



IITA moves closer to bringing 100% wilt-resistant banana to farmers' fields

Farmers in Africa may soon have in their fields banana plants that are totally resistant to the deadly Banana *Xanthomonas* Wilt (BXW), as IITA moves forward with its crop transformation research that uses advances in modern biotechnology to develop the crop.

BXW causes losses of up to half a billion US dollars every year and puts at risk the food security and livelihoods

of millions of mostly smallholder growers. All banana varieties grown in the continent are susceptible.

Transgenic technology is the only viable way to address this problem because commercial bananas are sterile and traditional breeding techniques cannot be used to improve the crop.

Giving an overview of IITA's ongoing banana transformation work at a seminar on crop transformation in Dar es Salaam, Tanzania, Leena Tripathi, IITA Plant Biotechnologist and lead scientist of the research, reported that 12 transgenic lines infused with wilt-resistance genes from green pepper had been identified as being 100 percent resistant to BXW under confined field trials in Uganda.

Tripathi said that two genes from sweet green pepper— plant ferredoxin-like amphipathic protein (*pflp*) and hypersensitive response-assisting protein (*hrap*) – had been proven to successfully stop the



A farmer inspecting a banana bunch of a plant infected by bacterial wilt disease.

spread of the BXW bacterium in the banana plant. The genes were obtained under an agreement from Academia Sinica in Taiwan.

She explained that the next step will be to evaluate their performance in multiple locations under different conditions across the country. Her team will also conduct environmental and food safety studies such as digestibility analysis to ensure that they are not harmful to humans or animals in any way.

She noted there was still some ways to go before open field trials could be conducted as Uganda does not currently have related laws that would allow such testing.

However, she was optimistic that the country would soon overcome this hurdle and, if all goes well, the world may see its first transgenic banana by 2017.

Partners in this research include the National Agricultural Research Organization (NARO) of Uganda and the African Agricultural

Technology Foundation (AATF).

Tripathi added that IITA is working with the University of Leeds' Africa College in developing transgenic plantain that is resistant to nematodes - tiny root-eating worms.

The plants have shown promising results in screenhouse trials and the

best lines will soon be planted in confined field trials also in Uganda.

Tripathi added that the institute will also look at stacking the anti-wilt genes with anti-nematode genes in the same plant for multiple resistance.

Ugandans eat more bananas per capita than any other country in the world. It is estimated that Africa loses US\$125 billion worth of fruits and vegetables annually to nematodes, with estimated yield losses of between 50-70% in sub-Saharan Africa.

Help conserve electricity!

Before leaving the workplace at the day's end, make sure that you have:

- (1) Powered off all unnecessary electrical office/lab equipment;
- (2) Turned off air conditioners; and
- (3) Switched off all lights.

Building business and finance skills of Sierra Leone cassava growers, processors



Training participants, resource persons, and organizers at the workshop in Kambia, Sierra Leone.

As part of its efforts to ensure food security and promote agribusiness development in Sierra Leone, The Sierra Leone Chamber of Agribusiness Development (SLeCAD), in collaboration with IITA and the USAID, has conducted training workshops for almost 100 cassava producers and processors in Kambia, Kenema, and Bo, respectively.

Explaining the objective of the training at the launch of the workshops, Ahmed Nanoh, SLeCAD Executive Secretary, said that the training is a major component of the IITA-led UPoCA (Unleashing the Power of Cassava) project and will focus on equipping cassava producers and processors with the relevant business development and financial literacy skills in order to add nutritional and economic value to the crop.

He added that the training will also help farmers to be in a better position to utilise the facilities in the Agribusiness Centres (ABCs) to increase productivity.

Nanoh appealed to the participants to be architects of development in their respective communities and share the knowledge and skills from the training with others. He promised that as long as farmers continue to work hard, SLeCAD will always be ready to support them.

Braima James, IITA/UPoCA-SL Project Manager, said that after gaining knowledge on how to grow and process cassava, it is time for farmers to focus on how to get rich from this process. James encouraged the participants to form networks to ensure effective communication with each other as they are the engine of the nation's livelihood.

The training workshops, which started in Kambia on 9 February, ended in Bo on the 19th. Aside from Nanoh and James, also in attendance during the launch of the training activities were Syl Fannah, IITA National Coordinator, Alusine Fofanah, and Victor Kailie Kamara, Chief Administrator of the Kambia District Council.

Got a story to share? Email Jeffrey T. Oliver (o.jeffrey@cgiar.org), Godwin Atser (g.atser@cgiar.org), or Catherine Njuguna (c.njuguna@cgiar.org) and we could publish them in the IITA Bulletin and IITA e-Bulletin.

IITA, ZARI train partners on Participatory Variety Selection

IITA, in collaboration with the Zambia Agricultural Research Institute (ZARI), recently conducted training for 48 partners drawn from the Ministry of Agriculture and Livestock, Farmers' Associations, and NGOs on Participatory Variety Selection (PVS) under the "Mitigating cassava disease threats for improved cassava production in Zambia with a special focus on Eastern Province" project.

The project is a component of the Feed-the-Future Program of the USAID.

Two workshops were held for researchers, technicians, and extension staff from the northern and eastern parts of the country on conducting PVS and good agronomic practices for cassava to ensure uniform implementation of methodologies across all districts during the project. The workshops included visits to farmers' field to identify problems, pests and diseases present, and to set up the PVS. This gave participants the opportunity to apply the theoretical lessons on farmer selection and identification of cassava diseases and pests.

The training was in support of the project's objectives of providing farmers with high-yielding cassava varieties that are also resistant to CMD and CBSD, building human and material capacities for cassava research in Zambia.

The Provincial Agriculture Coordinator (PACO) for Luapula province, Mrs Chisala, opened the training workshop at the Farmer Training Institute of Mansa on 16-17 January that brought together 27 participants from Luapula and Northern Provinces of Zambia.

She noted the importance of the PVS process in engaging farmers in the research process and of cassava as a food security for the crop. She also thanked IITA and ZARI for organizing the training and USAID for funding.

The Director for Msekela Research Station, Mr. Kennedy Kanenga, on the other hand, opened the training at the research station on 1-2 February, participated in by 21 partners from Petauke, Katete and Mambwe districts in the eastern province. In his remarks, he reiterated the commitment of ZARI to working more closely with IITA to achieve the project's objectives.



(Top) Training participants at Msekera, Chipata District; (bottom) Trainees discussing with farmers on evaluation new cassava varieties in Mansa.