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Showcasing Agricultural Innovations

ASARECA
Transforming Agriculture for Improved Livelihoods

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THE CROP OF HOPE

Quality Protein Maize can significantly contribute to nutrition, health, incomes and livelihoods in rural communities.

"Look at those miserable crops," a beaming Bonney Okello remarked pointing at maize fields that were fast turning from green to brown due to prolonged lack of rain.

"Nearly all the farmers here planted ordinary maize and they have lost everything," he noted.

The month was November, the time of the year when usually smiles are expected on farmer's faces in most parts of northern Uganda because it is harvest time. But the situation in Ogur sub-county in Lira district was sad.

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The new ASARECA at a glance ..

Unleashing new strength to cause economic growth, eradicate poverty and improve livelihoods

ASARECA has aligned its strategic plan to the Comprehensive Africa Agriculture Development Programme (CAADP) to contribute to the achievement of the 6% annual agricultural growth rate by 2015 as set by CAADP

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) was established in 1994 and comprises 10 member countries namely: Burundi, the Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda.

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

ASARECA's strategic plan is aligned to the Comprehensive Africa Agriculture Development Programme (CAADP), and its implementation agenda, the Framework for African Agricultural Productivity (FAAP) guidelines.

CAADP has set a regional target to achieve a 6% annual agricultural growth by 2015. This will be achieved through:

- Dynamic agricultural markets among and between nations
- Being a net exporter of agricultural products
- Having food available, affordable and through equitable distribution of wealth
- Being a strategic player in agricultural science and technology development
- Promoting a culture of sustainable use of natural resources.

In response to these demands, ASARECA has evolved to confront the new sub-regional agricultural challenges by taking another critical look at its comparative advantage at sub-regional level, adding value to national and regional institutions, working with Pan-African and international organisations, working in accordance with the principle of subsidiarity and by examining the active, catalytic roles ASARECA can play in CAADP.

To this end, ASARECA developed a 10-year strategic plan (2007-2016) and a five-year operational plan (2008-2012). These plans lay out the scope and scale of ASARECA's mandate in research. They also show ASARECA's roles in analysis and advocacy and extension as laid out in FAAP and for service provision; agricultural education and training; and empowerment of farmers' organisations and other appropriate bodies.

Central to ASARECA's vision and mission is the recognition of the value of collaboration and the need for regional collective action among member countries and their partners. Also central to the mission and vision is the notion that agricultural research convened and facilitated by ASARECA, furthers development aims such as broad-based economic growth, poverty eradication and improved livelihoods. To achieve this mission and vision, ASARECA has developed its operational, governance, management and operational systems as follows:

A new Constitution and governance manual have been completed and approved by the Board of Directors. The constitution provides the legal basis for patron ministers to have a governance role in ASARECA, besides providing ASARECA the legal basis as an intergovernmental association.

The constitution also provides for the establishment of a General Assembly which will contribute to good corporate governance practice. The Board of Directors will report to the General Assembly and be accountable to it.

The Board has expanded to include important institutions necessary to provide guidance to ASARECA. These include:

Director Generals of the 10 ASARECA member National Agricultural Research Institutes (NARIS), representatives of farmers, development partners, universities, the private sector, non-governmental organisations, the Common Market for Eastern and Southern Africa (COMESA), the Consultative Group on International Agricultural Research (CGIAR), and research extension and advisory services.

To deliver its research portfolio, ASARECA is now structured into seven programmes namely:

- Staple Crops
- High Value Non-Staple Crops
- Livestock and Fisheries
- Agro-biodiversity and Biotechnology
- Natural Resource Management and Biodiversity
- Policy Analysis and Advocacy
- Knowledge Management and Upscaling

The programmes are supported by five units namely:

- Information and Communication
- Monitoring and Evaluation
- Partnership and Capacity Development
- Finance
- Administration and Human Resources

ASARECA is also in the process of gender mainstreaming to ensure maximum gender involvement in the development and uptake of innovations and technologies.

With these structures, ASARECA is now better placed to promote regional agricultural research and strengthening relations amongst the National Agricultural Research Systems (NARS) and with the Consultative Group for International Agricultural Research (CGIAR).

ASARECA has also expanded its mandate to link agricultural research to the political dialogue through COMESA, the Forum for Agricultural Research in Africa (FARA), and the African Union's (AU) New Partnership for African Development (NEPAD).

ASARECA will continue to add value to the work of NARS in the sub-region through:

- The identification of shared goals and the promotion of economies of scale and scope through collaboration, specialisation and sharing of results.
- The identification of sub-regional public goods that would be under-produced in the absence of shared goals and a regional mechanism.
- Sharing of knowledge and experiences with institutional innovation for more effective agricultural research for development (AR4D), extension and agricultural training and education.

Seyfu Ketema (PhD)
Executive Director ASARECA

Harnessing partnerships to develop drought tolerant maize

Greenhouse constructed for research on transgenic plants and microbes built with funding by ASARECA at Kenyatta University, Nairobi

A team of scientists at Kenyatta University are on the way to developing drought tolerant transgenic maize lines through maize breeding efforts in Eastern and Central African region.

According to the lead researcher, Prof. Jesse Machuka from the Department of Biochemistry and Biotechnology, the research is focusing on transforming and evaluating transgenic maize that is tolerant to drought by introducing drought tolerant genes from a desert plant, Xerophyta viscose into the maize genome.

Drought is a major stress factor affecting productivity of maize in Africa leading up to 70% crop loss, and in certain cases, total crop loss. It is also a single most important abiotic factor responsible for reduced maize productivity in arid and semi-arid areas. This coupled with lack of suitable varieties that perform well under insufficient and erratic distribution of rain, significantly reduce productivity of maize grain to only 1.3tonnes/ha, compared to the potential of over 10tonnes/ha.

Although conventional breeding methods such as the intra-population, inter-population improvement scheme, pedigree and backcross breeding have been used to improve yield, they have so far not produced any true drought tolerant maize lines. This has necessitated the harnessing of technological advancements achieved in genomics research in developed countries to produce drought tolerant lines in the shortest time possible.

The first insights into drought tolerance genes found in Xerophyta viscose were reported by a team of biotechnologists from the University of Cape Town, South Africa, who observed an endowment by the plant in its natural habitat to survive weeks or months without water. They noted that when rains resumed, the plant rehydrated completely and resumed its full metabolic functions within 24 to72 hours. They then embarked on a project to isolate genes associated with drought tolerance. Prof. Machuka and his team benefited from this previous research and expertise.

Ongoing research efforts at Kenyatta University are aimed at transforming diverse tropical inbred maize lines from Sudan, Tanzania, Ethiopia and CIMMYT for drought tolerance.

The research although in its infancy, demonstrates the power of harnessing regional and international collaboration to implement a complex agricultural livelihood research issue.

