

KENYA AGRICULTURAL RESEARCH INSTITUTE



**KENYA AGRICULTURAL PRODUCTIVITY AND
AGRIBUSINESS PROJECT
(KAPAP)**

**STATUS REPORT ON KAPAP SUBCOMPONENT 2.2
SUPPORT TO KARI
FOR MTR MISSION - JUNE 10 – 21, 2013**

Component 2: Agricultural Research Systems

This component is supporting the research system in the country and it has two sub-components, namely: (i) Support to the National Agricultural Research System (NARS); and, (ii) Support to Kenya Agricultural Research Institute (KARI).

The component is funded to the tune of about US\$22.8 million (IDA) and focuses on supporting the ARS in the country. It has two sub-components, namely (i) Support to the National Agricultural Research System (NARS) and (ii) Support to Kenya Agricultural Research Institute (KARI) implemented by KAPAP and KARI, respectively. The ARS's, face challenges brought about by globalization, market liberalization, decentralization, advances in science and technology, and the evolving roles of the public and private sectors. The challenges are more acute in Sub-Saharan Africa (SSA) due largely to underdeveloped and segmented ARSs and increased technological demands. To address these changes and new demands, restructuring the current ARS in Kenya is imperative.

It is noteworthy that agricultural research services in Kenya are provided by both public and private institutions including a number of international researches. Some of the public research organizations are funded directly by farmers through levies deducted from sale of the respective commodities. The pluralism in agricultural research institutes offers many advantages, but it also poses major challenges in ensuring that the research activities are well coordinated to avoid duplication and create synergies. Further, Kenya's agricultural research is also not well linked to industry, implying that the available meager research resources have not been used efficiently.

Subcomponent 2.1 – Support to the National Agricultural Research System (NARS)

The Government efforts towards formulating a National Agricultural Research System (NARS) policy offer the necessary platform for research coordination and other necessary reforms including efficient mobilization, management and use resources. Agricultural research in Kenya is also not well linked to industry. This implies that meagre research resources have been inefficiently used yielding minimal results. The NARS policy seeks to establish appropriate institutional arrangements and management structures to efficiently coordinate, mobilize and use resources. In addition, the agricultural research focus will be reoriented to respond to national development goals, market demands, client (farmer) needs and cross-cutting and emerging issues. The policy also seeks to develop and manage an effective and efficient agricultural knowledge, information and communication system that links knowledge and information from a variety of providers and users. Promoting commercialization of agricultural research innovations in technology development and transfer is also a key policy objective. The policy provides for mechanisms for improving human, physical and financial resource capacities.

Already, the Kenya Agriculture and Livestock Research Act is in place and the roll-out of the implementation is ongoing. This will create 16 research institutions.

Support to KARI has focussed on research programs implementation and institutional support and aims to make KARI a key player in the proposed NARS.

Subcomponent 2.2 - Support to Kenya Agricultural Research Institute

The support to KARI is funded at US\$18.00 million (IDA) and is geared towards investment in the strategic research programs of KARI including capacity development to conduct outreach and partnership activities in order to improve catalysis of technology and knowledge dissemination. The support focuses on:

- (a) Promoting an agricultural innovation approach; which is a clear shift from previous paradigms that focused more on capacity building and institutional strengthening to client market needs targeting value addition and impact, as articulated in the NARS framework.
- (b) Research on Natural Resource Management (NRM) issues with a special focus on climate change.

For each research programme supported, clear milestones in terms of resource allocation and socio-economic impact were set to balance between maintenance of critical strategic research and research on post harvest and value addition. Over time, more resources would be dedicated to research on value addition, which is expected to feed into agribusiness initiatives supported by other Project components. On the other hand, institutional support to KARI focuses on making the Institute ready to take its role in the NARS as a key leader and main player. Other support is for reforms on KARI corporate governance and research programs as recommended by the External Program and Management Review, undertaken during KAPP Phase I in 2007.

To enhance the effectiveness and efficiency of both researchers and the management, investments have been made on ICT. This will ensure that all KARI centers are interconnected and have access to internet and other ICT services. To serve better the livestock community, a modest budget is provided under KAPAP to construct and equip the Garissa KARI Centre. To link better with extension and other stakeholders, the Project is supporting the establishment and strengthening of an outreach and partnership unit. Support is also provided for developing sustainable research funding mechanisms for KARI. This will reduce KARI and other NARS institution's dependency on funds from development partners. Necessary legal and administrative instruments for the establishment of an Agricultural Research Trust Fund for KARI and KARI's Agricultural Research Investment Services (ARIS) business plan for higher internal revenue generation will be developed. To enhance commercialization of animal health research products, a technology packaging and processing Unit is also set to be established at KARI-Muguga North.

Below are research programmes highlights in summary while details are contained in the matrix that follows.

Food Crops

The year witnessed an impressive release of food crops. The main activities involved carrying out multi-location National Performance Trials (NPTs) and Distinctness Uniformity and Stability (DUS) test. NPT and DUS tests were conducted under the aegis of KEPHI,

and culminated in the release of many food crop varieties. Significant achievements are as follows:

- Analysis of Agriculture Product Value Chains (APVC) for nine 11 Staple Crops was completed. Rolling out of APVC results to wider stakeholder was initiated in PY3Q2.
- A total of seventy three (73) varieties were released by the National Variety Release Committee (NVRC) in in the period 2010-2013, as follows: 16 varieties (2010), 21 varieties (2011), 18 varieties (2012), and 18 varieties (2013 – due on 13th June 2013).
- A total of 186,800 Kg of Breeder Seeds were generated for various Food Crops, as follows: 40,400 Kg (Maize), 40,400 Kg (Wheat), 96,400 Kg (Maize), 920 Kg (Rice), 500 Kg (Sorghum), 16,000 Kg (Finger-millet), 31,500 Kg (Bush Beans), 440 Kg (Climbing Beans), and 400 Kg (Chickpea); also, some 5,200,000 planting materials (3,400,000 Sweet-potato vines and 2,800,000 Cassava cuttings) were availed to farmers.
- A total of 2,100,576 Kg of Certified Seeds of Maize were produced by various seed companies during the reporting period, as follows: 259,366 Kg (2010), 1,336,180 Kg (2011), 155,030 Kg (2012), and 350,000 Kg (by June 2013).
- During the period under review, the programme developed, for various crops, 15 Agronomic Packages, 15 Crop Health Packages, 7 Plant Diagnostic Kits (2 for Maize, 3 for Wheat and 2 for Cassava), 43 Technology Promotion packages for outreach, which included 18 (for Maize), 12 (Sweet-potato), 4 (Cassava), and 6 (Bush Beans).
- **Hybrid rice varieties development:** Green-house construction at KARI-Mwea is complete, rice breeding 'lines' have been acquired from IRRI-Phillipines and are being multiplied and tested at KARI-Mwea.
- Under publications, there were 25 papers in refereed journals, in Technical Bulletin, and 77 in conference proceedings in PY2 (2012) alone.
- Scientists in the programme were involved in official trips out of the country, attending conferences, workshops and professional meetings in various countries in the course of the three year, to gain experience in their fields of scientific research.

Agricultural Research and Development Fund (ARDF)

During the period under review ARDF's objectives were:

- Establish an Agricultural Research Trust Fund (ARTF) as one way to stabilize the erratic flow of research;
- Build capacity for KARI scientists to successfully compete for competitive grants;
- Promote Contract research for the industry and offer of consultancies services
- Establish an effective system to enable KARI benefit from Royalties, from its technologies;
- Develop capacity in lobbying and negotiation skills for additional Government funding.
- Develop exchange linkage with **EAAPP** - Support development of a mechanism to facilitate linkages; Disseminate small holder dairy technologies; Support value addition investments in the dairy sector

The following were the activities undertaken by the unit and achievements:

- Developed a Board Paper on the establishment of Trust Fund for the Institute and got approval for setting up a Fund specifically for KARI. However the NARS policy and plans to establish umbrella organization for all NARIs, under which a Trust fund is to be set up, slowed down the establishment of a Fund only for KARI.
- In the effort to build capacity for KARI scientists to compete and win grants for research. The unit has trained a total of 60 scientists in scientific and grant-winning proposal writing skills in collaboration with Human Resource Development division.
- The unit has also engaged in sourcing for research Calls from various organization (nationally, regionally and internationally) and communicated the same to all KARI Centres/scientists. This is a continuous process. Examples of these are The National Council for Science and Technology, ASARECA, European Initiative for Agricultural Research for Development (EIARD) FP7, Bill & Mellinda Gates Foundation, AGRA, IDRC, International Treat on Plant Genetic Resource, ICRISAT, IFPRI etc.
- Processed applications/Concept Notes/Full proposals and submitted to potential donors
- Increased funding through competitive grants from KES 500 million to over KES 1 billion. This figure is dynamic and is set to increase as more scientists engage in writing proposals.
- Established a record of all the Competitive grants to the Institute and kept track of the disbursements and reporting to the donors.
- Participated in and contributed to the consultancy to develop Strategic plan, Implementation framework and Investment Plan for Siera Leone Agricultural Research Institute. Although there was no monetary value to KARI, the Institute's image on capacity in strategic plan development was greatly enhanced in the West African country.
- Established a Royalties committee with set Terms of Reference, with support from KARI management.
- Established a record of all firms (a total of 16 firms) that have signed Agreements with KARI and the status of remission, including the status of the Licensing Agreement.
- Follow-up on payments is done by correspondence through KARI legal office.
- Developing modalities of engaging the firms to ensure that they honour their obligations in the License Agreements.
- Lobbying for additional GOK funding has been undertaken by KARI management through the MTEF process. However, the target of 20% KARI development budget funding by government has not yet been achieved.
- Establishment of linkage to EAAPP has been achieved through setting up of desk office in KARI. This office coordinates activities undertaken by KARI and shares information with KAPAP through national coordinator, in scheduled ministerial meetings of project coordinators. Further an EAAPP Website has been established through which information is shared.
- On dissemination of smallholder dairy technologies, the initial activities were to undertake inventorization of existing technologies (a total of 45 technologies, 6 innovations and 32 management practices were inventorized for dairy), which has been completed and mechanisms are underway to package the information into extension messages for dissemination.

- Support to value addition investment in the dairy sub-sector, is being undertaken by EAAPP, through research on value addition, and also an agri-business sub-component has been established to support investments into dairy sub-sector.

Challenges:

The major challenge has been in the establishment of the Trust Fund, with the adoption of the NARS policy and enactment of the Agriculture and Livestock Research Bill to establish an umbrella organization. This slowed down the process of setting up a fund for KARI. The other challenge is the inadequate staff capacity in the ARDF unit, with only one staff undertaking a number of activities.

Animal Health Research Programme

The mission of KARI's Animal Health Research Programme is to develop, package, commercialize and catalyse usage of appropriate/superior animal health technologies and knowledge to sustainably enhance the incomes of rural people. This is achieved by conducting research that will lead to the development, validation and commercialization of appropriate animal health related technologies and knowledge for use by end-users. The research organized into the following themes:

- Disease diagnostics
- Vaccines and Drugs
- Disease Control and Epidemiology
- Technology Processing and Packaging

Animal Health Research programme received funding from KAPAP which were used to implement research activities in line with agreed workplans and budgets. Research is coordinated at KARI HQ through 4 thematic coordinators based at Centres.

The following are the achievements of the programme:

Two tests, CBPP CFT for bovine pleuropneumonia and an ELISA for analysis of residues in livestock products such as milk and meat have been tested and validated in the laboratory. The CFT is being commercialised under USAID funding and a Trade Mark is awaited. The use of ECf Merikebuni 'vaccine' has been demonstrated to be protect cattle under pastoral conditions. This was a follow-up of recommendations by the DVS Technical Committee on ECf immunization to demonstrate protection of cattle in pastoral areas where cattle mix with buffaloes which are disease carriers. The vaccine has already been shown to work in the dairy farming zones and is available at KARI Muguga North. To boost available ECf vaccine doses, two stabilate stocks, M001 and M002 are being tested for protective ability and initial results indicate 67% protection.

A critical requirement in the support of V-2030 creation of disease free zones is the availability of accredited laboratory testing services. The accreditation of the Muguga North Virology laboratory to ISO 17025:2005 is underway and a consultancy is under procurement to guide the process. The laboratory will offer backstopping services to the Department of Veterinary Services in disease diagnoses and control. Laboratory manuals

have been prepared and staff trained on ' Measurement of Uncertainties' and ' Internal Audit for ISO 17025:2005'. A draft Quality Policy System for ISO 17025 has also been developed.

Regarding control of helminths, the use of ineffective anthelmintics has been partially blamed for the development of resistance against anthelmintics. A study which sampled anthelmintics sold in Western and North Rift regions found the drugs ineffective thus increasing dangers of worms developing resistance to drugs. This is a costly finding as it means farmers were buying drugs with no medical value and thus increasing worm burdens and lowered productivity of their animals. This points to a need for efficient Inspectorate services to ensure only quality products are in the market. Besides anthelmintics, studies were conducted to ascertain drug use in the control of tsetse transmitted trypanosomiasis. The prevalent improper use of trypanocidal drugs use in Narok and Transmara revealed a need for training on proper drugs use for effective prophylaxis and treatment of trypanosomiasis. Farmers were trained on correct use of trypanocidal drugs and 30 Trainers of Trainers were also trained. In the tsetse infested zones of Western Kenya (Busia), a herd of trypanotolerant Orma Boran cattle has been established at Alupe for cross-breeding to impart trypanotolerance in the area for improved cattle productivity. Orma borans have been shown to be refractory to trypanosomiasis with continued disease challenge. Tsetse mass rearing continued at TRC for potential use in the Sterile Insect Technique in tsetse infested areas which are also the livestock conservation areas.

One student completed his MSc course on *peste des petits ruminants* (PPR) and six papers and extension leaflets have been published.

Programme scientists participated in the livestock subsector value chains analysis and planning for publicization of the value chains in the counties.

Constraints to implementation

The irregular release of funds has meant disruption to implementation besides making implementation expensive due to lack of continuity. The Programme was to benefit from a technology processing and packaging unit. The facility is meant to improve engagement with private Sector and production of tested animal health technologies for the market. This Unit has taken too long thus hampering the work of the 4th AH theme on technology translational research and packaging. Architectural drawings were agreed upon with the consultant and the last word was that a 'No Objection' from the World Bank was awaited. This is still pending. Laboratory work is hindered by old equipment and there is need to address this so that lab and field work can be balanced out.

Way Forward

- Urgently finalize plans to construct the production Unit at Muguga North and fund its operations
- Timely release of funds for efficient project implementation
- Improve funding levels for laboratory equipment

Range Management Programme

1. Introduction

The Range Management Research Programme (RMRP) addresses production constraints in the largely arid and semi-arid rangelands (ASALs) where mean annual rainfall is less than 600mm. This climatic zone covers almost 80% of the country's land mass (with 50% being constituted by the more arid districts and counties). Rangelands carry over 60% of Kenya's livestock resources and support 20-25% of its human population. Although key enterprise systems or commodities in the rangelands are livestock-based, a substantial portion of the rangelands is taken up by wildlife (90% of wild game) and ecotourism is a major source of revenue for the country (tourism supports direct employment and livelihood to 3 million Kenyans). In the arid and semi arid ecosystem of Kenyan rangelands, are special zones of potential intensive agricultural activity where arable farming is possible. These special ecosystems include oases, riverine ecosystems and mountain zones. Here irrigation holds potential for improving agricultural production. The more humid areas of ASALs have been encroached by cropping and mixed cop-livestock production systems predominate. Poultry production and beekeeping are alternative livelihood activities in ASALS. Plant resins and gums are exploited on a limited scale. Medicinal plants are also exploited to cure various livestock and human diseases. Exploitation of the range plant resources for various products and uses such as timber, charcoal, carvings, crafts and basketry can not be underestimated.

ASALs are characterized by low rainfall and frequent droughts often resulting in substantial losses of livestock and dependence of the human population on famine relief over extensive periods of time. Other features of the ASALs are chronic poverty (over 60%), low agricultural productivity, land degradation, insecurity in some areas (resulting from resources use conflicts and livestock raiding) and poor infrastructure. There are often conflicts between wildlife, livestock and crop farming in the rangelands. Other specific constraints include communal land tenure affecting appropriate and responsible land utilization and management; human migration and changes in land use incompatible with the environment; fragile soils and poor soil fertility; land degradation, desertification with accompanying loss of biodiversity.

