

Weed control, agronomy, and improved cassava seeds are key to accessing \$5bn per annum market

Efforts by the Nigerian government to tap the \$5billion per annum cassava market demand investments in weed science research, agronomy, and cassava seeds system with a view to raising the productivity frontier of the root crop, says the Dr Alfred Dixon, Project Leader, Cassava Weed Management Project.

Though the largest producer of cassava in the world with about 53 million tons in 2013, Nigeria is yet to maximize the benefit of cassava exports due low yield of less than 13 tons per hectare as opposed to Asian countries where yields are more than 25 tons per hectare and upwards. This yield gap puts Nigerian farmers at a disadvantage position, and they can't compete in the global cassava market.

"Nigeria's cassava production accounts for about 20% of the total global output of cassava but less than 1% of export," Dr Dixon explained in a keynote at the 2016 National Cassava Summit with the theme: "Towards a U.S.\$5 billion Per Annum Cassava Industry in the Next Five Years" in Abuja on 8 September.

Dr Dixon who is popularly referred to as 'Dr Cassava' urged the government and development partners to address the yield gap question in order to move the



Dr Alfred Dixon (4th from right) with development partners and policymakers at the National Cassava Summit in Abuja

cassava sector forward.

He described cassava as a poverty fighter, and as "Africa's best kept secret" that if fully harnessed could change the fortunes of farmers and contribute significantly towards the transformation of African economies.

According to him, cassava is an appropriate commodity to feature in Nigeria's economic development and confront the problems of a rapidly growing population and rising

urbanization that is demanding more food, feed for livestock, and raw materials for industries.

Besides the constraints of weed control, agronomy, and a lack of improved cassava seeds, Dr Dixon also brought to the front burner the low mechanization, limited access to finance and markets, poor transportation, and limited use of fertilizers, and other inputs as bottlenecks that have limited the potential of cassava in Nigeria.

On the way forward, the keynote speaker stressed the need for the government to develop a market oriented strategy for the root crop, and to create incentives and efficient input delivery systems.

He underscored the need to involve youth in cassava production, and more importantly, to sustain the local content policy of 10 percent inclusion of cassava in wheat flour for baking of bread.

While re-emphasizing the need to fund research and development, Dr Dixon called for the building of strong farmer groups and linkages while at the same time providing the necessary linkages.



Dr Kulakow representing IITA Director General, Dr Sanginga at the National Cassava Summit in Abuja

IITA reiterates commitment to support Nigeria

Dr Peter Kulakow, IITA Cassava Breeder, who represented the Director General of IITA, Dr Nteranya Sanginga at the National Cassava Summit, reiterated the commitment of IITA to support Nigeria towards agricultural transformation.

Dr Sanginga urged the country to take advantage of cassava and create wealth and jobs for the young population.

According to the IITA boss, “Value addition from cassava can generate jobs and income for youth, women, and investors. Youth in agribusiness in particular will provide the new business innovators to both drive down youth unemployment and fill agriculture with a new generation of vitality and expertise.”

The Minister of Agriculture and Rural Development, Chief Audu Ogbeh, acknowledge that the cassava industry’s potential had been hampered by the same factors that have hindered the development of other agricultural sub-sectors. These factors include the relatively low yields and high production costs, weak value chain coordination, poor infrastructure and poor access to finance.

In spite of the challenges, the Minister noted that the journey of a \$5 billion begins with a single step, and that the government was ready to take that step together with partners. “Our Ministry is here to listen and learn of innovative ways in which we can collaborate to address the challenges ahead,” he said.



L-R: Chief Audu Ogbeh (Nigeria’s Minister of Agric) listening to Godwin Atser at the IITA-Cassava Weed Management Project exhibition booth.

