

ISSUE 10

JULY 2017



CABI in Africa

ECOWAS VISITS WEST AFRICA CENTRE 3



SMS IMPROVES TECHNOLOGY UPTAKE 5



CABI DELEGATION MEETS AfDB PRESIDENT 6



CHANGING PERCEPTIONS THROUGH RADIO 7



Global plan to diversify agriculture in a hotter world

The world depends on just four crops for most of its food: maize, wheat, rice and soya bean. Climate change and global warming are predicted to have a serious impact on the future of growing these crops.

"Global temperature increase will have serious implications for the production of major crops. However, crops that are currently underutilised can contribute to agricultural diversification, support more environmentally sustainable agricultural systems and provide new livelihood options for smallholders and the poor", says Dr Dennis Rangji, Director General, International Development, CABI.

Launched in 2015, alongside the UNFCCC Paris Climate Summit, the Global Action Plan for Agricultural Diversification (GAPAD), spearheaded by Crops For the Future (CFF) and supported by the Association of International Research and Development Centres for Agriculture (AIRCA), is an initiative to promote agricultural diversification in a hotter world.

GAPAD, ["In an era of climate change"](#) states, "We now need new, imaginative

opportunities for agricultural diversification that include a wider range of crop species and agricultural systems that can link producers, consumers and markets and that are resilient to variable and volatile climates”.

In October 2016, CABI and the World Vegetable Centre (AVRDC) organised a GAPAD roundtable forum in Nairobi, Kenya to bring agricultural experts and leaders

“Crops that are currently underutilised can contribute to agricultural diversification and provide new livelihood options for smallholders”

from around the world to tackle this critical subject.

The aim: to develop an authoritative, inclusive global action plan for agricultural diversification in a hotter climate, which will contribute to achieving SDG 2, Zero Hunger, and which has the support of all relevant stakeholders.

The meeting created a shared purpose among the participants to make an urgent start on the ambitious process of crop diversification. It is anticipated that GAPAD will be fully launched in 2017, and the plan for agricultural diversification submitted to the United Nations 2030 Sustainable Development Agenda. Speaking at the roundtable, and endorsing GAPAD’s relevance to CAADP - Comprehensive Africa Agriculture Development Programme, Her Excellency Rhoda Peace Tumusiime, African Union’s then Commissioner for Rural Economy and Agriculture, said,

“The process of developing GAPAD through a comprehensive programme of symposia over a three-year period will build new knowledge, foster leadership, strengthen existing capacities, enhance networks and partnerships and generate new collaboration and undertakings”.



Peace Tusasirwe: p.tusasirwe@cabi.org



Delegates at the GAPAD meeting



CABI West Africa Centre Coordinator, Dr Victor A. Clotley briefing the ECOWAS delegation on the operations of CABI

Economic Community of West African States visits CABI

An ECOWAS delegation led by the Commissioner for Agriculture, Environment and Water Resources, Mr Tchambakou Ayassor and the Director of Agriculture and Rural Development, Mr Alain Sy Traoré, recently visited CABI in Accra.

The CABI Regional Coordinator Dr Clotley welcomed the visitors and enlightened them on the history, operational themes and areas of work, the most recent being CABI's role in the detection and identification of the Fall Armyworm. Dr Clotley explained that both CABI and the International Institute of Tropical Agriculture (IITA) have confirmed the presence of the pest in Ghana, Nigeria, Sao Tomé, Benin, Togo and parts of Burkina Faso, as well as other countries in East and Southern Africa.

CABI conducted a molecular analysis of samples from Ghana, which confirmed that both the strains known in the Americas are present. The two strains appear identical, but they are genetically distinct.

Dr Clotley said, *"As long as there is humidity and some vegetation, the armyworms are able to survive by migrating to other crops when maize and rice are out of season. Since these conditions persist in the sub-region, we are in for a long haul with this pest so we need a concerted action to bring it under control"*.

"This pest poses a real threat to agricultural production in the region. Once we have enough information on the nature, mode of spread and reproduction of the worm, a multi-stakeholder meeting should be convened at the earliest possible time to work out an effective integrated

regional action plan to help deal with the menace before it escalates into a crisis", added Mr Alain Sy Traoré, Director for Agriculture.

ECOWAS subsequently convened a meeting in Accra from 5-7 June to develop a regional plant pest prevention, surveillance and mitigation framework for the region, including actions on Fall Armyworm.

CABI is expected to work in close partnership and cooperation with ECOWAS to support the Commission and its member states in the implementation of its agricultural program (ECOWAP). This is contained in a recently signed Memorandum of Understanding (MoU) which mandates CABI to be the Advisory Institution to the ECOWAS Commission on issues concerning plants and crop protection for improved access to both regional and international markets.

Through the MoU, the two institutions are expected to harmonize their operations, especially in the area of plant health, to enable member states to meet international standards for exports.



Solomon Duah: s.duah@cabi.org

CABI working with Partners to Manage Fall Armyworm in Kenya

Kenya has launched a campaign to control the Fall Armyworm (FAW) which has been ravaging maize in at least 10 counties including Trans Nzoia, Bungoma, Kakamega, Uasin Gishu, Kwale, Taita Taveta, Nandi, Makueni, Vihiga, Busia, and Kisumu.