2. Targeted Outputs

The range programme targeted four result areas or outputs to be achieved. These outputs are:

- Constraints and opportunities for improvement of selected range resources value chains and production systems identified, prioritized and proposals developed
- Assess trends in range conditions and forage availability as related to climate change, human impact and land-use
- Identify and prioritize interventions for rangeland restoration and improvement including management of rangeland watersheds and riparian zones
- Test interventions for range improvements with regard to loss of biodiversity and pasture productivity

3. Achievements on targeted outputs

Under the first output, constraints and opportunities for the four value chains namely honey, Doum palm, Prosopis and fodder were identified and prioritized. Proposals for interventions were elaborated for honey and Doum palm value chains. However the prioritization for the fodder and Prosopis value chains are in the process of being done. A study on the current status and trends of camel production in southern rangelands and north rift was undertaken with constraints and opportunities identified. Stakeholder workshop to prioritize interventions in the camel value chain in the study area and proposal writing is yet to be done.

Under the second output, trends in range condition and forage resources were assessed for 5 districts namely: Garissa- on forage resources; Baringo, Koibatek, Samburu for key browse plants; Kajiado, for development of antihelmintics resistance in small ruminants and performance of Sahiwal and its cross-breds.

On the third output, a proposal for enhancing range restoration through nutrient re-cycling and integrated production has been approved for 2013-14 plan year

On the third output, interventions for improving the honey value chains were identified and tested. These are: training and capacity building of beekeepers in improved harvesting and processing of quality honey; providing honey processing equipment to beekeepers groups; linking of beekeepers groups to markets in Marsabit and Kibwezi honey producing areas and testing of honey for quality. Results of this work have been partly documented. Monitoring of impacts of interventions is still ongoing. Interventions for improving the Doum palm value chain have been elaborated and testing is to begin in the 2013/14 Workplan period. Interventions for improving fodder value chains including grass hay and browse will be identified through a stakeholders workshop planned for Y3Q4 Interventions for control of Prosopis juliflora through utilization as livestock feed have been identified and a proposal is to be elaborated

4. Constraints and way forward

Erratic funding and political situation delayed implementation of project activities. Funds were not enough to carry out activities that would deliver on all the targeted outputs. The Project should improve on timely fund disbursement to ensure that activities are implemented on time. This will enhance effectiveness and efficiency of implementation.

Adaptive Research

The main programme thrust was facilitation of promotion of technologies adoption through up-scaling and outscaling involving stakeholders and other partners in the field and through meetings and workshops and conferences. Policy meetings that guide the processes of Adaptive Research and paradigm shifts were attended. The programme also participated in meetings that guide the Institutes' financial, human and physical processes as we realign towards the vision 2030. The main achievements included:

- Facilitation and participating in research priority setting for a through Pre-CRACs, CRACs and APVC analysis.
- Facilitated holding of various stakeholders for a across KARI Centres including field days.
- Facilitated the conduction of Adaptive onfarm/onstation trials and demonstrations.
- Participated in the implementation of the Institutes Strategic Plan.
- Participated in the APVC analysis meetings/workshops and trainings.
- Participated in the process of Training Needs Assessment for the Institute
- Continued to participate in the technologies innovation processes initiatives both locally, regionally and internationally.
- Continued to participate in codex meetings both locally and internationally.
- Participated in the ISO 9001:2008 certification process and maintenance.
- Continued to represent the Institute in the NALEP meetings.
- Participated in the operationalization of the new department of Outreach and Partnerships including development of Departmental Strategies.
- Continued to participate in Research-Extension Liaison meetings.
- Started desktop work on rationalization of KARI Centre networks as we tend towards NARS and the new constitution dispensation
- Continued to participate in the Institutes' Performance Contract processes.
- Participated in the processes of annual workplans and budgets.
- Continued to participate in the Institutes Management meetings Workshops and conferences.
- Continued to participate in the Institutes procurement processes.
- Continued to participate in the technologies packaging.
- Continued to write Board of Management papers to update board members on the on-going and planned research activities and achievements.

Human Resource Development

Institutional Strengthening

Strategy - Capacity building

Project Title: Training and development

Summary: Importance of Human Resource Development

KARI staff needs are constantly changing, and the Institute will continue striving for the right multidisciplinary mix of scientists, staff ratios with defined and succession plans. Further efforts are made to enhance staff capacity to undertake more than one activity. To ensure effective or efficient management of human resources, the HRD division makes annual workplans to address the emerging needs through Training Needs Assessment (TNA). With acquisition of ISO certification some training issues emerged which needed training interventions.

To attain its goals and objectives, KARI must create an enabling, equitable, supportive, challenging and stimulating working environment, which values and empowers its staff at

all levels. Staff learning, training and development must be seen as an integral factor in achieving this commitment. The Institute must thus ensure that it attracts, develops and retains human resources with the appropriate skills, attitudes, and motivation. The human resource development function of the Institute should focus on enhancing the capability and performance of all staff and strengthening the efficiency, effectiveness, and sustainability of Institutional capacity.

Output 1: 1: Senior Management creates and demonstrates behavioral changes and supports the process of change necessary to achieve strategic objectives.

Activities

- Organize workshop for Managers, PO and scientists
- Train centre managers and hqt senior officers on financial management
- Organise management and leadership training for senior staff locally for 3 weeks.
- organise training workshop on change management
- Facilitate policy makers to attend study/learning tours outside Kenya
- Senior manager undergo team building training

Budget

| No | Activities | Total cost |
|----|---|-------------------|
| 1 | Organize workshop for Managers, PO and scientists | 640,050 |
| 2 | Train centre managers and hqt senior officers on financial management | 1,865,550 |
| 3 | organise management and leadership training for senior staff locally for 3 weeks. | 4,492,220 |
| 4 | organise training workshop on change management | 1,733,100 |
| 5 | Facilitate policy makers to attend study/learning tours outside Kenya | 2,980,000 |
| 6 | Senior manager undergo team building training | 4,567,500 |
| | Total cost | 16,278,420 |

Output 2: Critical mass of staff in all areas established and working environment improved for their retention and increased productivity

Activities

- Staff of various cadres attend seminar
- HR team leaders attend training on Performance Mgt
- Training various staff cadres on use of computer applications
- Source trainees for local Universities for sponsorship
- Organize training for scientists on statistical analysis and biometrics
- Conduct training workshops in proposal writing
- scientists attend conferences and seminars to present papers
- Local short courses facilitated
- Technicians trained on experimental design and data collection & analysis
- Organise course for laboratory Technologist and Technicians

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- Organize workshops for Accounts, Supply, HR and IMCT staff
- one supplies staff attends procurement for goods and services course
- Process management courses abroad
- HRD staff conduct supervision and monitoring training activities

Budget

| No | Activity | Total Cost |
|---------------|---|---------------|
| 1 | Staff of various cadres attend seminar | 929,630 |
| 2 | HR team leaders attend training on Performance Mgt | 1,130,000 |
| 3 | Training various staff cadres on use of computer applications | 1,270,000 |
| 4 | Source trainees for local Universities for sponsorship | 6,330,000 |
| 5 | organize training for scientists on statistical analysis and biometrics | 1,709,100 |
| 6 | Conduct training workshops in proposal writing | 3,745,640 |
| 7 | scientists attend conferences and seminars to present papers | 7,000,000 |
| 8 | Local short courses facilitated | 4,800,000 |
| 9 | Technicians trained on experimental design and data collection & analysis | 2,177,310 |
| 10 | Organize course for laboratory Technologist and Technicians | 2,137,440 |
| 11 | Organize workshop for workshops held for Accounts staff | 3,024,550 |
| 12 | one supplies staff attends procurement for goods and services course | 1,346,550 |
| 13 | Organize workshop for HR staff | 1,505,220 |
| 14 | process management courses abroad | 5,010,000 |
| 15 | organize workshops for IDS staff | 1,427,550 |
| 16 | HRD staff conduct supervision and monitoring training activities | 1,131,600 |
| TOTALS | | 60,000 |

Output 3: Training facilitated according to training needs assessment

Activities

- Facilitate First Aid training
- Facilitate Library training
- Facilitate Record Management training

Budget

| No | | Total cost |
|--------------------------------|------------------------------------|------------------|
| 1 | TNA Master Training Plan finalized | 4,050,000 |
| OUTCOME 3: TOTAL BUDGET | | 4,050,000 |

Output 4: Facilitate maintenance of ISO certification process and Occupational Safety and Health Training

- Conduct surveillance ISO internal Audits
- Training ISO champions and Auditor
- Review process procedure

Budget

| No | Activity | Total cost |
|-------------------------|--|-------------------|
| 1 | Conduct surveillance ISO internal Audits, Training ISO champions and Auditor, Review process procedure and documentation | 13,900,000 |
| 2 | Occupational Safety Training for Committee Members in Kitale, 2 Alupes | 1,733,100 |
| 3 | Conduct Fire and Safety Training | 1,301,750 |
| 4 | Creation of Safety and Health awareness | 11,294,200 |
| 5 | Creation of Safety and Health awareness | 11,294,200 |
| 6 | Risk Assessment for Health and Occupational Safety | 7,135,250 |
| 7 | Monitoring and evaluating OSH Programmes | 3,477,750 |
| OUTCOME 4: TOTAL | | 42,892,050 |

Information Management and Communication Technology (IMCT)

The Information Management and Communication Technology Division facilitates information management and application of information and communication technologies in KARI. The division has three units, namely, the information technology unit (ITU), library and information services unit (LIS) and the publications unit (PU). Achievements in the three units and included:

- KARI AND KAINET Stakeholders Awarded best e-agriculture award for the Fourth year running by the Computer Society of Kenya during Annual ICT Excellence Awards
- Corporate Internet Capacity was upgraded to from 11mbps to 19mbps via KENET. The back-up capacity remains at 10mbps via Access Kenya and residual capacity of 2mbps via KDN. Total internet capacity is 32mbps
- Computer Labs and Local Area Network for KARI Kibos completed and functional.
- Established a common Printer/Copier room at the headquarters to pilot sharing of resources

- KARI ICT needs assessment recommendations, technical specification development has been completed and the tender advertised and awarded. This comprises over 1000 computers, over 21 servers, various software for servers and users, UPSes, printers projector and configuration equipments
- Wide Area Network establishment piloted at Kabete NARL, Perkerra, Embu, Njoro, Mtwapa and Thika are fully functional in readiness for institute wide roll out.
- Implementation of e-RAILS programmes with KARI stakeholders. These includes procurement of ICT equipments, training and capacity building of stakeholders and application of e-RAILS web portal to partners
- Renewed purchase of the corporate security software: Mail marshal for email, Kaspersky Antivirus system for user computers and McAfee for the server systems
- The off-site backup at Kabete NARL is fully operational. The site retains a copy of Financial and Human Resources system data. However, the ICT recommends the site be relocated to another centre whose analysis is being carried out.
- KARI senior management have real-time connectivity using ipads
- Renewed institutional membership to the Kenya Library and Information service consortium (KLISC).
- The PERI online resources subscription for the year 2013 renewed, this enables access to over 20,000 online resources. These includes databases, e-journals and e-books in agriculture and other fields.
- Two Hundred and Fifty Seven (207) information requests were responded to through the Question and Answer Service (QAS). This is a demand oriented user service for dissemination of current and relevant information to various user categories including Researchers, farmers, students and Extension workers.
- The e-RAILS Question and Answer Service, Voucher System project supported by FARA was implemented. The project involves 2 farmers groups, Katoloni from Machakos and Aberdares from Limuru. 30 queries made by the farmers were responded to and uploaded into the run knowledge base.
- The Mkulima programme collaboration involving KARI/KBC/JKUAT made 25 field and 6 studio recordings from Sept 2012-April 2013. 11 of the programmes were aired. The recordings included the 110 frequently asked questions by farmers through the Question and Answer Service (QAS).
- 11 computers acquired through KARI/CTA funds were delivered to the respective centre Libraries including Naivasha, Lanet, Njoro, Molo, Embu, Mwea, TRC Muguga, Kabete NARL, Mtwapa, Kibos and Perkera
- Processed and Published end of year 2012 documents including, Christmas cards, Calendar, Diaries
- Processed and finalised the KARI InFocus Newsletter July-September and October-December 2012 issues and published on the website
- Processed the KARI Highlighter to layout and design stage
- Processed and the 13th KARI Biennial Scientific Conference programme and Book of Abstracts
- KARI 2011 Annual Report completed and printed
- Audio visual coverage and participation in the Agriculture Society of Kenya (ASK) Shows at Nairobi, Nakuru, Kisumu, Kakamega, Machakos and Embu

- Audiovisual coverage for institutional events and activities including President of Tanzania visit to KARI, Slovak Minister for Foreign and European Affairs Visit to KARI, KARI Board of Management Retreat in Embu, Farmers' Open Days in Muranga and Kakamega, Dissemination of Push-pull Technology in Muranga, and EAAPP/ASARECA Workshop in Mombasa

Socio-Economics and Applied Statistics

Introduction

The Socio-economics and Applied Statistics (SEAS) research programme provides a platform for the interface of the users (people) of research products/services and the technologies/information developed through the research process. The programme contributes to the understanding of the environment in which the research is conducted by addressing the social, cultural, economic and policy issues that influence the development and adoption of appropriate agricultural knowledge, information and technologies.

The overall goal of the research programme is to contribute to increased productivity, commercialization and competitiveness of the agricultural sector through generation and promotion of socio-economics and applied statistics knowledge and information that respond to clients' demands and opportunities. The purpose of the programme is to generate and promote use of socioeconomic and applied statistics knowledge, information and technologies that respond to clients' demands and opportunities. The programme research activities are implemented in all KARI centres.

The programme activities are implemented within six thematic areas, each headed by a coordinator; viz: (i) priority setting at agricultural product value chain (APVC), centre, project, programme and institute level, (ii) economic analysis and adoption/impact assessment (*ex-ante* and *ex-post*) of technologies and projects, (iii) social and gender analysis, and development/assessment of participatory research methods, (iv) market research and analysis, and development marketing strategies, (v) agricultural policy research and analysis and (vi) generation and provision of appropriate applied statistics knowledge in the research process.

Through KAPAP support, the following activities were accomplished.

2. Facilitated the development of the of the prioritization criteria for the APVC sub-sector analysis
3. Participated in facilitation of capacity building for prioritization and analysis of APVCs
4. Participated in the situational analysis of the APVCs in the three sub-sectors and prioritization of APVCs
5. Completed a study on Farm level assessment of costs of adaptation to climate change in Marani District, Kisii
6. Completed a study on determination of optimal enterprise mix in North Rift, Kenya..
7. A study on economic analysis of selected enterprises (cassava, milk, maize, eggs) in Coastal lowland Kenya study was completed. A conference paper from the study was also prepared and presented.

8. A study to assess the storage losses of maize and pulses in coastal Kenya was completed and a conference paper on the same was presented in Ghana.
9. A social, economic and cultural study to understand the low level acceptability of sorghum as a food security crop in the face of famine among the pastoral communities of the dry north rift valley, lessons for food policy in Kenya's marginal areas was completed
10. A study on wheat situational analysis was completed based on participatory evaluation of wheat marketing structures in the wheat growing areas.
11. An impact assessment study on the effects of climate change on adoption of developed pyrethrum technologies by small holder pyrethrum producers was completed.
12. An assessment study of the economic impact of biological control agents in major Brassica growing areas was completed.
13. A study on the evaluation and promotion of farmer seed enterprises for vegetatively propagated crops in Western and Coastal Regions of Kenya was completed
14. A study to assess the transaction costs for raw milk value chain actors in Central Kenya was completed. The report is being prepared
15. Provision of market information on Quality Protein Maize products to IPTAs Farmers
16. A study on the Structure, Conduct and Performance of Soybean in Central Rif valley completed
17. Improved production, marketing of honey and other bees products study was carried out in the mountainous areas of Marsabit, Laisamis and Samburu districts and a report completed - interventions on marketing of hive product in Tuum, Kurungu and Salato groups developed in a participatory manner
18. Market analysis for the development of value added cotton products study was completed and a report prepared. The areas studied and analysed included
19. Market out let for value added cotton products
20. An analysis of costs and benefits associated with the processing cotton into various products and establishment of cotton value addition facilities in the target region was conducted,
21. A study on the Economic Analysis of markets and production data for Crops and Livestock Enterprises for Product Value Chain Analysis was completed and a report prepared focusing on the in-depth economic analysis to compare different farming systems with respect to crop and livestock enterprises in terms of costs, profit and productivity in selected mandate districts of KARI Embu.
22. A study on Markets and marketing strategy for KARI towards commercialization was completed
23. A study on the farmers' perception of and attitude towards agriculture and its determinants in Kenya was completed and policy aspects in relations to youth assessed. A report was prepared and a paper presented at a conference
24. Climate change: Farm-level mitigation and adaptation strategies study in in North Rift Kenya was completed and a report prepared -- A paper was presented at the KARI conference
25. Assessing the influence of Agricultural Policies in rice production and marketing in Mwea irrigation Scheme and western Kenya
26. A study on the role of relief aid and famine foods in sustainable rural development was completed at KARI Perkera and a report on the role of relief agencies as well as a conference paper prepared

27. A study monitoring the impact of agriculture and food policies evaluating price dis/incentives was completed and technical reports for 10 commodities prepared.
28. A national Stakeholders policy forum was held to discuss the results and recommendations of the study.
29. Socio-economics and Applied Statistics scientists participated and facilitated stakeholder analysis for the various APVCs
30. Analysis of adoption of dairy goat technologies in Vihiga County, Western Kenya.
31. A study on the evaluation of Effectiveness of Agricultural Technology Transfer Methods in Northwest Kenya was completed—a report was prepared on effectiveness of print media as a dissemination pathway and a paper was presented at the KARI conference
32. A study on the Evaluation of information sources for livestock producers and traders in Narok, Kenya was completed and a report prepared showing the impact of the changes in land use in these areas
33. Training of scientists on appropriate statistical skills held
34. In collaboration with PME unit, trained scientists on conduct of baseline survey studies
35. Provision of Statistical software is part of the ICT capacity and infrastructural development the institute is implementing.