It is managed by the Agro-biodiversity and biotechnology programme of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and implemented by Kenyatta University. It is funded by USAID and the Multi-donor Trust Fund (MTDF) of the World Bank.

Prof. Machuka is working with a team of regional scientists including Rasha Adam Omer Abdalla (Sudan), Leta Tulu Bedada (Ethiopia), Miccah Songelael Seth (Tanzania), and Jonathan M. Matheka, Muoma John, V.Omondi, and Dr. Stephen Runo (Kenya).

Other partners are Prof. Jennifer Thompson of the University of Capetown South Africa; Dr. Dorota Konopka-Postupolska, Institute of Biochemistry and Biophysics; PAS Pawinskiego, Warsaw, Polland; Dr. Ron Mittler, Department of Biochemistry and Molecular Biology, University of Nevada, Reno; Syngenta Biotechnology Inc, North Carolina; Dr Eduardo Blumwald's laboratory at the Dept of Plant Sciences, University of California, Davis; Prof. Kan Wang, head of the Plant Transformation Facility at Iowa State University (ISU); Ghent University; CIMMYT; Prof. Zhanyuan Zhang, Plant Transformation Core Facility, University of Missouri, USA; North Carolina State University and Dr Peter Dominy, Raleigh, Glascow University, to mention but a few .

This article was compiled by Dr. Charles Mugoya and Clet Masiga, Agro-biotechnology Programme. It can also be accessed on www.asareca.org

The Crop of Hope

A healthy QPM cob. This maize variety has additional protein

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"We have undergone two rough seasons- both the first and second rains were unreliable," says Mrs. Rose Oweta, a renowned farmer and community mobiliser. "The crops were hit by prolonged lack of rain and severe sunshine when the cobs were starting to form...that means the food situation next year will be grave."

But Mr. Okello's one-acre maize garden, just a few metres away, still had the normal green colour and the crop had grown to full height, bearing big maize cobs.

New variety provides protein component

Unlike most of his village folk, Mr. Okello planted Longe 5, an open pollinated variety of Quality Protein Maize (QPM) that was released by researchers in Uganda. In Okello's perception, Longe 5 matures faster and is more tolerant to drought. His views, however, are not necessarily based on any experimental data on yield. Mr. Okello is a young farmer who is typically looking at this crop as a source of income.

According to Dr. Lydia Kimenye, the manager Knowledge Management and Upscaling Programme of ASARECA, ASARECA, data from the demonstration plots in the different target countries will be used to verify this perception. The highlight in Okello's story, Kimenye notes, is that it demonstrates how the QPM technology is progressing in the uptake pathways.

Mr. Okello received the seeds of this relatively new variety from a local women farmer's group called Ogur United Mothers (OGUM) to which he belongs. This, however, was not his first QPM crop. His first experience with the variety was when he received 10kgs of seeds from OGUM in March 2009.

He planted the seeds on one acre of land and despite the poor rains was able to raise three-100kg bags during the June/July harvest, while farmers who had planted ordinary varieties got nothing. Okello put aside a half bag (about 50kgs) for family food and planting in the second season.

This youth, who has lived in a mud walled and wattle grass thatched house since he was a baby, has been inspired by the potential to harvest enough QPM to raise money to build an iron-roofed brick house.

"I already have some money in the bank. I plan to use proceeds from the QPM sales as top up to buy iron sheets, timber and cement," he explains.

Mr. Okello was introduced to the group by his mother, who was the Church of Uganda Mother's Union chairperson of a local church. Usually, OGUM members invite their husbands and other family members to join the group, but Mr. Okello's father is physically handicapped—so the son joined instead.

Maize takes centre stage

"We decided to mobilise other women irrespective of their religious affiliations to start all-embracing agricultural projects. Maize was not a major bet. We at first wanted to produce just anything including poultry, rice and other crops," Mrs. Oweta, the group chairperson recalls.

Maize, however, took centre stage in 2008 when the district agricultural office informed them that they had been nominated to participate in a project called Dissemination of New Agricultural Technologies in Africa (DONATA), to learn and grow QPM.

DONATA was established to promote new proven and emerging agricultural technologies for adoption by farmers. It is an Africa-wide project supported with funding from the African Development Bank (AfDB) through the Forum for Agricultural Research in Africa (FARA).

The project was interested in working with organised groups and therefore found OGUM, handy.

The farmers were excited to learn from scientists at the National Crops Resources Research Institute (NaCRRI) Namulonge, who are partnering with other local stakeholders from the area to promote the QPM technologies, that unlike conventional maize, QPM provides protein in the diet.

"They said it was rich in protein and matures faster than ordinary maize, so we were excited about the idea," Mrs Oweta explained. "We were particularly happy because we were faced with poor nutrition, especially the children, after living in internally displaced peoples' camps for several years."

According to Mrs. Oweta, the project assured farmers that they would be trained to produce value added products like dough-nuts and animal feeds.

DONATA works through Innovation Platforms for Technology Adoption (IPTAs),

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a strategy that brings together key stakeholders along the value chain of a commodity and encourages them to participate innovatively to achieve mutual goals.

An IPTA comprises a network of stakeholders and institutions of diverse economic and social backgrounds, all working together using and applying research knowledge and technologies towards agreed common objectives that ultimately lead to improved livelihoods.

The IPTAs provide farmers, extension service providers, NGOs, researchers, and the private sector (like seed companies) with a forum to jointly face challenges like poor yields. In Uganda, there are two IPTAs. The two are promoting the adoption of technologies in QPM in northern Uganda. One of them is in Lira district and the other in Gulu. The Lira IPTA is focusing on QPM grain production, value addition and marketing, while the Gulu IPTA is focusing on QPM seed and grain production.

ASARECA and partners deliver on promise

The dissemination of new and emerging technologies in QPM is one of the projects under DONATA, which is being managed by the Knowledge Management and Upscaling programme of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA).

Dr. Kimenye says that, the QPM technologies are being disseminated by the National Agricultural Research Institutes (NARIs) and local partners in four countries—DR Congo, Kenya, Tanzania and Uganda.

"The project, which started about one and a half years ago, has taken root and is on track. Demand for the technologies, especially for the QPM seed has increased tremendously in all the four countries. The project has stimulated demand from other countries like Sudan and Ethiopia who have expressed interest in the technologies. We are therefore exploring ways to upscale to meet these demands," says Dr. Kimenye.

Technology to address challenges

According to Dr. Asea, a scientist at NaCCRI, who is coordinating the project in Uganda, the generation and promotion of uptake of new technologies, is crucial because of the increasing number of stress factors to crop production such as inadequate rainfall, soil infertility, pests and diseases, and hostile weeds.

Dr. Asea notes that drought contributes to about 17% of poor harvest, soil infertility 20%, leaf diseases 5%, ear rots 5%, and stem boring insects 10%. Insects that affect stored grain account to about 10-20% of loss, while striga, a parasitic weed, can reduce harvest by as much as 15%.

