



Consolidating achievements



Annual
Report 2015





The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) is a not-for-profit sub-regional organisation. ASARECA comprises 11 member countries: Burundi, the Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, South Sudan, Sudan, Tanzania and Uganda.

ASARECA VISION

To be a regional leader in agricultural research and development for improved livelihoods in Eastern and Central Africa

ASARECA MISSION

To enhance regional collective action in agricultural research for development, extension and agricultural training and education to promote economic growth, fight poverty, eradicate hunger and enhance sustainable use of resources in Eastern and Central Africa.

ASARECA brings together scientists and development workers from the national agricultural research institutions of the 11 member countries to work collectively with farmers; regional and international research; extension and training organizations; public and private sector actors; NGOs; the regional economic communities; and development agencies, to generate, share and promote knowledge and innovations to assist smallholder farmers to practice productive and profitable agriculture.



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Cover photo: A couple in Machakos, Kenya baling hay for use during the dry season. The grass was grown under strict water management innovations.

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ASARECA COVERAGE



AFRICA



0 500 1000KM
0 250 250MILES

LEGEND
■ ASARECA countries

Briefing by the Chairman, ASARECA Board of Directors

Dr Ambrose, Agona

This is the 21st year since the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) was established. This also marks the second year of implementation of ASARECA's 2nd Operational Plan (OP II 2014-2018).

Our 2nd Operational Plan builds on experiences gained from implementing the first plan which ended in 2013. OP II was designed to address emerging challenges including food security and nutrition for the ever-increasing population, adverse effects of climate change and variability.

To this end, the ASARECA Board of Directors approved the adoption and implementation of tenets of Climate Smart Agriculture due to its potential to positively contribute to food security and sustainability of agriculture besides its contribution to the whole range of Sustainable Development Goals including economic, social and environmental development.

The 2nd Operational Plan is implemented under the auspices of four thematic areas namely: Natural Resource Management and Ecosystem Services (NRMES); Markets, Market Linkages and Trade (MMLT); Sustainable Agriculture, Food Security and Nutrition (SAFSN); and Knowledge and Information Hub (KI-Hub).

To improve on her Governance, ASARECA developed and finalized its risk management policy during the year under review. The policy was designed to manage the organisations' stakes, risks and vulnerabilities both strategically and operationally. The policy adds value to ASARECA's decision making processes by





facilitating the identification, evaluation and management of risks within the organization in a coordinated manner. It is anticipated to contribute to improvement in strategic planning processes and ensuring compliance with institutional safeguards.

Reputed for our capacity development and training role in Eastern and Central Africa, ASARECA has developed a policy for capacity building. This is meant to ensure effective implementation of all the capacity strengthening initiatives which are facilitated by ASARECA and its partners in the region. The policy comprehensively identifies gaps and needs in human, institutional and infrastructure resources development and proposes how they will be covered.

Based on our history of creating and promoting enduring partnerships, the capacity development policy will be enriched with resources, contributions and inputs from networks and syndicates on capacity for research and development. It is hoped that this document will act as a reference for strategic capacity building and partnerships development interventions in the ASARECA sub-region.

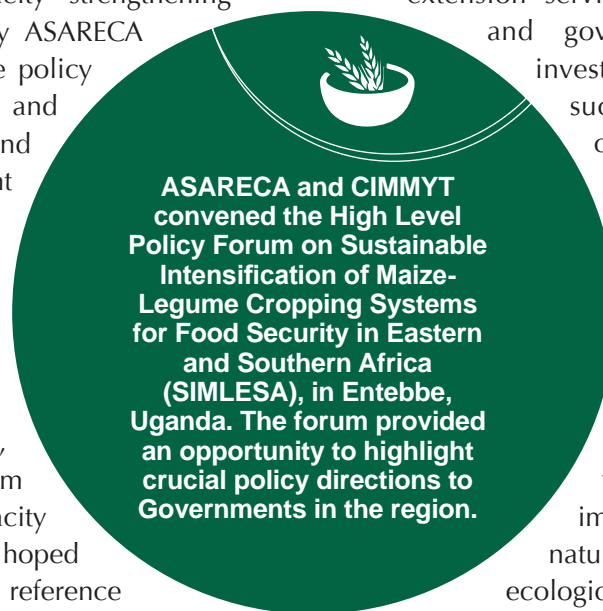
ASARECA in conjunction with CIMMYT convened a High Level Policy Forum on Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA), in Entebbe, Uganda on October 27th to 28th. Participants at the forum included

policy makers, researchers, farmers and the private sector. The forum provided an opportunity to highlight crucial policy directions developed through rigorous research and consultation by researchers from across Africa to Ministers and other Government officials.

The areas of policy intervention discussed during the forum included the following: extension services; non-tariff trade barriers; collaboration between researchers, extension service providers, the private sector and government agencies; access to investment capital; access to inputs such as fertilizer etc. The forum culminated in the signing of a joint communique' by representatives of the Ministers of Agriculture from Kenya, Mozambique, Rwanda, Tanzania and Uganda on key policy commitments by the respective governments.

In this report, we present the progress achieved in implementation of innovative natural resource-based initiatives in ecologically sustainable ways to enhance the competitiveness of crop and livestock systems.

With this briefing, I welcome you to read through this report and familiarise yourself with what ASARECA was able to do in 2015. A copy of this report can also be accessed at www.asareca.org



Briefing by the Interim Executive Secretary, ASARECA

Prof. Francis Wachira

2015 was the second year of implementation of ASARECA's Second Operational Plan (OP II). We are delighted to share with you progress made in the promotion of agricultural innovations in Eastern and Central Africa. Two examples from one of our flagship projects facilitating farmers to harness scarce water resources at farm and watershed levels in Kenya and Burundi illustrate this.

Kenya: As part of the responses to climate change, ASARECA in conjunction with the Kenya Agricultural and Livestock Research Organisation (KALRO) and other partners have been promoting agro-based weather advisories in climate smart watersheds in Machakos and Makindu districts of eastern Kenya. The two districts receive some of the least amount of rainfall in the region leaving them with a significant agricultural water deficit. Farmers in the two districts have been using weather-based agro-advisories and other accompanying technologies introduced by ASARECA and KALRO and as a result, by 2015, maize yields had improved from 1.2 t/ha to 3.2 t/ha compared to the baseline yield of less than 500 kg/ha four years ago. Consequently, over 90%

of the 6,500 households are now food secure. In 2015, due to public demand, the County Government of Machakos, in conjunction with the Agricultural Sector Development Programme of Kenya (ASDP) engaged experts in the ASARECA/KALRO landscapes to further scale out weather advisories to the entire county. This is expected to make a huge impact on livelihoods when it gets implemented in 2016.

Burundi: In 2015, members of the Rural Collaborative Network for Development (RECORD), a farmers' association in Kibimba watershed in Gitega reared 1,000 chicken and earned US\$4,752. By the close of the year, the 118 members (57 women and 61 men) finalised the



season's fisheries investments from which they expected to earn about US\$22,400 in the first half of 2016. Broken down, they expected about US\$8,750 from the sale of tilapia; and about US\$13,650 from catfish.

These are only but initial benefits from the ASARECA-supported project promoting adaptation to climate change. Through this project, ASARECA's implementing partner, Institut de Sciences Agronomiques du Burundi (ISABU) has been promoting a range of integrated and reinforcing innovations and activities designed to enable the farmers use water as an entry point to practice fish farming, poultry rearing, soil improvement and crop husbandry in a sustainable way.

These two examples illustrate that the people are the nerve centre of ASARECA's work. Similar initiatives are ongoing in other parts of the eastern and central Africa (ECA) sub-region. In Rwanda and Burundi, through a project jointly implemented with the Consultative Group on International Agricultural Research (CGIAR) Research Program on Wheat (WHEAT), ASARECA is keeping farmers hopes alive by enhancing wheat Productivity. Already, farmers are testifying to harvesting more than 3.8t/ha from the improved variety 11 HRWYT12, compared to baselines of lower than 1 t/ha some two years ago.

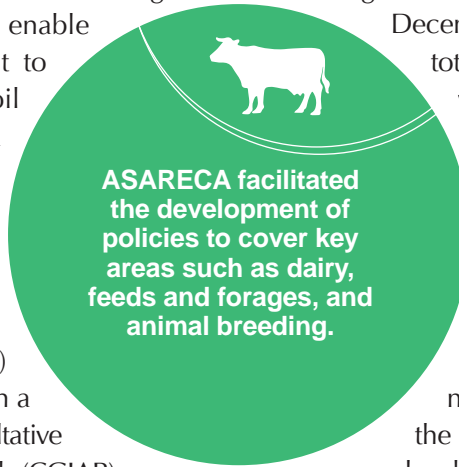
Through the Maize Lethal Necrosis (MLN) project, ASARECA and her partners have adopted a multi-pronged response to the disease challenge in the ECA sub-region. The first approach has been designed to ensure that farmers do not lose yields to the disease. This is being achieved by the

promotion of various recommended management practices such as intercropping of maize and legumes to repel MLN disease vectors, vector management, optimization of plant nutrition et cetera. The second approach is focused on breeding and development of elite germplasm that is tolerant/resistant to MLN disease. This latter initiative brings together several regional and international partners including the private sector.

