

## Clues emerge on how to control weeds in cassava farming systems



*Dr Kenton Dashiell (IITA), Dr Alfred Dixon (IITA), Lawrence Kent ( Bill & Melinda Gates Foundation), Dr Mohammed Elsherif (Bayer CropScience) at the 2017 Cassava Weed Management Project annual workshop at IITA, Ibadan.*

Researchers working under the International Institute of Tropical Agriculture led Cassava Weed Management Project (IITA-CWMP) are uncovering techniques for management of weeds in cassava farming systems.

Results from the project indicate that increasing the population of cassava from 10000 stands per hectare to 12,500 stands per hectare can control weeds in cassava. At 12,500 stands per hectare, farmers are advised to plant cassava at 1m X 0.8m. Also ridging controls weeds better than planting on flat, according to findings from the project.

The results of the agronomic data were shared during the week-long annual review and planning meeting and Steering Committee meeting held 27-30 March 2017 at IITA in Ibadan.

Apart of the use of best-bet agronomic practices, the project has also screened and narrowed down some new environmentally friendly herbicides for weed control in cassava farming systems that will be advanced for onfarm trials this year.

At the annual meeting of the IITA-CWMP, the Project Leader, Dr Alfred Dixon, remarked, "We are optimistic that the key findings from our research will help farmers to tackle the

problem of weeds in cassava, with the view of having more yield."

Declaring the meeting open, Dr Kenton Dashiell, IITA Deputy Director General, Partnership for Delivery, said the goal of the project was to take off drudgery due to weeding in cassava farming systems.

"I am happy that this meeting will share findings that will impact positively on weed control," Dr Dashiell said.

Grown on about 7 million hectares, cassava is a major staple in Nigeria and it has

transited from a food security crop to a cash crop. However, yield per ha of the root crop is about 8 tons per ha or less than half the amount realised on research stations. One of the major factors affecting the yield of cassava is weeds. Most of those involved in weeding are women and children, who often times skip classes to assist in weeding in Nigeria.

In 2014, the Cassava Weed Management Project was conceived to address the problem of weeds in cassava. The 5-year project which is supported by the Bill & Melinda Gates Foundation is exploring diverse weed control methods including the use of simple motorised implements, use of safe and environmentally friendly herbicides, and the use of best-bet agronomic practices.

Lawrence Kent of the Bill & Melinda Gates Foundation said the findings of the project would contribute to improvement of cassava with positive impact on women and children who bear the burden of weeding in cassava.

The IITA Cassava Weed Management Project is being implemented in Nigeria by IITA in partnership with the National Root Crops Research Institute (NRCRI) Umudike, Federal University of Agriculture Abeokuta, University of Agriculture Makurdi, and the state-based Agricultural Development Programs of Abia, Benue, Ogun, Oyo; and non-governmental organisations including the Justice Development and Peace Movement (JDPM) in Oyo and Abeokuta, and KOLPING in Abia.



*Cassava-maize intercrop with cassava planted at 1m X 0.8m*

# Economically sustainable seed businesses to transform cassava production in Nigeria



Participants at the BASICS annual stakeholders' meeting in Ibadan

Seed sector professionals have said that businesses selling improved varieties and high quality cassava stems for cultivation could help African farmers significantly raise their productivity. This will mean more Naira from the same land, inputs and effort. The benefits of this raised productivity will be enjoyed by all the stakeholders across the value chain in a sustainable way.

This was part of the resolutions from a national stakeholder conference on cassava seed system organized by the project, "Building an Economically Sustainable Integrated Cassava Seed System" (BASICS) that was held at the Institute of Tropical Agriculture (IITA), Ibadan last week Thursday.

The meeting, which reflected on the experiences of BASICS in 2016 and refined the project plan for 2017 and beyond, brought together national and international researchers, academics, policymakers, the private sector, non-governmental organizations and farmers to a roundtable.

Making the case for urgent need for all the stakeholders to work towards a sustainable seed system in Nigeria, Hemant Nitturkar, Project Director for BASICS, reminded the participants that Nigeria is the largest producer of cassava in the world with a production of about 54 million tons, but its

yield per hectare of cassava roots is about 8 tons, less than half of the realizable yields of more than 20 tons per hectare. Researchers say one of the factors responsible for the low yield of cassava is the low adoption of clean and healthy seeds of improved varieties of cassava by farmers.

"We have to start with the right planting material and nurture it with good agronomy and weed management practices. Each of these three components has the potential to raise the productivity of cassava by 30 percent. If we do not improve our practices in seed, weed and agronomy, we are incurring a lost opportunity of about 200 billion Naira annually from each of the three issues," he explained.

BASICS is commercially piloting two distinct pathways of seed delivery. In one, called Village Seed Entrepreneur (VSE) model, in partnership with Catholic Relief Services (CRS) in Benue and with National Roots Crop Research Institute (NRCRI), in Abia, Imo, Cross Rivers and Akwa Ibom states, the project is helping develop a network of 130 community based seed enterprises. These VSEs will source certified stems of improved varieties of cassava from NRCRI and IITA to multiply and sell to the farmers in their vicinity. This way, the farmers will not have to go far to source quality stems

for planting. In the second pilot called Processor Led Model (PLM), in partnership with Context Global Development, the project is working with large processors of cassava who will then make available quality stems to their outgrowers with a buy back arrangement for the roots produced.