The National Cassava Summit was organized by the Foundation for Partnership Initiatives in the Niger Delta (PIND). Partners for the summit included: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Federal Ministry of Agriculture and Rural Development (FMARD), Nigerian Institute of Food Science and Technology, Federal Institute for Industrial Research Oshodi (FIIRO), United States Agency for International Development’s Maximizing Agricultural

Revenue and Key Enterprises in Targeted Sites (MARKETS) II project, International Institute for Tropical Agriculture (IITA), Department for International Development (DFID) Market Development (MADE) program, Cassava Adding Value in Africa (CAVA) II, HarvestPlus, Nigeria Cassava Growers Association (NCGA), Nigeria Cassava Processors and Marketers Association (NCAPMA), and the African Agricultural Technology Foundation (AATF).

Roadmap to an efficient and equitable gari processing system underway

Stakeholders will converge on IITA-Ibadan, 4-6 October, for a major workshop to develop a road map for an efficient and equitable gari processing.

According to Dr Claude Fauquet, Director of the Global Cassava Partnership for 21st Century – GCP21, the purpose of the workshop, is not a scientific exchange

of information, but rather to identify together, what should be done to greatly improve gari processing in quantity and quality in the near future and to improve the livelihoods of those involved in gari processing.

The meeting is convened by GCP21 and partners, and will attract a broad range of actors around gari to stimulate actions for change.

Of special interest is the development of the TAAT program (Technologies for the African Agricultural Transformation) by the African Development Bank (AfDB) that will begin in 2017. Gari being such an important food for Africa in the present and future, will obviously be an important component of the TAAT program.

Organizers say a TAAT representative will give an introductory remarks at the meeting. Additionally this workshop will build on the process of results based management led by RTB with IITA and other partners for small and medium scale cassava processing in Nigeria.



Women roasting gari

IITA Director, Dr Vanlauwe, visits ACAI activities in Nigeria



Dr Vanlauwe and other ACAI team members with farmers in the field

The Director of the IITA Central Africa hub, Dr Bernard Vanlauwe, together with the ACAI Coordinator for East Africa, Dr Pieter Pypers visited the ACAI team in Nigeria at the end of September. The main purpose of the visit was for Dr Vanlauwe to keep himself abreast with the level of implementation of the ACAI project in Nigeria and to plan for the project's forthcoming annual review meeting scheduled for the first week of December.

The visiting team from Tanzania was joined by the ACAI team in Nigeria comprising of the Project Coordinator, Dr Abdulai Jalloh; Dr Christine Kyere, Project Agronomist; and Ms Rebecca Enesi, a Research Associate of the Project; together with the Dr Adeyemi Olojede, the ACAI Coordinator at NRCRI, and Dr Mark

Tokula-- an NRCRI staff. The team visited farmers' fields and key representatives of state governments and development partners in both Anambra and Benue states in the Eastern and Middle Belt regions of Nigeria respectively.

In both states, the team visited the states' Agricultural Development Project (ADP) offices. The Project manager of the Benue State ADP, Mr James Ker expressed great satisfaction with the collaboration with SG2000 in implementing ACAI field trials in the state. He promised to provide all the support required from his office to ensure that the project is successful in Benue state, and that the farming population would benefit accordingly.

In Anambra state, the Commissioner for Agriculture, Hon Afam Mbanefo

was very pleased to welcome the delegation. He outlined the Governor's well-meaning plans to boost agricultural production in the state. He informed the team that the state now has a clear vision and strategy to promote agriculture and make it beneficial to the farming population. He showed the team developments in information technology which are being used by his office, and that are providing much needed data on agricultural development in the state. He demonstrated the rich statistical information contained in their database with up to about a million registered farmers who can be reached instantly by mobile phone. The team was impressed with the database that would be useful in the implementation of ACAI.

Overall, Dr Vanlauwe expressed great satisfaction for the amount of work that has been achieved under the project during its first year of implementation. He underlined the need for stronger partnerships, and was very happy to interact with the SG2000 and NRCRI teams. He encouraged the team to pursue ongoing activities so that the project would remain on course. He further encouraged the team to maintain the rich relationship with the various development partners they are collaborating with. Dr Olojede, who is leading the project team in eastern Nigeria, thanked Dr Vanlauwe for finding time to visit his region and promised to continue collaborating with all the development partners to achieve the project's goals.