The first phase of the Eastern Africa Agricultural Productivity Programme (EAAPP) officially came to an end in December 2015 with resounding success. A total of 33 collaborative regional projects were implemented in the four EAAPP countries of Ethiopia, Kenya, Tanzania, and Uganda. Through EAAPP, the four established Regional Centers of Excellence (RCoE), developed a total of 472 technologies, innovations and management practices. Out of these, 67 have so far been shared across national boundaries. ASARECA supported the development of regulatory frameworks and policy harmonization to facilitate sharing of

the resultant Technologies Innovations and Management Practices (TIMPs). Besides, ASARECA facilitated the development of policies to cover key areas such as dairy, feeds and forages, and animal breeding. ASARECA also facilitated the development of an exit strategy showing how the RCoEs will continue to collaborate to generate and share technologies after the end of the first phase of EAAPP.

Details of the outcomes of ASARECA work in 2015 are found in this report. A copy of this report can also be accessed at www.asareca.org.



Output

**500kg to 1.2t/ha
to 3.2t/ha**

Increase in maize yields from
2011 through to 2015



Food secure



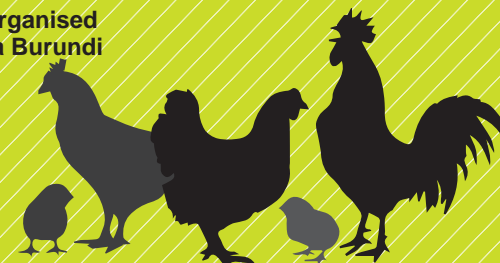
90%

Percentage of the 6,500
households in the intervention
area that are now food secure

Income

US\$4,752

Money earned by organised
poultry farmers in a Burundi
watershed in 2015



TIMPS



472

Total number of technologies,
innovations and management
practices developed through
EAAPP

67

Number of technologies
shared among EAAPP
countries and beyond

Projects



33

Total number of regional
collaborative projects
implemented in EAAPP
countries—Ethiopia, Kenya,
Tanzania, and Uganda



An extension staff associated with the water productivity project explains drip irrigation to a visiting delegate at the project site in Machakos, Kenya.



2015

Events around the year

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MARCH 2015



Prof. Francis Wachira (centre), Ms Sicily Kariuki, the Principle Secretary Ministry of Agriculture, Kenya (2nd right), and representatives from IDRC-Canada, FARA and CORAF-WECARD listen to a presentation by the key-note speaker.

Facilitating climate change interaction

The three-year Africa Interact project implemented by ASARECA and supported by the International Development Research Centre (IDRC) of Canada through the West and Central African Council for Agricultural Research and Development (CORAF/WECARD) was successfully closed on March 30, 2015.

The project provided a platform for research-to-policy dialogue for adaptation to climate change and decision making to help vulnerable populations in Africa adapt to the impacts of climate change. A very successful continental conference on 'Enabling informed decision and policy making for adaptation to climate change in Africa' was held from March 10-12 in Nairobi, Kenya.

The overall objective of the conference attended by over

250 participants was to enhance regional and continental collaboration and informed decision making for adaptation to climate change in Africa.

The research community, development experts and facilitators, members of parliament and senior government officials, farmer federation representatives, the private sector and the youth among others, attended the conference. Ms. Sicily Kariuki, the Principal Secretary, Ministry of Agriculture from the Republic of Kenya, officially opened the workshop.

The conference was concluded after three days with a call for Africa to unite in seeking interventions that minimize the impacts of climate change on vulnerable communities across the African landscapes.

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Pillar 4 Institution transformation meeting

ASARECA joined other CAADP Pillar 4 institutions under the leadership of FARA and other African Organizations and Development Partners from March 20-24, 2015 in Johannesburg South Africa to discuss 'approaches for strengthening funding for implementation of the CAADP Pillar 4 agenda'. The workshop was hosted by the World Bank.

The workshop was attended by the 5 Pillar IV institutions (AFAAS, ASARECA, CCARDESA, CORAF, and FARA) representatives made up of Executive Directors, programme managers, finance managers, technical advisers, and board chairs and or members.

Other participants included the Executive Secretary of the Global Forum on Agricultural Research, (GFAR), the Executive Secretary of the IDB Regional Fund for Agricultural Technology (FONTAGRO), development partners (USAID, Netherlands, CIDA), and relevant World Bank staff associated with the pillar 4 institutions


The meeting noted that there was need to (i) change the

current funding status quo and significantly diversify the funding base of Pillar IV institutions to ensure long term financial sustainability; (ii) shift focus from donor dependency to greater African ownership of the funding modalities of the Pillar IV institutions; and (c) rethink the modus operandi of Pillar IV institutions to ensure subsidiarity and maximum value added by the institutions on accelerating agriculture led growth and innovation for Africa.

The meeting resolved that the Pillar 4 Institutions should continue and/or immediately start the implementation of short term measures to meet their immediate financing needs.

The institutions should also collaborate to implement the longer term strategy of shifting the main source of financing from external Development Partners to internal African sources.

The World Bank committed to supporting the Pillar IV institutions in fund raising with development partners besides providing support in exploring modalities for common funding mechanisms.



The meeting noted that there is need to change the funding status of FARA and sub regional organisations by significantly diversifying the funding base of Pillar IV institutions and shifting focus from donor dependency to greater African ownership.

APRIL



Participants at the Global Conference on Community Based Adaptation to Climate Change visit farmers in Machakos, Kenya.

Global conference participants tour Climate Smart landscapes

The ASARECA and Kenya Agricultural and Livestock Research Organisation (KALRO) climate smart sites in Machakos and Makueni Counties in Kenya were chosen as flagship sites for Climate Smart Agriculture (CSA) interventions during the Global Conference on “Community Based Adaptation to Climate Change” in Nairobi, Kenya on April 23-26, 2015. ASARECA and KALRO showcased achievements of the CSA initiative to a cross-section of regional and international participants led by the Vice President of the

Inter-Governmental Panel on Climate Change (IPCC), who toured the sites. The delegates were amazed by the proactive response to climate change being promoted by the project through community-based adaptation and mitigation measures. The group lauded ASARECA for having pioneered efforts of bringing CSA to scale through a watershed approach with the potential of enhancing food security, resilience, and reduction of emissions from agricultural practices.

MAY

Conference on coordinated response to MLN

A conference was convened on May 12, 2015 in Nairobi, Kenya by the Alliance for a Green Revolution in Africa (AGRA) in partnership with various stakeholders including ASARECA to bring together representatives of public and private sector organizations across Sub-Saharan Africa to discuss ways of effectively controlling the transmission of MLN through seed, especially to the non-endemic countries. The meeting forged a way forward to manage the disease. In a consensus mirroring ASARECA's role, the conference agreed that increasing the scope of coordinated efforts by all actors was the best way to tackle the disease

SEPTEMBER

Conference calls for second phase of EAAPP

ASARECA convened the End of the Eastern Africa Agricultural Productivity Programme (EAAPP) Phase I Conference and Exhibition in Nairobi, Kenya from September 14-18, 2015. Under the theme, 'Regional Specialisation for Enhanced Agricultural Productivity and Transformation', the conference, which was attended by over 250 participants documented achievements, lessons learnt, and challenges faced during EAAPP Phase I. During the conference, lead papers were presented on wheat, cassava, dairy and rice, the key EAAPP commodities. The member countries acknowledged ASARECA'S role, in enabling EAAPP to manage a total of 33 collaborative regional projects in Ethiopia, Kenya, Tanzania, and Uganda.



Delegates at end of EAAPP Phase I conference in the outskirts of Nairobi, Kenya

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SEPTEMBER

ASARECA contribution to agri-business incubation

ASARECA participated in the 'African Agribusiness Incubator Network (AAIN) conference and Expo', in Nairobi, Kenya on 28-30 September. As a constituent of FARA, ASARECA received accolades for playing a key role in implementation of the Universities Business and

Research in Agricultural Innovation (UNIBRAIN) under which AAIN was established. The Conference, which was convened by FARA, brought together different stakeholders in agri-business incubation in Africa to share ideas and experiences and to launch AAIN.