Reports of the various studies were prepared and results of some of the studies shared with stakeholders.

Table 1: Detailed Achievements

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|--|--|--|--|----------------|
| Natural Resource Management (Dr. Wamuongo) | <i>i) Improvement of land use planning</i> | Conduct reconnaissance surveys | <ul style="list-style-type: none"> • Conducted reconnaissance survey of Kajiado Central and Isinya Districts, Kajiado County for multipurpose land use planning. • Soil map and report available. Land suitability for pastures, trees and irrigation conducted • Completed reconnaissance survey of Kinangop district and digitized Soil map and Land use/Land cover of the district 1:100,000 • Land suitability for Nyandarua County: • Landsat satellite images for Nyandarua County were downloaded after RCRMD failed to deliver. • A Digital Elevation Model (DEM) of Nyandarua County was made and physiographic boundaries delineated to form the base map for the field work • Collected data for Land use and land cover for Nyandarua S district (survey hampered by rains – Oct-Dec 2012 • Soil survey, physical measurements, land use and cover assessments completed • Reporting writing for soils; and land use and land cover in progress | |
| | | Develop land use databases for central and western regions | <ul style="list-style-type: none"> • A total of 34 dabases created: • For Muranga (central) – databases developed are soils, land use/land cover databases, AEZ, ACZ, soil | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|---|--|--|
| | | | <p>drainage, soil depth, mean annual rainfall.</p> <ul style="list-style-type: none"> • Crop suitability databases created for cassava, tomato, spinach, sorghum and millet • Pasture crops suitability databases for Kikuyu grass, Lucerne, Napier, Silver leaf desmodium, Rhodes grass, Nandi setaria and Kenya white clover were created • Other databases created – Altitude and temperature zones. • Land suitability assessment for oil palm, soybean and sesame production in Kenya •) Biophysical and climatic databases for oil palm in the coast and western/nyanza regions created • Preliminary land suitability maps for oil palm have been generated and report writing on oil palm Suitability in coast and western regions in progress • Land suitability assessment for sunflower, castor and canola • Desk research to determine the ecological requirements for the crops done, suitability ratings for sunflower and canola have been done and preliminary maps generated • Assorted stationeries (pentel pens, files paper, coated paper, toners and flash disks etc) were procured | |
| | | Promote awareness of Land use and resource planning Information using Kenya Soil Survey | <ul style="list-style-type: none"> • Conducted 95 Farmer training/workshops, student | This activity is mostly funded by clients who request for the maps |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|--|---|---------|
| | | Data Bank | training/ attachments, and educational visits on GIS application, analytical procedures and natural resource management | |
| | | <ul style="list-style-type: none"> Made 18 on-farm demos, exhibitions and field days of GIS products and applications to various categories of people | | |
| | | <ul style="list-style-type: none"> Undertook 50 land resources inventories for multipurpose and specific land use planning for clients | | |
| | | <ul style="list-style-type: none"> Prepared 93 GIS databases for clients | | |
| | | <ul style="list-style-type: none"> Prepared or scanned 770 thematic maps for clients | | |
| | | <ul style="list-style-type: none"> Scanned and backed up in digital formats 131 topographic maps at scale 1:50,000 | | |
| | | <ul style="list-style-type: none"> Scanned and backed in digital format 46 analogue biophysical maps into digital formats | | |
| | | Enhance the capacity (equipment and skills) for soil, plant and water analyses | <ul style="list-style-type: none"> Stationery, protective gear (gumboots, lab coats) were procured | |
| | | <ul style="list-style-type: none"> industrial gases (acetylene and butane gas cylinders) were procured | | |
| | | <ul style="list-style-type: none"> Assorted laboratory chemicals were procured | | |
| | | <ul style="list-style-type: none"> Assorted items for the lab (filter papers, sample bags, insulating tapes etc) were procured | | |
| | | <ul style="list-style-type: none"> Showers mixtures and one Arabic shower, and fire extinguishers (7 dry powder and 8 water gas) were procured | | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|---|---|--|
| | | Promote awareness of soil, plant and water analysis facilities for enhanced land productivity | <ul style="list-style-type: none"> • Several activities are carried out by the laboratory analytical service unit to promote the services and ensure they are affordable and easily accessible by farmers. Some of these are: <ul style="list-style-type: none"> ○ Training front line extension staff and farmers on soil sampling (86 MoA staff through SHDP in 2011, 136 through NAAIAP in 2012, and 24 through NAAIAP in April, 2013). Also training of groups organized by NGOs ○ Training of Agro-chemical shop owners on soil sampling and handling - they help farmers on sampling and work in collaboration with MoA staff and farmers. This setup is supposed to make them benefit from sales of the recommended inputs. ○ Setting up sample collection bureaus started in 2003 as a pilot phase with nine districts (Nakuru, Nyandarua, Laikipia, Meru Central, Meru South, Embu, Kirinyaga, Murang'a and Maragwa). These districts were selected because the inflow of samples was high. In 2010 other bureaus was set at Narok North district at Narok farmers centre (Al Subura house). ○ At county/district levels samples are collected by the trained Agro-chemical shop | Huge number of samples came from the MoA-NAAIAP activity and from Mumias Sugar Company |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|------------------|--|---------|
| | | | <p>dealers who send them to NARL through Securicor services. Currently extension staff and farmers are being advised to send the samples directly to NARL and pay service fee to the bank, send samples through courier services together with the bank deposit slip. The lab sends soil analytical recommendation reports through E-mail, Securicor services or personal pickups.</p> <ul style="list-style-type: none"> ○ Currently the lab analyses about 15,000 soil samples, 3,500 plant tissue samples and 1,500 water irrigation samples per year. During project implementation year 1 (2009/10) a total of 8,140 samples comprising 6,613 soils, 873 plant tissue, 205 fertilizer/manure and 449 water samples were analysed. In 2010/11, a total of 15,843 samples comprising of 13,910 soil, 1,449 plant tissues, 90 fertilizer/manure and 394 water samples were analysed. In the current year, a total of 4,252 samples comprising 3,352 soils, 692 plant tissues, 49 fertilizer/manure and 159 water samples have been analysed | |
| | | | <ul style="list-style-type: none"> ○ Embarked on establish a national soil fertility database | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|---|---|---------|
| | | | <p>in GIS using results from analyses conducted over the years. A total of 10,229 nutrient data samples have an indication of the sampled location and databases for nitrogen, phosphorus, potassium, organic carbon, pH, copper and zinc in soils samples analyzed since 2003 to mid 2011 in process of creation</p> | |
| | | <p>Complete accreditation of the soil and plant analytical laboratory</p> | <ul style="list-style-type: none"> • Various equipment (Segmented Flow Analyzer, Block Digester and drying oven) were repaired | |
| | | | <ul style="list-style-type: none"> • Ground floor was repaired (plumbing, ceiling) and main laboratory building painted | |
| | | | <ul style="list-style-type: none"> • Soil samples from the International Soil Exchange (ISE) programme were analysed | |
| | | | <ul style="list-style-type: none"> • Purchased a copy of Official Methods of Analysis from AOAC, USA and laboratory books (14) | |
| | | | <ul style="list-style-type: none"> • Internal laboratory audit in October 2010 and non-conformities rectified | |
| | | | <ul style="list-style-type: none"> • Laboratory was accredited as a Testing Laboratory with ISO/IEC 18025:2005 on 28th May 2010 (Certificate No. KENAS/TL/02) | |
| | | | <ul style="list-style-type: none"> • Surveillance audits continued and any non-conformity addressed promptly | |
| | | | <ul style="list-style-type: none"> • Quarterly proficiency testing of soil samples from Wagenigen Exchange Programme for Analytical Laboratories (WEPAL) | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|--|--|--|---------------------------|
| | | | <ul style="list-style-type: none"> • has continued • Maintenance and serving of equipment has continued on ad hoc basis by NMS Technical Services Ltd. | |
| | | | <ul style="list-style-type: none"> • In consultation with KENAS to re-evaluate the lab for extension of the accreditation. | |
| | <p><i>ii) Improvement of soil and water management in the coastal, central and north rift and western regions</i></p> | <p>Identify and prioritize strategies for crops and livestock systems improvement and mitigation against effects of climate change</p> | <ul style="list-style-type: none"> • Situational review of soil and water management was conducted that documented achievements and constraints in the crop, horticulture and industrial crops and livestock sub-sectors. Some of the constraints identified include: <ul style="list-style-type: none"> ○ Availability and use of appropriate equipment and machinery for timely land preparation ○ Application, promotion and upscaling of the concepts of conservation agriculture ○ Water harvesting for crops and livestock (fodder and pastures) production ○ Land use/watershed planning and adoption of community based soil and ○ water conservation ○ approaches | |
| | | <p>On-station and on-farm validation of developed soil and water management strategies</p> | <ul style="list-style-type: none"> • Validated the effect of crop residue management and tillage practices on soil fertility and moisture conservation and retention in southwest Kenya • Performance of water harvesting structures evaluated in Perkerra | <p>Co-funded by IFPRI</p> |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|---|--|---------|
| | | | <ul style="list-style-type: none"> • Soil and water management structures reinforced and stabilized using Napier grass and other leguminous shrubs • Farmers trained on use of leguminous crops for food, feed and fertility enhancement | |
| | | Evaluate integrated water harvesting and watershed management strategies for targeted communities | <ul style="list-style-type: none"> • Strengthening capacity for climate change adaptation in land and water management | |
| | | | <ul style="list-style-type: none"> • Targeted watersheds in Siaya, Bungoma, Mbeere and Machakos districts with population densities of 80-100 persons per km² . Farmers participated in waterpans excavations and rehabilitation, road runoff harvesting and infiltration ditches, composting, tree nursery, construction of soil and water conservation terraces, gabions on hillslopes with gullies. | |
| | | Disseminate and promote validated soil and water management strategies and information | <ul style="list-style-type: none"> • Farmers participated in soil and water conservation/management trials such as water pans excavations and rehabilitation, road runoff harvesting and infiltration ditches, composting, tree nursery, construction of soil and water conservation terraces, gabions on hills lopes with gullies. | |
| | | | <ul style="list-style-type: none"> • Farmer pamphlets on conservation of nutrients in animal manure through proper handling and storage, managing hard soil pan, strengthening capacity for climate change adaptation in sustainable land and water management have been prepared and shared with farmers | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | | and extension staff. | |
| | | Identify and promote SLM policies that enhance land productivity | <ul style="list-style-type: none"> • Availability of farming tools – baseline survey conducted in Kwale and Kilifi • Promotion of conservation agriculture | |
| <ul style="list-style-type: none"> • • • • • | <i>iii) Integrated soil fertility management</i> | Evaluate, adapt, promote and up-scale validated integrated soil fertility management strategies | <ul style="list-style-type: none"> • On-station and on-farm validation of developed ISFM technologies conducted at the Long term trial at Kabete • Evaluation of potassium nutrition on quality and yield of tomatoes on-going • Validation and promotion of usage of organic residues for soil fertility enhancement by small holder farmers on-going • Impact of copper oxychloride application on wheat productivity in the Rift Valley underway • Demonstrations carried in 5 sites to upscaling use of efficient and affordable soil fertility replenishment practices for small holder farmers of western Kenya. As a result stockists started availing Minjingu phosphate rock and lime in Matunda and Segu in Kitale. • Development, validation and promotion of an integrated soil nutrient management model farms to optimize water productivity in agro-pastoral systems in water scarce areas in collaboration with Kenyatta and Moi Universities. | <ul style="list-style-type: none"> • • • • • |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|--|---------------------------|--|--|--|
| <ul style="list-style-type: none"> • | | | <ul style="list-style-type: none"> • Constraints and opportunities in paddy and rainfed rice production identified and documented in collaboration with KOPIA. | <ul style="list-style-type: none"> • |
| | | Demonstrate and promote integrated soil-water-nutrient use efficiency packages | <ul style="list-style-type: none"> • Agronomic evaluation of newly released maize varieties in low moisture environments of central Kenya • Evaluation of growth promoting Rhizo-organisms on maize in central Kenya • Use of green manure to enhance soil fertility and farm productivity • Evaluation of legumes and finger millet intercrops for control of striga in western kenya underway | <ul style="list-style-type: none"> • • • • |
| | | Develop and disseminate recommendations of farming practices for mitigation against climate change | <ul style="list-style-type: none"> • Validation and promotion of soil fertility improvement technologies to enhance maize productivity in central Rift Valley districts • Soil-type specific potting media formulation for control of macadamia seedling chlorosis • Reconnaissance survey of zinc on soils of Trans Nzoia county • Pigeon pea-pyrethrum intercrops in former cold pyrethrum growing zones through rhizosphere studies | <ul style="list-style-type: none"> • • • • |
| | | Develop and demonstrate and promote technologies to enhance P-uptake in acidic soils | <ul style="list-style-type: none"> • Evaluation of lime and phosphate fertilizers for maize production in acidic soils of Kisii region on-going • Phosphate micro-dosing techniques for maize hybrids evaluated in north western Kenya on-going. | <ul style="list-style-type: none"> • • |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • • • | | Undertake a critical review of studies conducted on soil fertility in the country to date | <ul style="list-style-type: none"> • Initiated digitization of FURP database and all original FURP raw data for 68 sites has been entered into Ms Excel to be converted to Ms Access. Available maps have also been scanned • 32 diagnostic field trials conducted to validate/develop site-specific ISFM recommendations. • Nutrient (N,P) omission trials to evaluate ISFM strategies (N,P,K, micronutrients, lime and manure) in progress • In process of forming database of nutrient analysis results conducted by the soils lab in the past. | <ul style="list-style-type: none"> • • • • |
| <ul style="list-style-type: none"> • • • • | <i>iv) Improvement of irrigation, drainage and management of problems soils</i> | Assess the performance and recommend improvement of small-scale irrigation and drainage schemes | <ul style="list-style-type: none"> • Assessed Mwanzai irrigation scheme (Kilifi County, Coast), Kibirigwi irrigation scheme (Central Kenya), Ishiara-Kiambu and Ishiara-Kathigi irrigation schemes (Eastern Kenya) • Did rapid evaluations in Kanyuabori and Kathiga irrigation schemes, Mitune irrigation scheme in Isiolo far • Evaluated Kiambu, Mitunguu irrigation schemes • Constraints were identified and time-bound plans to be implemented in collaboration with the extension staff and farmers prepared. | <ul style="list-style-type: none"> • • • • |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|------------------------------|---------------------------|---|---|---------------------|
| • | | | <ul style="list-style-type: none"> • Other schemes visited and assessed: Narosura irrigation scheme and Ambeson Olutoruto farm (Kajiado County), Mosiro (Narok County). Issues that needed attention discussed with the farmers and extension. For Mosiro irrigation that requires urgent attention, proposal will be sent to the County Director of Agriculture, Narok. | • |
| • • • • | • • • | Develop drainage technologies for water-logged agricultural lands | <ul style="list-style-type: none"> • Assessment of constraints and opportunities in drainage in Nyanza and Western Kenya (Nyamira, Busia, Funyula, Siaya, Kisumu, Nyando , Kakamega, Mumias, Butere and Matungu districts). • Drainage issues discussed with the farming communities and extension. • Developed model drainage intervention. Beans, kales, tomatoes, and other horticultural crops identified as crops that can be grown to improve food security and for commercial production in areas targeted for drainage. • Interventions for managing vertisols prioritized: land/soil maintenance farmers practice (flat cultivation), ridges, ridges + FYM | • • • |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • • • • | <ul style="list-style-type: none"> • • • • • | Develop strategies and technologies for managing problem soils | <ul style="list-style-type: none"> • Adaptation and promotion of low cost technologies for management of salt affected soils • Soils and water analyzed, • Demonstrations on soil salinity management established at Kiwalwa, Kimala, and Njukini irrigation schemes and monitored. • Seven treatments being tested • 1st draft of a technical publication on Guidelines on use of salt affected soils and irrigation waters in Taveta County under review • Developed multi-can head mobile irrigator equipment and tested it in Carissa. It can perform on the spot irrigation, line watering for row crops and flooding for small basins. A second equipment fabricated for testing in Nairobi | <ul style="list-style-type: none"> • • • • • |
| <ul style="list-style-type: none"> • • • • • • | <ul style="list-style-type: none"> • • • • • • | Package and promote small scale irrigation technologies for high value crops and forages | <ul style="list-style-type: none"> • Drip systems for vegetables and orchards tested in Namanga and Mashuru with succes • Tested drip kit in greenhouse as a possible low cost system • Tested value of greenhouse tunnels compared to conventional open drip systems • Tested water productivity of greenhouse tunnels with and without mulcing • Demonstrated orchard small scale irrigation technologies with very good response • Tested dam lining technology for | <ul style="list-style-type: none"> • • • • • • |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • • • | | <ul style="list-style-type: none"> • water reservoirs • Small scale irrigation technologies demonstrated at Mawe Mbili in Ruai division and Ngong • Assessed small scale farmers groups in Loitoktok and Mashuru and two farmer groups identified for improving with drip irrigation kits. • Set up trial to enhance tomato production through integration of micro-irrigation systems and nutrient management under greenhouse conditions. | <ul style="list-style-type: none"> • • • |
| <ul style="list-style-type: none"> • Cereals and Orphan Crops (Dr JAW Ochieng) • • • | <p>1. Develop food crop varieties appropriate for different regions</p> <ul style="list-style-type: none"> • • • • | <p>Develop acid soil tolerant maize varieties for North Rift valley region</p> <p>Develop Striga resistant maize and sorghum varieties for Western Kenya</p> <p>On-station evaluation of aromatic rice varieties for Central Kenya</p> <p>Develop cold tolerant Sorghum varieties for Eastern Kenya (ASALS)</p> | <ul style="list-style-type: none"> • Acid-tolerant maize inbred lines in the highland (Kitale) programme for North Rift have been developed from Brazilian sources, crosses made and tested in PYT. • Striga resistant maize variety (GAF-4) was released in 2008, tested in On-Farm Trial (OFT) in Striga hot-spots in western Kenya (variety GAF-4 yields 1 T/Ha over the commercial H513) for the same region. • NERICA-1 (aromatic rice variety), released in 2009, has been evaluated for agronomic performance in Central Kenya, as well as Western and coastal Kenya. • Three cold tolerant Sorghum varieties, namely KARI/Lan-1, KARI/Lan1-2 and Ikinyaruaks were developed and released from Lanet in 2010; | <ul style="list-style-type: none"> • Promising varieties to be advanced to AYT, prior to final evaluation in the NPT. • Seed of GAF-4 is being bulked at Perkerra irrigation scheme prior to commercialization; • A varietal cross hybrid (GAF-4 x Pop 2) may be more attractive to seed companies than the OPV maize <i>per se</i>. • The variety, together with NERICA-4, NERICA-10 and NERICA-11, have been commercialized, and the seed system is in place with Kenya Seed Company. • Seed system is under KARI Seed Unit to facilitate private seed companies by availing Pre-baisc/Basic Seed. |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|--|--|--|--|--|