L-R: Dr Vanlauwe, Mr James Ker (BNARDA), and Dr Jalloh in Makurdi, Benue State

Cassava Seed Quality team on a learning visit to Tanzania

The BASICS Quality Seed team had a learning visit to IITA research centre in Dar es Salam, and other cassava project sites at the Sugar Research Institute Kibaha, and Mtwara in Tanzania.

The team comprised Julian Smith, the International Partnerships Manager at Fera; Ishiaku Khalid (Deputy Director, Seed Certification, National Agricultural Seeds Council, Abuja); Ralph Ike Okalanwa (Deputy Director & Regional Head, NASC, South East Region, Umudike); and Hemant Nitturkar, Project Coordinator, BASICS.

The visit, 4-7 September 2016, was aimed at strengthening the quality regime in cassava seed system in Nigeria through the exposure of the NASC team to Tanzania's seed certification protocol on cassava. It also provided opportunity for information sharing between Tanzania and Nigeria on their seed systems and seed certification in cassava.

At the Sugar Research Institute, Kibaha, the team was shown a screen house-based rapid multiplication system that could take 100 virus-free cassava plantlets from tissue culture tubes through shade house to about 20,000 seedlings ready to plant in open fields within one year. In Mtwara, Southern Tanzania, the team also visited the Mennonite Economic Development Associates (MEDA) led project called 'Mihogo Mbegu Bingwa' (Cassava Seed Champion), which is involved in an integrated chain of pre-basic, basic, certified, and quality



BASICS team in Tanzania for an experiential learning

declared materials (QDM) multipliers in a public-private partnership model.

The experiential visit exposed NASC to cassava seed quality control systems along the value chain in East Africa, and how researchers are combating Cassava Brown Streak Disease in that region. Based on the learnings, NASC will be strengthening the systems and improving the overall protocols for seed quality certification. NASC will also be reviewing its cassava seed certification protocols on isolation for the various classes of seed to forestall the spread of viruses as Tanzania has 300m, 200m, 100m and 50m for pre-basic seed, basic seed, certified seed and QDM

respectively while Nigeria has 5m for all classes. All of the results will be shared with stakeholders next year.

The Quality Seed component is led by Fera Science Ltd. of UK (Fera) – a partner under the Building an Economically Sustainable, Integrated Cassava Seed System (BASICS) project.

It will be recalled that BASICS is working to enhance both the soft and the hard infrastructure at the National Agriculture Seed Council (NASC), which is the agency of the Federal Ministry of Agriculture and Rural Development (FMARD), that is charged with the overall development and regulation of the national seed industry in Nigeria.

ACAI holds in-house planning meeting in Tanzania

The ACAI project held an in-house planning meeting in Tanzania 6-9 September. The objectives of the meeting were to discuss the current status of activities, and plan the way forward. The meeting also evaluated and discussed the progress being made by the project, and benchmarked progress against the result tracker milestones of the project. Participants also discussed cross-country (Nigeria/Tanzania) synergies through lessons learnt from both countries.

During the meeting, all ACAI zonal leaders from both Tanzania and Nigeria presented synopsis of activities which were done during trials' implementation, current status, challenges associated with implementation, what went right, and what went wrong, and the way forward.

After the meeting some participants and project managers visited trial sites in Mkuranga, Kineng'ene, and in Zanzibar (Pemba and Unguja) where they interacted with extension agents and farmers on various issues in connection with the trials. In Mkuranga

participants met with District Agriculture and Livestock Development Officer (DALDO) of Mkuranga, and farmers. The farmers were excited with the fertilizer recommendation trials and are waiting for the results. The Project Leader of ACAI, Dr Abdulai Jalloh thanked DALDO on behalf of the team for the support to ACAI activities. He said, "The research is ours and we have to keep on cooperating

on its implementation since the aim is to improve the production and productivity of cassava."

Earlier Dr Geoffrey Mkamilo welcomed participants and called on everyone to feel at home. Participants at the meeting were drawn from the National Agricultural Research Institutes, IITA, IPNI, CABI, CAVA II, MEDA, FCI/FOI, NRCRI, AFSIS, MINJINGU and FANAAB.