OCTOBER



Representatives of agriculture and development Ministers of Rwanda, Uganda, Kenya, Tanzania and Mozambique joined by the coordinator of SIMLESA at CIMMYT, Dr. Mekuria Mulugetta (2nd from right) and ASARECA Interim Executive Secretary, Prof. Francis Wachira (extreme right) at the forum in Entebbe.

SIMLESA forum provides policy direction to governments

ASARECA in collaboration with CIMMYT and the National Agricultural Research Organisation (NARO) Uganda hosted a 'high-level policy forum on Sustainable Intensification of Maize-Legume Systems in Eastern and Southern Africa (SIMLESA)' in Entebbe, Uganda on 27-28 October 2015. Among other things, the forum highlighted policy options emanating from SIMLESA led research and other sources to Governments and policy makers.

A joint communique' with policy recommendations covering agricultural extension, movement of commodities, use of fertiliser, best practices and trade among others was signed by representatives of ministers of Agriculture from Kenya, Mozambique, Rwanda, Tanzania and Uganda. SIMLESA is funded by the Australian Centre for International Agricultural Research (ACIAR).

ASARECA-China research collaboration kicks-off

An agreement between ASARECA and the Chinese Academy of Agricultural Sciences (CAAS) was signed in December 2015, signifying the start of a new collaborative partnership between the two organizations. Under the agreement, the two parties have mutually agreed to collaborate in a number of areas including: scientific research and capacity building; exchange of information; use of equipment and research facilities among others.

Scientists working on the Eastern Africa Agricultural Productivity Programme (EAAPP) and other Agricultural Productivity Programmes (APPs) in Africa together with the World Bank visited the Chinese Academy of Agricultural Science (CAAS) in June 2014. During that visit; it was jointly agreed that there was need to:

- Organize an exchange visit of scientists between China and Eastern Africa.
- Facilitate exchange of germplasm between China and EAAPP countries and ensure long term training for technical staff and strengthening farmer organisations.
- Jointly develop research and development projects.

Consequently, EAAPP implementers, through ASARECA, invited the CAAS to visit ASARECA in 2015. However; this invitation, which had initially been accepted, was postponed until further notice. The agreement, however, has already been signed.

ASARECA gets key role in animal genetic resources conservation



Dr. Joseph Methu (ASARECA), incharge of coordinating the project.

In a new partnership with the African Union – Inter-African Bureau for Animal Resources (AU-IBAR), ASARECA was appointed as the Eastern and Central Africa Sub-regional Focal Point (S-RFP) and Secretariat for coordination in the implementation of the project on strengthening the Capacity of African Countries in Conservation and Sustainable Utilisation of African Animal Genetic Resources.

The appointment came through a sub-regional agreement signed between ASARECA and the AU-IBAR in December 2015. This means ASARECA is responsible for coordinating the 10 member states of the Eastern and Central Africa S-RFP: Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, South Sudan, Tanzania and Uganda, in the implementation of the project.

Healthy chicken in a poultry cage built on top of a fish pond in Burundi.

STORIES

Progress, Achievements & Impacts

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A Burundian farmer is set to transplant onions



Responding to climate change: Burundi farmers harness water for poultry, aquaculture, crops

By the end of 2015, 118 members of the Rural Collaborative Network for Development (RECORD), a farmers' association in Burundi, had finalised laying a sustenance foundation for 2016. According to their plan and judging by the progress from their investments, the members expected to earn US\$22,400 from fish farming in the first quarter of 2015. The initiative is based on principles of climate smart agriculture such as; improvement of farm productivity, enhancement of resilience and reduction of emissions at farm and watershed levels. Broken down into different components, the members earned US\$8,750 from the sale of tilapia; and US\$13,650 from selling catfish. This is mainly as a result of the ASARECA-supported project on "Going beyond climate smart agriculture".

Welcome to Kibimba watershed in Gitega Province in Burundi, the home of the 118 members (57 women and 61 men) of RECORD, who have established eight fishponds, where they are growing tilapia and catfish. In 2015 alone, they earned USD\$9,000 from fish alone. However, in 2016, they are out to increase their income by growing fish in two cycles of six months each.

Scaling out climate smart innovations

"We have 1,750 tilapia and 1,820 cat fish in the ponds. We can estimate the yield because we have been monitoring their growth and health," says Evariste Manirabona the President of the Association.

This is one of the sites ASARECA and Institut de Sciences Agronomiques du Burundi (ISABU) are implementing the project, "Sustainable agricultural water productivity

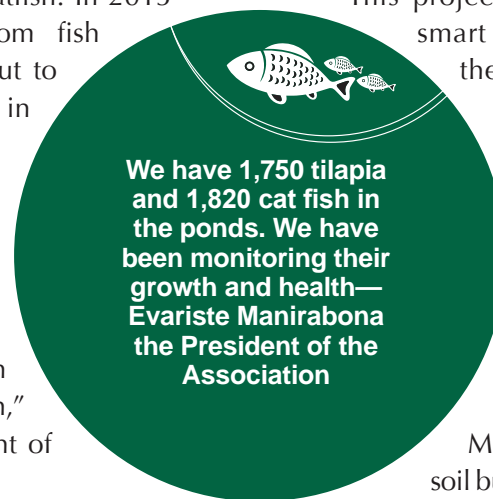
enhancement for improved food and nutrition security in Eastern and Central Africa."

This project is anchored on scaling out climate smart agriculture to landscape levels across the Eastern and Central Africa sub-region.

Launched in 2014 as a follow up of an earlier project implemented in the region, the project is ongoing at two sites in Burundi, i.e, Muhembuzi watershed in Kirundo province and Kibimba watershed in Gitega Province.

Muhembuzi is a semi-arid zone with fertile soil but with insufficient rainfall for crop survival.

Kibimba watershed in Gitega Province is a tropical zone where rainfall is moderate (1,200mm from October to the end of May), but the soil is poor.





Poultry cages built on top of fish ponds in Gitega, Burundi.

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ISABU moves in to support integrated watershed management practices

According to Jean Pierre Twagirayezu of ISABU, who is also the Country Principal Investigator of the project, farmers in the 29.8 ha-watershed with an estimated population of 13,977, requested ISABU to provide technical support in integrated watershed management. ISABU researchers conducted a site characterization exercise to determine opportunities related to the site such as soil, water and human resources. The exercise also showed that although the population was keen to make the best out of their landscape, they lacked

the technical know-how on integrated practices including efficient management and use of water, landscaping and nutrient recycling and marketing among others.

Integrating fish to poultry and crops

Since the intervention started, a range of integrated and reinforcing activities have been designed and are currently being implemented. The project has trained farmers on how to establish ecologically strategic fishponds using water catchments at the valleys. This is reinforced with appropriate fishpond management best practices and fish





Beans grown uphill using nutrient-rich water from the fish ponds.

nutrition skills. Besides the fish ponds, the farmers have been facilitated to rear chicken after receiving training on best poultry management practices in nutrition, control and treatment of various diseases, using locally available water, and using chicken droppings to improve soil fertility. According to Evariste, in every poultry production cycle of about three months, each farmer rears up to 250 chicken, and therefore in a year they can do four cycles, producing 1,000 chickens each. "In the last cycle we sold 250 chickens, earning US\$1,188 in all," he says. "Converted to four cycles in a year, this is about US\$4,752."

Building farmers capacities

As a means of improving soil moisture and productivity, the project has trained 173 people (80 women and 93 men) in moisture enhancing innovations including producing-improved manure through composting by adding ash, humus-rich soil, and organic fertilizers. The farmers were supported to establish 468,000 cuttings of Napier grass to plant for improving the soil ecosystem. In addition, nutrient rich water drained from the fish ponds is handy for soil fertility management. This has formed a basis for introduction of improved varieties



Farmers establish compost manure in Gitega in Burundi after training on soil management.

of vegetables, banana and beans with accompanying improved practices of water management. By the close of 2015, 55 of the farmers (24 women and 31 men) had fully adopted mini irrigation in an area of 1.5 ha.

Using available water efficiently

According to Dr. Hezron Mogaka, Theme Leader for Natural Resources and Eco-systems Services at ASARECA, the philosophy behind the innovations is using available water

efficiently to enhance productivity at farm and landscape levels. "This can be achieved through replenishing practices such as re-forestation, enhanced grass cover, terracing, Tumbukiza pits, and manure production to enhance soil fertility," says Dr. Mogaka. "Soil that is protected is fertile and has adequate moisture content and easily supports crop and livestock production because it is not vulnerable to soil erosion". The project is designed to address the three pillars of climate smart agriculture at a landscape level which are:



increased agricultural productivity at farm level, enhanced watershed resilience to climate-induced stresses, and reduction of emissions from agricultural practices.

