieved by End Dec**	2014/15 **Proposed Budget and Planned Outputs**
		above 1,000 kg/ha and five of them shown resistance cowpea scab disease. - 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). - Evaluation completed and 45 cowpea lines resistant to blast and 13 lines with tolerance to drought identified. - Selected 40 advanced cowpea lines for further screening; - Selected 5 lines drought tolerance for further analysis - 20 sunflower lines selected for further screening - 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. - 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 BC2S2 crosses were advanced to BC3S3 generation, 12 BC6 lines were advanced to BC7 generations for bulking and evaluation	

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Vote Summary

Vote, Vote Function Key Output	2013/14 **Approved Budget and Planned outputs**	**Spending and Outputs Achieved by End Dec**	2014/15 **Proposed Budget and Planned Outputs**
		- 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. - 16 elite forage sorghum lines planted for evaluation in 4 different locations for the first rain season 2013. Agronomic data collected on pest and diseaseresponses. 5 lines identified promising. - 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 intoduced forage lines planted for further advancement. - 4 sweet sorghum varieties were planted 10 demostration sites in 3 Sub-counties of Kayunga, Baale and Busaana to introduce NaSARRI released sorghum varieties to the farming communities. Data collection and harvesting have been done and two have been identified promising M.O.U signed between NaSARRI and Bio Green investiments Kayunga. 400 farmers selected to start producing sweet sorghum for bio- ethanol production. Chineese company given permision by Govt. to start construction of the factory. - 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	

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Vote Summary

Vote, Vote Function Key Output	2013/14 **Approved Budget and Planned outputs**	2013/14 **Spending and Outputs Achieved by End Dec**	2014/15 **Proposed Budget and Planned Outputs**
		promising - 10 Agriculture Extension staff and 47 lead farmers trained on pest and disease management and quality sweet sorghum seed production in Kayunga district. - 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. - Draft report detailing farmers agricultural need, constraints and opportunities in Bukedi sub zone produced - 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 amygadalina, Acacia spp, Millicia excelsa, Albizia coriaria, Mangifera indica, Sena spectablis, Coffea spp, Albizia ziggia, Grewia mollis, Combretum molle, Mangifera indica and Combretum collinum. - Data has been collected on	

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Vote Summary

Vote, Vote Function Key Output	2013/14 **Approved Budget and Planned outputs**	**Spending and Outputs Achieved by End Dec**	2014/15 **Proposed Budget and Planned Outputs**
		severity of aphids, plant aphid infestation, groundnut rosette disease severity following application of botanicals extracts of Tephrosia vogelli, Mexican marigold, red pepper, Nicotania 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. - 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 avocadoes - 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. - Monitored the survival, pest & disease resistance of agroforestry technologies. Survival: Kayunga 98% of cirtus and Mubende 95% for mangoes. Avearge fruiting in all cirtrus varities was 300, and	

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Vote Summary

Vote, Vote Function Key Output	2013/14 Approved Budget and Planned outputs	2013/14 Spending and Outputs Achieved by End Dec	2014/15 Proposed Budget and Planned Outputs
		mangoes 76. - Preliminary technical report on yield performance for improved potato varieties developed in Rwebitaba ZARDI	
Performance Indicators:			
No. of research studies under competitive grants scheme	40	0	60
No. of production technologies generated	80	22	80
No. of new varieties/ prototypes submitted to Variety Release Committee for release	25	17	30
Output Cost:	*UShs Bn: 5.820*	*UShs Bn: 2.015*	*UShs Bn: 10.718*
Output Cost Excl. Ext Fin.	*UShs Bn: 1.923*	*UShs Bn: 0.632*	*UShs Bn: 2.993*
Output: 015102	**Research extension interface promoted and strengthened**		
Description of Outputs:	Multistakeholder innovation platforms established or supported; Foundation and basic seed provided to farmers, farmer groups and seed companies; Clean/Improved planting materials multiplied and availed to uptake pathways; 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 held for subject matter specialists and other service providers; Scientific conferences, dissemination workshops and seminars for scientists, extension agents and policy makers conducted; Scientific & extension dissemination materials developed and published;	- Multistakeholder innovation platforms established or supported; 31 (4 new, 29 supported) - Foundation and basic seed provided to farmers, farmer groups and seed companies; (600kgs-cowpeas; 2.31 tons-maize; 17 tons-beans; - Clean/Improved planting materials multiplied and availed to uptake pathways; 1000 apple seedlings; 37000 tree seedlings; 1114-coffee; 2500 seedlings; - On-farm trials conducted; 35 trials - 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	- Multistakeholder innovation platforms established or supported; - Foundation and basic seed provided to farmers, farmer groups and seed companies; - Clean/Improved planting materials multiplied and availed to uptake pathways; - 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 held for subject matter specialists and other service providers; - Scientific conferences, dissemination workshops and seminars for scientists, extension agents and policy makers conducted; - Scientific & extension dissemination materials developed and published; - Design and development of Farming manuals; - Publicity and News articles developed and published, - Audio Visuals in English and local languages developed and availed to uptake pathways; - Radio talk shows conducted;