Farmers in Tanzania have put QPM to various uses

Marketing, post harvest handling and storage, he adds, also need urgent attention because they affect production. The IPTA approach enables the integration of these aspects into the dissemination of technologies, Asea states.

Dr. Zubedda Mduruma of the International Centre for Maize and Wheat Research (CIMMYT), which provides technical back-up to the implementing partners in the four countries, agrees no less, highlighting the role of the IPTAs in bringing together farmers, processors and researchers to plan activities and share ideas.

> "They said it was rich in protein and matures faster than ordinary maize, so we were excited about the idea..."

Why the IPTAS?

Through the IPTA's, ASARECA promotes multidisciplinarity and the achievement of pro-users' result oriented action research, where scientists, farmers and other value chain actors learn by doing.

This way, says Mr. Moses Oremo, of the Knowledge Management and Upscaling Programme, adoption of technology is enhanced because it is well understood, adapted and owned by all relevant stakeholders.

The IPTAs can also be a basis for agricultural policy formulation, Oremo argues: "For instance, seed quality and accessibility have been noted as serious issues in Lira district, and so the IPTAs can create demand for policy review to establish declared seed certification services in the district."

Women define production roles

After a year and a half of implementation, the project has experienced a number of successes and challenges.

First, a number of farmers have been mobilised by the various groups and supported to produce QPM. Todate, the OGUM group has grown into an umbrella of 54 smaller groups, each with an average of 32 people. The membership has impacted 952 families with an average multiplier effect of up to 1,890 women, youth and men.

As the name suggests, the majority of OGUM members are women. Their constitution allows only women to take on top leadership positions, which also means that the top decisions are made by them.

The leadership is structurally constituted into subcommittees with roles to play in production, procurement and marketing, finance and elders' welfare. Despite their

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A maize farmer shows off a day's harvest

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limited power, the men, however, are not outcasts. They enjoy prestigious positions as advisors and facilitators, besides participating in meetings, training and other group activities.

Through this project, ASARECA through NaCRRI has supported OGUM and other groups in northern Uganda with training in many aspects such as seed selection, crop production, protection and post harvest handling of maize grains and seeds, besides facilitating the training of trainers in leadership and management.

The OGUM group in all received 80kg of foundation QPM seeds for multiplication, 1,140Kg of certified seeds for grain production and some fertilizers as part of the demonstration of the technologies.

Using the inputs, the farmers planted 114 acres of maize for grain and 10 acres for seeds multiplication.

The harvest was good. It could have been better if severe lack of rain had not hit the district. The farmers in aggregate produced three metric tonnes of quality declared seeds of Longe 5 also known as Nalongo.

From this, they were able to sell 300kg of the seeds to a sister QPM project implemented by the NaCRRI cereals programme at Ug.sh1,500 (US$ 0.75) per kg. They earned about Ug.sh450, 000 (US$ 225).

The balance of the seeds (about 2.7 tonnes) was kept in a store for planting in the first season of 2010. This will be shared among members under the "pass it on" arrangement in which earlier beneficiaries pass on proceeds to other members of the community. This is expected to increase seed production to 338 acres in the next season.

Crop of hope

Although the QPM project is only at the initial stages, it offers hope to an area whose food, nutrition and income security has been compromised by the insurgency caused by Joseph Kony's Lord's Resistance Army (LRA) rebellion.

According to the Food and Agricultural Organisation, Lira district is categorised in a belt of areas where the food situation is in "the balance".

"The chances of supply slipping into food insecurity seem to be high because some households sometimes sell their crops while they are in gardens," says the District Agricultural Officer, Dr. Peter Ajungo.

"As the district grapples with food insecurity, QPM holds a very high ranking amongst residents and leaders as one of the solutions. The potential is very high and we as a district are ready to scale up the production efforts," he asserts.

This article was compiled by the Knowledge Management and Upscaling Programme and the Information and Communication Unit
The full article can be accessed on www.asareca.org

Act now to stop the spread of the Cassava Brown Streak Disease

Total loss of harvest due to CBSD

The cassava brown streak disease (CBSD) is a devastating disease that is spreading very fast and causing destruction to the cassava crop in East and Central Africa. This disease causes serious reduction in cassava harvest and in some cases total crop loss.

Cassava is the second most dominant staple crop in Africa, after maize. This means that the disease could result in serious disruption in the lives of 200 million people (about 70% of the population) in East and Central Africa who depend on this crop for food and income generation.

Origin

CBSD is known to have started in the coastal areas of Kenya, Tanzania and Mozambique. It recently spread out to western Kenya, the Lake Zone of Tanzania and Uganda. In Uganda it has already been identified in the districts of Luweero, Busia, Pallisa, Wakiso, Mukono, and Kaberamaido.

What causes CBSD?

The disease is caused by a virus which is spread by a vector known as the whitefly. It is further spread through planting infected materials. The movement of materials from infested areas to non-infested areas escalates the situation.

How to identify CBSD

The symptoms are not striking or attention-catching and farmers are often unaware of the disease until harvest time.

- On the leaves, they appear as patches of yellow mixed with the normal green colour. The patches are more prominent on mature leaves which are often at the bottom of the plant.
- The damaged leaves do not become distorted
- On the stem, the disease appears as brown streaks on the upper green portions of the stem.
- On the root, it causes rotting of the roots and may also cause root distortion and cracking. It distorts the growth of the root, making it not fit for consumption.

The symptoms vary from variety to variety. Previously, the most widely known cassava disease in the region was the cassava mosaic disease (CMD). The symptoms of the two diseases (CBSD and CMD) are currently being confused with each other.

What is the difference between CBSD and cassava mosaic?

- The symptoms of CBSD are prevalent on lower mature leaves, while those of cassava mosaic are more pronounced on younger leaves
- Unlike cassava mosaic, the damaged leaves in CBSD do not get distorted in shape
- In CBSD the plant appears normal, while in cassava mosaic, the plant becomes stunted as the disease progresses
- The roots that are affected by CBSD may become distorted and rotten, while in cassava mosaic situations, roots do not become distorted but may reduce in size.
- CBSD causes discolouration of the roots into brown and dead brown patches while in cassava mosaic, there is no discolouration

How CBDS spreads

- The disease is spread through the planting of stem cuttings from infected plants.
- It is also spread from plant to plant by white flies and probably other insect pests.
- Planting of susceptible varieties helps build up the disease.
- CBSD also spreads at multiplication centres if the original cuttings were infested or if they were not checked for CBSD.
- Farm implements such as knives used in cutting cassava stems into cuttings can spread CBSD to healthy planting materials when the infested knife is used on them.