Courtesy of their acquired capacity to improve their soils, and to harvest water and retain it in the soil, farmers in the watersheds are producing 25 t/ha of onion, 20 t/ha of tomato, and 30,000 cabbages/ha, leading to an income improvement to the tune of US\$729 at landscape level from vegetables. They have been introduced to a new variety of amaranthus through vegetative multiplication. This variety is perennial while others are seasonal and it is important for household nutrition and health.

Diversifying the range of benefits

According to Jean Pierre Twagirayesu, the ISABU scientist in charge of the project on “Sustainable agricultural water productivity enhancement for improved food and nutrition security in Eastern and Central Africa.”, a total of 403 farmers (246 female and 157 male) have diversified their bean production to produce improved climbing bean varieties namely: AND10, MUHORO, G13607 and MAC44 at Kibimba and three improved bush bean varieties INAMUNUHIRE (IZO201245), AKARYOSHE (Mooore88002) and MBUNDUGURU) at Muhembuzi in 2.3 ha.

They are realizing increased incomes of at least US\$450 at

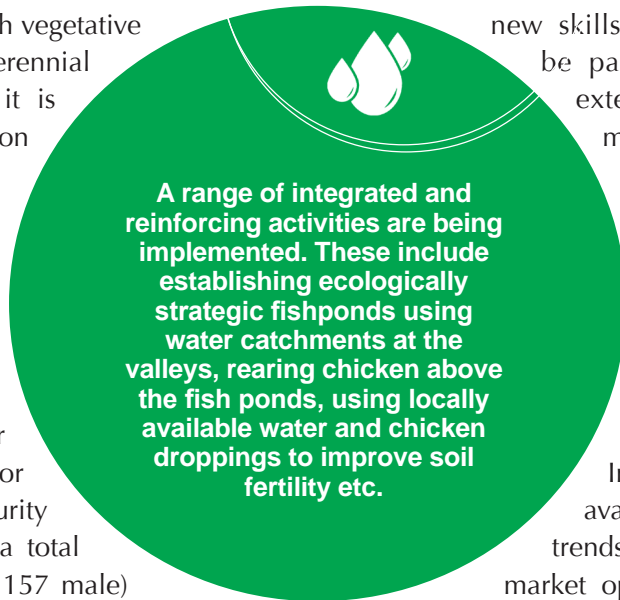
the farmer level from beans. A group of 4 farmers have been facilitated to establish banana plantations. They are piloting this on a 1 ha land, which is strategically located to benefit from nutrient rich water from fishponds as a main supply channel.

Eight researchers trained

To ensure that farmers benefit from a total package of the value chain approach, eight researchers at ISABU have been trained to make business plans. The new skills that they have acquired are to be passed on to the farmers through extension and outreach. Training modules on carbon smart agro-forestry, livestock management and knowledge smart beans and vegetable production, water smart management practices, and fish farming, have been produced to initially train 60 farmers.

Information has been made available at the project sites on: trends and changes in water demand, market opportunities, barriers to enterprise diversification and value addition, and gender roles and participation in agricultural water management.

Before the project, the population was not harnessing water from the existing eight run-down fishponds optimally, including using it for irrigation. The activities in the valley were stand alone, because the farmers had no clue of the benefits of integration.



A range of integrated and reinforcing activities are being implemented. These include establishing ecologically strategic fishponds using water catchments at the valleys, rearing chicken above the fish ponds, using locally available water and chicken droppings to improve soil fertility etc.



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A woman displays a bumper harvest of cow-pea. The high yields are a result of following agro-weather advisories.



Expanding impact: How climate smart weather advisories are changing livelihoods of Kenyan farmers

Over 1 million residents of Machakos County in Kenya are set to benefit from climate smart weather advisories following efforts to out scale this service which is essential for the performance of the agricultural sector, particularly in the drier parts of Eastern and Central Africa.

Only a week to the expected onset of the long rains, a workshop to translate the weather forecast for Machakos County into advisories was held on the eve of Easter in Machakos town, Kenya. The workshop was convened by the Agricultural Sector Development Programme of Kenya (ASDP) to enable agricultural value chain actors including scientists, meteorologists, farmers, NGOs, traders, and experts from ASARECA/KALRO who are promoting climate smart landscapes to share scientific and local weather predictions to produce best agricultural management options for the March-May cropping season.

What are agro-weather advisories?

According to Dr Kwena Kizito of Kenya Agricultural and Livestock Research Organisation (KALRO), a leading implementer of two successive ASARECA climate change adaptation projects, through the integrated watershed management approach, weather-based advisories are a succinct summary of climate-smart agricultural decisions proposed to farmers to help them minimize losses in bad seasons. "The decisions include when to prepare the land, when to plant/sow, planting density, what to plant, how to plant and how much to plant," Kizito explains.

The advisories are usually developed after the National forecasts have been released by the Kenya Meteorological Service (KMS), at least a month to the start of the cropping season. This is done deliberately to allow farmers ample time to internalize the advisories and mobilize the resources required to implement the decision therein.

ASARECA/KALRO provide leadership on agro-advisories

Weather-based advisories are a brainchild of ASARECA and KALRO's two successive projects; "Integrated management of water for productivity and livelihood security under variable and changing climatic conditions in ECA", and "Sustainable agricultural water productivity enhancement for improved food and nutrition security in ECA". (These projects were implemented back to back in 2009 -2013 and 2014 -2016).

According to Dr. Hezron Mogaka, the ASARECA Theme Leader for Natural Resource Management and Ecosystems Services, the projects brought back to life the critical but much ignored use of weather-based agro-advisories to enable farmers in marginal areas make the most out of good seasons and minimize risks/losses in bad ones.



This woman in Makindu in Kenya opted to grow green-gram because she was advised that it is suitable for marginal water conditions.

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Demand for agro-advisories increases

ASDSP in conjunction with the Machakos County Government picked a leaf from ASARECA's climate smart landscapes in Mwanja and Kalie watersheds in Machakos and Makindu districts, respectively, three years ago. Farmers in the two watersheds have embraced weather-based agro-advisories and other technologies such as tied-ridging, seed priming, improved agronomic practices, improved crop varieties, and micro dosing among others, and have posted good yields even in marginal seasons. Over 90% of the 6,500 households are now food secure. For example, by 2015, maize yields had improved

from 1.2 t/ha to 3.2 t/ha compared to the baseline yield of less than 500 kg/ha before the projects. Besides Kenya, the projects have built capacity for farmers in Ethiopia, Eritrea, Rwanda and Madagascar. The successor Agricultural Water Management project brought on board Burundi, Uganda and South Sudan to harness and enhance utilization of water resources including rain and ground water both at farm and watershed levels.

Farmers involved

During the workshop on translating weather forecasts, two forecasts, one based on scientific research and the



other based on indigenous knowledge were presented to a plenary of stakeholders. Despite slight differences, both forecasts predicted late onset of rains for the March-May season. The season was predicted to commence between the last week of March and the first week of April and end by the second to third week of May. It was predicted to be a very short cropping season, slightly over three weeks, with depressed and poorly distributed rainfall. There was therefore need for farmers to adopt appropriate measures to cope with this scenario.

The advisories at a glance

The advisories implore farmers to prepare adequately for the season by rehabilitating existing water harvesting and conservation structures, laying out and constructing new ones, de-silting existing water pans and earth dams and constructing new ones, repairing gutters; breaking soil pans, applying organic manure, making rows and contours, and selecting appropriate seed varieties.

The advisories are discouraging farmers from growing maize, due to its low chances of success given the short season. Instead, farmers are advised to grow fast maturing and drought tolerant crops such as sorghum and millet.

The advisory is currently being widely disseminated mainly through announcements and call-in talk shows on



The projects brought back to life the critical but much ignored use of weather-based agro-advisories to enable farmers in marginal areas make the most out of good seasons and minimize risks/ losses in bad ones

This farmer in Makindu, Kenya learnt skills in water harvesting and management. He now produces food crops year-round

local FM radio stations such as Mbaitu FM. The group also plans to disseminate the advisories further through non-traditional media such as Barazas, mobile telephony, and political and civic meetings as well as through the churches.



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A farmer and an extension worker in Burundi inspect a wheat field under the project.



Ray of hope: Rwanda, Burundi wheat farmers talk of improved yields and benefits

A ray of hope is looming over the farms of wheat growers in Rwanda and Burundi nearly two years since the launch of a project intended to secure wheat-based livelihoods in the two countries. Already, farmers are testifying to marked progress in the project. Mrs Chantal Niyonzima, a wheat grower from Mugongomanga commune in Burundi explains that she has been able to harvest more than 3.8 t/ha from the improved variety HRWYT12 compared to 650 kg/ha from local varieties grown at the same conditions.