“Its impact will be severe given that the country is just recovering from a drought that has affected food production. This risk is heightened since Trans Nzoia is the country’s grain basket producing maize both for seed and for consumption. The government has allocated 200million Kenya shillings for the campaign and we are working with partners to help us fight this pest”, said Mr Willy Bett, Agriculture Cabinet Secretary.

Dr MaryLucy Oronje from CABI who accompanied the cabinet secretary on a visit to Trans Nzoia, explained that the pest invaded Africa from South America. After the cabinet secretary had addressed farmers, a plant health rally was held and information on pest identification, cultural and chemical control methods was shared with over 200 farmers.

Elicana Lunani a farmer from Kinyoro Ward, Saboti Sub-county recounts his experience. *“This year I saw this pest and thought it was the normal armyworm. I tried controlling it by spraying with the normal chemicals during the day but it did not work despite several attempts. I lost a lot of money as a result since I had to buy chemicals repeatedly. After today’s visit, experts have identified it as the Fall armyworm. It feeds and is very active at night and I have been told to spray the chemicals early morning or evening”.*

“This pest has really damaged maize in my half-acre farm. Last season I harvested 18 bags but I see that

declining this season. The harvest will not be enough to feed my family and pay school fees for my children. I have learnt from the plant health rally that I need to spray in the evening when they are active, plant early, and avoid moving infected crops to other farms”, added another farmer Rose Boit Cheruto.

“I tried controlling it by spraying with the normal chemicals but it did not work despite several attempts”

Kenya Agricultural and Livestock Research Organization (KALRO), working with other Plantwise-implementing partners has developed a pest management decision guide to manage FAW and is currently spear-heading efforts to sensitize farmers about the pest and its management. CABI is a member of the response team set up to manage the pest in Kenya.

 **MaryLucy Oronje:** m.oronje@cabi.org



Dr MaryLucy Oronje explaining the impacts of FAW to Agriculture CS Willy Bett

SMS improves uptake of agricultural technologies



A farmer in Mbeya, one of 40,000 who receive SMS on improved technologies for maize production and post harvest handling

Farmers in Mbeya region in Tanzania's Southern Highlands are reporting increased use of improved agricultural technologies in maize production following a short messaging service (SMS) campaign to promote the usage of improved seed and good agricultural practices. Over 900,000 sms were sent to 43,000 maize farmers across seven administrative regions in the Southern Highlands Zone.

The seed was developed at Agricultural Research Institute (ARI) Uyole and multiplied through a private sector breeding program established under the Scaling Seeds Technologies Partnership (SSTP). The Partnership is an intervention designed to accelerate smallholder farmer access to transformative agricultural technologies. The improved seed promoted has attributes such as short maturity, drought and disease tolerance, preferred user attributes and increased yields. The campaign began in November 2016 at inception of the cropping season for the Southern Highlands Zone and has now entered into the harvest season.

Key messages disseminated related to the use of improved seed and relevant good agricultural practices such as appropriate spacing, weeding, use of

environment-friendly pest control methods, appropriate harvest and post-harvest practices. Initial reports from the private companies, which participated in the campaign reveal that following the promotion, their sales of improved seed increased by between 20 - 90%. ARI Uyole has also reported increased sale of early generation seed to seed companies for bulking in anticipation of increased demand from farmers in the next season.

“... sales of improved seed increased by between 20 – 90% following the campaign”

The SMS campaign was implemented by CABI through the Upscaling Agricultural Technologies through Knowledge and Extension (UPTAKE) Project which employs interactive Information Communication Technologies (ICTs) to promote knowledge and adoption of improved agricultural technologies amongst small scale farmers in rural Tanzania.

The project employs mobile phone and radio technologies to carry out interactive regional information campaigns. To date, the campaign is implemented across three value chains; maize, cassava and potato reaching close to 60,000 farmers by SMS in the Eastern and Southern Highlands Zones of Tanzania to contribute to enabling rural poor people to improve their food security and nutrition, raise their incomes, and strengthen their resilience



Stephanie Gakuo: s.gakuo@cabi.org



Photo credit: AfDB

From Left: Dr Trevor Nicholls - CABI CEO, Dr Akinwumi Adesina - AfDB President, Dr Elizabeth Nambiro - Plantwise Regional Coordinator, Africa, Dr Dennis Rangi - Director General, International Development and Dr Morris Akiri - Regional Director, Africa

CABI delegation meets with President of African Development Bank

Dr. Trevor Nicholls, CEO, led a CABI delegation to Côte d'Ivoire in April 2017 to discuss with the African Development Bank (AfDB) the current status and future role of CABI programmes for promoting agricultural development in Africa.

Dr. Nicholls attended the meeting at the National Center for Agricultural Research in Abidjan accompanied by a CABI delegation comprising Dr. Dennis Rangi, Director General, International Development, Dr. Morris Akiri, Regional Director Africa, and Dr. Elizabeth Nambiro, Plantwise Regional Coordinator for Africa.