| <ul style="list-style-type: none"> • • | <ul style="list-style-type: none"> • • | <p>On-station evaluation of Coastal Lowland Maize composite</p> | <ul style="list-style-type: none"> • A sorghum hybrid (KSH-01) was released from Katumani in 2012 for ASALs of Eastern Kenya. • Coastal Lowland Maize composite, along with the old Coast Maize Composite were evaluated under normal agronomic practices and in Zai pits to determine differential performance | <ul style="list-style-type: none"> • • |
| <ul style="list-style-type: none"> • • • • • • | <p>2. On-farm evaluation of developed / adapted varieties</p> <p>3. Catalyze adoption of food crops technologies</p> | <ul style="list-style-type: none"> • Promote newly released maize varieties and new Sorghum in Western Kenya region | <ul style="list-style-type: none"> • Highland maize varieties (KH600-15A, 19A, 20A, 21A, 22A, and 23A) and sorghum varieties (KARI/Mtama-2, 3 and 4), have been taken through promotion effort by KARI in liaison with various seed companies at Field Days,, ASK shows and Business Fairs in western Kenya: • • 9 on – farm and 3 on-station demos done using released maize varieties currently under commercialization; • 3 field days done at Githunguri, Kabete and Ndeiya in Kiambu counties; • Demonstrated four released varieties at ASK shows in Nyeri, Nakuru and Kabarnet • Organized one road show covering Kiambu | <ul style="list-style-type: none"> • Maize varieties KH600-15A, 19A, 20A and 21A are already in commercialization; • Seed system on KH600-22A 23A has started (2013); • Sorghum varieties are with Kenya Seed Company for commercialization. • • • |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---|--|--|--|
| • | | | <ul style="list-style-type: none"> • Distributed free seed samples of MSV resistant maize varieties to farmers within Kiambu county; • Trained agricultural extension officers from Nyandarua and Murang'a counties. | <ul style="list-style-type: none"> • • |
| • | | Promote MSV resistant maize varieties in Central region | <ul style="list-style-type: none"> • Newly developed maize varieties, such as KH500-43A (dual purpose for both gain and stover, has been promoted by KARI-Muguga, and commercialized by East African Seed Co.) has been taken up in many parts of Central Kenya. Seed system is on track. | <ul style="list-style-type: none"> • Seed system on KH500-43A is on track. |
| • | | Promote drought tolerant Maize varieties in Eastern region ASALS | <ul style="list-style-type: none"> • Drought tolerant maize varieties (Kat Comp B, PAMUKA and other new maize varieties) have undergone promotion, along-side GAPs, in the ASALS, targeting various farmer groups: up-scaled from 1 farmer in 2011 -> 10 farmers todate. | <ul style="list-style-type: none"> • From Mukuyuni Farmer Group in Makueni in 2011 (20 farmers), the new variety technologies have been up-scaled to more than 50 farmers by 2012. |
| • | 4. Carry out food crop research activities that cut across the regions | Maintenance of breeders' seed of newly released Maize varieties | <ul style="list-style-type: none"> • From 200 to 2012, approx. 40,800 Kg of maize Breeder Seed of have been generated, maintained and availed to seed companies. | <ul style="list-style-type: none"> • Further maintenance is done conjointly between KARI maize breeders and the various seed companies. |
| • | | On-farm evaluation of IPM options for control of Larger Grain Borer (LGB) pest | <ul style="list-style-type: none"> • Two LGB-tolerant maize varieties (KH523-1 LGB and KH523-2 LGB) were released in 2011 from KARI-Embu programme and subjected to joint OFT with KARI-Katamani | <ul style="list-style-type: none"> • The varieties are yet to be taken up by seed companies for commercialization. |
| • | | Laboratory evaluation of new Wheat varieties for milling and baking qualities | <ul style="list-style-type: none"> • Tested 32 and 50 wheat pure lines in various stages for Test weight, Milling • (NIR test, Farinograph and Alveograph) • And baking quality (Falling number) | <ul style="list-style-type: none"> • Effect of wheat genotype and stem rust interactions contributed greatly to bread milling and baking properties for the 82 wheat pure line tested |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|---|---|---|
| • | | On-station evaluation of Rice accessions for Rice blast reaction | <ul style="list-style-type: none"> • Samples were collected countrywide; • 8 strains of Rice blast were isolated | <ul style="list-style-type: none"> • DNA analysis and sequencing to confirm the strains will be done at BECA-Hub at ILRI |
| • | | NPT and DUS tests on new varieties of Cereal, Pulses and Roots & Tubers through the National Regulatory Agency (KEPHIS) | <ul style="list-style-type: none"> • Rice varieties (paddy and rain-fed) evaluated at KARI-Mwea for yield and agronomic traits (including Rice Blast reaction) sowed that ---- | <ul style="list-style-type: none"> • |
| • | | Fingerprinting parents of commercial varieties of Cereal crops, Pulse crops and Root & Tuber crops for IPR | <ul style="list-style-type: none"> • From NPT and DUS tests, the programme had 120 new Staple Crop varieties released, of which 53 varieties have been availed to various seed companies for commercialization. | <ul style="list-style-type: none"> • Ten seed companies have accessed the maize varieties released for various agro-ecologies, and most of them are fairing on well in the (formal) seed system. |
| • | | Evaluating Bean accessions for reaction to foliar and charcoal rot, pests and root-knot nematodes | <ul style="list-style-type: none"> • This activity has not been accomplished. | <ul style="list-style-type: none"> • Revenue accruing from commercialization of varieties already in the seed system could be used to do finger-printing. |
| • | | Incorporating resistance to diseases and pests into cultivated varieties (cultivars) of Pulses | <ul style="list-style-type: none"> • Dry Bean varieties (accessions from CIAT) were evaluated for root-rots and three of them released in 2011: the varieties are already in production in parts of western Kenya. | <ul style="list-style-type: none"> • Change of course: no nematologist was available to do research on Bean root-knot nematodes. |
| • | | Determining Land Equivalent Ratio and Benefit: Cost Ratio in crop mixtures of Pulses and Cereal crops | <ul style="list-style-type: none"> • Dry Bean root-rot was bred into moist, Medium -Highland varieties: New varieties KK0701 and 0702 varieties are poised for release in 2013. | <ul style="list-style-type: none"> • This is predicated on the premise that KEPHIS will accept the variety release novelty (characteristics) in June 2013. |
| • | | Evaluating varieties of Cassava for cyanogenic (poison) potential | <ul style="list-style-type: none"> • This activity was not carried out specifically. | <ul style="list-style-type: none"> • Available data from parallel activities will be used to deduce this parameter. |
| • | | Evaluating varieties of Potato, Cassava and Sweet-potato for various quality traits (processing, cooking, table and organoleptic properties). | <ul style="list-style-type: none"> • 6 sweet potato varieties were evaluated and suitable ones selected for OFT; • 5 sweetpotato varieties released to farmers • Two high dry-matter and β- | <ul style="list-style-type: none"> • The 6 sweet potato varieties will be evaluated on-farm in Kikonene (Coast) • The 5 Sweet potato varieties are being promoted to farmers through innovation platforms |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | | <ul style="list-style-type: none"> carotene orange-fleshed varieties identified for fresh root consumption and processing; Three Irish potato varieties (Sherekea, Kenya Mpya, Purple Gold) highly resistant to potato blight were released in 2010. | <ul style="list-style-type: none"> 26 million cuttings were distributed to farmers; Seed system for the 3 new potato varieties is now in place at KARI-Tigoni |
| <ul style="list-style-type: none"> | | Developing disease diagnostic kits for detecting diseases of Food crops Licensing out KARI-bred Maize, Wheat, Sorghum, Pulses and Irish Potato varieties to seed companies/merchants for commercialization | <ul style="list-style-type: none"> Plant disease diagnostic kits for detecting diseases wheat, Potato and Cassava disease were developed at ab few KARI centres. | <ul style="list-style-type: none"> KARI-Daktari technology is now (2013) on the threshold of being launched. |
| | | Developing disease diagnostic kits for detecting diseases of Food crops | <ul style="list-style-type: none"> Plant disease diagnostic kits for detecting diseases wheat, Potato and Cassava disease were developed at ab few KARI centres. | <ul style="list-style-type: none"> KAR-Daktari technology is now (2013) on the threshold of being launched. |
| | | Licensing out KARI-bred Maize, Wheat, Sorghum, Pulses and Irish Potato varieties to seed companies/merchants for commercialization | <ul style="list-style-type: none"> 11 maize varieties, 9 wheat varieties, 4 rice varieties and 6 Dry Bean varieties have, so far, been licensed to various seed companies /merchants during the reporting period. | <ul style="list-style-type: none"> Seed system is largely in place, facilitated by KARI Seed Unit (KSU). |
| | | Multiplication of 'Orphan Crops' including | <ul style="list-style-type: none"> During the period 2011-2012, some 4.5 million Sweet-potato vines and 3.9 million Cassava cuttings were produced by Staple Crops under Vision 2030 Flagship Project. | <ul style="list-style-type: none"> |
| | | OPV maize through KSU | <ul style="list-style-type: none"> Various new OPV maize, viz.EMCO-92, KSTP-94, CLC, GAF-4, and HAC (Nyandarua-1) were handled by KARI Seed Unit (KSU). | <ul style="list-style-type: none"> |
| | | Development and production of biocontrol agents for priority pests and pathogens of selected crops | <ul style="list-style-type: none"> 48 native Bt isolates have been tested against Helicoverpa armigera, Chilo partellus and Busseola fusca, key pests of corn. | <ul style="list-style-type: none"> More studies going on for other pests [Not funded under KAPAP] |
| | | • Development, validation and promotion of | <ul style="list-style-type: none"> Not funded under KAPAP but; | <ul style="list-style-type: none"> Potato- 2 technologies developed |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks | |
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| | | integrated pest management technologies for priority pests and pathogens of selected crop production systems (maize) and potato) | <ul style="list-style-type: none"> Potato has been funded by ASARECA Maize by KAPAP A manual on maize pests has been developed | 1 Seed plot technique 2 Positive seed selection technique Dissemination to follow | |
| <ul style="list-style-type: none"> | | <ul style="list-style-type: none"> Determining the incidence, severity, distribution and management practices for selected pests/diseases/weeds | <ul style="list-style-type: none"> Not funded under KAPAP | | |
| | | <ul style="list-style-type: none"> Developing diagnostic kits and protocols for selected diseases | <ul style="list-style-type: none"> Not funded under KAPAP | | |
| | | <ul style="list-style-type: none"> Development of repository and retrieval systems for fungal, viral and bacterial pathogens | <ul style="list-style-type: none"> Not funded under KAPAP | | |
| | | <ul style="list-style-type: none"> Digitization and updating agricultural insect pest collections | <ul style="list-style-type: none"> Not funded under KAPAP | | |
| | | <ul style="list-style-type: none"> Development of herbaria/conservancy and identification systems for noxious weeds and invasive plant species | <ul style="list-style-type: none"> Not funded under KAPAP | | |
| | | <ul style="list-style-type: none"> Evaluating the efficacy of pest control products for integration with other management options | <ul style="list-style-type: none"> Individual clients fund not KAPAP | | |
| | | <ul style="list-style-type: none"> Developing pest risk analysis (surveillance/forecasting) tools and protocols for selected pests/diseases/weeds | <ul style="list-style-type: none"> Proposal never submitted | | |
| | | <ul style="list-style-type: none"> Coordination and backstopping of Crop Health Programme | <ul style="list-style-type: none"> Ranked and prioritized pests and diseases of various crops. A prioritized pests and diseases document developed | A call for proposals to be raised based on priorities set. | |
| | | <ul style="list-style-type: none"> | Intellectual Property <i>iii) Strengthen and support Intellectual Property capabilities</i> | <ul style="list-style-type: none"> a) Develop institutional IP policy and develop implementation framework | <ul style="list-style-type: none"> A draft copy of the IP Policy has been developed |
| | <ul style="list-style-type: none"> | <ul style="list-style-type: none"> b) Create awareness to KARI scientists | | <ul style="list-style-type: none"> Intellectual Property Awareness creation was done in all KARI centres clustered into 6 categories. The clusters were KARI | There is need to occasionally assess the impact and if need be repeat the exercise |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | | Mtwapa, KARI Embu, KARI Katumani, KARI Njoro, KARI Kakamega and KARI NARL Kabete. A total of 120 scientists were trained. | |
| <ul style="list-style-type: none"> • Horticulture and Industrial Crops (Dr. Wasilwa) • • • • • • • • | <ul style="list-style-type: none"> • i) Analysis of value chains • • • • • • • • | <ul style="list-style-type: none"> • • • • • • • • • | <ul style="list-style-type: none"> • 8 HIC commodity chains analyzed and prioritized and interventions identified - Q4PY1 • Participated in 3 commodity APVC workshops for cotton (CODA), macadamia nut (MoA and NutPAK and Cashew nut (MoA, and NutPAK) Q3PY1 • Growth characterization of traditional (local) and micro-propagated banana conducted (KARI-Kitale) - Q4PY1 • Fruit sub-sector analysis conducted (KARI-Thika) Q4PY1 • An assessment of mango production trends and associated constraints carried out in Imenti district (KARI-Thika) - Q3PY1 • Challenges facing mango farmers in Mbeere district identified and report developed - Q4PY1 • Market survey for vegetables in Central Rift conducted - Q4PY1 • Indigenous vegetable market survey conducted in Nyeri and Karatina municipal markets - Q4PY1 | <p>487 broad array of HIC stakeholders participated in value chain prioritization, constraint and intervention analysis</p> <ul style="list-style-type: none"> • - Stakeholder proceedings completed • - Over 30 stakeholders were involved in each groundnut workshop • • - Vegetable value chain in collaboration with Wageningen University, Netherlands • • • • |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • • • • • • • | <ul style="list-style-type: none"> • • • • • • • • | <ul style="list-style-type: none"> • • • • • • • • | <ul style="list-style-type: none"> • 2 groundnut stakeholder workshop held to analyze and identify interventions along the groundnut value chain in Kisumu and Homabay - Q4PY2 • workshop to document utilization and consumption vegetable chains in Kenya Conducted November 2011 - Q4PY2 • 1 sunflower stakeholder workshop held in Ndhiwa to identify gaps for technology intervention (KARI, MoA, Plan International and farmers) including 7 men and 5 women - Q4PY2 • Fact finding mission on vegetable supply chain in East Africa conducted between 8-21 January 2012 - Q4PY2 • Value chain workshop to map constraints and interventions for the mushroom value chain conducted - Q4PY3 • 3 business plans for passionfruit, mango and avocado developed with private sector – Q2PY3 • Value chain analysis for passionfruit conducted in Kwale County – Q3PY3 | <ul style="list-style-type: none"> • • • • • • • • |
| <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • <i>ii) Development and adaptation of technologies</i> • • | <ul style="list-style-type: none"> • Analyze and prioritize value chains in horticulture and industrial crops • • | <ul style="list-style-type: none"> • Fusarium resistant banana (FHIA 15, 17, 19, 23, 24) evaluated in several ecozones and recommended for commercialization - Q4PY1 • Soybean and sunflower entered in NPT - Q2PY1 • 15 African traditional vegetables | <ul style="list-style-type: none"> • • • |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <p>(ATVs) accessions established on-station (KARI-Thika) - Q3PY1</p> <ul style="list-style-type: none"> • 10 advanced snap bean lines and new commercial varieties evaluated for agronomic and postharvest characteristics - Q4PY1 • 19 improved soybean from IITA, Nigeria evaluated in Butere and Mumias - Q3PY1 • 15 soybean hybrids evaluated on-station (KARI-Njoro and KARI-Lanet) - Q3PY1 • On-farm trials for superior tomato breeding (TKA-81-1, TKA-193-31, TKA-155-18 and TKA-193-2) lines evaluated (KARI-Thika and KARI-Mwea) and the best lines TKA-155-18 and TKA-193-2 - Q3PY1 • Macadamia hybrid evaluation data collection ongoing - Q4PY1 • 5 “new” commercial snap bean varieties (Konza, Mara, Serengeti Venda, Tana); and 5 promising advanced lines (J12, HY, JSAMX1, PAUJX1, PALJX4) evaluated on-station - Q4PY2 • 40 cotton germplasm evaluated for yield and quality (KARI-Mwea) - Q4PY2 • 3 new tomato varieties evaluated on-station (KARI-Thika) - Q4PY2 • 10 sunflower germplasm evaluated and selected for potential production in Central Kenya (KARI-Muguga South) - Q4PY2 • 15 soybean germplasm evaluated and selected for potential | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> production in Central Kenya (KARI-Muguga South) - Q4PY2 • 20 promiscuous soybean varieties evaluated in Western Kenya (KARI-Njoro) - Q4PY2 • 18 sunflower hybrids evaluated in Central Rift (KARI-Njoro) • 25 soybean varieties evaluated in Central Rift (KARI-Njoro) - Q4PY2 • 2 canola varieties evaluated in Eastern Kenya (KARI-Embu) - Q4PY2 • 40 cotton germplasm evaluated for yield and quality – Q2PY3 • F2 cotton crosses evaluated for pest resistance – Q2PY3 • 2 sunflower accession introduced from Argentina (Argensol 20Y and Argensol 40) are very high yielding – Q3PY3 • 3 tomato varieties evaluated on-station at KARI-Thika – Q3PY3 • 1 participatory evaluation trial of sesame planted in semi-arid land in Eastern Kenya – Q3PY3 • 5 accessions of jatropha evaluated and characterized KARI-Katumani, KARI-Matuga and North Rift- Q4PY3 • 3 castor lines evaluated for provenance in the North Rift - Q3PY3 • 6 soybean varieties evaluated for adaptability in ASALs – Q2PY3 • 3 varieties of tree tomato evaluated at KARI Thika - Q4PY3 • 1 trial on the effect of gibberellic acid to enhance germination of | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <p>MAPS conducted - Q4PY3</p> <ul style="list-style-type: none"> • 3 groundnut varieties (ICGV-89749; ICGV 88710; Uganda Stripe) in second year of NPT - Q3PY3 • 1 oil crop, soybean (SBH 6/1/1) entered in NPT - Q3PY3 • 3 cotton (Vered, A540 and F962) in second year NPT - Q3PY3 • -2 snap beans entered in NPT • - Several oil crops in final step for obtaining white labels for 7 soybean and 3 sunflower lines recommended by KEPHIS - Q3PY3 • 2 strawberry varieties (Chandra and Cambridge) evaluated at KARI Njoro – Q4PY3 • 1 underutilized fruit motherblock established in KARI-Kitale - Q3PY3 | |
| <ul style="list-style-type: none"> • • • • • | <ul style="list-style-type: none"> • • • • • | <ul style="list-style-type: none"> • Develop varieties for the various agro-ecological zones with particular emphasis on arid and semi-arid zones • • • • | <ul style="list-style-type: none"> • A manual on weed control in onions developed - Q4PY1 • Participated in the development of the fruit tree diagnostic manual for improved papaya production published by MoA - Q4PY2 • 1 crop production manuals co-authored with the MoA - Q4PY2 • 5 African eggplant accessions (MM 858, RW-AE-12, TZ-SMN-75-7, RW-AE-7 and DB3) planted in soil-less substrates (pine back, forest soil, sugarcane husks, pumice, murrum, sand, peat moss and cocopeat) to compare suitability as alternative to soils - Q4PY2 • -Pyrethrum clones intercropped | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • • • • • | <ul style="list-style-type: none"> • • • • • • | <ul style="list-style-type: none"> • • • • • | <ul style="list-style-type: none"> with 3 short duration legumes in Kisii and Limuru - Q3PY2 • Appropriate mushroom production technologies for small scale farmers - Q4PY3 • 3 agronomic techniques for oil palm field management demonstrated in one agro-ecological zone - Q4PY3 • chemical to promote flower induction tested on mango • validated production technologies for pest management (mango weevil and fruit fly - Q4PY3 • developed a resistant rootstock for (G755) for management of root rot in avocado - Q4PY3 | |
| <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • Develop appropriate management technologies for priority horticulture and industrial crops • • | <ul style="list-style-type: none"> • 4 high tunnels installed at KARI-Thika, KARI-Katumani, KARI-Molo and KARI-Mtwapa to develop best-bet tomato production options for smallholder farmers - Q4PY1 • Partnership with Agrotunnel, AMIRAN, Hortipro and Mavunno Greenhouses developed - Q4PY2 • Tomato grafting demonstrated superior performance under high tunnel production - Q4PY3 | |
| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • Develop greenhouse technologies for smallholder vegetable production • | <ul style="list-style-type: none"> • Development of a new laboratory technique for rearing and multiplying two macadamia stink bug species (<i>Bathycoelia distincta</i> Distant and <i>Nezara viridula</i>) commenced - Q4PY1 • Protocol for banana virus indexing developed (KARI-Njoro) - Q4PY1 | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • 1 field day held and 20 participants trained on weed control options for onions - Q4PY1 • On-farm validation of IPWM technologies on-going at Maragua • Cashew nut pest and disease Q4PY1 survey conducted in the coastal region - Q4PY1 • Participatory evaluation of technologies for management of BXW conducted - Q4PY2 • A technical handbook for African leafy vegetables in pests and disease in Small Holder Development Project irrigation schemes developed - Q4PY2 • A technical manual for Asian vegetables pests and diseases in Small Holder Development Project developed - Q4PY2 • Integrated management strategies for citrus wooly white fly designed and validated - Q4PY2 • The natural (Cales noacki) enemy for citrus wooly aphid bulked for release in Eastern and Western Provinces - Q4PY2 • Bio-control of diamond back moth (DBM) technology evaluated and up-take packages promoted and up-scaled - Q4PY2 • 1 IPM technologies for botanicals (KOKARI) validated and documented - Q4PY2 • ABCC (Avoid, Break, Clear and Clean) for ease of recycling banana planting material for control of Banana Xanthomonas Wilt - Q4PY3 | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • • • • • • | <ul style="list-style-type: none"> • • • • • • • | <ul style="list-style-type: none"> • • • • • • | <ul style="list-style-type: none"> • One superior avocado root stock G755 identified - Q4PY3 • 2 technologies on control of mango seed weevil and fruit fly validated with farmers in Makueni, Kilifi, Mbeere and Meru – Q3PY3 • 1 apple banana variety resistant to panama disease developed - Q4PY3 • Standardization of Extraction methods of Biocides from promising botanicals conducted - Q4PY3 • 5 tomato lines (TKA193-31, TKA81-1, TKA155-18, TKA 193-2 and MT 56) were evaluated for resistance to bacterial wilt. Line MT 56 was resistant to bacterial wilt while the TKA lines were all susceptible – Q3PY3 • Crosses made between TKA lines and Line MT56 (resistant to bacterial wilt) – Q3PY3 | |
| <ul style="list-style-type: none"> • • • • • | <ul style="list-style-type: none"> • • • • • | <ul style="list-style-type: none"> • Develop IPM technologies for pests and diseases of economic importance • Develop a database for Maximum Residue Levels (MRLs) for pesticides • • • | <ul style="list-style-type: none"> • Horticulture sub-sector proposal developed • Passionfruit woodiness virus isolates characterized - Q4PY2 • Isolates for virus complex involved in passionfruit woodiness collected and stored - Q4PY2 • Detailed pest and disease mapping for on-farm horticultural crops demonstrations of production strategies - Q4PY3 • Soil samples collected from Nemlok for nematode and bacterial analysis – Q2PY3 | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • • • • • | <ul style="list-style-type: none"> • Candidate pests of Asian vegetables documented including bollworms, leafminer, thrips, aphids and whiteflies – Q3PY3 • Onion thrips (Thrips tabaci) identified as a major pest of garlic • Unidentified rust disease affecting foliage recorded in garlic - Q4PY3 • Thrips tabaci Linderman confirmed as a perennial pest of garlic - Q4PY3 • Whiteflies Bemisia tabaci recorded in Rosemary - Q4PY3 | |
| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • Characterize and map fungal, viral and bacterial diseases of economic importance using molecular tools • <p>Develop kits for rapid disease diagnosis</p> <ul style="list-style-type: none"> • • • • • | <ul style="list-style-type: none"> • Laboratory manual for cleaning passionfruit viruses developed - Q4PY2 • International Plant Diagnostic Network standard operating procedures for plant diagnostic laboratories, passionfruit woodiness virus disease version 1 - Q4PY2 • Primers developed designed and validated to diagnose passionfruit woodiness disease • Q2PY3- Diagnostic kit validated under laboratory conditions - Q4PY3 • 14 cashew nut clones assessed for disease resistance • Pathogenicity of Pythium vexans on macadamia established - Q2PY1 • Research on fruit fly pest of avocado and passion fruit virus disease carried out - Q4PY2 • 20 F2 cotton varieties evaluated for resistant/tolerance to pests | <ul style="list-style-type: none"> • - discussion towards development of rapid diagnostic kit with BeCA is ongoing |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • | <ul style="list-style-type: none"> • • | <ul style="list-style-type: none"> • • | <ul style="list-style-type: none"> and diseases (KARI-Mwea) - Q4PY2 • Effective management of tomato bacterial wilt attained in Manyatta and Siakago - Q4PY3 • Isolated pathogens (Fusarium, Alternaria and Phytophthora) that cause dieback of passionfruit - Q4PY3 | |
| <ul style="list-style-type: none"> • • • • • • • • • | <p><i>iii) Development of Markets and Marketing for Horticultural and Industrial Crops</i></p> <ul style="list-style-type: none"> • • • • • • • • • | <ul style="list-style-type: none"> • Research in emerging diseases that are of economic importance with national perspective • • • • • • • • | <ul style="list-style-type: none"> • 35 groundnut stakeholders trained on HACCP food safety requirements for processing and value addition of nuts (KARI Headquarters) – Q2PY1 • Participated in Horticulture Data Validation and a report developed - Q4PY2 • Groundnut shelling equipment acquired to promote market access developed - Q4PY2 • Developed a mushroom analysis report - Q4PY3 • 1 protocol verified for improving quality of palm oil for better market access developed Q4PY3 • primary data collected on effect of standards in French bean production in Central Kenya • Partnered with VegPro for marketing avocado Q4PY3 | |
| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • Contribute to market information collection and analysis, and promotion of market access for priority horticulture and industrial crops | <ul style="list-style-type: none"> • Farmers-group members trained on GAPs for African traditional vegetables, fertilizer and manure use, spacing and plant density, thinning, diseases and pests and their control using ITK (wood ash, chillies and Mexican marigold) - Q4PY2 | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • 36 farmers (21 men and 15 women) trained on sunflower value chain – Q3PY2 • 15 MoA trained frontline staff on use of agronets (KARI-Kabete) – Q2PY2 • - 20 farmers trained on mushroom production (KARI-Thika) – Q3PY2 • 23 farmers (17F and 6M) trained on ICPM of ALVs in Kajiado district (KARI-Thika) - Q4PY2 • 24 farmers trained on vegetable production in Kilifi County (KARI-Mtwapa) – Q3PY2 • 38 farmers (19F and 19M) sensitized on African leafy vegetables in Kisumu West, Butere, Siaya and Bondo districts - Q4PY2 • 60 farmers (45M and 15F) trained on bulking of traditional high value crops – Q3PY2 • 3 farmers groups trained on production, seed processing and utilization of ALVs - Q4PY2 • 20 extension workers trained on Bt cotton - Q4PY2 • 25 extension workers trained on management of cotton pests (KARI-Mwea) – Q2PY2 • 13 stakeholders trained on fruit tree nursery establishment and management in Keiyo South District – Q3PY2 • 300 farmers trained on soybean seed production and utilization in western Kenya • 15 farmers trained on botanical | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> extraction methods in West Pokot – Q1PY2 • Farmers trained safe use of pesticides on Brassica in Eastern and Central Provinces – Q2PY2 • 35 plant doctors trained including 5 KARI scientist - Q4PY3 • 300 farmers trained on vegetable preservation - Q4PY3 • Farmer field schools for high tunnel greenhouse and nurseries were established at all sites in Kirinyaga and Embu counties - Q4PY3 • 15 farmers and 2 extension agents trained in garlic production in April 2012 at Nguruman scheme - Q4PY3 • Over 300 farmers trained on IPM interventions for tomato and passionfruit – Q2PY3 • - 2 farmers field days to train farmers on utilization and production of botanicals held at Ndeiya – Q3PY3 • 20 agriculture extension trained on Bt cotton - Q4PY3 • 25 extension officers at the cost trained on cotton pests - Q4PY3 | |
| <ul style="list-style-type: none"> • • | <ul style="list-style-type: none"> • • | <ul style="list-style-type: none"> • Development of a programme that facilitate adoption of GAPs to foster food safety and traceability • | <ul style="list-style-type: none"> • 12 snap bean based recipes developed compiled - draft recipe snap bean manual -Q4PY2 • 15 farmer groups from Mwea County trained on preparation of snap bean recipes - Q4PY2 | |
| <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • | <ul style="list-style-type: none"> • Development of a programme to integrate nutrition and agribusiness towards improved livelihoods | <ul style="list-style-type: none"> • A model grading shed constructed on-station at KARI-Thika compiled -Q4PY2 | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • Mechanized shelling of groundnut introduced to farmers in South West Kenya - Q4PY2 • A structure for optimum production of mushroom developed - Q4PY3 • Extraction and identification of active ingredients in Mexican marigold, Tithonia and Tephrosia on-going at KIRDI, Nairobi - Q4PY3 | |
| <ul style="list-style-type: none"> • | <p><i>iv) Development of irrigation technologies for small holder horticulture production</i></p> | <ul style="list-style-type: none"> • Develop pre-and-post harvest handling and processing technologies to enhance value addition in marketed horticulture and industrial crops | <ul style="list-style-type: none"> • Integrated pest and disease management manual for exotic vegetables for farmers and extension agents for smallholder irrigation schemes developed - Q4PY2 | |
| <ul style="list-style-type: none"> • • • • • • • • | <ul style="list-style-type: none"> • v) Commercialisation of Horticultural and Industrial Crops products • • • • • • • | <ul style="list-style-type: none"> • Recommendation of varieties ready for commercialisation in various regions • • • • • • • | <ul style="list-style-type: none"> • 1 soybean variety 934/5/4 released in 2011 - Q4PY2 • 3 sunflower lines recommended by KEPHIS - Q4PY2 • Seed of five tomato lines (TKA193-31, TKA81-1, TKA155-18, TKA 193-2 and MT 56) bulked - Q4PY2 • 12 groundnut varieties evaluated on-station (KARI-Katumani) – Q2PY2 • 3 groundnut (ICGV-89749; ICGV 88710; Uganda Stripe) in second year of NPT – Q3PY2 • 1 soybean line submitted to KEPHIS for NPT – Q2PY2 • 7 soybean varieties (DPSB 18, DPSB 19, Hill, Black Hawk, Nyala, EAI 600, Gazelle) in final stage of obtaining white label – Q3PY2 • 2 sunflower hybrid varieties (Kenya Mkaa and Kenya Almasi) in | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • • • | <ul style="list-style-type: none"> • Coconut husk processing equipment acquired from Vietnam • Solar-drying technology for pyrethrum and mango • Suitable uses/recipes of soybean and palm oil | <p>County (2013)</p> <ul style="list-style-type: none"> • - Entrepreneurs sensitized on coconut value addition - Q4PY1 • - Promotion of the improved solar drier continued on station (KARI-Perkerra) - Q4PY2 • - Farmers trained on preparation of soybean milk, “githere”, “mandazi”; and groundnut “dengu” (soup) in South West Kenya - Q4PY3 | |
| d). Miano) | <i>i) Analysis of value chains</i> | <ul style="list-style-type: none"> • Analyse the indigenous poultry value chain in high rainfall, Semi-Arid and humid lowlands areas | <ul style="list-style-type: none"> • Three priority poultry value chains (exotic broiler, exotic layers and Indigenous chicken) value chains were identified and analysed. The opportunities and constraints were identified and agreed with stakeholders. | The Indigenous chicken value chain was ranked as the most important and a mega project dealing with the constraints (feed, breed, disease and marketing) was developed and is being implemented |
| | | <ul style="list-style-type: none"> • Analyse the sheep production and identify important value chains in high rainfall areas | <ul style="list-style-type: none"> • Two value chains in sheep (mutton and wool) were identified and analysed. | The mutton value chain was ranked highest and a project addressing the constraints in the high rainfall areas is being developed |
| | | <ul style="list-style-type: none"> • Analyse the sheep production and identify important value chains in high rainfall areas | <ul style="list-style-type: none"> • Two value chains in sheep (mutton and wool) were identified and analysed. | The mutton value chain was ranked highest and a project addressing the constraints in the high rainfall areas is being developed |
| | | <ul style="list-style-type: none"> • Analyse the goat and sheep meat value chain in Arid and Semi-Arid areas | <ul style="list-style-type: none"> • The chevon and mutton value chains in the ASAL areas were analysed and constraints and opportunities identified and agreed with stakeholders. A project addressing the value chain upgrading is being developed in collaboration with ICARDA | The major opportunity identified for small ruminants (sheep and goats) is the local demand for the same and the Middle East Market that the country has not exploited |
| | | <ul style="list-style-type: none"> • Analyse the beef value chain in Arid and Semi-Arid areas | <ul style="list-style-type: none"> • The beef value chains were analysed and key opportunities and constraints were identified. The main constraints are in feed availability and quality, beef | A project proposal dealing with feed availability in the ASAL areas has been developed and implementation initiated. The project focus is mainly in feed |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | | breeds with low growth and mature weight | development (pasture breeding and management in the ASAL areas) |
| | | <ul style="list-style-type: none"> Analyse the pork production value chain in high rainfall areas | <ul style="list-style-type: none"> The pork value chain was characterised, opportunities and constraints identified and agreed with stakeholders | Funds in year 3 will be used to improve the supply of breeding material from the pig herd in KARI Naivasha |
| | | <ul style="list-style-type: none"> Analyse the camel meat and milk value chains in Arid areas | The camel meat and milk value chain was analysed and constraints and opportunities identified and agreed with stakeholders | The development of the research proposal is on-going but development of a camel centre of excellence is being discussed. This will be based in KARI Garissa or KARI Kiboko |
| | ii) Development and adaptation of technologies | <ul style="list-style-type: none"> Analyse the emerging livestock sector and identify priority chains in Arid, Semi-Arid and humid lowlands | <ul style="list-style-type: none"> 2 value chains (honey bee and rabbit) value chains were analysed A scoping study to define the emerging livestock sub-programme was carried out and a stakeholder meeting is planned in June 2013 to discuss the results. | The emerging livestock sub-programme is new and needed to be defined hence the scoping study which has identified quail, Guinea fowl, crocodile, ostrich, Guinea pig, pigeons, bantam and termite chains were identified. These will be presented to stakeholders for concurrence |
| | <ul style="list-style-type: none"> Develop feed, feeding strategies and systems for appropriate product value chains | <ul style="list-style-type: none"> Feed and feeding issues being addressed in two mega projects in indigenous poultry and beef value chains | Calls for proposals were developed in the Indigenous chicken, Beef and Small ruminants value chains. Mega projects have been developed in the Indigenous chicken and beef value chains. Implementation has started in the indigenous | |
| | iii) Commercialisation of animal production products | <ul style="list-style-type: none"> Develop disease control and management strategies for important diseases along appropriate product value chains | <ul style="list-style-type: none"> After the development of thermostable Newcastle disease vaccine the poultry team is work Gumboro disease which is the next highest ranging disease after NCD. The team is also working on Camel mastitis and thermostable PPR vaccine | The animal health activities are funded under EU support but the constraints identified through the value chain analysis funded by KAPAP |
| | <ul style="list-style-type: none"> Identify existing and potential markets | <ul style="list-style-type: none"> delayed | Due to the erratic and delayed | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | and develop market linkages for sheep products from high rainfall areas | | disbarment of funds some activities have been delayed but a proposal is currently being developed to address the mutton value chain in the high rainfall areas |
| | | <ul style="list-style-type: none"> Develop market linkages and enhance value addition for beef, sheep and goats, indigenous poultry and camels products | <ul style="list-style-type: none"> Market linkages for the indigenous chicken value chain are developed and a business model is available | Due to the erratic and delayed disbarment of funds some activities have been delayed apart from the indigenous chicken value chain funded by Technoserve (USAID) and ASAL APRP (EU) However proposals being developed for the other value chains |
| | | <ul style="list-style-type: none"> Carry out a product/ technology screening to determine status of research products that are ready for commercialisation | <ul style="list-style-type: none"> Delayed apart from the indigenous value chain activities (see above) | Partners identified and a number of meetings held for the indigenous poultry vale chain |
| | | <ul style="list-style-type: none"> Identify pathway for commercialization and deal with IP issues | <ul style="list-style-type: none"> Delayed apart from the commercialization of range grass seed funded through KAPAP and ASAL APRP (EUO) | |
| | | <ul style="list-style-type: none"> Identify potential partners | <ul style="list-style-type: none"> Partners identified and a number of meetings held for the indigenous poultry vale chain | |
| | | <ul style="list-style-type: none"> Develop and brand products | <ul style="list-style-type: none"> Delayed | |
| | | <ul style="list-style-type: none"> Mass Production of product | <ul style="list-style-type: none"> Apart from the production of over 360,000 indigenous chicken day old chicks (DOC) the rest has been delayed | |
| Dairy value addition (Dr. Miano) | | <ul style="list-style-type: none"> Create awareness | | |
| | | <ul style="list-style-type: none"> a) Analysis of value chains | | |
| | | <ul style="list-style-type: none"> b) Development and adaptation of technologiespt | | |
| Cross-cutting | | <ul style="list-style-type: none"> c) Catalyse uptake of technology | | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | <i>i)Biotechnology and genetic resources management (Dr. Ngichabe)</i> | <ul style="list-style-type: none"> Generate and adapt tissue culture techniques for production of clean planting materials of priority food crops | <ul style="list-style-type: none"> Tissue culture protocols developed for Vanilla, Coconut and Aloe vera | Ready for mass micropropagation and dissemination to farmers |
| | | <ul style="list-style-type: none"> Develop genetic modified technologies for introducing desirable traits in food crops of economic importance | <ul style="list-style-type: none"> Maize: Drought tolerance, Insect resistance Cassava: Virus resistance, Biofortification Sorghum: Biofortification Cotton: Insect resistance | All GM crops under confined field trials. Of these cotton is the most advanced with efficacy completed |
| | | <ul style="list-style-type: none"> Develop improved food crop varieties using marker-assisted selection (MAS) | | MAS is a tool for fast identification and screening of lines with the desired traits |
| | | <ul style="list-style-type: none"> Develop rapid and sensitive diagnostic tests for diseases of food crops using biotechnology | <ul style="list-style-type: none"> LAMP tests developed for cassava and sweetpotato viruses. | The causative organism for maize lethal necrosis disease has been partially sequenced by the KARI and UK teams. |
| | | <ul style="list-style-type: none"> Build capacity on DNA fingerprinting, gene sequencing, marker assisted breeding in Horticulture and industrial crops programme | <ul style="list-style-type: none"> 3 KARI scientists trained in DNA fingerprinting and MAS | Actual sequencing is outsourced. Scientists trained on interpretation |
| | | <ul style="list-style-type: none"> Develop rapid multiplication techniques for micro-propagation of fruits, nuts, vegetables, flowers and botanicals | <ul style="list-style-type: none"> Tissue culture protocols developed for banana, cassava, sweetpotato, potato, Vanilla, Coconut, arabicum and Aloe vera | Development of protocols for passion fruits, jatropha, macadamia, anthurium, moby dick are on-going |
| | | <ul style="list-style-type: none"> Develop rapid, sensitive, affordable, specific and user friendly diagnostic tests for livestock diseases | <ul style="list-style-type: none"> Diagnostic Latex Agglutination Tests developed for Contagious Caprine Pleuro-Pneumonia (CCPP), Contagious Bovine Pleuro-Pneumonia (CBPP) and Capripox. | Diagnostic test being validated: RT-PCR - Rift Valley Fever and Newcastle ELISA- Rif Valley Fever, Capripox PCR - Capripox |
| | | <ul style="list-style-type: none"> Develop vaccines priority livestock diseases in which live attenuated or inactivated vaccine have not been developed | <ul style="list-style-type: none"> Rift Valley Fever recombinant vaccine being evaluated | Rift Valley Fever and Contagious Bovine Pleuro-pneumonia Subunit Vaccines being developed. |
| | | <ul style="list-style-type: none"> Conduct Viability tests on conserved assorted germplasm | <ul style="list-style-type: none"> Viability tests have been conducted on about 4000 accessions | |
| | | <ul style="list-style-type: none"> Document, update and disseminate information on conserved germplasm | <ul style="list-style-type: none"> 95% of all data is digitally captured and updated. | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | | <ul style="list-style-type: none"> A draft Genebank seed list has been developed and undergoing review before it could be published. Have participated in several field days, demos, workshops | |
| | | <ul style="list-style-type: none"> Undertake priority germplasm collections in target areas | <ul style="list-style-type: none"> Over 1200 new accessions comprising yam, rice finger millet sorghum, cowpea and other assorted wild species have been collected and conserved. There 7 in the assorted species category that are new to science. | |