The project named “Enhancing Wheat Productivity and Value Chains in Rwanda and Burundi” was initiated in 2014 by ASARECA and the CGIAR research program on Wheat (WHEAT), led by the International Maize and Wheat Improvement Center (CIMMYT). The project is promoting smallholder wheat value chains. Dr. Brian Isabirye of ASARECA, who is in charge of the project, says it was designed to improve the productivity and competitiveness of smallholder wheat production systems.

Promoting wheat value chains

As part of an integrated package, at least six out of a targeted seven proven wheat management practices and innovations have been tested on five acres of demonstration plots in Burundi. These include sowing techniques, application of fertilizer, weeding, harvesting techniques, threshing techniques, post harvest techniques. Two new varieties, ISWSN 64 and HRWYT12 have been selected by farmers as part of the package. All these were done following the Innovation Technology Adoption Platforms approach. Research within the innovations platform approach is part of the means of addressing issues of crop quality, volumes of harvest and pricing. As a result, the mean yield at project sites today has increased from 0.8 to 2.5 t/ha, exceeding the project

target of 1.6 t/ha. It is expected that at least two improved wheat varieties will be made available for uptake.

In Rwanda, the project is being implemented in Musanze while in Burundi it is being implemented at Mugongomanga and Muruta communes.

Farmer participation is key

In Burundi, since the intervention started, the project has produced a value chain assessment/survey report and established two Innovation Platforms each with an average of 12 people in Muruta and Mugonmanga. The project has also facilitated the signing of a market linkage contract between the farmers and a local NGO, and scaled up proven TIMPs adaptable to smallholder wheat production systems in an integrated value chain.

Seed multiplication

In Burundi, two farmers with more than five acres each were selected and supported to multiply the existing wheat improved seed. Each farmer received 120 kg of two pre-basic improved wheat varieties (11th HRWYT 12 and 1st ISWSN

64) and 300 kg of N-P-K fertilizers. Further, the National Control and Certification Board (Office National de Controle et de Certification des Semences) has registered the two farms and is expected to process certification for good quality seed multiplication in early 2016, i.e., after two seasons.

In a bid to develop the capacity of stakeholders to utilize proven wheat TIMPs, 14 farmer groups out of the targeted 26 with 10 persons per group, have adopted the innovations. The farmers testify to increased production and multiple benefits including using the stalks left after harvest for thatching houses. As a result, the motivation to use the package of agronomic interventions including the use of fertilizer is high.

Rwanda

In Rwanda, the project has established two innovation platforms at Musanze comprising of farmers, the Rwanda Agriculture Board (RAB), Imbaraga as an extension organization, and agro-input dealers. The platform has been pivotal in RAB's work of multiplying seed varieties, management of demonstration plots, and training on management of demonstration plots.

An inventory of the improved wheat technologies available for dissemination to stakeholders in the targeted areas of Butaro and Mukura was carried out. The inventory included improved wheat varieties like Njoro BW2, Chozi, EN161 and EN48; agronomic practices such as: seeding rate, right time of applying appropriate types and rates of organic and inorganic fertilizers (10 t/ha organic manure at least 2 weeks before planting, 100 kg/ha DAP18-46-0 at planting and 50 kg/ha Urea 46% for top dressing done 2-4 weeks after planting), weeding frequency, harvesting time; and postharvest handling practices.

An assessment of technology adaptability and package



Burundian farmers supported by an extension staff inspect their garden.

technologies was also conducted in Kinigi, Rwerere and Nyamagabe Research Stations in Rwanda. Meanwhile, wheat germplasm recently obtained from CIMMYT-Mexico; and advanced wheat lines and varieties have been evaluated for adaptability in different agro-ecologies in Rwanda during the 1st and 2nd cropping seasons (2015A & 2015B).

Varieties validated

Fields of improved varieties, such as Njoro BW2, Chozi, Simba, EN161 and EN48 for demonstrating appropriate agronomic practices were established to validate suitability of the selected packages for wider dissemination. Such appropriate agronomic practices include seedbed preparation, fertilizer application and other crop management practices. Three demonstration plots, one in Butaro and two in Mukura) were established to help the target farmers to evaluate promising technologies. These fields are now being used as farmer field schools in the respective



An extension staff associated with the project in Burundi.

areas. New and advanced varieties used include the Kenyan and local materials such as: K.Eagle10, K. Robin, K. Sunbird, K. Wren, EN161, EN48, Njoro BW2, Chozi and Musama.

Farmers give a nod to improved varieties

In Rwanda, two tons of improved wheat seed of Njoro BW2 variety was distributed to Butaro and Mukura wheat farmer groups. Each community received one ton of seed. The seed was planted in both season 2015A and 2015B. Feedback from the farmers on the variety performance indicates that the improved varieties such as Njoro BW2 are doing well (with yields of 3.5-4 t/ha) compared to the local varieties such as Musama.

In both Rwanda and Burundi, farmers had become accustomed to poor yielding varieties for other associated benefits. For example, they grew long traditional wheat varieties, which would provide them straws for thatching houses besides

food. Researchers in the project, however, explained to them the types of varieties and all the benefits and shortcomings associated with them. The idea was to persuade them to adopt the improved high yielding varieties, which could earn them enough income to build iron-roofed houses instead of straw thatched ones. Farmers who adopted the improved varieties realized three times higher harvest.

Why wheat?

Wheat is a major staple food crop in Rwanda and Burundi. Its demand is growing faster than any other major food grain. Currently, the increasing gap between domestic production and consumption is met through imports, which strain the limited foreign exchange reserves of the fragile economies in the two countries.

“Despite the two countries having conducive environments for production of the crop, their productivity is marginal. In Burundi, national annual wheat production is estimated at 10,000 tones, and the current national productivity level is at 0.4-0.8 t/ha. In Rwanda yields are averaging 2 t/ha.

This is mainly because wheat is sown in broadcast system, which leads to wastage of materials and poor productivity. Other constraints to wheat production include diseases such as wheat rust and Fusarium, low soil fertility and use of unimproved varieties.

The wheat project is being jointly implemented by ASARECA (supported by the Multi Donor Trust Fund administered by the World Bank) and WHEAT (<http://wheat.org>) from the CGIAR Fund. ASARECA and WHEAT have each committed US\$150,000 (USD\$300,000 in all) over a two year period for the project.



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Maize crop free from MLN in Uganda.



Coordinated response: Using a two pronged approach to MLN, the deadly maize disease

Integrated management of the maize lethal necrosis (MLN) disease is one of the ASARECA flagship projects. The project was initiated in late 2014, and is being implemented in seven countries: Burundi, Ethiopia, Kenya, Rwanda, South Sudan, Tanzania and Uganda.

ASARECA and her collaborating partners continued to use integrated and a multi-pronged approach to support farmers to overcome challenges associated with the disease. These included different control strategies, such as development and use of appropriate management practices alongside breeding and germplasm development activities carried out in the implementing countries as well as at the CYMMYT MLN facility in Naivasha, Kenya.

Deploying management practices for sustenance

Various management practices have been tested on-station with promising results. For example, intercropping maize and legumes has shown promise in repelling thrips, aphids and leafhoppers away from maize. Thrips, aphids, and leafhoppers are thought to be vectors of the MLN virus. Stem borers are also reduced due to the presence of natural enemies.

Similarly, intercropping and border cropping maize with sorghum, pearl millet, coriander, and Napier grass also leads to reduced infestation of MLN vectors on maize. Coriander hosted more thrips, and could potentially act as a pull crop.

Other management practices such as avoiding continuous cropping, planting maize once a year, planting another crop or not planting at all have also shown promising results with

very minimal vector population and disease effects. There is also evidence that MLN spread is slow in maize zones where the crop is grown only once a year.

Seed dressing using various products such as: *Gaucha*, *Poncho*, *Thunder*, and *Marshal* have shown strong negative effects on aphids, cutworm, leafhoppers and thrips. The efficacy of five pesticides: *cypermethrin*, *lambda*, *cyhalothrin*, *rocket*, *nimbecidine* continued to be validated for use in management of MLN in the mid and high altitude areas of Rwanda: RHM104 (MLN tolerant) and SC513 (MLN susceptible) varieties were used in mid-altitude areas; while RHT132 (MLN tolerant) and PAN691 (MLN susceptible) varieties were used in the highland areas. Evaluation of host plant resistance of various hybrids and OPVs is on going with preliminary results showing significant variability in performance of Germplasm.

Soil fertility management is also important in mitigating effects of MLN. Evidence generated indicates that lack of nutrients (control) significantly constrained maize growth in the very early stages of development. Thus, lack of nutrients combined with infestation from the MLN viruses was more severe in arresting maize growth and development. On the other hand, presence of ideal or near ideal soil nutrient conditions reduced MLN virus expression on plants.



