Food and Agriculture Organization of the United Nations

70TH SESSION OF THE COMMITTEE ON COMMODITY PROBLEMS (CCP)

SIDE EVENT

MITIGATING AND ADAPTATION MEASURES FOR THE CONTROL OF BANANA FUSARIUM WILT TROPICAL RACE FOUR (TR4) INCLUDING THE SUCCESSFUL DEVELOPMENT OF RESISTANT CULTIVARS

Tuesday, 7 October 2014; 12:45 – 14:15 hrs
Iran Room, FAO Headquarters, Rome

The purpose of the side event is to share with delegates to the CCP some of the results – breakthrough of the work on banana *Fusarium* wilt tropical race four (TR4) which came out of the CFC funded project on organic bananas that was implemented over the last five years in three provinces in China, in collaboration with the Guangdong Academy of Agricultural Sciences and supervised by the FAO Intergovernmental Group on Bananas and Tropical Fruits. It is also an opportunity to take stock of the state of play internationally. In particular, the collaborative partnership being developed between the International Tropical Fruits Network (TFNet) and the Banana Asia Pacific Network (BAPNET) as well as FAO's own Global Programme on Prevention of *Fusarium* wilt TR4 Disease of Bananas. The Side event will be chaired by David Hallam, the Director of the Trade and Markets Division.

Background/Rationale:

In general terms the world production of banana can be grouped into four styles of production systems:

- Cavendish monoculture – multinational companies for the export/domestic trade produced in countries such as Central Latin America, Philippines, India, Africa and Australia;
- Cavendish monoculture – small growers supplying to multinational trading companies in produced countries such as Philippines, India, