

Researchers find GBS a powerful tool for genetic studies and breeding



Dr Rabbi during his seminar presentation

Researchers at IITA working on crop improvement say they have found genotype-by-sequencing (GBS) to be a powerful genotyping tool for breeding programs.

Dr Ismail Rabbi, IITA Scientist, while

giving a presentation during the West Africa Seminar Series entitled *Genetic mapping using genotyping-by-sequencing in cassava*, explained that GBS was a relatively cheap tool, and recent application of the

technology for cassava improvement demonstrated that the method was powerful. It provided a sufficient number of markers for unraveling the genetic architecture of key traits in cassava, in addition to the development of dense genetic maps.

Rabbi and his colleagues are currently using GBS to implement genome-wide genetic studies that will facilitate rapid genetic gain through breeding.

The team applied the technology to a full-sib population of cassava and achieved high-resolution mapping of several traits including resistance to the cassava mosaic disease (CMD); yield under CMD pressure; increased carotenoid content in storage roots; and exterior color of stems and anthocyanin pigmentation in the petioles, inner root skin, and apical leaves. Results of this study will soon be published and trait-linked markers will be available for use in breeding. The West Africa Seminar Series is facilitated by Ms Sylvia Oyinlola under the leadership of the Director for the West Africa Hub, Dr Robert Asiedu.

IITA improved cassava varieties bring transformation in Eastern and Central Cameroon

Three improved cassava varieties are improving livelihoods and incomes and making farmers proud in the eastern and central regions of Cameroon. These varieties were developed in 2008 by the International Institute of Tropical Agriculture and disseminated in Cameroon by the National Development Program of Roots and Tubers in collaboration with the Institute of Agricultural Research for Development.

Farmers who cultivated the improved varieties in Abeng Ngon, Abui Kpem, and Nko'h Menzui are recording high yields of between 18 and 35 tons/hectare, in contrast to local varieties that yield less than 10 tons/hectare and achieving annual incomes ranging from 540,000 to 8,800 million Fcfa, depending on the size of their farms.

"With these new varieties, I can get about 8,800 million Fcfa," says El Hadj Ahmadou Abbo who compares the varieties to white diamonds.

Last year, farmer Abbo harvested 15 bags of cassava which he sold at 45,000 Fcfa. With the help of cassava, Abbo estimated that his



Improved cassava makes farmers smile

annual income was about 540 000 Fcfa.

For farmer Therese Foe, the improved cassava varieties have turned around her life for the better.

"We just have to uproot five stems and get 50 cassava roots, and sell them in Yaoundé. One field gives me about 800 000 Fcfa per year. Everything in this house, including the building itself, was acquired from cassava," she explained, pointing in her living room to her TV and DVD player.

These new varieties, in addition to producing high yields, have a short production cycle of between 6 and 12 months, and are resistant to Cassava Mosaic Disease (CMD). Their performance has made farmers in the Central and Eastern areas to ask the Government to facilitate mechanization to help them to open up more land for cultivation.

The work by IITA in Cameroon is led by Dr Rachid Hanna under the supervision of the Director for Central Africa Hub, Dr Bernard Vanlauwe.

Cassava processors in Tanzania eye regional markets with improved products

Processors of cassava flour in Tanzania are now set to exploit local and regional markets with better products after receiving training on the regional standard for safe and quality flour.

The training was conducted by researchers from IITA and the Tanzania Bureau of Standards (TBS) as part of efforts to enhance the capacity of cassava processors to comply with the harmonized standards for cassava flour which are already in place in the East Africa region.

The 2-day training was launched by the Director for the Lake Zone Agricultural Research and Development Institute (LZARDI)-Ukiriguru, Dr January Mafuru. He noted that the country suffered heavy crop losses annually due to poor storage and processing methods and therefore the farmers continued to be poor. He said the training was very timely and would support the ongoing efforts to push cassava into becoming a commercial crop.

Dr Adebayo Abass, IITA Value Chain Specialist, who led the training, informed the participants that there was a huge market for cassava flour not only in Tanzania but also in the region. However, to benefit, the processors needed to improve the quality of their products to comply with the approved East Africa standards.

He explained that the standards were important to protect consumers from unsafe foods and to ensure they got products that met their needs. For the processors, compliance with standards would enable them to increase their income through



Dr Abass (middle) trains farmers

obtaining better market prices.

The training focused on good manufacturing practices for the production of cassava flour, from the selection of the raw materials to packaging. It stressed the maintenance of stringent hygiene measures in all the processing steps to reduce any contamination to a minimum.

These measures include wearing protective clothing - aprons, head wear, and gloves -, regular hand washing, and the separation of the wet and dry areas in the processing plant. Other aspects are plant sanitation, product grading, the consumers'

perspectives of cassava flour quality, and the analysis of profitability.

The training was conducted as part of efforts to create awareness and enhance the capacity of processors to implement the harmonized standards for cassava and potatoes in Kenya, Rwanda, Tanzania, and Uganda, and funded by the Association for Strengthening Agriculture Research in East and Central Africa (ASARECA). The cassava and potato standards were harmonized in 2010 by member states of the East Africa Community to facilitate cross-border trade.

Burundi pledges support to Humidtropics

The Government of Burundi has pledged to support the implementation of Humidtropics and ensure the achievement of the goals of the program.

The Governor of Gitega province, Mr. Sindayihebura Sylvestre while speaking at the inception meeting for Humidtropics, commended IITA and partners for identifying the Central Highland region as the pioneer site for activities in Burundi and promised the Government's support.

Represented by the Economy Adviser,

Mr Nininahazwe Alexis, the Governor urged participants to take an active part in the meeting, stressing that their presence was a testimony to the great interest they attached to agricultural research and development which is in line with the Government's policy to improve the living conditions of the people.

Boudy van Schagen, from Bioversity International and Coordinator of CIALCA Knowledge Resource Center (KRC) asked participants to maximize the one-day

meeting by identifying critical researchable activities that would foster development and promote sustainable agricultural intensification.

Participants identified four critical entry points and potential partners to facilitate the implementation of activities and also agreed on experimental sites. Partners in the meeting initiated an R4D platform and the NGO, Réseau Burundi 2000 Plus, was elected to facilitate the R4D platform in the Central Highland region. Participants also went on a field visit to Makebuko village to witness farmers' cropping/farming systems and the challenges that the R4D platform would develop activities to tackle.

The meeting was facilitated by *Institut des Sciences Agronomiques du Burundi (ISABU)* and *Direction Générale de la Mobilisation pour l'Auto-développement et la Vulgarisation Agricole (DGMVA)* as a follow-up activity after the launching workshop in Bujumbura on 02 and 03 July that identified four field sites in Burundi based on agro-ecologies.

The meeting had 46 participants, representing Government agencies including research institutions and universities, international and local NGOs, the private sector, and farmers' associations.



Participants at the inception workshop in a group photo

Africa RISING project lauded for its strong partnership and progress in East and Southern Africa



Stakeholders at the annual review meeting

The Africa RISING East and Southern Africa project that aims at improving food security and livelihoods of small-holder farmers in the region through research to sustainably intensifying maize-legume-livestock farming systems has been commended for its progress in its second year and especially for its efforts in strengthening the relationships between the wide-range of partners implementing the project in a complex integration approach.

The project funded by the USAID as part of the Feed the Future initiative and led by IITA is being implemented in Babati, Kongwa and Kiteto districts in Tanzania and in Dedza and Ntcheu districts in Malawi.

According to the Senior Sustainable Agricultural Systems Advisor at USAID, Jerry Glover, the project's approach was very important in the face of finding novel ways to feed the current population without compromising the ability of the future populations to meet their needs in the face of a rapidly increasing population, shrinking arable land and a changing climate change.

"Africa RISING is a unique project with many partners - CG centers, national and international universities and Non-Governmental Organizations (NGOs). I am pleased with the progress that we have made so far at the farm levels," Glover said at the project's annual review meeting held

in Lilongwe, Malawi, from 3-5 September 2013.

"No one could visualize how we were going to operationalize this concept (sustainable intensification) and how it was going to work. This year, I get the sense that we are beginning to achieve what our discussions in early 2012 were talking about. It's unique how we are looking at maize, poultry, vegetables, cows and tree crops in a complex approach to address livelihoods and landscape issues," he noted.

Glover said efforts were underway at USAID to add layers to the concept of intensification and integration by including issues around landscape. He said there were additional projects funded by USAID such as an award to Texas A&M University promoting small-scale irrigation technologies for small-holders in the same region as Africa RISING and also significant activities on small-scale mechanization.

Victor Manyong, the Director for IITA Eastern Africa noted Africa RISING was running smoothly and successfully and thanked all the lead institutions and partners for their believe in the project and commitment and USAID for funding the project and their flexibility in its implementation.

He noted that though the project had experienced some set-back due to the withdrawal of one key partner, it had also brought new partners on board, such as Wagenigen University and other USAID funded projects in Malawi and Tanzania.

IITA scientists at the International Plant Pathology Congress

Two scientists from IITA were among over 5000 plant pathologists from all over the world who gathered in Beijing, China, to share the latest advanced research and novel methods of crop protection at the 10th International Congress of Plant Pathology (ICPP). This year's theme was Bio-security, Food Safety and Plant Pathology: The Role of Plant Pathology in a Globalized Economy.

IITA's Plant Pathologist Fen Beed was invited by the International Society of Plant Pathology (ISPP) and ICPP to give a keynote address on managing the biological environment to promote and sustain crop productivity and quality in the plenary session entitled "Can we improve Global Food Security?" IITA's Molecular Scientist Leena Tripathi was invited to make a presentation on *Banana Xanthomonas Wilt* (BXW) in East and Central Africa at the session on Plant Pathogenic Bacteria.

Beed presented the efforts of the CGIAR and, in particular, of IITA to improve the

efficiency of crop production through the pre-emptive and cost-efficient control of crop diseases to enhance food security and income generation. He highlighted the need to respect key ecological interactions and to create a plant healthcare system with a focus on sub-Saharan Africa (SSA).

In his presentation, Beed demonstrated the link between disease control and improved crop quality, consumer health and safe trade and presented a biological solution for the mitigation of aflatoxin contamination in Africa.

Tripathi highlighted advances on the development of transgenic bananas resistant to the deadly *Banana Xanthomonas Wilt* (BXW) that was ravaging the crop in Eastern Africa.

The Congress is held every 5 years. The next meeting will be hosted in 2018 by the American Phytopathological Society in Boston, with the theme Plant Health in a Global Economy. It will coincide with the 50th anniversary of the ISPP.



Banana plants in confined trials



Annoucement

The sixth reunion of IITA alumni will hold in IITA Ibadan next year. Please visit: <http://www.iita.org/alumni>