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Vote Summary

Vote, Vote Function Key Output	2013/14 Approved Budget and Planned outputs	2013/14 Spending and Outputs Achieved by End Dec	2014/15 Proposed Budget and Planned Outputs
	Design and development of Farming manuals; Publicity and News articles developed and published, Audio Visuals in English and local languages developed and availed to uptake pathways; Radio talk shows conducted;	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	
Performance Indicators:			
No. of technological innovations delivered to uptake pathways	40	40	50
No. of technological innovation platforms established/supported	12	4	14
Output Cost:	*UShs Bn: 4.075*	*UShs Bn: 1.338*	*UShs Bn: 6.506*
Output Cost Excl. Ext Fin.	*UShs Bn: 0.745*	*UShs Bn: 0.228*	*UShs Bn: 1.694*
Output: 015105	**Generation of technologies for priority commodities**		
Description of Outputs:	Technologies for enhancing productivity of Crops (cassava,maize,Rice, Horticultural crops, bananas)(new, intermediate), Livestock (dairy cattle, meats(new and intermediate), and fisheries New varieties of submitted for release Foundation and basic seed provided to farmers, farmer groups and seed companies; Breeder seed provided to seed companies; Clean/Improved planting materials multiplied and availed to uptake pathways; 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;	- 12 promising coffee candidates selected according to yield; - 17 CWD resistant hybrid progenies identified; - Distributed 1114 TC derived plantlets to nursery operators; - 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; - Determined the disease and yield losses caused by ALS and rust on-farm with 3 farmers' fields in Wakiso district; - 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; - 430 kg of seed obtained from 10 genotypes from 10 nutrient	- Technologies for enhancing productivity of Crops (cassava,maize,Rice, Horticultural crops, bananas)(new, intermediate), Livestock (dairy cattle, meats(new and intermediate), and fisheries - New varieties of submitted for release - Foundation and basic seed provided to farmers, farmer groups and seed companies; - Breeder seed provided to seed companies; - Clean/Improved planting materials multiplied and availed to uptake pathways; - 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;

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Vote Summary

Vote, Vote Function Key Output	2013/14 Approved Budget and Planned outputs	2013/14 Spending and Outputs Achieved by End Dec	2014/15 Proposed Budget and Planned Outputs
		dense bean lines; - Bean innovation platforms established. - 23 hybrids selected from previous regional trials and planted for second evaluation. - 8 hybrids selected through PVS at farmers filed; - Application for release of at least 4 varieties submitted; - Applied for release of highland maize 3 candidate varieties; - Distributed 0.6t of certified seed to the 3 IPTA; - Thesis on molecular characterisation of partial inbreds for CBSD resistance submitted to Makerere University for examination; - 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 = 3mg/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 (= 1ppm) and zinc (= 5ppm). Those above WHO permissible limits were Manganese (> 0.1ppm), Ni (> 0.1ppm) and iron (0.1ppm);	

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Vote Summary

Vote, Vote Function Key Output	2013/14 **Approved Budget and Planned outputs**	2013/14 **Spending and Outputs Achieved by End Dec**	2014/15 **Proposed Budget and Planned Outputs**
		- 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 - 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%) - 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. 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	

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Vote Summary

Vote, Vote Function Key Output	2013/14 Approved Budget and Planned outputs	2013/14 Spending and Outputs Achieved by End Dec	2014/15 Proposed Budget and Planned Outputs
		(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 - 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 - 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. - 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)	