Slow and low multiplication ratio has been a key constraint in cassava seed system. The project is piloting a new technology called Semi-Autotrophic Hydroponics (SAH) for vastly rapid seed multiplication. Once this technology from Argentina is adapted and perfected in Nigeria by the Project, it is expected to have a significant impact on the ability of early generation seed businesses to quickly bring suitable varieties within reach of farmers. The project is also working with National Agricultural Seed Council (NASC) and Fera of UK to improve the quality certification system in Nigeria.

Lawrence Kent, a senior program officer at the Bill & Melinda Gates Foundation, said the aim of the Project is to build an economically sustainable seed system that is profitable both to the sellers of quality stems and to the farmers who purchase and plant those stems. He encouraged all to create reusable bridges to continuously link technology developers with farmers through business oriented approaches, like the one being implemented under BASICS.

Graham Thiele, Director for the CGIAR Research Program on Roots, Tubers and Bananas led by the International Potato Center (CIP); Alfred Dixon, IITA Director for Development and Delivery, and Project Leader for the Cassava Weed Management Project; Amin Babandi, Director of Agriculture, FMARD, represented by Segun Ayeni, Deputy Director, Roots and Tuber crops, FMARD; Folusho Olaniyan OON, CEO, Contact Consulting Nigeria and Program Director, AgralInnovate West Africa; Emmanuel Okogbenin, Director of Technical Operations, AATF and Robert Asiedu, Director R4D, IITA-West, all shared perspectives and added their voice for all stakeholders to jointly build a strong and sustainable seed system for cassava in Nigeria and wished all the stakeholders well.



In a field planted with cassava seeds/stems from SAH; Lawrence Kent (left) congratulates Peter Kulakow and team for hard work on SAH technology in Ibadan.

# ACAI trains partners on agronomy data management and barcode labelling systems

The African Cassava Agronomy Initiative held training workshops in Tanzania and Nigeria on agronomy data management and barcode labelling as part of efforts to enhance efficiency in data collection, collation, and administration. The objectives of the training workshops were to understand the principles of database management and how these are applied in ACAI, how ACAI database is fed through mobile/web based tools, the importance of 'identifiers' in database management, and to learn how to assign 'entity identifiers' through barcode labelling.

The training held in February and March 2017 provided participants hands-on training on how to use the new Open Data Kit (ODK) tools to conduct data collection and to upload to the project platform immediately.

It also provided opportunity for the harmonization of data collection tools and data requirement of the project.

It will be recalled that in the past, agronomy trials data were collected using both field books and old open data kit (ODK) forms, which was tedious and time consuming.

More so, the collected data were easily



Practical session on barcodes labelling systems

mixed up or duplicated because there were no clearly assigned unique identity (label with the barcode) of the field, trial, plots, treatment, and plants.

Due to increased number of trials over the country with time, the need to clearly label and identify each attribute with barcodes became pertinent and instant. This then

reinforced the importance of the agronomy database management and barcode labelling system training

At the end of the training, participants were able to assign unique entity identifiers of the fields, trials, treatments, plots and plants and trace them back during data collection.

## ACAI coordinator lauds field implementation in Tanzania

Dr Abdulai Jalloh, Coordinator of the ACAI project made a monitoring visit to the

Tanzania team and visited field operations in the Coastal zone of the country. The one



Dr Jalloh (left) and other researchers on an ACAI trial field in Tanzania

## ACAI welcomes Christian Witt, gives kudos to Lawrence Kent

Dr Christian Witt has taken over oversight role for ACAI project at the Gates Foundation from Lawrence Kent who chaperoned the development and approval of the project as well as its first year of implementation. Dr Witt has 20 years' experience in plant nutrition and soil nutrient management in the tropics as well as considerable experience in strategy development and grant management in agricultural research and development. He also has vast experience in facilitating science-based solutions and cooperation among public and private sector partners.

On behalf of the Principal Investigator, Dr Bernard Vanlauwe, and the entire ACAI team; the Project Coordinator, Dr Abdulai Jalloh thanked Lawrence for midwifing the ACAI project and also welcomed Christian.



Dr Witt

day visit on the 16th of March 2017 was led by the Head of the Root and Tuber Crops Program in Tanzania, Dr Geoffrey Mkamilo, and the team was led by Dr Hildelitha Berthold Msita, a member of the ACAI team based at the at Sugarcane Research Institute at Kibaha. The team was also accompanied by Extension Officers of the Ministry of Agriculture, Livestock and Fisheries, and several fields were visited. The trials visited include the nutrient omission trials related to the Fertilizer Recommendation and Blending use cases and planting and harvesting date trials related to the Scheduled Planting and High Starch Content use cases.