How CBSD can be controlled

- The key control measure is planting clean cassava cuttings.
- The use of resistant varieties, however, is currently the most sustainable control method. Research in developing or selecting resistant varieties is ongoing in several countries, with promising results in Tanzania, Kenya, Uganda and Mozambique.
- Integrated management of CBSD is the best way forward. The options in this approach are:

Field hygiene

Field hygiene involves uprooting and destroying all plants which are showing symptoms of CBSD. This reduces the risk at the source of the disease. To achieve results, cassava plants in multiplication plots should also be regularly checked for CBSD. All farm implements need to be sterilised over fire, especially when cutting cassava stems into planting materials.

Use of disease-free planting materials

Farmers should select cuttings from healthy cassava plants. They should use only materials from reliable multiplication sources.

Farmers involved in community multiplication of planting materials should be trained in proper identification and how to reduce the spread of CBSD through cuttings.

Use of CBSD resistant/tolerant varieties

Tolerant cassava varieties exist in some countries even though some of them have not been consistent in showing tolerance to CBSD. In Uganda, two varieties are showing tolerance. These are MM-97 4271 and MM-96 0686. Resistance to CBSD is also reported in Tanzania, Malawi and Mozambique.

Use of clean materials

Use of clean planting materials is a crucial component of CBSD management.

- Propagators of cassava planting materials should therefore be trained in proper identification of symptoms of CBSD and other diseases which are spread through cuttings.

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Practical experiences from 'doctors of the soil'

A farmer demonstrates how compost manure is made

"We are farmers and doctors of the soil," Mr. Kenneth Byarugaba remarked in a prologue to a long narration. "If our priority is to make direct injection of nutrients and moisture to starving crops, we use both a composite manure basket and a water conservation trench," he continued, pointing at his avocado plants.

The avocados, which looked malnourished, were planted without adequate planning on the sharp edge of his one-acre piece of land on one of the hills in Kibuga parish, Rubaya sub-county, Kabale district in south-western Uganda.

According to the district Agricultural Officer, Mr. James Katsimbazi, the cliff cannot support farming because it lacks ability to retain rain water, which naturally rushes downhill taking with it all the soil nutrients.

Hostile environment

Kabale district is a densely populated highland covering 705 sq miles, with about 318 people per sq kilometre and an annual population growth rate of 3%. This implies that the land is scarce and heavily fragmented.

In the words of the Local Council 5 Vice chairperson Mr. Silver Baguma, "Our challenge is our environment. We have a dilemma on how to successfully invest on the hilltops for farming."

"But that does not mean defeat", he said. "We have not stopped exploring how to survive. We have only two options: either to modify and adapt the harsh environment to suit our needs, or, like others have done, flee to neighbouring districts".

> "We have only two options: either to modify and adapt the harsh environment to suit our needs, or, like others have done, flee to neighboring districts"

Their choice is to adapt. "We have intensified the use of innovations to utilise most of the land optimally," Mr. Byarugaba stated with confidence before describing how he constituted a compost basket to save his starving avocados.

"Chicken, sheep and goat droppings, fresh cow dung, dry grass, bean stalks, water and ash are some of the materials that we use for compost making, but the list is long," he explained.

Decomposition starts, usually at the bottom of the basket, due to concentration of moisture and heat levels and some of the nutrient-rich soil filters into the existing poor soil, causing the level of the basket to drop, he narrated.

The farmer regularly adds ingredients to the basket to attain a critical mass of compost and monitors the rate of decomposition using 'a thermometer' of sorts. The thermometer is not a factory product, but simply a dry, thin, but hard stick from one of the trees on the land.

"The stick is pushed from one side of the basket through to the other side. When it begins to mould at the suspended side, one is able to tell that decomposition is progressing well and after two weeks, the process is complete and the manure is ready for use," Mr. Byarugaba explains.

About five metres away, uphill from the composite basket, a two-foot horizontal water trench referred to as *fanya chiini* is established to trap runoff from the hill top and harvest water from roofs of any nearby building. *Fanya chiini* is a Swahili phrase used by locals to describe the heaping of soil scooped from the trench down the slope. The opposite is called *fanya juu*. Above the trench, a strip of Napier grass is planted to act as a stabiliser, meaning: it reduces the speed of water flow while trapping silt, hence remarkably scaling down soil erosion.

Long after the rains, Mr. Byarugaba explains, the water from the trench, carrying along some nutrients from the compost vicinity, gradually sips into the avocado garden, directly injecting fresh life to the plants.

This is just one of the many interwoven innovations that farmers, scientists and development partners working in these steep and heavily cultivated hills are doing to modify the harsh environment.

Over 130 families In Rubaya have adopted a range of water and soil conservation technologies including *fanya chiini* and *fanya juu*, water traps for directly hitting rain and Mandella water traps which maximise

A reverse bench on a hilltop in Rubaya subcounty, Kabale district in western Uganda. The technology is used to check the momentum of runoff

the use of water from roofs of houses.

Both *fanya juu* and *fanya chiini* are practiced in the same piece of land together with agro-forestry, intercropping, organic and mixed farming and the benefits are many: "Apart from acting as a stabiliser, Napier grass is also used for feeding cattle, goats and pigs," says Mr. Byarugaba.

Grevillea robusta, one of the commonly planted trees, says Byarugaba, helps check erosion and provides staking materials for climbing crops like snap beans and tomatoes. The medicinal plant, Tysonia, is handy in treating malaria and for making 'plant tea' and green manure. Plant tea is made by plucking Tysonia leaves and fermenting them in a jerrican of water for two weeks.

> "Today, about 40% of the farmers in the sub-county are practicing land care approach and are using a range of new technologies developed through collaboration with scientists..."

The leafy indigenous vegetables; *nakatti*, *sukuma wiki*, *dodo* as well as green pepper and *echadoi*, are grown in small plots and sprayed with plant tea in addition to compost manure, and watered from the trenches. Intercropping is also used as a means of controlling pests and diseases because different crops are attacked by different pests and diseases.

Using these technologies, the output from Mr. Fred Bitarabeho's fragmented five-acre piece of land has grown exponentially from less than 800kgs of beans, 160kgs of maize and 60 bags of Irish potatoes in a season five years ago, to over 1,600 kgs of beans, 800kgs of maize and 100 bags of Irish potatoes each season.

Other technologies include reverse benches and deep trenches to check the water momentum. Reverse benches are labour intensive technologies for turning steep slopes into cultivable land through levelling. This technology, residents say, was borrowed from Rwanda.

Rubaya sub-county chief, Mr. James Bitarabeho, says collaboration efforts by different development partners and determined farmers, has helped check the exodus of people from the district.

"Today, about 40% of the farmers in the sub-county are practising land care approach and are using a range of new technologies developed through collaboration with scientists and development partners to get value from the difficult terrain," Mr. Bitarabeho notes.

Mr. Bitarabeho explains that bye-laws on land conservation have been enacted in different sub-counties. The bye-laws oblige land owners in a common valley to belong to an association. They also require all farmers from the top, middle and down parts of the hill, to adopt a uniform approach of land management since activities of individuals affect each other.

