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African organizations unite to address the threat of a dangerous form of Fusarium wilt of banana

Dr Beed (left) with Dennis Ochola of Bioversity International on a farm infected with Foc TR4 in northern Mozambique

An African consortium of international researchers and growers, backed by policymakers in regional blocs of eastern and southern Africa has declared "war" against *Fusarium oxysporum* f. sp. *cubense* tropical race 4 (Foc TR4), a highly pathogenic form of the banana Fusarium wilt, previously confined to Asia, but recently introduced to a farm in northern Mozambique.

FoC TR4 (also known as Panama disease) is caused by a fungal strain that can survive for decades in the soil, and once introduced to a country has never been previously eradicated. Production of Cavendish types of banana which dominate export markets, and some other local forms of banana, has been devastated across Asia, no thanks to Foc TR4.

Its introduction to Africa, probably by infected planting material by people, has already had a massive impact on the commercial plantation in Mozambique, and efforts are in place to contain the disease on this farm, to avert further spread and to prepare other African countries against similar incursions, says Dr Fen Beed, Plant Pathologist with the International Institute of Tropical Agriculture (IITA).

To manage the disease outbreak and to prepare African countries reliant on banana for food security and income generation, a stakeholder workshop of the African Consortium for Foc TR4 (AC4TR4) was held in Stellenbosch, South Africa, 23-24 April 2014, on the theme: Development of a Strategy to address the threat of Foc TR4 in Africa. Representatives from the following organization took part: Southern African Development Community (SADC), The Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), Food and Agriculture Organization (FAO), National Plant Protection Organizations (NPPO), IITA, Bioversity International, Stellenbosch University, national research organizations, and commercial growers.

Recommendations from the workshop have now been harmonized. A major output has been "The Stellenbosch Declaration on addressing the threat of *Fusarium oxysporum* f. sp. *cubense* tropical race 4 (Foc TR4) to banana production in Africa," convened by SADC and COMESA, signed by member states and endorsing institutions.

This unique Declaration aims to combine forces to curtail the introduction and spread of Foc TR4 in Africa and in particular to achieve the following:

- Fully develop and implement a continental strategy under the direction of an African Foc TR4 task force to contain the incursion of Foc TR4 in the Nampula province of Mozambique and prevent similar incursions elsewhere.
- Provide and enhance technical capacity on the continent, and to implement and monitor phytosanitary systems, including wider use of International Standards for Phytosanitary Measures (ISPMs) and other matters concerning plant health to address the threat of Foc TR4 in Africa.
- Report and map electronically by means of a web portal any new outbreaks of Foc TR4 in African member states and communicate information on new outbreaks, successful containment, and prevention initiatives.
- Establish recognition that Foc TR4 is a continental issue that requires coordination and collaboration between NPPOs, RECs, ICPs, research institutions, universities, governments, and other relevant stakeholders throughout Africa by means of regular meetings and consultations.
- Develop and apply appropriate diagnostic services, provide training, raise awareness, monitor disease spread, and screen banana germplasm for Foc TR4 resistance for deployment by vulnerable banana growers.
- Call upon African and international organizations to recognize and support the activities of AC4TR4 by investing in research, awareness programs, human capacity, and infrastructure development on the continent.
- Develop a regional Pest Risk Analysis document and a set of phytosanitary measures to be enforced by member states to prevent the introduction and spread of Foc TR4 and other quarantine pests of banana.
- Encourage governments in Africa to formulate the necessary legislation and to implement the required activities to protect the crops of vulnerable farm owners against destructive exotic pests.

Farmers satisfied with IITA-ISMA technologies — study

Dr Oluoch during a seminar presentation

A perception study on improved technologies being promoted by the Integrated Striga Management in Africa (ISMA) project shows that farmers in targeted communities where the project is being implemented are satisfied with the performance of the technologies. Many have adopted improved management practices to combat *Striga*.

Striga—otherwise known as witch weed remains a menace on cereals and legumes farms. The reduction to crop yields is estimated at costing $1.2bn in sub-Saharan Africa. ISMA Project, which is being implemented by IITA in partnership with CIMMYT, *icipe,* BASF Crop Chemical, AATF and national partners in Kenya and Nigeria is advocating improved technologies including better management practices to curtail the devastation on farms.

Such technologies include the following: cultural practices such as intercropping maize with legumes (soybean and groundnut); crop rotation of maize with soybean; a "push-pull" technology that involves intercropping cereals with *Striga*-suppressing *Desmodium* forage legume; using *Striga*-resistant varieties of maize and cowpea; using maize varieties resistant to Imazapyr (IR)—a BASF herbicide (StrigAway®) and Metsulfuron Methyl (MSM) – a Dupont herbicide which are coated on the maize seeds and which kills the *Striga*; and the adoption of biocontrol technologies which uses a *Striga* host-specific fungal pathogen (*Fusarium oxysporum)*.

Dr Mel Oluoch, ISMA Project Manager, during his contract review gave a snapshot of results from the intervention with the majority of the farmers (about 75 percent) in project intervention areas in Bauchi State of Northern Nigeria rating varieties being disseminated by the project as "very good" in terms of purity, germination and *Striga* resistance.

The implementation of the project in Nigeria has also increased the farmers' knowledge of how to better control *Striga*, the study revealed. But even more importantly, after three years of project implementation, the project has a positive impact on the lives of farmers in the target communities with very high adoption of some of the technologies being disseminated. Despite the successes being recorded, Dr Oluoch noted that more still needed to be done to amplify the benefits of the project.

Thinking agribusiness along the value chains

Integrating agribusiness along the value chains could facilitate the adoption of innovations among small-scale farmers and in turn help improve their livelihoods, says Dr Gbassey Tarawali, Representative of the Director General & Deputy Director General (Partnerships & Capacity Development) in Abuja.While giving his contract review on "Exploring Agribusiness Opportunities in the Cassava Value Chain through Public-Private-Partnerships for Food Security and Improved Livelihoods," Dr Tarawali argued that only the inclusion of business elements in agriculture could guarantee sustainability.

"Agribusiness," he said, "offers realistic opportunities for food security, job and wealth creation for young people."

He noted that interventions to resource-poor farmers should go beyond lifting them out of poverty to building their capacities to generate wealth.

Dr Tarawali also underscored the need for greater cooperation between IITA and the players in the public and private sectors, stressing that the challenge to food security could not be addressed by one organization.

Dr Tarawali during a seminar presentation

He also reviewed his accomplishments, challenges and future plans, while serving IITA as Representative of the Director General & Deputy Director General in Abuja; Head of Onne station, Rivers State; Coordinator of the Cassava Value Chain project; and a member of the Committee for the IITA Youth Agripreneurs project.

He highlighted the successes recorded by the projects: IITA-WASCO and IITA-Nestlé (both projects under his management), the challenges and lessons learnt for the future disseminations of IITA's technologies,especially in cassava.