Dr Pieter Pypers introducing the objective of the meeting and trials implementation overview

Reaching 125,000 farmers: IITA Cassava Weed Management Project begins farmer field days



Farmers at a farmer field day in one of the onfarm trial sites

The IITA Cassava Weed Management project has stepped up efforts to reach 125,000 farmers with the commencement of the 2016 farmers' field days across four key cassava growing states in Nigeria.

The field days are being conducted in the on-farm researcher-managed plots of 50 sites located in Abia, Benue, Ogun and Oyo State.

Generally, farmers' field days are widely used platforms to introduce agriculturalists and prospective and smallholder farmers to new technologies and innovations so that the audience could see how these technologies or techniques could be practically used and applied.

In the context of the IITA-Cassava Weed Management Project, field days

are aimed at demonstrating best-bet weed control methods with a view to stimulating adoption by farmers. They also provide opportunity for mid-season evaluation of the on-farm trials. To ensure the success of this year's field days, the project team mobilized farmers, agricultural development program (ADP) staff, other extension service providers (NGOs), local government officials, spray service providers, opinion leaders, herbicides companies, the media, and local government officials etc. A target of 80 persons was set for each site.

Farmers agog in Benue, Oyo, and Ogun state

In Benue, Oyo and Ogun state, farmers were excited over the results of trials

from the cassava-maize intercrop. They were also educated on safe use of herbicides and other mechanical equipment.

Farmer Hajia Amina at Agunrege in Oyo state said, "I never thought it is very important to use protectives like nose cover, rain boot, gloves and overall when spraying."

She commended the IITA-CWMP for involving the community in the trials. Yet another farmer based at Akufo, farmer Sunday said the project was very educative and informative. "These trials have revealed to us the benefit of controlling weeds and we are willing to use these techniques," he said.

Syngenta and Monsanto commends FFD

Besides farmers, partners from the chemical industries that participated in the FFD also commended the mobilisation and enthusiasm of farmers towards the FFD.

Mr Kehinde Johnson of Monsanto said the FFDs were excellent strategies for behavioral change. "Farmers themselves have seen the performance of plots treated versus those not treated and they can make their choice," he said.

Mr Orolakin Seun who represented Mr Sunday Ameh of Syngenta lauded the idea of the FFD. They were also impressed with the performance of the different trials.

The FFD ended with farmers evaluating the fields on a three point scale. Ten farmers comprising 5 men and 5 women were randomly selected for the exercise.

In the coming days, the team will be organizing more FFDs across the trial sites.



L-R: Dr Moses Okwusi, a farmer, and Prof Grace Sokoya assessing an onfarm plot

Congratulations! Prof Weller tells IITA-CWMP

Stephen Weller, a professor of weed science at Purdue University gave kudos to the IITA-Cassava Weed Management Project during his recent visit to Nigeria 15-24 September.

The professor of weed science could not hide his feeling after touring on-farm trial sites in Benue and Abia Nigeria and pronounced congratulations to the team.

He was particularly impressed with the leadership of the project under Dr Alfred Dixon coupled with the performance of the different treatments and the extension activities.

Farmers willingness to adopt the weed control innovation is key, and Prof Weller said that he had no doubt about adoption of the technologies, thanks to the collaborative teamwork.



L-R: Dr Mary Agada, Profs Ekeleme and Weller in an onfarm field in Benue State

National research partners embrace ACAI

The national research partners in Nigeria and Tanzania are increasingly embracing the ACAI initiative of transformative agronomy and exposing postgraduate students to advanced research tools and techniques. Following the recruitment of two PhD students each in Tanzania and Nigeria who have now been enrolled in universities in Belgium and Switzerland, at least two students have been identified in each of the two countries to pursue M.Sc degree programs. These students will be enrolled in local universities in the respective countries. The project will cover tuition fees while all costs associated with data collection will be covered under the research

operational funds managed by the collaborating institutions. These students have the opportunity to be jointly supervised by professors and senior scientists in their respective institutions together with IITA scientists.