After the visit, Dr Jalloh expressed great satisfaction over the effective implementation of field trials despite the challenges of the increasingly varying weather in Tanzania. He noted that the scheduled planting trials were timely with a potential to contribute towards finding appropriate solutions to the challenges of the varying rainfall situation in the country. Dr Mkamilo on behalf of the Tanzania team thanked Dr Jalloh for his support in the overall project implementation in the country, and particularly for sharing his experience and mentoring young technicians during the tour. He added that this experience would be invaluable to the young team who will certainly put it into good use.

# Revised Handbook of West African Weeds launched



L-R: Alfred Dixon, Lawrence Kent, Kwesi Atta-Krah, David Chikoye, and Friday Ekeleme during the launch of the Hand Book of West African Weeds in Ibadan by Lawrence as part of activities marking the 50th anniversary of IITA in Ibadan

The revised Handbook of West African Weeds was launched during the annual review and work planning meeting of the Cassava Weed Management Project by Lawrence Kent of the Bill & Melinda Gates Foundation. The launch of the book was part of IITA activities to mark the 50th anniversary.

IITA Director General, Dr Nteranya Sanginga said the selection of Lawrence for the activity was part of IITA's recognition of Lawrence's commitment to fighting hunger and poverty in Africa. The revised weed book aims to address the problem of poor weed identification by researchers and partners. The new edition has 52 additional new weed species, and

53 weed seedlings, and it builds on the earlier work done in the first and second edition while filling the gaps created by the emergence of new weed species in West Africa.

The revised edition which was put together by the IITA-Cassava Weed Management Project seeks to assist farmers, agricultural extension agents and other agriculturists as well as institutions of learning that are faced with the practical need to learn and identify common weeds in West Africa.

In his foreword, Dr Sanginga stated that weeds have become one of the most notorious constraints to agricultural development in sub-Saharan Africa

and were undermining the gains made through crop improvement. Emphasizing that weeds limit the ability of resource-poor farmers to expand their farm sizes and expose them to ailments such as back aches; the Director General stated that the weed album is an imperative resource material that would help in weed identification for all stakeholders.

Chair of the 50th Anniversary Committee, Dr Kwesi Atta-Krah, praised the IITA Cassava Weed Management Project for revising the book and making it relevant. He described the book as an

empowerment tool for scientists and students of weed science.

Prof Ekeleme, Principal Investigator of the Cassava Weed Management Project and co-author of the third edition of the weed album stated that the book, as a repository of weed knowledge, would go a long way to benefit schools and higher institutions where agriculture is taught.

The 381-paged new edition which was produced with funding support from the Bill and Melinda Gates Foundation has better digital photographs, two additional parts on weed seedlings and fallow species that appear as regrowth in arable and plantation crops.

To get a copy, please send a mail to: Ezinne Ibe, e.ibe@cgiar.org

## ISTRC-AB honours researchers for great work on root and tuber crops in Africa

The international body of root and tuber crops, International Society of Tropical Root Crops- Africa Branch (ISTRC-AB), has presented awards of honour and recognition to 10 researchers working on root and tuber crops in Africa, out of which 9 of the recipients were either current or former staff of the International Institute of Tropical Agriculture.

The awards, which were presented during the close of the 13th symposium of ISTRC-AB in Dar es Salaam, Tanzania were part of efforts by the root and tuber crop society to recognise the contribution of researchers to science, technology and innovation in agriculture.

Recipients of the awards were Dr Nteranya Sanginga, Director General of IITA; Dr Alfred Dixon, Director for Development and Delivery at IITA, and also the Project leader of the Cassava Weed Management Project; Dr Victor Manyong, IITA Director for East Africa; Dr Robert Asiedu, IITA Director for West Africa; Dr Regina Kapinga, IITA Head of Resource Mobilisation; Dr Nzola Mahungu, IITA Country Representative for DR Congo; Dr Maria Andrade, former IITA staff and



Dr. Nteranya Sanginga (IITA)



Dr. Maria Andrade (IITA Alumnus)



Victor Manyong (IITA)



Dr. Robert Asiedu (IITA)



Dr. Alfred Dixon (IITA)



Dr. Mpoko Bokanga (IITA Alumnus)



Dr. Nzola Mahungu (IITA)



Prof. Malachy Akoroda (IITA Alumnus)



Dr. Mrs. Regina Emilian Kapinga (IITA)



Late Dr. Kenneth Nwosu (IITA)

### ISTRC-AB 2017 Awardees

2016 World Food Prize Winner and a staff with International Potato Center (CIP); Dr Mpoko Bokanga, former IITA staff and presently the founder of AgroTEK; and Prof Malachy Akoroda, former IITA staff and now working at the University of Ibadan, Nigeria. The Society also gave a posthumous award to Dr Kenneth Nwosu, the former Executive Director of the

National Root Crops Research Institute (NRCRI), Umudike.

Presenting the awards, Prof Lateef Sani, President of the ISTRC-AB, said the awards were aimed at rewarding and appreciating hard work and the dedication of persons who have contributed to the advancement of food security in Africa using root and tuber crops.