| | | <ul style="list-style-type: none"> Rehabilitate and maintain existing field genebanks | <ul style="list-style-type: none"> Four field genebanks (sweet potato, yam, sugarcane, fruit rehabilitated | |
| | | <ul style="list-style-type: none"> Regenerate, characterize and multiply priority germplasm | <ul style="list-style-type: none"> Three field genebanks (sweet potato, yam, sugarcane and fruit trees) rehabilitated. A fourth one has been established in Eastern Kenya | |
| | | <ul style="list-style-type: none"> Promote On-farm conservation of genetic diversity | <ul style="list-style-type: none"> Over 300 accessions of priority African leafy vegetables have been subjected to participatory characterization to spur infusion of the conserved germplasm among farming communities in western Kenya | |
| | | <ul style="list-style-type: none"> Coordinate germplasm conservation activities | <ul style="list-style-type: none"> Conservation activities coordinated and through holding planning meetings and monitoring visits | |
| | <i>ii) Social Economic (Dr. Murithi)</i> | <ul style="list-style-type: none"> Participate in the situational analysis of the identified APVCs of FC, HIC, livestock and NRM to identify areas of intervention and prioritize them across the regions | <ul style="list-style-type: none"> Facilitated the development of the of the prioritization criteria Participated in facilitation of capacity building for prioritization and analysis of APVCs | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|--|--|--|
| | | | <ul style="list-style-type: none"> Participated in the situational analysis of the APVCs in the three sub-sectors and prioritization of APVcs.. | |
| | | <ul style="list-style-type: none"> Participate in collaboration with PM&E unit in the establishment of baselines and setting of benchmarks for the various interventions for purposes of impact assessments | | |
| | | <ul style="list-style-type: none"> Conduct economic analysis (by determining costs of production, profitability- gross margins, returns to investments) of the technologies developed | <ul style="list-style-type: none"> Study completed on Farm level assessment of costs of adaptation to climate change in Marani District, Kisii and a report prepared | An increasing shift from traditional main crops to other crops and farm enterprises due to input-output price volatility |
| | | | <ul style="list-style-type: none"> Study completed on determination of economic optimal enterprise mix in North Rift, Kenya; - A report has been prepared showing the optimal combination of enterprises in the N. Rif. | |
| | | | <ul style="list-style-type: none"> Economic analysis of selected enterprises (cassava, milk, maize, eggs) in Coastal lowland Kenya study was completed and a report prepared – conference paper presented | |
| | | | <ul style="list-style-type: none"> A study to assess the storage losses of maize and pulses in coastal Kenya completed and report prepared. A Conference paper on the same was presented in Ghana | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|--|---|---------|
| | | | <ul style="list-style-type: none"> Economic Analysis of markets and production data for Crops and Livestock Enterprises for Product Value Chain Analysis study completed and a report prepared | |
| | | <ul style="list-style-type: none"> Conduct social analysis of the interventions to ensure they are socially acceptable and gender mainstreamed | <ul style="list-style-type: none"> A social, economic and cultural study to understand the low level acceptability of sorghum as a food security crop in the face of famine among the pastoral communities of the dry north rift: Lessons for food policy in Kenya's marginal areas completed and a report prepared. | |
| | | <ul style="list-style-type: none"> | <ul style="list-style-type: none"> A study on Wheat situational analysis completed based on participatory evaluation of wheat marketing structures in the wheat growing areas | |
| | | <ul style="list-style-type: none"> Conduct adoption/impact assessment studies to identify the adoption rates, adopters and their characteristics and productivity impacts of the interventions | | |
| | | <ul style="list-style-type: none"> Provide statistical support during the design, data analysis and interpretation for the various projects developed to increase productivity | | |
| | | <ul style="list-style-type: none"> Participate in collaboration with PM&E unit in the establishment of baselines and setting of benchmarks for the outreach and partnerships activities of impact assessment. | | |
| | | <ul style="list-style-type: none"> Participate in the situational analysis of the identified APVCs of FC, HIC, livestock and NRM to identify technologies and | | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | innovations for commercialization and prioritize them across the regions | | |
| | | <ul style="list-style-type: none"> Participate in collaboration with PM&E unit in the establishment of baselines and setting of benchmarks for commercialization of the various APVC purposes of impact assessments | | |
| | | <ul style="list-style-type: none"> Conduct economic analysis (by determining costs of production, profitability- gross margins, return to investments) of the technologies and innovations to be commercialized to ensure they are economically viable and competitive for the various players alo | | |
| | | <ul style="list-style-type: none"> Conduct social analysis of the commercialization of technologies and innovations ensure they are socially acceptable, have social equity and are gender mainstreamed | | |
| | | <ul style="list-style-type: none"> Conduct impact assessment studies to identify the levels of commercialization, competitiveness of the various technologies/innovations and the returns of the interventions for the different players along the APVCs | <ul style="list-style-type: none"> An impact assessment study on the effects of climate change on adoption of developed pyrethrum technologies by small holder pyrethrum producers was completed a report prepared | A dissemination process for the study results is planned for FY 2013/14 |
| | | | <ul style="list-style-type: none"> Assessing the economic impact of biological control agents in major Brassica growing areas study was completed and a report prepared | |
| | | | <ul style="list-style-type: none"> Study on the Evaluation and Promotion of Farmer Seed Enterprises for Vegetatively Propagated Crops in Western and Coastal Regions of Kenya was completed and a report prepared | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | <ul style="list-style-type: none"> Analyze the market opportunities and provide market information for the technologies and innovations with potential for commercialization | <ul style="list-style-type: none"> A study to assess the transaction costs for raw milk value chain actors in Central Kenya was completed and a report is being prepared | This is a continuing project occasioned by delays in funds disbursement |
| | | | <ul style="list-style-type: none"> Provision of market information on QPM products to IPTAs Farmers | This study is still pending due to slow disbursement of funds |
| | | | <ul style="list-style-type: none"> A study on the Structure, Conduct and Performance of Soybean in Central Rif valley completed and a report prepared. | |
| | | | <ul style="list-style-type: none"> Improved production, marketing of honey and other bees products study was carried out in the mountainous areas of Marsabit, Laisamis and Samburu districts and a report completed - interventions on marketing of hive product in Tuum, Kurungu and Salato groups developed in a participatory manner | |
| | | | <ul style="list-style-type: none"> Market analysis for the development of value added cotton products study was completed and a report prepared. The areas studied and analysed included | |
| | | | <ul style="list-style-type: none"> Market out let for value added cotton products | |
| | | | <ul style="list-style-type: none"> Costs and benefits associated with the processing cotton into various products | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| \ | | | <ul style="list-style-type: none"> Establishment of cotton value addition facilities in the target region | |
| | | | <ul style="list-style-type: none"> A study on the Economic Analysis of markets and production data for Crops and Livestock Enterprises for Product Value Chain Analysis was completed and a report prepared focusing on the in-depth economic analysis to compare different farming systems with respect to crop and livestock enterprises in | |
| | | | <ul style="list-style-type: none"> terms of costs, profit and productivity in selected mandate districts of KARI Embu A study on Markets and marketing strategy for KARI towards commercialization was completed and a report prepared | |
| | | <ul style="list-style-type: none"> Conduct policy analysis and participate in formulation of appropriate policies to enhance commercialization and competitive of the various APVCs | <ul style="list-style-type: none"> A study to assess the transaction costs for raw milk value chain actors in Central Kenya was completed and a report is being prepared Provision of market information on QPM products to IPTAs Farmers | Report not prepared as the officer proceeded on maternity leave |
| | | | <ul style="list-style-type: none"> A study on the Structure, Conduct and Performance of Soybean in Central Rif valley completed and a report prepared. | Policy Briefs for each commodity will be prepared and distributed to stakeholders |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | | <ul style="list-style-type: none"> Improved production, marketing of honey and other bees products study was carried out in the mountainous areas of Marsabit, Laisamis and Samburu districts and a report completed - interventions on marketing of hive product in Tuum, Kurungu and Salato groups developed in a participatory manner | |
| | | | <ul style="list-style-type: none"> Market analysis for the development of value added cotton products study was completed and a report prepared. The areas studied and analysed included | |
| | | | <ul style="list-style-type: none"> Market out let for value added cotton products | |
| | | | <ul style="list-style-type: none"> Costs and benefits associated with the processing cotton into various products | |
| | | | <ul style="list-style-type: none"> Establishment of cotton value addition facilities in the target region | |
| | | | <ul style="list-style-type: none"> A study on the Economic Analysis of markets and production data for Crops and Livestock Enterprises for Product Value Chain Analysis was completed and a report prepared focusing on the in-depth economic analysis to compare different farming systems with respect to crop and livestock enterprises in terms of costs, profit and productivity in selected mandate districts of KARI Embu | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|---|--|--|
| | | | <ul style="list-style-type: none"> A study on Markets and marketing strategy for KARI towards commercialization was completed and a report prepared | |
| | | <ul style="list-style-type: none"> Participate in the stakeholder analysis for various APVCs to identify the key partners | <ul style="list-style-type: none"> SEAS Scientists participated and facilitated stakeholder analysis studies for the various APVCs | |
| | | | <ul style="list-style-type: none"> | |
| | | <ul style="list-style-type: none"> Participate in the development of the methodologies/approaches for technology upscaling | <ul style="list-style-type: none"> Analysis of adoption of dairy goat technologies in Vihiga County, Western Kenya. A study on the evaluation of Effectiveness of Agricultural Technology Transfer Methods in Northwest Kenya was completed—a report was prepared on effectiveness of print media as a dissemination pathway and a paper was presented at the KARI conference <ul style="list-style-type: none"> A study on the Evaluation of information sources for livestock producers and traders in Narok, Kenya was completed and a report prepared showing the impact of the changes in land use in these areas | <p>Not so many households listen to agricultural radio programmes However some of them are aware of the airing of agricultural</p> |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | <ul style="list-style-type: none"> Participate in collaboration with HRD division in the design and implementation of capacity building activities in the areas of economic and social analysis methodologies, PM&E and statistical research methods | <ul style="list-style-type: none"> Trainings on APVC process held Training of scientists on appropriate statistical skills held In collaboration with PME unit, trained scientists on conduct of baseline survey studies | |
| | | <ul style="list-style-type: none"> Liaise with ICT and supplies divisions to acquire and install appropriate statistical analysis software (SAS, SPSS) for use by scientists | <ul style="list-style-type: none"> - 1.Statistical software is part of the ICT capacity and infrastructural development the institute is implementing. | |
| | iii) Range Management (Dr. Keya) | <ul style="list-style-type: none"> Constraints and opportunities for improvement of selected range resources value chains and production systems identified, prioritized and proposals developed | <ol style="list-style-type: none"> Constraints and opportunities for the following ASAL resource 4 value chains were identified and prioritized : <ul style="list-style-type: none"> Honey Doum palm Prosopis Fodder Proposals for interventions were elaborated for honey and doum palm value chains. However the prioritization for the fodder and Prosopis value chains are in the process of being done A study on the current status and trends of camel production in southern rangelands and north rift was undertaken with constraints and opportunities identified. Stakeholder workshop to prioritize interventions and proposal writing is yet to be done | <p>Funding flow and political situation affected timely implementation of the activity Target is 80% achieved</p> |
| | | <ul style="list-style-type: none"> Assess trends in range conditions and forage availability as related to climate change, human impact and land-use | <ol style="list-style-type: none"> Trends in range condition and forage resources was assessed for 5 districts namely: <ul style="list-style-type: none"> Garissa- on forage resources Baringo, Koibatek, Samburu for key browse plants Kajiado, for development of antihelmintics resistance in small | <p>Funds flow interruptions and political situation delayed implementation Target is 80% achieved</p> |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | | ruminants and <ul style="list-style-type: none"> • Kajiado for performance of Sahiwal and its cross-breds 2. Proposal development not yet achieved | |
| | | <ul style="list-style-type: none"> • Identify and prioritise interventions for rangeland restoration and improvement including management of rangeland watersheds and riparian zones | A proposal for enhancing range restoration through nutrient re-cycling and integrated production has been approved for 2013-14 plan year | <ul style="list-style-type: none"> • Low fund allocation to the programme did allow full implementation of the objective. • Target is 40% achieved |
| | | <ul style="list-style-type: none"> • Test interventions for range improvements with regard to loss of biodiversity and pasture productivity | 1. Interventions for improving the honey value chains were identified and tested. These are: <ul style="list-style-type: none"> • Training and capacity building of beekeepers in improved harvesting and processing of quality honey • Providing honey processing equipment to beekeepers groups • Beekeepers groups were linked to markets in Marsabit and Kibwezi honey producing areas • Testing of honey for quality was conducted | Erratic funding, and political situation delayed implementation Limited fund allocation could allow the objective to be fully realised |
| | | <ul style="list-style-type: none"> • | 2. Results have been partly documented as monitoring of impacts of interventions are still ongoing | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | • | .3. Interventions for improving the Doum palm value chain have been elaborated and testing is to begin in the 2013/14 workplan | |
| | | • | 4 Interventions for improving fodder value chains including grass hay and browse will be identified through a stakeholders workshop planned for Y3Q4 • | |
| | | • | 5. Interventions for control of Prosopis juliflora through utilization as livestock feed have been identified and a proposal is to be elaborated | |
| | | • Disseminate range improvement technologies including range reseeding and in-situ woodland protection | • Technologies for improved honey production were disseminated in Marsabit and Kibwezi. | • Low funding levels limited full achievement of this objective. • Target 60% achieved |
| | | • Develop strategies for utilization of oases and mountain ecosystems for improving crop-livestock integrated value chains for agro-pastoralists in arid zones | • Blue print developed for Garissa mandate area. • Losses associated with vegetable production in Marsabit and Isiolo have been documented and strategies reducing losses developed. • Study on enhancing productivity through crop-livestock integration is proposed for 2013-14 workplan period • Strategies for enhancing efficiency of green house farming are to be elaborated through a study proposed for 2013-14 | • Limited funding. Some activities Proposed for year 4 of the project. • 80% achieved |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
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| | | | workplan period | |
| | | <ul style="list-style-type: none"> Develop recommendations for ecologically sustainable, economically viable and socially accepted integrated human- wildlife-livestock systems in rangelands | Not achieved | Objective not achieved due to low funding level. Status of knowledge on the subject to be elaborated in year 4 of the project |
| | iv) Animal Health (Dr. Wamae) | <ul style="list-style-type: none"> Develop more efficient and cost effective diagnostic kits for diseases of major veterinary and Zoonotic importance in Kenya | <p>CBPP CFT for bovine pleuropneumonia</p> <p>Residue Analysis ELISA test for livestock products such as milk and meat has been tested.</p> | <p>Reagents have been supplied to DVS Central Veterinary Laboratory (CVL)</p> <p>Residue analysis is carried out at TRC, Muguga</p> |
| | | <ul style="list-style-type: none"> Develop and apply efficient and cost-effective vaccines and drugs that guarantee the availability of livestock and livestock products in sufficient quantities and quality | 200 cattle immunised in Kajiado using <i>Theilkeria parva</i> strain Merikebuni to demonstrate use of the vaccine in a pastoral setting. | <ul style="list-style-type: none"> |
| | | <ul style="list-style-type: none"> | <ul style="list-style-type: none"> Testing of M001 and M002 Merikebuni ECf vaccine batches initiated. Initial results indicate 67% protection and this awaits confirmation through further testing. | <ul style="list-style-type: none"> Prospects for additional ECf vaccine doses packaged in fewer farmer friendly packages (currently 10 dose packs) |
| | | <ul style="list-style-type: none"> Develop, adapt, evaluate and recommend disease and vector surveillance and control technologies for use by the Department of Veterinary Services | Accreditation of the Virology lab to ISO 17025:2005 is underway and a consultancy services are under procurement to guide the process. Laboratory manuals have been prepared and staff trained on ' Measurement of Uncertainties' | This is expected to be a regional reference lab and also support the DVS in Trans-boundary Animal Diseases (TADs) control in Kenya. |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|------------------|--|---|
| | | | and ' Internal Audit for ISO 17025:2005'. Quality Policy System for ISO 17025 draft developed. | |
| | | • | Sampled anthelmintics from Western and North Rift were found to be ineffective thus increasing dangers of worms developing resistance to drugs. | This shows an urgent need for inspectorate services to enforce quality standards. A paper on thios was presented in a scientific conference. Improper use of trypanocides has resulted in drug resistance by trypanosomes . |
| | | • | | Cattle handling facilities constructed at Alupe. |
| | | • | | Vital support has been provided by the Slovak Government in automation of the process |
| | | • | | The parasite is spread by wild carnivores and affects beef quality. A paper is being prepared on findings. |
| | | • | Farmer groups trained on preparation of Molasses urea blocks as a feed supplement. | |
| | | • | Studies on prevalence of trypanocidal drugs use in Narok and Transmara revealed a need for proper drugs use. Farmers were trained on proper use of trypanocidal drugs and 30 | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|---|---|---|
| | | | Trainers of Trainers were also trained. | |
| | | • | Orma Boran trypanotolerant cattle herd has been established at Alupe for cross-breeding to impart trypanotolerance in the area which is tsetse infested | |
| | | • | Mass rearing of tsetse flies for use in the sterile insect technique has continued at Muguga. | |
| | | • | Sero-prevalence of <i>Neospora caninum</i> in Rumuruti, Naivasha, Kajiado, Kiboko and Isiolo cattle indicated cattle are exposed to the parasite. | |
| | | • Conduct an IP audit and screening of animal health products (diagnostic kits and improved vaccines) for commercialisation | Development of thermostable Newcastle disease vaccine under KAPP requires MoU with KEVEVAPI to agree on contribution to research fund | NCD vaccine under mass production. |
| | | • | CBPP CFT diagnostic test has been identified as ready for commercialization. Production of reagents ongoing in the lab. Trade mark applied for and awaited from KIPI. | Work on development and production of reagents in the laboratory was conducted under KAPAP while the commercialization phase is being done under USAID funding. |