In the meantime, a total of 10 students including 3 female students have been given the opportunity to participate in the ACAI research activities implemented by the Federal University of Agriculture in Abeokuta (FUNAAB). Five of the students including all the females and 3 of the male students will be undertaking postgraduate thesis research using the ACAI field trials. The students are privileged to be mentored by experienced scientists

and using state of the art equipment and techniques to collect data for their thesis research. The ACAI coordinator, Dr Abdulai Jalloh who is leading the capacity strengthening component of the project believes that, “enhancing the capacity of these young chaps is a worthwhile investment which will benefit them, the university as well as their respective countries.” Professor Felix Salako who is the coordinator of ACAI at FUNAAB, described the capacity strengthening of the ACAI project as a formidable assistance to the university and the nation. In Benue state, Nigeria, Dr Mark Tokula leading ACAI activities in the state on behalf of the National Root Crops Research Institute (NRCRI) has been collaborating with the state’s agriculture development officers in engaging the youths sent there on Industrial Training. A total of 9 youths comprising 4 attached to NRCRI and 5 attached to the Benue State Agriculture Development Programme were involved in mapping out experimental plots on farmers’ fields thereby gaining relevant experience in basic plot lay out techniques and cassava agronomy including appropriate land preparation and selection of planting materials. Most of these young students will soon be engaged in jobs where such knowledge and skills will be helpful in carrying out their duties.



Dr Tokula in a practical session with postgraduate students

ACAI boosts the capacity of national partners in project management



Participants

More than 30 scientists and administrators from the Agricultural Research Centre (ARC) in Tanzania, as well as the National Root Crops Research Institute (NRCRI) and the Federal University of Agriculture in Abeokuta (FUNAAB) in Nigeria were exposed to key aspects of project and financial management to enhance their capacity in meeting the challenges of project management.

The training, coordinated by IITA Project Administration Office (IITA-PAO), for Tanzania took place in Dar es Salam 29 – 31 August, 2016 while the joint training of the NRCRI and FUNAAB teams took place on the FUNAAB campus during August 16 – 18. Key areas covered in the training were project management, budgeting, financial as well as

contract management. During the closing ceremony in Nigeria, the project agronomist Dr Stefan Hauser, who distributed the certificates, congratulated all the participants on acquiring such important knowledge and admonished them to particularly put into practice the preparation of required technical and financial reports and to submit them in time. Dr Adeyemi Olojede of NRCRI noted that “the more a teacher emphasizes a point, the more the students assimilate, so that gradually, the message you are trying to pass becomes part and parcel of their daily lives.” On his part, Professor Felix Salako of FUNAAB said, “I came to learn what I did not know and I believe that as a scholar every opportunity you have you learn

something new.” He noted that the training has been very helpful.

In Tanzania, Dr Geoffery Mkamilo, lead Coordinator of ACAI in the country, was very appreciative of the training. He thanked the ACAI project management team for providing such a golden opportunity that has drawn their attention to key responsibilities in project management as well as providing them with tools for effectively collaborating with other stakeholders. Dr Mkamilo added that the training would help them in focusing attention and efforts towards effective implementation of projects and promised that he would do everything possible to put into practice all the valuable guidance that he has acquired through the training.

ACAI strengthens the capacity of graduate students

In May and June this year, training courses were organized in both Tanzania and Nigeria to enhance the capacity of ACAI partners in the National Agricultural Research Systems (NARS) in procedures of agronomic data collection and interpretation of results. Thereafter, it became quite evident that collecting the required data from the ACAI field trials would require appropriate equipment to ensure that the quality of the data is at a desirable level and collected efficiently. This is particularly crucial in view of the fact that the ACAI field trials are numerous and more complex than the traditional on-farm trials.

In this regard, a critical mass of postgraduate students associated with the ACAI project were exposed to the use of advanced equipment including the Ceptometer which measures canopy Photosynthetically Active Radiation (PAR) interception and calculates leaf area index at any

location within a plant. Increased use of this equipment is facilitating efficient data collection and ensuring quality data for the project as well as the students' thesis research.