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Vote, Vote Function Key Output	**2013/14 Approved Budget and Planned outputs**		**Spending and Outputs Achieved by End Dec**		**2014/15 Proposed Budget and Planned Outputs**	
			- 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 - The status of pest and disease prevalence of Arabica coffee wsa determined. Coffee leaf rust at >5% on station, 80% of fields in Bulambuli with symptoms of Nitrogen deficiency and suffering dieback due to overbearing; - 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. - 3 formulations for the supplimentation packages developed using locally available materials in the dry seasons in Ngetta ZARDI		
Output Cost:	*UShs Bn:*	*7.595*	*UShs Bn:*	*6.938*	*UShs Bn:*	*11.962*
Output Cost Excl. Ext Fin.	*UShs Bn:*	*1.702*	*UShs Bn:*	*0.538*	*UShs Bn:*	*2.394*
Vote Function Cost	***UShs Bn:***	***93.875***	***UShs Bn:***	***38.530***	***UShs Bn:***	***120.397***
VF Cost Excl. Ext Fin.	*UShs Bn*	*47.683*	*UShs Bn*	*16.844*	*UShs Bn*	*41.826*
Cost of Vote Services:	*UShs Bn:*	**85.875**	*UShs Bn:*	**38.530**	*UShs Bn:*	**120.397**
Vote Cost Excl. Ext Fin.	*UShs Bn*	*47.683*	*UShs Bn*	*16.844*	*UShs Bn*	*41.826*

* *Excluding Taxes and Arrears*

2014/15 Planned Outputs

Planned outputs 2014/2015
a) Varieties submitted to the Variety release committee/No of Prototypes; 30 new
b) Production technologies generated, 80 new technologies.
c) Multistakeholder innovation platforms established or supported; 12 new, 15 supported.
d) Technnological innovations delivery to uptake pthways, 40 new.
1)Foundation and basic seed provided to farmers, farmer groups and seed companies;
2)Clean/Improved planting materials multiplied and availed to uptake pathways;
3)On-farm trials conducted;
4)Technology demonstrations held on station and technology parks;
5)Capacity of Farmers and Farmer Groups to make choices and implement decisions that affect their

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livelihoods enhanced; Farmers empowered in 12 areas(seed production, IPM, QPM production, forage seed and fodder production, pest and disease management and quality sweet sorghum seed production,good agronomic practices for maize and rice,Fruit nursery operations,value addition; agroprocessing)
6)Dissemination and Training workshops held for subject matter specialists and other service providers; 10 agriculral extension workers
7)Scientific conferences, dissemination workshops and seminars for scientists, extension agents and policy makers conducted; 2 –extension agents; 1-policy dialogue
8)Scientific & extension dissemination materials developed and published;
9)Design and development of Farming manuals;
10)Publicity and News articles developed and published,
11)Audio Visuals in English and local languages developed and availed to uptake pathways;
12)Radio talk shows conducted;

Table V2.2: Past and Medum Term Key Vote Output Indicators*

Vote Function Key Output Indicators and Costs:	2012/13 Outturn	2013/14 Approved Plan	2013/14 Outturn by End Dec	MTEF Projections 2014/15	2015/16	2016/17
Vote: 142 National Agricultural Research Organisation						
Vote Function:0151 Agricultural Research						
No. of new varieties/ prototypes submitted to Variety Release Committee for release		25	17	30		
No. of production technologies generated		80	22	80		
No. of research studies under competitive grants scheme		40	0	60		
No. of technological innovation platforms established/supported		12	4	14		
No. of technological innovations delivered to uptake pathways		40	40	50		
Vote Function Cost (UShs bn)	***N/A***	***85.875***	***38.530***	***120.397***	***64.460***	***69.342***
VF Cost Excl. Ext Fin.	*35.316*	*39.683*	*16.844*	*41.826*	*N/A*	*N/A*
Cost of Vote Services (UShs Bn)	**N/A**	**85.875**	**38.530**	**120.397**	**64.460**	**69.342**
Vote Cost Excl. Ext Fin	*35.316*	*39.683*	*16.844*	*41.826*	*N/A*	*N/A*

Medium Term Plans

To submit for release 100 new varieties, 100 new production technologiestrategies. Initiate the rehabilitation of the Regional Cassava Centre of Excellence at NACRRI in Namulonge (No progress in FY 2012/13). To initiate the construction of Nabuin ZARDI offices and laboratories and rehabilitation of ZARDI offices and laboratories; Training of at least 5 new PhDs and 5 MScs, reviewing of the NAR Act, review and development of research standards and guidelines, initiation of the ISO certification of PARI laboratories. Strengthen research in Food Biosciences, value addition and market linkages. Strengthen the NARO-NAADS linkages.