President of the AfDB, Dr. Akinwumi Adesina, received information on CABI [Plantwise](#) and Pest Risk Information Service ([PRISE](#)) programmes, which aim to tackle crop losses through pest identification and control. Dr. Adesina was grateful for CABI's work, acknowledging the programme's value in helping to reduce food imports and increase agricultural intensification across Africa.

A key component of the discussions related to linking Plantwise and PRISE with the AfDB's Technologies for African Agricultural Transformation (TAAT) programme, worth US\$850m. TAAT is focusing on transforming agriculture on the continent using technological innovations to eliminate hunger and turn Africa into a net

food exporter.

Dr. Adesina was engaged throughout the meeting highlighting the challenges and opportunities of embedding CABI's work into TAAT. There was constructive discussion on the issues of youth participation, IT integration, institutional collaboration and scaling up the programmes.

Dr. Nicholls was pleased with the meeting, saying, "We were honoured that President Adesina spent nearly an hour of his valuable time with us. He was already very knowledgeable about CABI's work in Africa and made a number of very valuable suggestions during our discussions."

On future collaboration between CABI and AfDB, Dr. Nicholls added, "It is very encouraging to see the African Development Bank placing such a strong emphasis on agriculture as a driver of economic growth on the continent and we look forward to playing our part in delivering the visionary TAAT programme."



Morris Akiri: m.akiri@cabi.org

Changing farmer perceptions using radio campaigns in Malawi

In *Kalilangwe* village in the Nkhotakota district of Malawi we meet Everess Chilchungu, Cyrial Mangochi, Brighton and Agness Mzama – farmers from the Choma radio group who have been listening to the '[Cassava Plant doctor on air](#)' show. After a warm reception they share their experiences of listening to the Cassava radio programmes, highlighting challenges from pests and diseases, what they've learned, and suggestions for improving the show. The meeting is part of an evaluation to understand farmers' experiences and the impact of the radio show. *"I have learned that I need to uproot weeds quickly if I see white flies so that the disease doesn't spread in my crop,"* says Brighton who heads the group.

"I can now not only identify the flies but can also clearly identify the cassava mosaic disease symptoms"

Everess has noticed that the tolerant varieties (recommended in the programmes) seem to have fewer pests in general compared to the local variety. *"We did not know that white flies transmit the disease. After listening to the radio show, I can now not only identify the flies but can also clearly identify the cassava mosaic disease symptoms".*

Formed in 2013, Choma cluster farmer listener group has 20 members and is one of many in Malawi that use radio to improve their farming practices. *Dokotala wa chinaingwa pa wailesi* ([Cassava Plant doctor on air show](#)), as it's popularly known, has been airing since October 2016 on the Nkhotakota community radio station which has 100,000 listeners in the district.

The station is one of a number of community stations across Malawi, well loved by locals who get to listen in to programmes produced by and for their own community and the issues they face.

John Mangani, the area's agricultural extension officer, reiterates how important cassava is to farmers in the region. *"Each household grows about 1 acre of cassava on average (from an overall farm size of around 2 acres), so efforts aimed at reducing loss of their harvest are highly welcome!"*

District Crops Officer, Stella Mangochi, told us that the programmes had prompted farmers to get in touch with their extension workers to ask questions and advice on where to find the tolerant varieties Sauti and Sangoja (one of the key recommendations of the programmes), which shows that farmers want to find out more. An in-depth evaluation of the radio campaign is currently underway to assess changes in farmer knowledge, attitudes and practices.



David Onyango: d.onyango@cabi.org



Agness Mzama tuned to her radio

Reducing CABI's Carbon Emissions

CABI has a greening policy that seeks to ensure the organization's commitment to greening its operations through processes and practices that save on energy, reduce waste, conserve water and minimize pollution.

The installation of the solar system in 2015 enabled a 44% reduction in the energy consumed and a 42% reduction in electricity bills in 2016. A change in light bulbs from the compact fluorescent bulbs to the Light Emitting Diode (LED) bulbs, together with a shift from a water boiler system to instant water heating system has led to a reduction of CABI's daily power demand in the Nairobi Office from an initial 20 kWh to less than 10kWh. The net combined effect has been a reduction of dependency on the national electricity grid by at least 50% compared to the same period in 2015. Other efforts include efficient management and disposal of recyclable and non – recyclable waste.

Current efforts are aimed at minimizing carbon emissions via air travel, through investments in video conferencing facilities such as Skype for Business and Zoom across the CABI regional offices in Nairobi, Ghana and Zambia.



Lilian Kiarie: l.kiarie@cabi.org

CABI offices in Africa

AFRICA HQ

Canary Bird
673 Limuru Road
Muthaiga
PO Box 633-00621
Nairobi
Kenya
T: +254 (0)20 2271000/ 20
E: africa@cabi.org

WEST AFRICA

CSIR Campus
No.6 Agostino Neto Road
Airport Residential Area
PO Box CT 8630, Cantonments
Accra, Ghana
T: +233 (0)302 797 202
E: westafrica@cabi.org

SOUTHERN AFRICA

5834 Mwangi Close
Kalundu
P.O. Box 37589
Lusaka
Zambia
T: +260967619665
E: southernafrica@cabi.org

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