Also, with a view to ensuring that the application of treatments and data

collection are as scheduled, the project team has instituted regular monitoring of field trials as well as training of students, and backstopping field technicians in data collection. These efforts are ensuring the collection of quality data and hence the reliability of the results.



Integrated weed control holds promise for cassava revolution in smallholder farms, says Cornell professor

Integrating diverse but proven weed management options drawn from mechanical, biological, cultural and chemical weed control methods could help small-scale farmers overcome the limitations posed by weeds and help them maximize the benefits of genetic improvement, according to Prof Ronnie Coffman, Director of International Programs in the College of Agriculture and Life Sciences (IPCALS), Cornell University.

Grown by over 4 million farmers in Nigeria, cassava's productivity has been disappointing at about 14 tons per hectare as opposed to more than 20 tons per hectare in countries of Asia such as Thailand. One principal factor that has kept yields low is poor weed control. In most cases, small-scale farmers – especially women and children – use hoes, cutlasses and hands to weed. The use of herbicides in cassava is growing but not common.

Prof Coffman said efforts in weed management should be directed towards helping smallholder farmers. "And I see the use of chemicals as one option that can benefit smallholder farmers," he added on 2 September in IITA, Ibadan at a meeting with IITA researchers and members of the IITA Cassava Weed Management Project. The Cassava Weed Management Project is a five-year project funded by the Bill & Melinda Gates

Foundation that is seeking solutions to weeds menace in cassava farming systems using mechanical, best-bet agronomic practices, and the use of environmental friendly herbicides. Prof Coffman also suggested more research into mechanical weed control, saying that mechanization and integrated weed management approaches were likely to provide more sustainable results.

Seminar presentation in IITA

Earlier, while presenting a seminar to researchers in IITA, Prof Coffman underscored the need for research that would create impact at the farm level with positive outcomes on the lives of resource-poor farmers. For sustainability to occur, he proposed the need for greater support to the agricultural sector and commended emerging private sector initiatives in agriculture as demonstrated by the African Development Bank (AfDB) under the Technologies for African Agricultural Transformation (TAAT) program. The TAAT program is an AfDB led program that is being supported by the CGIAR and partners with the aim of addressing food insecurity and wealth creation by scaling out proven agricultural innovations in Africa. While acknowledging that science and technology has pulled many out of poverty, Prof Coffman said that more



Prof Coffman

actions are needed to sustain and improve the gains especially in the face of emerging challenges such as climate change and low yield of crops such as cassava.

Benefiting from NextGen Cassava project

He noted that the Next Generation Cassava Breeding (NEXTGEN Cassava) project has been successful in providing researchers – including those who would be involved in the TAAT program – with the tools and resources that could fast-track breeding initiatives. One such resource is the Cassavabase – a centralized database on cassava that can help breeding programs. Another milestone of the NEXTGEN project is the training of African students and other capacity building programs, he said.

Scientists must speak up

Prof Coffman concluded by calling on scientists to speak out and communicate their findings to the public. He said that most organizations were becoming "flat" in decision-making and funding. He said the more people get to know about an innovation, the more chances it had of being scaled out. He argued that investment in science communication has benefits with enormous returns some of which could be greater public acceptance of new technologies.

Collaboration

Dr Peter Kulakow, Head of Cassava Breeding Unit, IITA called for stronger ties between IITA and Cornell. The two institutions agreed to harness their complementarities with a view to fighting hunger and poverty. Cornell and IITA will be working together on the second phase of the NEXTGEN Cassava Project proposal and other initiatives of mutual interest.



Prof Coffman with colleagues in IITA

This newsletter is produced by the Cassava Weed Management Project in collaboration with the ACAI and the BASICS projects. **Advisers:** Drs Bernard Vanlauwe, Alfred Dixon, Abdulai Jalloh, Hemant Nitturkar, and Friday Ekeleme.

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