(ii) Efficiency of Vote Budget Allocations

- Strengthening the Monitoring and evaluation of research
- Strengthening the internal audit
- Institutionalise Research management information systems,
- Strengthen and Institutionalise financial management systems
- Strengthen and Institutionalise quality assurance management systems

Table V2.3: Allocations to Key Sector and Service Delivery Outputs over the Medium Term

	(i) Allocation (Shs Bn)	*(ii) % Vote Budget*

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Vote Summary

Billion Uganda Shillings	2013/14	**2014/15**	2015/16	2016/17	*2013/14*	***2014/15***	*2015/16*	*2016/17*
Key Sector	17.5	**29.2**	27.2	27.3	*20.4%*	***24.2%***	*42.2%*	*39.4%*
Service Delivery	17.5	**29.2**	27.2	27.3	*20.4%*	***24.2%***	*42.2%*	*39.4%*

NA

Table V2.4: Key Unit Costs of Services Provided and Services Funded (Shs '000)

(iii) Vote Investment Plans

An increasing trend to be funded mostly from donor budget. GOU funding is low, affected by the low MTEF, In some quarters no funds are released, and sometime inadquate funds release.

Table V2.5: Allocations to Capital Investment over the Medium Term

	(i) Allocation (Shs Bn)				*(ii) % Vote Budget*			
Billion Uganda Shillings	2013/14	**2014/15**	2015/16	2016/17	*2013/14*	***2014/15***	*2015/16*	*2016/17*
Consumption Expendture(Outputs Provided)	67.4	**85.8**	42.9	45.3	*78.5%*	***71.3%***	*66.6%*	*65.4%*
Grants and Subsidies (Outputs Funded)	7.3	**9.6**	0.9	1.2	*8.5%*	***8.0%***	*1.4%*	*1.7%*
Investment (Capital Purchases)	11.2	**24.9**	20.7	22.8	*13.0%*	***20.7%***	*32.0%*	*32.9%*
Grand Total	**85.9**	**120.4**	**64.5**	**69.3**	***100.0%***	***100.0%***	***100.0%***	***100.0%***

More specialised laboratory equipment, field machinery and irrigation machinery. Information Communication Technology System,services and equipment. The rehabilitation of the Regional Cassava Centre of Excellence at NACRRI in Namulonge, Food Bioscience in Kawanda. Procurement and delivery of a Liquid nitrogen Plant. Rehabilitation and construction of offices and labaratories in 5 ZARDIs (Abi, Buginyanya, Ngetta, Bulindi, Nabuin)

Table V2.6: Major Capital Investments

Project, Programme **Vote Function Output** *UShs Thousand*	**2013/14** **Approved Budget, Planned Outputs (Quantity and Location)**	**Actual Expenditure and Outputs by September (Quantity and Location)**	**2014/15** **Proposed Budget, Planned Outputs (Quantity and Location)**
Project 1138 EAAPP			
015172 Government Buildings and Administrative Infrastructure	EAAPP areas of excellencies rehabilitated	Drawing designs for the CRCOE have been developed.	EAAPP centres of excellencies rehabilitated
Total	**2,445,076**	*0*	**4,500,000**
GoU Development	***0***	*0*	*0*
External Financing	***2,445,076***	*0*	*4,500,000*
015177 Purchase of Specialised Machinery & Equipment	Agric TractorS & its Accessories. Purchase and installation of liquid nitrogen plan and AI equipment	2 tractors delivered. Completed deliveries of semen equipmentand nitrogen bank.	Agric Laboratory Equipment.
Total	**144,620**	*0*	**800,000**
GoU Development	***0***	*0*	*0*
External Financing	***144,620***	*0*	*800,000*
Project 1139 ATAAS (Grant) EU, WB and DANIDA Funded			
015172 Government Buildings and Administrative Infrastructure	- Design and development of drawings and bills of quantities for office, laboratories and farm buidings at NACRRI, NAFIRRI, Bulindi ZARDI, Ngetta ZARDI; Rehabilitation of office, laboratories and farm buidings NACRRI, NAFIRRI, Bulindi ZARDI, Nabuin & Ngetta	Preparation for engagiing 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.	- Building designs developed and submitted for approval - Development and construction of research infrastruture advertised, evaluated and contracts signed