ASARECA taps into farmers' experiences

Rubaya is one of the sites that ASARECA and partners chose for a project on existing approaches to Integrated Natural Resources Management (INRM).

The aim of the project is to mainstream this approaches into agricultural research and development Institutions in Eastern and Central Africa.

Regionally, the project is being implemented in Kenya, Uganda and Tanzania with two action sites in each country. In Uganda, the sites are located in Kabale and Mbale districts. In Kenya the sites are in Siaya and

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Experiences from 'doctors of the soil'

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Makueni districts and in Tanzania, Arusha and Lushoto.

These sites were selected on the basis of rainfall patterns, poverty levels, population density, prevailing farming systems and previous work on INRM in the area.

The sites represent areas where some of the key research institutions in agriculture, water and forestry are working, and INRM technologies and approaches developed, but are not widely applied in the region," says Ms. Anke Weisheit, the project Leader for the Uganda component.

According to the Manager Natural Resources Management and Biodiversity (NRM&B) Programme of ASARECA, Dr. Hezron Mogaka, the site selection was aimed at coming up with a diversity of approaches while avoiding duplication in order to multiply benefits from economies of scale and peer-learning, leading to efficiency.

"It is also expected that project results will be applicable to all ECA countries," Dr. Mogaka explains.

The project is meant to enhance availability of information on mainstreaming INRM approaches among agricultural research and development organisations in the region.

This is anticipated to enhance adoption of innovations leading to a change of mindsets and attitudes of stakeholders, more efficient use of resources, increased productivity and better articulation of policy issues within different stakeholder categories.

"At the end of the 18 months (project time) we should be able to report on the limitations to the process of making research directly impact on the livelihoods of communities. The idea is to establish how the barriers to mainstreaming INRM approaches can be broken through," Mr. Alex Ariho, a lead consultant in the INRM Uganda team notes.

Working with institutions

In line with ASARECA commitment to strengthening institutions and social capital for improved governance, Mbarara University of Science and technology was chosen to implement the programme in Uganda. Regionally, other implementing institutions are; Kenya Forestry Research Institute (KERFI), Kenya Agricultural Research Institute (KARI), Rural Energy & Food Security Organization (REFSO), and Selian Agricultural Research Institute (SARI) - Tanzania.

Mbarara university planner Ms. Robinah Nakakeeto explains that the university was well placed to implement the programme because of its renowned community outputs, which the entry of INRM project would boost further. This was later emphasised by the University Secretary who pledged support to the project and long term partnership with ASARECA in Research and Development.

According to Mr. James Ateker, the NRM&B Programme Assistant, the project was initiated against the background that substantial work in INRM had been done in the region, yet research and development institutions were slow to embrace the different approaches generated.

"We are looking forward to demonstrating that existing institutional barriers that have prevented institutionalization of INRM approaches can be addressed," Mr. Ateker states.

Learning together

The Task Force on INRM (2001), noted that the approach integrates research and development on different types of natural resources, into stakeholder-driven processes. It entails adoptive management and innovations to improve livelihoods, ecosystem resilience, agricultural productivity, and environmental services at community level.

This placed natural resources and the people with their needs, livelihoods and rights at the heart of INRM. This means that the communities must be involved in the planning, decision-making and actual conservation and management of the resources.

"ASARECA considers action research, where researchers work with communities to inform further decisions and project design very crucial in development of innovations that are responsive to people's needs," Dr. Mogaka states.

Progress made

According to the project performance report, 2009; a total of five project inception workshops (two each for Kenya and Uganda and one in Tanzania) were held during which the level of knowledge on INRM was found to be low.

Teams from participating countries have also reviewed literature on the various available INRM approaches and mapped the approaches in the field. The state of the art of INRM technologies in Kenya, Tanzania Uganda is yet to be published from the literature reviewed. However, an analytical framework for analysing institutional barriers together with the research tools was developed. The framework has already been validated in the field and research tools pretested in all the three countries. Data collection was expected to be completed by January, 2010. This article therefore presents practical experiences in INRM by the farmers ('Doctors of the soil') that were mapped in Rubaya sub-county, Kabale District south western Uganda.

Challenges

Ms Anke observes that despite increasing levels of participation, stakeholders are still impatient with development research because it takes time and "because of their orientation to physical handouts as incentives."

This, she notes, requires sensitisation to help stakeholders to distinguish between ongoing development research and projects that give instant development aid.

This article compiled by NRM&B programme and the Information and Communications Unit. It is also available on www.asareca.org
For more information contact the NRM&B Programme at nrm@asareca.org

Act now to stop the spread of the CBSD

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- Selection of planting materials should be done at propagation sites.
- Only resistant cassava varieties should be propagated and distributed.
- Multiplication of varieties known to be tolerant to CBSD should be fast tracked.

Quarantine and legislation

This involves restrictions on farmers living along borders between countries against transporting or moving cassava cuttings.

Awareness

Adequate sensitization and awareness campaigns need to be undertaken to enable the communities be part of and own the measures.

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) comprises the national agricultural research systems (NARS) of 10 countries namely; Burundi, DR Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda. ASARECA facilitates collective action among its member countries to address agricultural threats. Through ASARECA, several cassava growing countries are working together to combat this devastating disease.

This is an article from a project entitled: "Developing Communication and Training Resources for the Awareness Campaign for Cassava Brown Streak Disease (CBSD)" spearheaded by:
ASARECA Staple Crops Programme

For more information contact: staples@asareca.org. The article is also available on www.asareca.org

Controlling Napier (elephant grass) smut and stunt diseases in Kenya, Uganda and Tanzania

Also called elephant grass, Napier grass (Pennisetum purpureum) is a tall fast growing specie averaging 3.5metres. In the savannas of Africa, it grows along lake beds and rivers where the soil is rich.

In East Africa it is planted on farms as a source of feed for dairy cows constituting between 40 to 80% of forages used by smallholder dairy farmers. In Kenya alone, about half a million smallholder dairy producers rely on Napier grass as a major source of feed and in Uganda, 90% of the farmers rely entirely on Napier grass as a source of fodder for improved dairy cattle.

Napier grass is capable of yielding up to 50-100 tonnes of fresh weight per hectare if recommended agronomic practices are used contributing significantly towards milk production.

A regular supply of milk provides nutritional security for many rural poor and affordable nutrients to improve their general well-being. Dairy also generates more regular household incomes and jobs than any other enterprise. In most areas in the region, smallholder dairy tasks are the responsibility of women, who rely on milk for regular daily income and for improving the nutritional status of their children.

Other than feeding livestock, Napier grass is also used for the management of stem borers as a trap crop, conservation of natural enemies of other potential crop pests and prevention of soil erosion.