Development and dissemination of information

In Rwanda, the project created a national taskforce for MLN control. The taskforce brings together scientists, Non-Governmental Organisations (NGOs) and seed companies, all working to create awareness on the management of MLN. Through the taskforce and other dissemination pathways such as radio talk shows, call-in programmes, posters and leaflets, the project has created awareness countrywide on MLN trends, distribution and management. The project also conducted national synchronized planting following guidelines drafted at a meeting of the taskforce. The team identified hybrids namely RHT 132 and RHMM127 that seem to have some tolerance to MLN under artificial and natural inoculation. Some of the new tolerant hybrids will be released soon.

Burundi

An MLN surveillance survey was conducted in Burundi covering seven provinces out of 17. These are Ngozi, Kirundo, Ruyigi, Cankuzo, Rutana, Makamba and Cibitoke, which border with neighbouring countries where MLN has already been declared. The main virus (MCMV), which causes MLN was detected for the first time in Burundi in samples from farmers' fields at Cibitoke province. Germplasm sources have since been screened for resistance. Nine local maize varieties have been collected and sent to CIMMYT for screening to establish levels of resistance to MLN. In the mean time, the project has trained **133** trainers on diagnostics, propagation and management of MLN to develop human capacity for MLN management.

Baseline surveys for MLN were carried out and data analyzed for economic and social impact. The baseline shows that 15% of respondents have been informed about MLN or they have observed the symptoms of the disease in their farm or village. Among them, 8% are female and 7% are male.



A totally damaged and distorted maize cob

Progress in breeding and germplasm development

CIMMYT acquired MLN tolerant lines from Ohio State University from which **15** promising lines were identified. Additionally, **six** inbred lines have been identified from the CIMMYT germplasm for further evaluation.

A total of **30** elite lines from Kenya, **45** from Uganda and **20** from Tanzania were sent to CIMMYT and planted at Kiboko, Kenya. The resultant materials were crossed with CIMMYT lines identified to be resistant to MLN. These materials were sent to Uganda, Kenya and Tanzania for further evaluation. Evaluation started in March 2015. Furthermore, the Ugandan, Kenyan and Tanzanian lines have been crossed with identified resistant lines. This resulted in **436** different materials from the crosses from **10** resistant lines with **51** elite CIMMYT germplasm.



In Uganda, **16** lines from CIMMYT, **10** from Ohio and **10** from Hawaii have been accessed and are currently being screened in different MLN hotspots in Eastern Uganda. The screening sites have been set up at the National Livestock Resources Research Institute (NALIRRI) in Tororo and at the District Technology Testing Centre in Bulambuli.

South Sudan assembled and sent **12** maize germplasm (**5** open-pollinated varieties and **7** hybrids adapted to South Sudan agro-ecologies) with the support from the Ministry of Agriculture, Forestry, Cooperatives and Rural Development (MAFCRD), for screening for MLN under artificial inoculation at the CYMMYT/KALRO laboratories in Naivasha, Kenya.

Rwanda assembled and sent **154** maize entries that included: released and elite hybrid varieties, locally developed inbred lines, released OPVs and breeding populations to Naivasha, Kenya for MLN screening under artificial inoculation. A further **101** maize entries that included; inbred lines, breeding populations and local ecotypes were also sent to Naivasha, Kenya to be screened for MLN under artificial inoculation conditions in February 2015. A total of **255** maize entries have so far been sent for artificial inoculation screening to Naivasha, Kenya.

A total of **14** hybrid varieties developed locally and **one** hybrid introduced from Kenya are being validated for MLN status in mid-altitude locations at Karama Research station in Rwanda under enhanced infestation. Moreover, an additional **11** hybrid varieties developed locally, **1** hybrid introduced from Kenya and **two** hybrids from two seed companies are also being validated

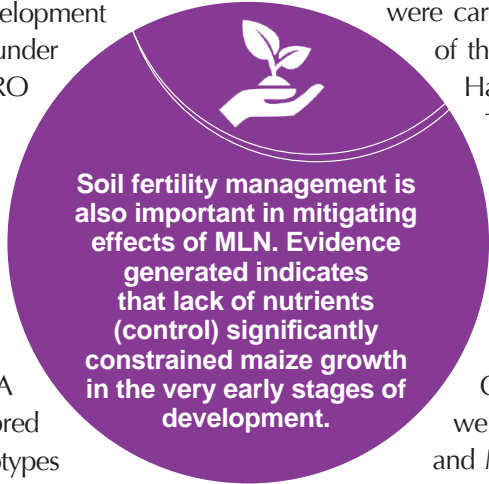
for MLN status in the high altitude locations at Kinigi Research station also under enhanced infestation. Trials were planted at the end of March 2015. In addition, **48** inbred lines for mid-altitudes and **27** for highlands were undergoing validation as at the end of 2015.

Using donor-inbred lines identified at CIMMYT, crosses were made with elite inbred lines from Kenya (KALRO), Tanzania (SELIAN) and Uganda (NARO). Crosses involving **10** inbred lines (**8** from Ohio and **2** from Thailand) with **57** elite inbred lines were carried out, resulting in **478** F1 hybrids. Out of this, **five** F1 hybrids were sent for Doubled Haploid (DH) induction in Kiboko, Kenya. These F1s were advanced to F2; and a total of **300** F2s were harvested. These F2s will be shared with institutions in partner countries for evaluation in their MLN hot spot areas.

Similarly; **five** inbred line testers (CML444, CML312, CML395, CML202, and CML442) were selected for conversion to MCMV, SCMV and MLN resistance using **six** donors identified from the screening program at CIMMYT Naivasha. At least **300** F1s were developed and F2s were harvested.

Kenya (KALRO); Tanzania (SELIAN); and CIMMYT Naivasha also established a BC₁ nursery with about **203** BC1s. These will be used as mapping populations for Quantitative Trait Analysis (QTL) analysis.

In Burundi, nine local maize varieties have been collected and sent to the CIMMYT facility in Naivasha, Kenya for screening to establish levels of resistance to MLN.



Soil fertility management is also important in mitigating effects of MLN. Evidence generated indicates that lack of nutrients (control) significantly constrained maize growth in the very early stages of development.



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Kenya's Principle Secretary, State Department of Livestock in the Ministry of Agriculture, Livestock and Fisheries, Prof. Fred Segor (right), Prof. Francis Wachira (centre), Dr. Ladisy Chengula of the World Bank and Mr. Vincent Akulumuka (ASARECA) appreciate an ASARECA publication with EAAPP success stories.



Spreading benefits: Harmonising policies for sharing EAAPP technologies across Africa

Since the inception of the Eastern Africa Agricultural Productivity Programme (EAAPP) in 2009, a total of 33 collaborative regional projects have been implemented in the four EAAPP implementing countries of Ethiopia, Kenya, Tanzania, and Uganda. Through the collaboration, the regional centres of excellence (RCoEs) developed a total of 472 TIMPs. Out of these, 67 have so far been shared across the four countries. However, stakeholders in Eastern and Central Africa recognized that policy harmonization was a prerequisite for sharing technologies and innovations across borders. ASARECA played a pivotal role in supporting policy harmonization and development of regulatory frameworks for the EAAPP implementing countries. The progress made under four areas of policy harmonization is described below.

Dairy policy frameworks

The process involved the different EAAPP countries taking lead in the regional harmonization of different policy frameworks. Kenya took a lead in policies on animal registration and breed performance, delivery of artificial insemination services, and movement of heifers and germplasm across borders. Ethiopia and Uganda took lead on policies in dairy processing, while Tanzania took lead on policies in feeds and forages.

Enactments on feeds and forages

The Ethiopian and Tanzanian parliaments have each developed an Act on animal feeds and forages. Kenya and Uganda are also in the process of developing similar Acts. On the other hand, Tanzania has drafted regulations for importing and exporting feeds and forage, including compounded feeds.

The enactment of the Act and regulations is in progress.

Tanzania is already implementing regulations for the Animal Feeds and Forage Resources Act 2010. The regulations were used to propose standards for compounded feeds for other EAAPP member countries.

Tanzania also finalized curricula for Animal Feeds and Forage Inspectors; and trained personnel who have been gazetted by the Ministry of Agriculture and Food Security as Animal Feed Inspectors. Tanzania technical working group finalized the Protocol for Import and Export of Compounded Dairy Animal Feeds and shared it with other EAAPP countries.

Based on this, Kenya, Ethiopia, Tanzania and Uganda agreed to have internal consultations for adjustment and adoption of these regulations. Uganda has already drafted the Animal Breeding Policy and submitted to the Minister in charge after reviewing the Animal Feeds and Forages bill. Kenya also finalized the review and re-drafting of the



L-R: World Bank Lead economist Dr. Ladisy Chengula; Prof. Fred Segor and Prof. Francis Wachira enjoy the proceedings of the conference.

Animal Feeds Policy, bill and implementing regulations as part of enhancing availability of feeds and forages for animals. These legal instruments are currently going through a stakeholder review process before approval.