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Project, Programme Vote Function Output *UShs Thousand*	2013/14 Approved Budget, Planned Outputs (Quantity and Location)	Actual Expenditure and Outputs by September (Quantity and Location)	2014/15 Proposed Budget, Planned Outputs (Quantity and Location)
	ZARDI		
Total	**2,000,000**	*1,350,000*	**5,768,378**
GoU Development	***0***	*0*	*0*
External Financing	***2,000,000***	*1,350,000*	*5,768,378*
015175 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	15 Station wagon vehicles, 3 vans and 2 trucks were delivered	18 vehicles double cabin and 20 other Transport Equipment purchased
Total	**1,580,000**	*0*	**5,570,000**
GoU Development	***0***	*0*	*0*
External Financing	***1,580,000***	*0*	*5,570,000*
015176 Purchase of Office and ICT Equipment, including Software	Power requirements identified Prerequisite training. ICTspecialists identified and recruited. Infrastructure and equipment procured. Mobile applications , user info needs and Software requirements identified. - ICT infrastructure and eq	None	Assortment of Office and ICT equipment purchased for the secretariat and the PARIs
Total	**2,000,000**	*0*	**3,600,000**
GoU Development	***0***	*0*	*0*
External Financing	***2,000,000***	*0*	*3,600,000*
015177 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	Awaiting world Bank no objection to procure an assortment of specialised machinery and equipment.	Assortment of labaratory and field equipment purchased for the PARIs
Total	**2,000,000**	*655,000*	**4,000,000**
GoU Development	***0***	*0*	*0*
External Financing	***2,000,000***	*655,000*	*4,000,000*
015178 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	None	Assortment of Office furniture purchased for the secretariat and the PARIs

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Project, Programme Vote Function Output *UShs Thousand*	2013/14 Approved Budget, Planned Outputs (Quantity and Location)	Actual Expenditure and Outputs by September (Quantity and Location)	2014/15 Proposed Budget, Planned Outputs (Quantity and Location)
	modern chairs; Resource center furnished with shelves, lockers,		
Total	**1,000,000**	*700,000*	**700,000**
GoU Development	***0***	*0*	*0*
External Financing	***1,000,000***	*700,000*	*700,000*

(iv) Vote Actions to improve Priority Sector Outomes

- Strengthening research coordination
- Strengthening technology promotion, partnerships and collaboration
- Strengtheninh knowledge, information, comminication management, and public relations
- Strengthening the Monitoring and evaluation of research
- Strengthening the internal audit
- Institutionalise Research management information systems,
- Strengthen and Institutionalise financial management systems
- Strengthen and Institutionalise quality assurance management systems

Table V2.7: Priority Vote Actions to Improve Sector Performance

2013/14 Planned Actions:	2013/14 Actions by Sept:	2014/15 Planned Actions:	MT Strategy:
Sector Outcome 0:			
Vote Function: 01 51 Agricultural Research			
VF Performance Issue: Infrastructure development			
Rehabilation of existing offices, laboratory and farm buildings in the NARIs and ZARDIS will be given priority in the FY 2013-14 under EAAPP and ATAAS. The unfilled staff training slots will be advertised.	- Preparations are underway to sign a contract with a local service provider ID forum to develop bills of quantities for all infraastructural development under ATAAS. Consultants under EAAPP have submittedd the proposals for infrastructural development.	- Rehabilitation of the CRCOE laboratories, ZARDI offices (Buginyanya, Ngetta, Bulindi) NARO secretariat offices, NAFIRRI offices.	Establish and maintain appropriate infrastructure for NARIs and ZARDIs;regularly replace and updating old and obsolete equipment; purchase new equipment for under-equipped laboratories; Annual assessment of status and needs for new equipment
Sector Outcome 1: Agricultural Production and Productivity			
Vote Function: 01 51 Agricultural Research			
VF Performance Issue: Low levels of adoption of improved technology			
NARO in collaboration with NAADS have started implementation the Multistakeholder innovation platform and the value chain approaches. These sucesses have been tried with considerable success.	- One MSIP training workshop was conducted for NARO and NAADS teams at the zonal level.	- NARO and NAADS will continued establishing and supporting multi stakeholder innovation platforms and other approaches. - Implementation of research activities under ATAAS and EAAPP	Implement institutional reforms resulting from studies and report findings.
Sector Outcome 3: Improvement in the enabling environment & Institutional strengthening			
Vote Function: 01 51 Agricultural Research			
VF Performance Issue: Human capacity development			
35 posts to be advertised during the FY 2013-2014.	- 10 positions advertised for positions at the secretariat. So far recruited staff in the	- 30 posts advertised during the period. Interview conducted. Some posts filled.	Recruit 263 by 2014, 40% of staff to have doctorates, 55% to have masters and 5% to

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2013/14 Planned Actions:	2013/14 Actions by Sept:	2014/15 Planned Actions:	MT Strategy:
	positions of Director Corporate Services, Director Bulindi, Director Kachwekano, Senior Corporate Services Officer, Council Secretary, Senior Quality Assurance Officer and Quality Assurance Officer.		have bachelors.