However, the emergence of two major diseases; Napier smut, a fungal disease caused by *Ustilago kamerunesis*, and Napier grass stunt, caused by *phytoplasma*, has become a serious threat to Napier grass with the potential of causing significant reduction in yields and threatening an industry with most varieties susceptible to the diseases.

The far reaching implication of this is that farmers may be forced to sell their dairy cows or graze them on sparse communal pastures, which exposes them to the risk of other diseases.

Napier smut

Smut disease spreads rapidly by wind and use of infected planting materials and manure.

In Kenya, farmers say they first witnessed smut in Kiambu in the early 1970s. It was (officially) reported in central Kenya in the late 1980s. It then became a serious problem in between 2000-2007.

In Tanzania, smut was first reported in 2007 in one village in Meru district; however, it has not been seen to affect Napier grass in the surveyed districts.

Napier stunt

Stunt disease as the name suggests, inhibits grass growth, and in some cases, ultimately leads to the death of the grass.

Until a year ago, the cause of the disease, which renders healthy thick leaves thin, yellow and weak, was elusive. However, it is now clear through analysis done at Rothamsted Research in the UK, that the cause of stunt is a phytoplasma which are micro-organisms similar to bacteria.

In Kenya, stunt was first observed in western Kenya in the mid 1990s. It has also been observed in central Kenya.

In Tanzania, stunt has been observed in Muheza, Meru and Tarime districts. It is still localised to a few places like Tarime, where it is prevalent in villages along the Tanzania/Kenya border.

In Uganda, stunt was first observed in 2002 in Masaka district and is now reported in over 30 districts.

ASARECA Napier grass smut and stunt resistance project

Responding to demands from farmers and concern from authorities, ASARECA in collaboration with the International Livestock Research Institute (ILRI), Rothamsted Research, Kenya Agriculture Research Institute, National Agricultural Research Organisation (Uganda) and National Biological Control Programme (Tanzania) launched a three year project in 2007.

The project brings together scientists from different institutions to work to halt the spread of the diseases. Doctors Jolly Kabirizi (National Agricultural Research Organisation, Uganda), Mulaa (Kenya Agricultural Research Institute), Beatrice Pallangyo (National Biological Control Programme, Tanzania), Janice Proud and Jean Hanson (International Livestock Research Institute, Ethiopia) and Prof. John Lucas from the UK are part of a multidisciplinary team of pathologists, entomologists, agronomists, animal nutritionists and germplasm experts working to mitigate the effects of the diseases.

The objectives of the project were to determine the extent of the problem in areas where smallholder dairy is an important livelihood strategy; to collect Napier grass clones that farmers identify as more resistant to the diseases; and identify best management practices used by farmers to mitigate the impact of the diseases.

Surveys were carried out in three agro-ecological zones in Kenya, Tanzania and Uganda to obtain information on Napier grass management and use, the spread and severity of the diseases and collect potentially disease tolerant material for multiplication and distribution.

Stakeholder meetings in each country identified baseline indicators and output and outcome indicators that can be used to monitor the impact of the various activities in the project.

In Tanzania, where the diseases are not widely known, there was an opportunity to raise awareness on the diseases, their impact, symptoms and methods of control. Selected Napier grass material was evaluated for yield, morphology, nutritive quality, molecular diversity and disease resistance.

Effective management practices used by farmers to mitigate the impact of smut and stunt have been identified. According to Dr. Jolly Kabirizi, "Following surveys and farmer meetings from 2007 to 2009, improved practices such as manure application, proper harvesting, weeding, roguing and use of clean planting materials led to the decrease of stunt incidence by 10% in Uganda."

The situation seems to be improving in Kenya in areas where trials and sensitization workshops have been conducted. And in Tanzania, where stunt is a new disease, monitoring and reporting systems have been set up to prevent spread of stunt.

Finding resistant clones

Read about resistant clones and quick tips on controlling smut and stunt in the full article on www.asareca.org

This article was compiled by ASARECA Livestock and Fisheries Programme in collaboration with Doctors Genevieve Renard, Janice Proud and Jean Hanson, Margaret Mulaa, Beatrice Pallangyo and Jolly Kabirizi.

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The Promise of High Value Non-Staple crops

A farmer fixes a traceability label on pineapples

High value non-staple crops have a huge potential to impact the economies of Eastern and Central Africa, according to a study, Strategic Priorities for Agricultural Development in Eastern and Central Africa, commissioned by ASARECA in 2005.

Among other uses, the crops play a significant role in human nutrition (proteins, vitamins, micronutrients) and health (pharmaceutical value).

These crops provide nutritional security and health for the populations and particularly to the most vulnerable groups- pregnant women, breast feeding mothers, children below five years and HIV/AIDS patients.

High value non-staple crops include beverage crops like coffee and tea; oil crops like oil palm, groundnuts, soybeans; fruits like mangoes and citrus; vegetables like tomatoes, onions and garlic; and pulses like snap, dry and runner beans, and field, snap and string peas.

Coffee and tea are known as traditional cash crops in most of Eastern and Central Africa. Oil crops like oil palm, soybean and sunflower produce edible oils which once processed and packaged, increase in economic value several times over, way beyond the reach of the common person.

"Among the pulses, snow-peas and snap-beans fetch premium prices in local high-end markets and in European supermarkets," notes Dr. Mwamburi Mcharo the manager ASARECA's High Value Non-Staple Crops programme.

Fruits and vegetables are also marketable on the local and export markets thus contributing significantly to the economic empowerment of the community and socio-economic change in general, he notes.

The programme is working towards ASARECA's vision to be a regional leader in agricultural research and development for improved livelihoods by promoting high yielding and demand-driven crop varieties that are resistant to biotic and abiotic stresses.

The programme promotes efficient multiplication and delivery of seed and other planting materials, and uptake of appropriate technologies in ECA. Top on its agenda is support to research into innovations for improving value chain efficiency and market competitiveness. To this end, the programme carries out capacity development of value chain actors, entrepreneurship and financial resources mobilisation, and information and knowledge management.

Snap beans, the hot item on the market

The programme is currently working to enhance competitiveness of snap beans (French beans) for domestic and export markets. Snap beans are growing in importance in east and central Africa (ECA).

The crop could address food insecurity, improve incomes and alleviate poverty. Compared to the common dry beans, snap beans obtain 12-fold the market value of dry beans on dry weight basis in Kenya and Uganda. Snap beans are also harvested earlier and can be done over a longer period than dry beans. They also require much less energy for cooking.

However, insect, pests and diseases have constrained production and contributed to the high yield losses. Farmers rely mainly on costly pesticides to control pests and diseases, thus, increasing production costs and possible toxic accumulation of agrochemicals. In addition, Smallholder snap bean production is threatened by lack of affordable and marketable snap bean cultivars whose seed can be produced and disseminated through formal and informal seed delivery systems.