| | | • | .Construction of the Technology Packaging unit at Muguga North | Architectural drawings were discussed with the Architect from Ministry of Public Works. No Objection awaited from World Bank. |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|------------------------------------|---|--|---|---------|
| | <i>v) Crops health (Dr. Ochieng / Dr. Wasilwa)</i> | <ul style="list-style-type: none"> • Development and production of biocontrol agents for priority pests and pathogens of selected crops | | |
| | | <ul style="list-style-type: none"> • Development, validation and promotion of integrated pest management technologies for priority pests and pathogens of selected crop production systems (maize, Passion fruit, potato) | | |
| | | <ul style="list-style-type: none"> • Determining the incidence, severity, distribution and management practices for selected pests/diseases/weeds | | |
| | | <ul style="list-style-type: none"> • Developing diagnostic kits and protocols for selected diseases | | |
| | | <ul style="list-style-type: none"> • Development of repository and retrieval systems for fungal, viral and bacterial pathogens | | |
| | | <ul style="list-style-type: none"> • Digitization and updating agricultural insect pest collections | | |
| | | <ul style="list-style-type: none"> • Development of herbaria/conservancy and identification systems for noxious weeds and invasive plant species | | |
| | | <ul style="list-style-type: none"> • Evaluating the efficacy of pest control products for integration with other management options | | |
| | | <ul style="list-style-type: none"> • Developing pest risk analysis (surveillance/forecasting) tools and protocols for selected pests/diseases/weeds | | |
| | | <ul style="list-style-type: none"> • Coordination and backstopping of Crop Health Programme | | |
| INSTITUTIONAL STRENGTHENING | Decentralize resource management to research programs and KARI centres | i) Implement reforms on KARI corporate governance | Research planning is now programme based. Programme leaders develop AWP's with centres. | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---|--|--|--|
| | <p>(KARI Management) Implement reforms on research programs <i>i) Improved planning, implementation and resource management and accountability (Dr. Mose/ Mr. Kivui/Mr. Ndei)</i></p> | | The AWP's vetted by Research Coordination Committee (RCC) and KARI Budget Committee allocates resources to support research activities implementation at Centres | |
| | | ii) Develop and implement structure | | |
| | | iii) Develop new procedure manuals | All positions for the 3 Departments of Research and Technology, Outreach and Partnerships and Finance and Administration have been filled | |
| | | iv) Build capacity | Capacity has been developed for M&E and a unit set up. A KARI Project Planning and Management System (KPPMS) has been developed for rolling out to centres | |
| | | <ul style="list-style-type: none"> • Make improvements in the Institutional PM&E by providing support/guidance to the technical and support divisions of KARI | - Several trainings on M&E principles and Practice | |
| | | <ul style="list-style-type: none"> • Develop planning, monitoring and evaluation manuals to guide the implementation of various actions within the institute and provide the necessary backstopping | <ul style="list-style-type: none"> ○ Developed data capture templates ○ ISO 9001:2008 PME procedures distributed to all centres currently being used as a manual | <i>M&E workshop proceedings currently used as planning, Monitoring & evaluation Manual</i> |
| | | <ul style="list-style-type: none"> • Coordinate the completion of the revision of the 2nd KARI strategic Plan and its Implementation Framework | KARI strategic Plan and implementation Framework done. Also revised to reflect changes in government structure (devolved system) | |
| | | <ul style="list-style-type: none"> • Collaborate with ICT in the designing of an appropriate management information system (MIS) for the Institute and ensure its implementation | - KARI Project Performance and Monitoring System (KPPMS) in place, Already rolled out to six centres | - Roll out of system to all other centres to continue starting July, 2013. |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---------------------------|---|---|---|
| | | <ul style="list-style-type: none"> Identify and deploy the right personnel to spearhead the activities of the PM&E Unit at the headquarters and centres | Done. Appointment of Centre Monitoring & Evaluation Officers in all centres | |
| | | <ul style="list-style-type: none"> Conduct training needs assessment and coordinate training in the use of PM&E tools and processes for both the PM&E support group and other personnel, In collaboration with the HRD and SEB divisions | _ Training on use of PME tools (data capture templates, logframes and Performance Monitoring Plans) | - Often done in collaboration with other projects (EAAPP, USAID and ASAL-APRP) |
| | | <ul style="list-style-type: none"> Generate appropriate reports on a timely basis on the use and practice of planning, monitoring and evaluation system in the Institute | - Status of attainment of Strategic Plan targets done in 2012. | - Status of attainment of Strategic Plan targets to be done in late June / early July 2013. |
| | | <ul style="list-style-type: none"> Establish a Performance management system that incorporates the planning of employees' performance into quantitatively verifiable targets, progressive performance monitoring and performance appraisal | | |
| | | <ul style="list-style-type: none"> Create staff awareness on new performance management system, and the use of the new performance appraisal tool | | |
| | | <ul style="list-style-type: none"> Update and integrate the MIS component databases | Not achieved | Planned to be undertaken after full operationalization of KPPMS (the project management module) |
| | | <ul style="list-style-type: none"> Train staff on operations of the integrated MIS | Not done, however on use of KPPMS is on-going. | |
| | | <ul style="list-style-type: none"> Coordination of PM&E activities | | |
| | | <ul style="list-style-type: none"> Implement a Quality Management System structured on the certification of ISO 9001:2001 standards for the Institute's processes and ISO 17025 for the | | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|--|--|--|---|
| | | Institute's laboratories | | |
| | | <ul style="list-style-type: none"> • Improve research planning, review and approval processes to reflect changes prompted by feedback from end-users and or emerging challenges and to improve accountability | Research Coordination Committee re-invigorated. The committee allocates resources to prioritized research projects that reflect client (user) needs. | |
| | | i) Strength capacity for procurement and maintenance of the various physical resources | | |
| | | ii) Strength capacity for effective and efficient management and use of financial resources | | |
| | | iv) Procurement of plant and equipment | | |
| | | v) Procurement of vehicles | | |
| | | vi) Procurement of consultancy services | | |
| | | vii) Purchase office stationery | | |
| | | viii) Purchase repair and maintenance services for vehicles and equipment | | |
| | | ix) Purchase fuel for vehicles | | |
| | ii) Develop the governance structure c) Strengthening research support systems (Mr. Yego) | | | |
| | d) Improved KARI wide ICT capabilities for research effectiveness (Mr. Akuku) | <ul style="list-style-type: none"> • Develop and operationalise ICT system and activities in KARI | ICT needs assessment was carried out in 2011: gaps, requirements analysed and documented. Specifications and | Review is needed to harmonise the changes since the report was made |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|--|---|--|---|
| | <i>i) Conduct needs and gap assessment, requirements specification and design</i> | | designs were made and procurement initiated | |
| | | <ul style="list-style-type: none"> Local Infrastructures improved and in place | ICT: Covered under on-going tenders | There is still need to renovate libraries in all KARI centres Proposed pre-press unit, and studios are still pending |
| | | <ul style="list-style-type: none"> Computers and communication tools established | ICT: Computers and accessories totalling to 900 units tendered and awarded deliveries expected in July 2013 | |
| | | <ul style="list-style-type: none"> Local Area Networks for all centres integrated | ICT: LAN tender for all centres completed and awards to be done in May 2013. Wide Area Network integration for centres established for Kibos, Embu, Mtwapa, Njoro the rest of the centres are expected to done in July 2013. | However, all connectivity will be improved to cover all centres in a WAN tender |
| | <i>ii) Upgrade interconnection between KARI centres through a wide area network</i> | <ul style="list-style-type: none"> WWW Internet Access provided | ICT: Primary and Backup internet capacities increase to total 29mbps, Backup services were procured through Access Kenya at 10mbps, whereas Primary access through KENET has increased to 19mbps | Plans underway to establish new DR site with high Internet capacity which will be a hot site. |
| | | <ul style="list-style-type: none"> Development and Establishment of Data centres, Information Repositories and Information Systems | ICT: Tender for KARI data centres at Njoro & HQ floated. Each data centre will have the requisites ICT equipments, servers and communication devices | |
| | | <ul style="list-style-type: none"> Operations and Maintenance | ICT: Maintenance of Copiers and UPSes, Printers and Computers and replacements have continued to take place | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|--|---|--|--|
| | | | <p>Information) is a programme under the International Network for the Availability of Scientific Publication (INASP) The Programme provides access to over 20,000 information resources</p> | <p>and Tendered Procurement of books in progress</p> |
| | <p><i>iii) Development of ICTM policies and procedures for information management and sharing</i></p> | <ul style="list-style-type: none"> Publication of scholarly electronic and print media products and services | <p>Publications published by the Publication Services and Products Unit (PSPU) include Annual reports 2009-2011, Internal newsletters (KARI High lighter and KARI Infocus), Publicity materials developed,(Roll-up banners, brochures, leaflets, event programmes. Editorial services provided Audio/visual services (photography and video recording) provided upon request to internal clients Layout and design services provided for institutional documents</p> | |
| | | <ul style="list-style-type: none"> Market and promote KARI information products and services | <p>IMCT actively participated in Agricultural Society of Kenya (ASK) annual shows, other relevant shows, farmer field days at KARI centres and other venues, and exhibitions, workshops/seminars and conferences at various for a</p> <p>Institutional publications uploaded and availed on the website</p> <p>Website developed for Library and Information Services (LIS)</p> | |
| | | <ul style="list-style-type: none"> Coordinate, Monitor and Evaluate IMCT | | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|--|---|--|---|
| | | • | | |
| | e) Civil works, Furnishing and equipping Garissa KARI Centre to serve livestock community (Mr. Yego and Mr. Mbaluku <i>i) Civil works</i> <i>ii) Furnish and equip centre</i> | <ul style="list-style-type: none"> Hiring of engineering and architectural consultants | KAPAP chose to use MOPW engineers as consultants. | |
| | | <ul style="list-style-type: none"> Design and preparation of bills of quantities | Architectural drawings were approved by client (KARI) and returned to KAPAP but to date no further information on the way forward. | |
| | | <ul style="list-style-type: none"> Tendering process to select contractor | | |
| | | <ul style="list-style-type: none"> Roll out civil works | Not done | |
| | | <ul style="list-style-type: none"> Prioritize the Training Needs of each of all categories of staff | A Five Year Training Needs Assessment Report containing priority training needs for all categories of staff was accomplished | Achieved |
| | | f) Capacity Building (Mr. Kivui / Mr. Akuku) <i>i) Implement recommendations from TNA</i> <i>ii) Review the Human Resource strategy</i> <i>iii) Update and improve the human resource MIS modules</i> | <ul style="list-style-type: none"> Prepare a Training schedule for the prioritized training needs | A Five Year Master Training plan scheduling prioritized training was accomplished |
| | <ul style="list-style-type: none"> Source for the most suitable training provider for each of the training interventions | | Long term courses under KAPAP are taken at Local Training Institutions and short term skills development training and workshops are advertised to as per procurement Act requirements. Most competitive consultancy firm is acquired for the | Achieved |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---|---|---|--|
| | | | respective areas of skills development | |
| | | <ul style="list-style-type: none"> Organize and coordinate the training schedules | HRD Annual Training and Work Plans and budgets for scheduled activities are in place | Achieved |
| | | <ul style="list-style-type: none"> Conduct post training evaluation to establish the extent of skills transfer | Impact assessment on transfer of skills are conducted and reports maintained | Some impact assessment done for Secretarial, Customer Care and defensive Driving courses have been done |
| | | <ul style="list-style-type: none"> Develop human resource and management interventions for improving the overall institutional efficiency and effectiveness | New Schemes of service; Terms and conditions of service were done and approval from the Ministry of Agriculture obtained In addition, courses have been organized as a means of intervention to improve productivity of staff | HRD will continue organizing courses to expose staff of their job requirements and impart knowledge in respective areas of work as planned in the HRD Annual work plan for 2013/14 |
| | | <ul style="list-style-type: none"> Hiring of a Consultant | Not done | |
| | | <ul style="list-style-type: none"> Coordinating the review | Not done | |
| | | <ul style="list-style-type: none"> Printing, publication and distribution of the new HR strategy | Not done | |
| | | <ul style="list-style-type: none"> Updating the current modules to optimize on data capture, storage and retrieval | | |
| | | <ul style="list-style-type: none"> Updating the capacity of the end users to improve their utilization of the system | | |
| | <p>g) Establish and build capacity of an adaptive research, outreach and partnership department (Mr. Kiriro / Dr. Ouda))</p> <p>i) Develop a strategy for</p> | <ul style="list-style-type: none"> Assess and document current status, challenges, constraints and opportunities in the establishment and operationalisation of strategic and effective partnerships | A preliminary draft of outreach and partnerships strategic plan already in place | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---|---|--|---|
| | <i>outreach and partnership Unit</i> <i>ii) Operationalise the strategy and unit</i> | | | |
| | | <ul style="list-style-type: none"> Develop guidelines on partnerships and collaboration | Preparation of policy on partnerships in progress | |
| | | <ul style="list-style-type: none"> Conduct stakeholder analysis in collaboration with other programmes for various APVC to identify the key partners | Participated in stakeholder analysis of Food crops, Horticulture and Livestock sub sector value chains and reports are available | |
| | | <ul style="list-style-type: none"> Establish partnership with key institutions i.e NARIs, IARCs, Extension providers, farmer organisation, Agri-business sector | 103 MOUs signed with National Agricultural Research Institutes, Universities, and other agricultural sector stakeholders | |
| | | <ul style="list-style-type: none"> Promote integration of strategic and effective partnership mechanisms in KARI's R&D programmes | Memoranda of Understanding (MOUs), Legal Agreements signed with various partners | |
| | | <ul style="list-style-type: none"> Conduct ex-post assessment of the status and impact of partnerships in KARI's R&D activities, agricultural productivity and commercialisation | To be done on completion of policy | |
| | | <ul style="list-style-type: none"> Evaluate and prioritise innovative and effective methodologies/approaches for technology adaptation and adopt two | Innovation Platform methodology being evaluated on maize and legumes and their management practices in KARI Kakamega and KARI Embu (SIMLESSA project) | Roll out to the rest of KARI centres to be done later in the year |
| | | <ul style="list-style-type: none"> Evaluate and prioritise innovative and effective methodologies/approaches for technology up-scaling and adopt two | Innovation Platform methodology being evaluated maize and legumes and management practices in KARI Kakamega and KARI Embu (SIMLESSA project) | Roll out to the rest of KARI centres to be done later in the year |
| | | <ul style="list-style-type: none"> Assess impact of adoption of innovative and effective methodologies/approaches for technology adaptation and up scaling | Study of the impact of Innovation Platform methodology on scaling out of maize and bean varieties and management practices has been carried out in KARI Embu and KARI Kakamega | |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|---|---|---|---|
| | <i>iii) Review, validate and upscale adaptive research methodologies</i> | <ul style="list-style-type: none"> Assess current status of adoption of KARI technologies through adoption studies | Joint adoption studies with Social Economics and Applied Statistics division | |
| | | <ul style="list-style-type: none"> Develop a mechanism for screening technologies, products and services for purposes of commercialisation | Farmer evaluations through Mother Baby Trial method for varieties in all centres. - Technology Innovation Units (TIUs) established in ten centres for popularising products and services | |
| | | <ul style="list-style-type: none"> Develop a “client-friendly” database of KARI’s technologies, products and services to promote awareness | Inventory of KARI technologies at an advanced stage | |
| | <i>iv) Promote adoption of KARI's KITS (Dr. Makini)</i> | <ul style="list-style-type: none"> Promote awareness and adoption of KARI technologies, products and services | 91 Leaflets produced in English and 76 translated into Kiswahili - Technologies products and services promoted through the KARI website - Promotion of KARI innovations through KBC (<i>mkulima</i>) and Citizen (<i>Shamba shape up</i>) television programmes - TIU ‘s established in ten centres - Participated in field days, shows and exhibitions | |
| | | <ul style="list-style-type: none"> Conduct ex-post assessment of the status of adoption of KARI technologies | Adoption studies jointly with Socio economics and Applied statistics division | |
| | | <ul style="list-style-type: none"> v) Capacity building | 23 Centre Outreach and Partnerships Officers (COPOs) trained, - 20 Scientists trained on IP | |
| | <i>v) Develop strategies and mechanisms for sustainable Funding (Dr. Wandera / Mr. Ngigi/ Mr. Kahuro and Ms. Masila)</i> | a) Establish legal status of ARIS as commercial entity | <ol style="list-style-type: none"> Memoranda and articles of association prepared ARIS Business strategy plan presented during board of management retreat in December 2010 | 80% achievement; only appointment of Directors and registration of company remaining. |
| | <i>i) Develop KARI's Agricultural Research Investment Services (ARIS)</i> | b) Develop strategy and business plans | <ol style="list-style-type: none"> ARIS strategic business’ plan prepared. 12 Centre commercial | 100% achieved |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|-------------------------|--|---|---|---|
| | | | business plans prepared. | |
| | | c) Roll out the business plan | | |
| | | Commercialize KARI's surplus farm resources | Farm Business plans for Oljoro-orok, Kitale, Muguga South, Mtwapa, Msabaha, Mariakani, Buchuma and Kiboko under implementation | 100% achieved |
| | | Commercialize KARI's laboratory and analytical services | Commercialization business for KARI Kakamega Tissue culture laboratory under implementation | 100% achieved |
| | | Commercialize KARI's hospitality services | Commercialization plan for KARI Retreat centre under implementation | 100% achieved |
| | ii) Establish Agricultural Research Trust Fund for KARI | a) Facilitate the registration of the Trust Deed | This milestone was not achieved | The NARS policy and plans to establish umbrella organization for all NARIs, under which a Trust fund is to be set up, slowed down the establishment of a Fund only for KARI |
| | | b) Create awareness of the Trust Fund among stakeholders | This milestone was not achieved | This activity was planned as a follow-up of the registration of Trust Deed. It could not be undertaken due to the reasons above |
| | | c) Support the mobilisation of financial resources for the Trust Fund | This milestone was not achieved | Similarly this activity could not be undertaken due to the reasons stated above |
| | | Enhance capacities of KARI scientists to compete for research grants, sourcing, bidding and execution of research contracts and consultancies | <ul style="list-style-type: none"> Trained a total of 60 scientists in grant-winning proposal writing skills Sourced for research Calls and communicated with all KARI Centres Processed applications/Concept Notes/Full proposals and submitted to potential donors | The efforts have significantly increased funding through this stream. In 2008/2009 the Institute had secured about KES 500 million, however by 2012/2013 the figure has increased to over KES 1 billion |