Animal breeding

Ethiopia, Kenya and Tanzania continued to draft their animal breeding policies. Kenya's draft Animal Breeding Policy was submitted to the Cabinet Secretary for transmission to the Cabinet for approval. The Animal Breeding Rules and Artificial Insemination (AI) regulations are now waiting to be presented for dialogue with policymakers, before eventually having them approved. Meanwhile, the draft

Animal Diseases (Control of Breeding Diseases) Rules, 2013 are awaiting final approval by the Cabinet Secretary. The Procedures for movement and trade in heifers and germplasm including development of permit templates were finalized by Kenya. These will be shared among the EAAPP member countries for discussion, mutual agreement, and ratification.

Meanwhile, Uganda has finalized the process, and currently has the breeding policy in place. Ethiopia continued to fast track enactment of the draft animal breeding policy.

It has been developed, reviewed by stakeholders and is



now awaiting approval by Cabinet.

Procedures for dairy processing

Ethiopia and Uganda led in the process of drafting procedures, regulations and standards of dairy processing. All the four countries agreed to propose a one-stop centre in their countries that will deal with dairy processing. As a means of fast tracking this process, Ethiopia was tasked to start the process of establishing a National Dairy Board similar to the ones in Kenya and Tanzania to act as a dairy regulatory body.

It was also agreed that both Kenya and Uganda should have Food and Drug Authorities to complement the functions of the proposed dairy board.

Ethiopia also developed 25 standards on milk and milk products; and declared 35 ISO standards on milk and milk products as national standards thereby fast tracking development of legal instruments for the dairy processing sector. On the other hand, the Dairy policy, Dairy Industry Act and Dairy regulations continued to be formulated. Once completed, these will enhance implementation of dairy-related interventions.

Other policy-related agreements reached included: ensuring that the Dairy RCoEs have an internationally accredited laboratory for carrying out rapid tests at point of entry, besides enhancing coordination among institutions involved in the dairy industry.

A final policy draft for the Intellectual Property Rights



Livestock semen refrigeration facilities at KALRO Naivasha.



A successful dairy farmer in Kenya.



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L-R: Dr. Michael Waithaka (ASARECA), Prof. Francis Wachira (ASARECA), Ms Liz Ogutu (ACIAR), Prof. Timothy Simalenga (CCARDESA), Dr. Ambrose Agona (NARO Uganda), Dr. Buddupalli Prasana (CIMMYT) and Dr. Mulugetta Mekuria (CIMMYT) address journalists at the forum.



Best options: Providing African governments researched policy directions to transform agriculture

“Resist the temptation of imposing non-tariff barriers during food and price unrests and increase the number of frontline extension workers to at least 33 staff per 10,000 farmers”. These are some of the policy recommendations that experts convened by ASARECA and CIMMYT made to governments and other policy actors in Eastern and Southern Africa towards the close of 2015. In a joint communique’ to agriculture and development ministers during the High Level Policy Forum on Sustainable Intensification of Maize- Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA), in Entebbe, Uganda, October 27-28, ASARECA and CIMMYT took the opportunity to highlight policy directions developed through rigorous research and consultation by researchers and stakeholders drawn from across Africa. Below is a summary of policy recommendations to Governments:

- Working in collaboration with researchers, extension agencies and the private sector to enable agriculture attain its potential.
- Increasing access to extension information and supporting institutional and human capacity to provide extension services.
- Facilitating farm level access to investment capital through innovative rural financing.
- Improving the logistics of fertilizer distribution by investing in ongoing efforts at the regional economic blocs level to make port and customs operations more efficient.
- Improving road and railway networks and streamlining fertilizer tax structures.
- Domesticating harmonized quality and quantity standard specifications for fertilizer, herbicide and seed across the region; streamlining investments in blending, bagging and labelling; and strengthening regulatory institutions.
- Simplifying documentation and approval procedures for importation and marketing of fertilizer, herbicides and seed in the region.
- Promoting access to improved seed by strengthening public private partnerships to fast-track scaling up and delivery of seeds to smallholder farmers.
- Training farmers in sustainable intensification practices and proper application, safe use and handling of fertilizers and herbicides.



- Strengthening efforts to grow social capital by supporting the creation of innovation platforms, farmer groups, cooperatives etc.
- Removing barriers to cross border trade by prioritizing and implementing road and trade infrastructure development, supporting the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC) and the Southern African Development Community (SADC) Tripartite Free Trade Area online non-tariff barriers reporting, monitoring and eliminating mechanism.
- Enhancing value addition and diversification by fostering public-private sector partnerships. There was a consensus that Agribusiness incubation should be encouraged since it supports creation of viable, competitive agro-enterprises.
- Supporting integrated approaches to technology development and dissemination.
- Promoting better agronomic practices and crop varieties as packages in adaptive research in order to make products of the research process more relevant to the needs of the farmers.
- Recognizing and integrating the informal seed system

to the formal system by building the capacity of actors to improve the quality of seeds they produce. There was mutual agreement that Quality Declared Seed (QDS) for crops that are not adequately covered under the formal system be recognized where applicable. The Ministers recommended to their governments to provide institutional support to the private sector to develop new and improved varieties, provide quality assurance, upgrade laboratory and market infrastructure, enforce regulations and contracts, and simplify procedures.



Under SIMLESA, ASARECA was responsible for convening experts into policy fora to discuss research evidence generated in the project and draft policy guidelines leading to the high level policy forum which validated them. The forum, which was also attended by key policy makers, researchers, farmers and private sector players culminated in the signing of a joint communique' by representatives of the respective Ministers.

- Preventing the spread of MLN causing viruses from endemic to non-endemic areas by among other measures, mandating and enforcing synchronized maize planting and maize-free windows in severely affected areas; mobilizing dynamic extension and information delivery system to create MLN awareness; use of standard operating procedures (SOPs) to ensure production of MLN-free seed along the seed value chain; generation and deployment of tolerant/resistant MLN varieties by fast-tracking the release of high-yielding MLN tolerant and or resistant maize varieties among others.

The joint communiqué and detailed policy option documents are available at <http://www.asareca.org/~asareca/news/agriculture-ministers-agree-smart-initiatives-move-agriculture>





Delegates at the High Level Policy Forum in Entebbe, Uganda.

The SIMLESA high level forum was attended by representatives of the: Minister of Agriculture, Livestock and Fisheries from Kenya; Minister of Agriculture and Food Security from Mozambique; Minister of Agriculture and Animal Resources from Rwanda; Minister of Agriculture, Food Security and Cooperatives from Tanzania; and Minister of Agriculture, Animal Industry and Fisheries from Uganda.

ASARECA's role in SIMLESA

Under SIMLESA, ASARECA was responsible for convening experts into policy fora to discuss research evidence generated in the project and draft policy guidelines leading to the high level policy forum which validated them. The forum, which was also attended by key policy makers, researchers, farmers and private sector players culminated in the signing of a joint communiqué' by representatives of the respective Ministers.

Drawing from past work

In its past work on policy harmonisation and recently under the theme on Markets, Market Linkages and Trade (MMLT), ASARECA has been proactively facilitating regional working groups, project implementers and state actors to ensure that policy makers use factual and researched information to facilitate formulation of sound policies.

This is in line with the ASARECA objective to contribute to commercialization of smallholder farming through improved access to input and output markets. ASARECA has done this through analysis of bottlenecks to input and output marketing, promotion of viable approaches that improve access to markets and advocacy for enabling policy environments in projects.



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A farmer from DR Congo displays dry multiple climbing bean pods



Tracking adoption: ASARECA, IFPRI in joint bid to map and monitor uptake of technologies

At the beginning of 2015, ASARECA and the International Food Policy Research Institute (IFPRI) undertook a US\$190,000 joint initiative to explore innovative and cost-effective data collection methods to monitor the adoption and diffusion of agricultural technologies. The project: “Monitoring the Geospatial Diffusion of Agricultural Technologies”, is expected to generate data, knowledge and tools to help elucidate where and how far the agricultural technologies generated in Eastern and Central Africa over time have been adopted by smallholder farmers and diffused over time and space.

The initiative specifically aims to make it easier to track the rate of adoption and the potential for use in scaling out by the CGIAR, ASARECA and other development organizations. The project is collecting underlying data on technology adoption, diffusion, and performance from various sources, including participatory and crowd-sourced mapping, ICT-based surveys, as well as aggregated evidence from other research and development activities. IFPRI and ASARECA have agreed to focus on two specific technologies in four countries in the region namely: climbing beans in Rwanda and Burundi and Quality Protein Maize (QPM) varieties in DR Congo and Tanzania.