Current commercial export varieties are patented by foreign multinational companies. Unfortunately smallholder farmers whose livelihoods ASARECA is seeking to transform cannot afford to purchase the patented varieties and at the same time they cannot penetrate the export market using snap bean pods raised from own-saved seeds due to traceability issues which are a standard requirement for export markets.

It is anticipated that the deployment of resistant genes and the use of other improved integrated snap bean production technologies will reduce production costs. Working with the National Crop Resources Research Institute (NaCRRI) Namulonge in Uganda, the Kenya Agricultural Research Institute (KARI) Thika, the University of Nairobi, Kenya, (Institut des Sciences Agronomiques de Rwanda (ISAR), SARI in Tanzania, ASARECA is undertaking research into enhanced utilisation of improved snap bean germplasm and management practices in Eastern and Central Africa.

The snap bean project was first conducted for six months in 2006, but due to suspension of funding, it went into abeyance for three years until it was revived

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Healthy cabbage grown using proper agronomical practices

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in 2009 in a restructured ASARECA. Planting for the first season commenced at Namulonge, Uganda in October 2009 and other countries started later.

On December 9 and 10, 2009, the programme held a regional workshop that brought together key players in the snap beans commodity value chain.
This was in order to discuss issues affecting its marketing both in the domestic and international markets. The stakeholders were from Tanzania, Kenya, Rwanda and Uganda. The outcome of the workshop and much more will soon be made available.

"This is certainly space to watch in the coming days, months and year. We will be looking out for signs of knowledge and skills of stakeholders to participate in domestic, regional and international markets and market chains," Mcharo states.
"We will be looking forward to the introduction of snap bean varieties that meet domestic and export markets, improved agronomic (cultural, biological, chemical and mechanical) management packages for snap beans, improved pre and post harvest management packages for snap beans, uptake and utilization of snap bean technologies," he notes.

A new and befitting name

The High Value Non Staple Crops Programme, formally known as the 'Non Staple Crops' programme, attained its new name in December 2009 following approval by the board of directors meeting in the ocean town of Mombasa, Kenya.
The baptism is a key development especially at a time when ASARECA is undergoing 'a renaissance' that was flagged off over a year ago, with the introduction of a programmatic approach to achieve her objectives.

The new name, which comes with new a new list of promises and a proactive spirit, is meant to change perceptions and identity of the programme that was established against a background of limited research focus on beverage and oil crops, fruits, vegetables and pulses.

The name was first adopted by stakeholders at a strategic planning workshop from June 22-26, 2009 at the Imperial Resort Beach Hotel, Entebbe. Further discussions of the matter with the Executive Director, earned this noble initiative executive endorsement, which sailed it to the board.

According to Dr. Mwamburi Mcharo, the old name started with a negative connotation "non" which could bear overtones of lack or inferiority.

"In order to strategically attract all stakeholders to support the programme in the implementation of its activities, buy-in and feel proud to belong, the participants recommended a positive and attractive name-High Value Non-Staple Crops," he said.

This article was compiled by the High Value Non-Staple Crops Programme and the Information and Communications Unit. It can also be accessed on www.asareca.org
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Tracing the story of seed variety evaluation, release and registration in ASARECA sub-region

The commercial seed industry requires huge investment in research and development to create new varieties, and in processing and packaging.

These investments have to be recouped through the sale of seed, which is still a low value, high volume product. Under these circumstances, seed companies require a critical volume of sales to break even or to make profits.

According to the executive secretary of the Uganda Seed Traders Association, Ruth Sebuliba, increasing the volume of trade and return on investment requires a fair environment that favours trade without compromising standards.

Three factors are therefore critical to the growth of the seed industry namely; generation of seed technologies for high farm productivity, the ability to assure ownership of the technology by its provider and to recoup the returns to innovation.

However, Africa commands less than 10% world seed market share and even less intra-regional trade with neighbours. A study commissioned by the Policy Analysis and Advocacy Programme (PAAP) of ASARECA early this year, shows that the volume of seed imports into the region increased from 9 to 15 million metric tonnes between 2002 and 2008.

Yet eastern and central African (ECA) countries have had different standards and regulations for variety release and trade, which served as barriers to cross-border trade. Coupled with the relatively low level of effective demand, says Dr. Obong Nyachae, the former chairman of the Kenya Seed Trade Association, this leads to high costs, making the seed sector an unprofitable area.

It is in response to this that ASARECA initiated a project in 1999, to harmonise seed policies and regulations in the region to create a regional market with effective demand to induce needed investment.

Performance testing procedures were established when plant breeding and formal seed production was dominated by the public sector and designed to meet the needs of public germplasm. This led to delays in release and often rejection of useful varieties that did not meet the criteria and procedures. A public variety released in one country faced long battles to gain release in a second country. Acceleration in innovation was also hampered by lack of intellectual property protection for plant varieties.

The future of the seeds sector, however, is getting brighter by the day because of the unwavering efforts by ASARECA and partners to reform policies and regulations to dismantle barrier to trade.

Over the past few years, says Dr. Michael Waithaka, the manager of the Policy Analysis and Advocacy Programme, the procedures for managing the testing, release and trade in new varieties have been streamlined. This is allowing new technologies to become available to our farmers.

"There is broad agreement and a growing commitment to similar variety evaluation and released procedures throughout the region," Dr. Waithaka notes. "There's no doubt that the harmonisation project spearheaded by ASARECA is contributing a lot in putting reforms in the seed sector on fast track."

These developments, Dr. Nyachae agrees, have re-energised the sector, leading to exponential growth in trade volume. "Before 2000, Uganda traded less than 500 metric tonnes of seed, but is now exporting about 10,000 metric tonnes, the number of seed companies has grown following the harmonisation efforts and trade associations have evolved," he explains.

Today, in the words of Sebuliba, "Everybody knows that harmonisation is here to stay. "The process is slow but sure because we are changing things that have been here for long," she notes.

Indeed breeders are now able to undertake evaluation to the point of release. Countries are now required to establish a technical committee, the National Performance Trials (NPT) committee, comprising crop experts to evaluate the trials data and recommend for release.

The participating countries have also agreed to establish the National Variety Release Committee, a policy organ to regulate the process.

Regulations in individual countries also provide for harmonization of the release process with the regional seed harmonization agreements to facilitate regional variety listing. They also provide procedures for application to entering a variety into NPTs and the process leading to gazetting and entering the variety in the national and regional variety lists.

National certification agencies, the Plant Health Inspectorate Services (KEPHIS) of Kenya, the Tanzania Official Seed Certification Institute (TOSCI) and the National Seed Certification Service (Uganda) respectively have been established. But although regulations have been revised and streamlined in most countries, shortage of funds and manpower has curtailed a complete shift to autonomous trials in most of ECA.

Overall, the project has helped to shorten the testing process.

National and regional variety lists

The project has encouraged the collation and updating of national variety lists that include all released varieties for agricultural crops in the respective countries. A regional variety list for Kenya, Tanzania and Uganda was produced in 2004 including varieties that have been released in at least two countries. According to Nyachae, the list has improved knowledge of varieties available in the region.