V3 Proposed Budget Allocations for 2014/15 and the Medium Term

This section sets out the proposed vote budget allocations for 2014/15 and the medium term, including major areas of expenditures and any notable changes in allocations.

Table V3.1: Past Outturns and Medium Term Projections by Vote Function*

	2012/13 Outturn	2013/14 Appr. Budget	2013/14 Spent by End Sept	MTEF Budget Projections 2014/15	2015/16	2016/17
Vote: 142 National Agricultural Research Organisation						
0151 Agricultural Research	35.316	85.875	24.594	120.397	64.460	69.342
Total for Vote:	**35.316**	**85.875**	**24.594**	**120.397**	**64.460**	**69.342**

(i) The Total Budget over the Medium Term

(ii) The major expenditure allocations in the Vote for 2014/15

Major allocations have been made under VF 015101 Generation of technology and VF 015105 Genration of technologies for priority commodities.

(iii) The major planned changes in resource allocations within the Vote for 2014/15

- NARO will continue to undertake and promote work to eradicate banana wilt in all parts of the country. Considerable resources will be allocated to commercial fruits. Further , NARO will increase resource allocation under the vote function output for priority commodities, 015105. It is the intention of NARO to ensure the continued growing of bananas and commercial fruits to ensure continued Food, nutrition and household security.
- NARO will increase resources invested for captical development. This will ensure there is adquate physical infrastructure for agricultural research and development across the entire country. It is the intention of NARO to increase service delivery all parts of the nation.
- NARO will increase resource allocation to motor vehicles,other transport equipment and tractors to ensure the terrain where the organization can be accessed by staff.

Table V3.2: Key Changes in Vote Resource Allocation

Changes in Budget Allocations and Outputs from 2013/14 Planned Levels:	2014/15	2015/16	2016/17	Justification for proposed Changes in Expenditure and Outputs
Vote Function:0101 Agricultural Research				
Output: 0151 01 Generation of agricultural technologies				
UShs Bn:	*4.897*	*UShs Bn: 2.966*	*UShs Bn: 1.442*	
Output: 0151 02 Research extension interface promoted and strengthened				
UShs Bn:	*2.432*	*UShs Bn: -2.035*	*UShs Bn: -2.035*	
Output: 0151 04 Agricultural research capacity strengthened				
UShs Bn:	*6.445*	*UShs Bn: -34.164*	*UShs Bn: -31.854*	
Output: 0151 05 Generation of technologies for priority commodities				

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Changes in Budget Allocations and Outputs from 2013/14 Planned Levels:	2014/15	2015/16	2016/17	Justification for proposed Changes in Expenditure and Outputs
UShs Bn:	*4.367*	*UShs Bn:* *8.778*	*UShs Bn:* *10.405*	
Output:	**0151 51 Payments to International Organisations (CGIAR, ASARECA, WARDA)**			
UShs Bn:	*2.322*	*UShs Bn:* *-6.417*	*UShs Bn:* *-6.103*	
Output:	**0151 72 Government Buildings and Administrative Infrastructure**			
UShs Bn:	*5.823*	*UShs Bn:* *2.833*	*UShs Bn:* *6.455*	
Output:	**0151 75 Purchase of Motor Vehicles and Other Transport Equipment**			
UShs Bn:	*3.990*	*UShs Bn:* *3.420*	*UShs Bn:* *2.420*	
Output:	**0151 76 Purchase of Office and ICT Equipment, including Software**			
UShs Bn:	*1.600*	*UShs Bn:* *1.600*	*UShs Bn:* *1.000*	
Output:	**0151 77 Purchase of Specialised Machinery & Equipment**			
UShs Bn:	*2.655*	*UShs Bn:* *1.855*	*UShs Bn:* *1.855*	

V4: Vote Challenges for 2014/15 and the Medium Term

This section sets out the major challenges the vote faces in 2014/15 and the medium term which the vote has been unable to address in its spending plans.

The major challenges for the FY 2012/2013

Budget line allocation restrictions

The funds released to the organization are often restricted to a few budget items. Considering the broad spectrum of activities the restriction makes budget execution very involving. Considering these budget line restrictions, there is need to customize at least one budget line for research activities to allow for continuous adjustments across all research disciplines and sub disciplines.

- Low MTEF

This financial year FY 2012/2013 the MTEF was Ugx shs.87.99. Whereas there were more planned activities for this FY, and more planned procurements of goods and services, this e low MTEF curtailed the expectations of what was to be achieved from what was available. The lower MTEF will grossly affect the implementation of NARO planned activities in short and long-term. There is need to increase the MTEF to Ugx shs.12.7 billion for ATAAS, shs. UGx shs. 4.0 billion for EAAPP, and Ugx shs 3.26 billion for GOU funding.The specific vote functions affected were purchase of office and ICT equipment, Government and administrative buildings, Purchase of specialised equipment and agricultural research capacity strengthened (especially the budget line item on consultancies).