ASARECA and IFPRI staff has already started developing specific prototypes for use in the field. These prototypes include a systemically organized inventory of agricultural technologies that have been introduced by ASARECA. The team has also generated preliminary mock maps showing the adoption and diffusion of two specific technologies. Laboratory sessions have also been held in which the various development domains were reviewed.

The project is based on the experience that despite continuous efforts and significant investments in new technologies for smallholder farmers, there is little evidence to show the extent of technology adoption and diffusion over time.



A farmer from DR Congo shows off climbing bean seed.



Diary breeds at KALRO in Kenya grazing on well managed pasture.





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The chief guest, Prof. Fred Segor, joined by Senior ASARECA and KALRO staff, and World Bank officials enjoying a performance during the EAAPP conference in Nairobi Kenya.

EAAPP Phase I closes, Phase II expected

After completing its no-cost extension period, EAAPP Phase I officially came to an end in December 2015. ASARECA coordinated the development of an exit strategy explaining how the regional centres of excellence (RCoEs) will collaborate to generate and share technologies after EAAPP Phase I. ASARECA continued its role of facilitating the development and signing of communication documents necessary for transitioning to Phase II. In August 2014, ASARECA facilitated the development and signing of a joint communique' by the Permanent Secretaries of the ministries of agriculture of Tanzania and Uganda, the Principal

Secretary of Kenya and the State Minister for Agriculture of Ethiopia, indicating the will and desire of the countries' for EAAPP II.

This Communique' was submitted to the World Bank. ASARECA also supported the development and signing of a follow-up note to the joint communique, as agreed during the 5th EAAPP Regional Steering Committee meeting that was also submitted to the World Bank. Discussions are underway between the World Bank and the EAAPP countries on the possibility of rolling out Phase II.

Taking leadership in defining Africa's research for development needs

Since 2015, ASARECA in collaboration with the European Commission's PRO Intens Africa Project has been participating in a cornerstone initiative to identify the most critical research needs for Africa.

The two-year project named PRO Intens Africa is meant to formulate a research and innovation agenda that identifies key domains for in-depth research for development to realize the potential of African food systems.

The initiative focuses mainly on improving food and nutrition security and livelihoods of African farmers by exploiting the diversity of pathways to sustainable intensification of African agro-food systems.

The rationale of the project is that the adoption of a variety of pathways is very likely to lead to sustainable intensification of African food systems. The project is being implemented in Kenya, Uganda, Ethiopia, and Tanzania.

The key aspects that the project is attempting to establish are:

- Describing the scientific and innovation domains that need further research to identify and implement effective pathways.
- Identifying the value for both continents in addition to on-going partnerships and activities.
- Suggesting financial and governance structures that can adequately support the partnership.

ASARECA assigned strategic role in flagship gender project

Because of its strategic position at national and regional level, ASARECA has been assigned a convening role in the Gender-Responsive Researchers Equipped for Agricultural Transformation (GREAT) project.

Funded by the Bill and Melinda Gates Foundation, the main objective of the project is to develop, test and deliver specialized training programs for agricultural researchers on how to design, implement, and measure gender-responsive agricultural research projects and engage leadership and policymakers in Sub-Saharan Africa on the importance of gender in agricultural research.

The project is jointly led by Cornell University and Makerere University. ASARECA, AWARD, ALINe and Cultural Practice LLC are project partners.

The scope of policy engagement is expected to cover the ASARECA countries as well as West Africa.

The project is to develop and offer a joint certificate program in applied gender training for agricultural researchers.

Specifically, ASARECA is expected to provide technical input into course design, publicize the course through the ASARECA network, identify institutional teams from NARIs to be trained and identify mentors for participating beneficiaries, and support efforts to engage policy makers.



Knowledge from climate change adaptation studies

ASARECA in partnership with COMESA finalised the implementation of a project on climate change adaptation and mitigation in the COMESA-EAC-SADC region in November 2015. Among other things, the project developed guidelines on engaging with multiple stakeholders to develop strategies for addressing the effects of climate change. Desk reviews were undertaken to determine the status of the target countries and the Eastern and Central Africa region on reducing emissions from deforestation and forest degradation (REDD).

REDDs objective is mitigating climate change through reducing net emissions of greenhouse gases through enhanced forest management in developing countries; and Nationally Appropriate Mitigation Actions (NAMAs) and other climate change mitigation initiatives. NAMAs refer to any action that reduces emissions in developing countries. Background papers and policy briefs were prepared focusing on Climate Smart Agriculture; Mitigation strategies; Agriculture, Forestry and Other Land Uses (AFOLU).

A series of draft papers were prepared by ASARECA to inform the participants at the Conference of Parties (COP21),



Ms Sicily Kariuki, the Principle Secretary Ministry of Agriculture, Kenya, graced the occasion.

December 7-8 2015 in the Le Bourget area of Paris on the African position with regards to climate change. The papers covered a broad range of challenges and opportunities for climate Smart Agriculture in the EAC/SADC/COMESA sub-region

Environmental and Social Safeguards policy ensures sustainability

ASARECA's policy on environment and social management was finalized and approved by the Board of Directors in February 2015. One of the major highlights of the policy is Environmental and Social Safeguards (ESS) Compliance of regional projects.

In this regard, 75% of the new ASARECA projects screened were compliant for the initial stages of ESS implementation. Compliance of the Eastern Africa Agricultural Productivity Programme (EAAPP) projects had greatly improved.



Gender policy is out

ASARECA has continued to incorporate Gender Mainstreaming in agricultural research and development to ensure efficient and effective delivery of services. In this direction, ASARECA published her Gender Policy which is now available on www.asareca.org. The Policy emphasizes integration of gender and gender mainstreaming at all operational levels and related interventions of the national Agricultural Research and Extension Systems (NARES). It

is supported by the Gender Project Guide (GPG), which is expected to serve as a practical tool for mainstreaming gender into project activities and processes. The guide provides clear direction and mechanisms for equitable participation by target groups in project activities and serves as reference document for gender mainstreaming in agricultural research for development in ASARECA countries.

UNIBRAIN reveals IPR issues in key institutions

In 2015, ASARECA under the Universities in Business and Research in Agricultural Innovation (UniBRAIN) project conducted a study to identify Intellectual Property Rights (IPR) issues around UniBRAIN supported Technologies, Innovations and Management Practices (TIMPs). The study identified a number of challenges concerning IPR issues within institutions involved in UniBRAIN. The key challenges identified by the study were:

- Universities such as Makerere, Kyambogo, and Jomo Kenyatta University of Agriculture and Technology; as well as the National Agricultural Research Institutes (NARIs) such as NARO and KALRO are still struggling with implementation of IPR policies despite having them in place.
- The IPR policies of the universities are not well aligned to the UniBRAIN incubators, which the universities are hosting.
- Awareness and appreciation of IPR at incubator and incubatee levels is low and IPR is not included in their business plans and strategies.
- Some technologies with high potential for commercialisation

had been profiled but there is no systematic documentation of the IPs, thus creating a risk of losing intellectual innovations of incubates.

Potential IPs for the TIMPs prioritized under UniBRAIN were identified during the study. For the sorghum value chain, the IPs identified were brand identities that could be protected by trademark registration. On the other hand; IPs under sorghum food and feed formulations could be protected under patents or utility models, while art and crafts materials produced from banana fibres could be protected by copyrights, trademarks and industrial designs. Tissue culture technologies could also be protected by a system of branding and certification for TC facilities such as laboratories, hardening nurseries, distributors and gardens. A newly published book by ASARECA on “Opportunities for commercialization and research under the banana, coffee and sorghum value chains” is available on www.asareca.org.

UniBRAIN was funded by the Danish Ministry of Foreign Affairs Development Agency (DANIDA).



Participants at the AHC-STAFF validation workshop in Nairobi.

Progress on (AHC-STAFF) capacity development studies

The African Human Capital in Science Technology and Agripreneurship for Food Security Framework (AHC-STAFF) is a three year-initiative supported by the EU through FARA whose aim is to develop country-based and regional investment frameworks to guide domestic and development partner support towards demand-led and forecasted human capital formation in agriculture. The initiative is expected to benefit CAADP implementation across the continent. In 2015, four sector-wide studies were initiated by ASARECA to guide the development of the proposed frameworks. The studies were conducted in five countries: Ethiopia, DR Congo, Kenya, Rwanda and Uganda. National validation workshops were convened for some of the studies in

Ethiopia, Rwanda, Uganda and Kenya. The final study reports are expected by mid-2016. The areas of study included:

- Reviewing of the National Agriculture and Food Security Investment Plans (NAFSIPs) and determining the implementation capacity gaps.
- Assessing the human capital requirements along technology and value chains.
- Assessing and forecasting the qualitative human capital requirements in agriculture.
- Undertaking yield gap analysis of key agricultural commodities







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Consolidating achievements

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