Burundi recently published its regional variety list and Madagascar is undertaking the activity. An update of the 2004 regional variety list will be done to include more countries and to enable a web-based catalogue.

However, further attention should be given to implementation. Although fairly uniform and streamlined testing procedures are documented in most ASARECA member countries, the only case that is fully functional is Kenya. ASARECA is promoting implementation in this through provision of training opportunities for regulators and other actors in the industry.

"ASARECA training efforts have created an awakening. Because of the regional orientation and ability to scan global trends, ASARECA has helped to expose the seed industry in the region to what happens on the global scene," says Sebuliba. "Through ASARECA initiatives seed stakeholders have participated in international forums, accessed information, including bills that are making a difference elsewhere in the world.

Variations in procedure for seed policy implementing regulations, including the procedure for distinctness, uniformity and stability (DUS) testing across ASARECA member countries, have hampered trade. A seed variety may be certified in Uganda and rejected in Tanzania because of variations in the testing procedures.

Harmonizing the DUS test procedure will hence enable the realization of a seamless border for seed trade in the region. To this end, the Eastern Africa Seed Committee (EASCOM) recently convened training of certifiers in the region on testing for seed variety (DUS).

This article was compiled by the Policy Analysis and Advocacy Programme. It is also available on www.asareca.org.

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ASARECA Board of Directors

The Board of Directors, the highest governing body of ASARECA, consists of the directors of the National Agricultural Research Institutes in the ten member countries together with representatives from faculties of Agricultural Sciences, extension, CGIAR, private sector in the region. The Board is responsible for providing the policy oversight for the organization. The Board has the following members:-

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This list is also available on http://www.asareca.org/index. php?page&as=9 under the section 'Board of Directors'.

BOOK SHELF

Title: The influence of current and future climate-induced risk on the agricultural sector in East Africa.

Authors: Jeannette van de Steeg, Mario Herrero, James Kinyangi, Philip Thornton, K.P.C Rao, Roger Stern, and Peter Cooper
Publisher: International Livestock Research Institute

Year of publication: 2009

The book is an output from ASARECA funded project; "Managing uncertainty: Innovation systems for coping with climate variability and change". It is a collaborative project under the leadership of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in conjunction with the World Agroforestry Centre (ICRAF), the International Centre for Tropical Agriculture (CIAT), Reading University, the Agricultural Research Council (ARC) of Sudan and the National Agricultural Research Organisation (NARO) in Uganda.

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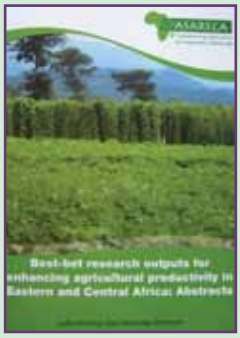

Title: Best-Bet research outputs for enhancing agricultural productivity in Eastern and Central Africa: Abstracts

Compiled by: Lydia Kimenye and Alexander Bombom

Published by: Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)

Year of publication: 2009

Synopsis: The book brings together best-bet research outputs generated through efforts of former research networks, programmes and projects (NPPs) of ASARECA in collaboration with other partners in the region. It contains 37 proven agricultural technologies and innovations available for uptake and upscaling to improve livelihoods in the region. Grouped in eight thematic clusters, the abstracts provide brief accounts of the technologies, the intended end-users, areas where the technologies and innovations are currently being used, the dissemination and scaling out methods used and lessons learnt.

Copy available on www.asareca.org

Title: Responding to the food price crisis in Eastern and Southern Africa: Policy options for national and regional action

Published by: Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)

Year of publication: 2009

Synopsis: The production of this book was influenced by unprecedented increase in food prices from 2007 to the latter part of 2008, overtaking the notorious food spikes of 1995-1996. Moreover, even while the prices reduced globally in 2009, Eastern and Southern African countries continued to experience high food prices. The book, therefore, addresses the magnitude and implications of food price changes in national and regional markets in ESA. The aim is to provide policy makers and readers in general, the evidence that they need to take action.
Specifically, the book analyses trends, and outlook in national and regional data, presents evidence on the food situation and the nexus between high domestic food prices and global food prices. It highlights regional and national dimensions of food price increases and how they are related to food security in the region. It also provides practical short, medium and long-term options for governments and other stakeholders to address the problem posed by the food price crisis.

Copy available on http://www.asareca.org/paap/uploads/reports/Food%20price%20crisis.pdf

▸ EVENTS

International Day of Biodiversity

In recognition of the importance of biodiversity globally, the UN General Assembly in 2002 designated May 22, as the International Day of Biodiversity. Since then, the global community celebrates this day by exploring important themes such as marine and coastal biodiversity, agricultural biodiversity, mountain ecosystems, inland water ecosystems, etcetera. with a view to enhance global awareness on biodiversity conservation and sustainable use of natural resources.

Similarly, the General Assembly in its 83rd plenary meeting declared 2010 the International Year of Biodiversity. The assembly invited member states to establish national committees for the year and encouraged them to use them to enhance awareness on the importance of biodiversity with a view to safeguarding natural resources and reducing loss of biodiversity.

ASARECA member countries join the world to celebrate these important milestones by organising various forums including national discourse, public discussions and exhibitions. The objective is to highlight the role of biodiversity in ensuring sustainable access to food and improved livelihoods.

Read an article celebrating the importance of biodiversity on www.asareca.org

Sub-Regional Climate change conference

Venue: Adis Ababa, Ethiopia
Date: June 7-9

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Ethiopian Ministry of Agriculture and Rural Development, the Ethiopian Institute of Agricultural Research (EIAR); in partnership with United States Agency for International Development – East Africa (USAID-EA), the International Development Research Centre (IDRC), the International Centre for Agricultural Research in the Dry Areas (ICARDA), the International Crops Research Institute for Semi-Arid Tropics (ICRISAT) and the International Livestock Research Institute (ILRI) are organising a sub-regional conference on climate change. The theme of the conference is: Climate Change Adaptation Strategies, Capacity Building and Agricultural Innovations to Improve Livelihoods in Eastern and Central Africa.

The objectives of the conference are:
- Present the objectives of the UN Framework Convention on Climate Change (UNFCCC) and outcomes and implications of the Copenhagen conference resolutions for African countries.
- Assess Climate change vulnerability, impact and national agricultural adaptation strategies in 10 member countries of ASARECA.
- Assesses available agricultural innovations and technologies to respond to climate change and variability to improve livelihoods in the arid and semi-arid areas in the 10 ASARECA member countries.
- Make recommendations on how capacity of policy makers and researchers will be enhanced to negotiate and facilitate the implementation of international agreements on climate change and the way forward to respond to climate change and variability challenges and improve livelihoods in the 10 ASARECA countries.

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