- World Bank no Objection

For NARO to utilize ATAAS funds, a No objection from World Bank is required. There is need for GOU to lobby the Bank to reduce the response waiting period. The specific vote functions affected were purchase of office and ICT equipment, Government and administrative buildings, Purchase of specialised equipment and agricultural research capacity strengthened (especially the budget line item on consultancies).

- World Bank cost tables and the MTEF

Under the ATAAS project there has been a huge variance between the World Bank submitted cost tables and MTFE . Whereas the IDA cost tables give an annual projection as to what will be spent, the lower MTEF does not provide for the same. There is need to match the two . This in turn has affected the over

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procurement of goods and services. And hence, the low absorption capacity of IDA funded activities under ATAAS and planned activities under GOU. All vote function outputs were affected.

- Cash limits
The cash limit handled by the organization was raised from Ugx shs. 20 to 40m. Whereas this eased the budget implementation and execution, there is need to raise this limit to improve budget implementation and execution. All vote function outputs were affected.

- Late release of GEF funds
NARO experience a late release of funds from GEF under the ATAAS project. This grossly affected the implementation of components funded by GEF. This has contributed to overall picture of the lower absorption of ATAAS funds and the performance of the ATAAS project. All vote function outputs were affected.

- Lack of vehicles and an ageing fleet
NARO often operates in remote areas where the roads and the terrain is tough. Maintain a road worthy fleet is a challenge. Budgetary restriction did not allow the organization to plan and budget for vehicles during the financial year.There is need to lift the restricts on vehicles above 3000 cc. There is also need to allow for allocation, release of funds for the acquisition and maintenance for more new vehicles.The specific vote function output affected was the purchase of motor vehicles.

Table V4.1: Additional Output Funding Requests

Additional Requirements for Funding and Outputs in 2014/15:	Justification of Requirement for Additional Outputs and Funding
Vote Function:0101 Agricultural Research	
Output: 0151 01 Generation of agricultural technologies	
UShs Bn: 16.498 - Quantity of technologies, research projects and information materials to increase(by 40%, 15% and 55% respectively)	*This output addresses core research activities of NARO as well as expanding and strengthening the existing Competitive Grants System for the whole of NARS. Under this, strategic, national and zonal specific programmes are to be financed to maintain ongoing research on technology generation as well as to taking on new work (including activities in climate change and sustainable land management). The Competitive Grants System will be expanded to deal with new emerging issues as well as being used as an instrument for institutional streamlining.*
Output: 0151 02 Research extension interface promoted and strengthened	
UShs Bn: 8.600 Increased number of technologies will be demonstrated to more farmers by atleast 15%	*This output will contribute to the strengthening of interaction with key value-chain and innovation system stakeholders, notably small-scale processors, based on the IAR4D principles of joint diagnosis and planning, interactive learning and multi-dimensional assessment.*
Output: 0151 04 Agricultural research capacity strengthened	
UShs Bn:	*with increased capacity of research including both in infrastructure and human resources, the effeciency and quality of research is execpected to increase*

This section discusses how the vote's plans will address and respond to the cross-cutting policy, issues of gender and equity; HIV/AIDS; and the Environment, and other budgetary issues such as Arrears and NTR..

(i) Cross-cutting Policy Issues

(i) Gender and Equity

NARO is implementing a gender action plan for mainstreaming gender into agricultural research. The

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action plan outlines activities for:
NARO is implementing a gender action plan for addressing gender issues into agricultural research. The plan outlines the various intervensions geared towards addressing the various gender concerns of the different gender categories which include: women, men, youth, persons with disabilities, elder persons, and those living with HIV. It indicates the intervensions necessary for building competencies of research scientists in identifying and analysising gender issues and concerns to effectively organise, plan and budget for resourses to address them. In addition, it looks at building capacities of scientists to monitor and evaluate their projects for further action
Output area 1. Generated Technologies addressing stakeholders' needs to respond to market opportunitites: (Total 52, 000,000 ug shs)
Expected output. Address inequalities in access to and control of resources and factors of production, time poverty food insecurity health and nutrition and finacial resources.
•Generation of gender sensitive technologies to address the inequalities in access to and control as the time, health and nutritional needs of the various gender categories
•Sensitize/support institutional arrangements that emphasize various stakeholders to participate in gender sensitive demand articulation and priority setting exercices. Need for the inclusion and engagement of the various gender during these exercises
•Assessment of the structure and functioning of fishing communities and the implications for spread of diseases including HIV/AIDS,
•Promoting value addition technologies and approaches (agro-value value chain development).
•Developing technologies on the basis of market demands (to produce what the market wants and not just for marketing)