| Major areas of Support: | Specific Areas of Support | Object/Activity* | Achievements** | Remarks |
|---|--|--|--|---|
| | | Establish an effective system to enable KARI benefit from Royalties, from its technologies | <ul style="list-style-type: none"> • A Royalties committee has been formed • A catalogue of all companies that have signed contracts with KARI has been established, and the status of remission, indicated • Follow up on payments is done by correspondence through KARI legal office | <ul style="list-style-type: none"> • 16 firms have entered into License Agreements with KARI. • So far very few of these firms have paid any royalties. • The committee is developing modalities of engaging the firms to ensure that they honour their obligations in the License Agreements. |
| | | Establishment of an endowment fund, sinking fund, debt swaps, gifts etc | This milestone has not been achieved | The activity was to be undertaken after registration of the Deed, and thus could not be undertaken due to the reasons stated above |
| | iii) Strengthen and support intellectual property capabilities | a) Develop institutional IP policy and develop implementation framework | | |
| | | b) Create awareness | | |
| | iv) Develop capacity in lobbying and negotiation skills for additional government funding (KARI Management) | a) Develop guidelines and procedures for commercialisation of research outputs | | |
| | | b) Inventorise commercialisable research outputs | | |
| | | c) Create awareness | | |
| DEVELOP APPROPRIATE TOOLS TO SUPPORT CREATION OF START-UP AGRI-BUSINESS COMPANIES (Mr. Kahuro / Masila, Dr. Wandera) | | a) Support development of a mechanism to facilitate linkages | | |
| EXCHANGE LINKAGE WITH EAAPP (Dr. Wandera) | | b) Disseminate small holder dairy technologies | | |
| | | c) Support value addition investments in the dairy sector | | |
| | | | | |

- Legend**
1. * In some areas of research focus, the column refers to an **objective** and in some others, it refers to an **activity**. In the case of an **objective** this implies there could be more than one activity
 2. ** In case of **achievements**, please indicate what you have achieved (as milestones) i.e. what has been achieved against what was planned (targeted).
 3. Where responsibilities are multiple; please respond appropriately (i.e. what your specific research area was to address).