Out put area 2. Efficient and effective delivery and uptake of technology and knowledge within the innovation system. (Total 66,238,000 ug shs)

Expected output. Address Inequalities in womens involvement in development intervensions, income poverty, competencies and skills, and information
•Initiating the development and promotion of innovative approaches to promote gender equity in agro-enterprise development (commodity chain development) with the various stakeholder (MSIP)
•Promoting effective participation and engagement of women in stakeholder platforms and value chain development interventions
•Promoting intervensions that address emerging issues such as enterprises previously for women assuming male ownership .
•Need to promote research on and effective approaches that address issues of power relations, cultural norms and taboos that are limitations to agro-value chain development efforts by women.
•Promoting practices geared towards adding value in commodities.
•Promote gender sensitive market research and information dessenimation
•Research to analyse the agricultural research and extension policy to tease out issues/gapsn that will effectively inform policies geared to wards effective promotion of gender equity in the research sector .
Output area 3. Strengthened effectiveness of the National Agricultural Research System
Expected Output; Incresaed capacities and competencies of research scientists carrying out gender sensitive agricultural research and technology dessemination. (Total 79, 000,000 ug shs)
•Promote training geared towards increasing competencies and skills of scientists in identify and analyzing gender issues, and disaggregating information with respect to the various gender categories within their projects and programs.

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•Promoting trainings in effective monitoring and evaluation of gender activities/issues for proper planning, budgeting and reporting
•Limited capacity of researchers to identify emerging gender issues form their projects given that gender issues are never static and change over time
•Sensitise reseachers on the importance of addressing gender given that their own gender perceptions and biases may limit their effectiveness address and gender issues in policies, programs and projects .
•Promoting capacity building of women scientists in gender related issues through mentoring
Output area 4. NARO under ATAAS has designed projects to enhance sustainable use of natural resources to be implemented in the medium term. They include development of technologies for: (Total 63, 000,000 ug shs)

•Control of aquatic weeds including the resurgent water hyacinth on Uganda Water bodies
•Mitigation of climate change and variability;
•Land, Soils fertility management and soil mapping;
•Afro-forestry and forests, and tree resource management;
•Control of invasive alien plant species

(ii) HIV/AIDS

NARO's technology development process takes into consideration the needs of the households with persons affected by HIV and AIDS. NARO has been already providing clean planting materials for improved varieties such as a vitamin A rich sweet potato that is important in the nutrition of such patients. Others include crops such as beans which are early maturing and resistant varieties. NARO is also working on the bio-fortification of banana with Vitamin A and Iron. The fisheries research Institute has a special programme on assessment of the structure and functioning of fishing communities and its implications for spread of diseases including HIV/AIDS, and establishment of nutritional status of fisher communities. The project has a sensitisation component.

(iii) Environment

NARO under ATAAS has designed projects to enhance sustainable use of natural resources to be implemented in the medium term. They include development of technologies for:
•Control of aquatic weeds including the resurgent water hyacinth on Uganda Water bodies
•Mitigation of climate change and variability;
•Land, Soils fertility management and soil mapping;
•Afro-forestry and forests, and tree resource management;
•Control of invasive alien plant species

(ii) Payment Arrears

The table below shows all the payment arrears outstanding for the Vote:

Payee	Payment Due Date	Amount (UShs Bn)
CGIAR, WARDA, ASARECA and CABI	31/03/2012	0.12
	Total:	**0.120**

Ministry of Finance released less funds to NARO inrespect of Government of Uganda's contribution to International Organisations.

(ii) Non Tax Revenue Collections

The table below shows Non-Tax Revenues that will be collected under the Vote:

Source of NTR	UShs Bn	2012/13 Actual	2013/14 Budget	2013/14 Actual by Sept	2014/15 Projected
Market /Gate Charges				0.000	0.066

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Miscellaneous receipts/income	0.000	2.782
Rent & rates – produced assets – from other govt. units	0.000	1.008
Sale of (Produced) Government Properties/Assets	0.000	1.101
Total:	**0.000**	**4.958**

The funds will be spent on maintanance of the property generating the revenues. Payment of wages for casual labourers running the guest houses and other revenue generating units.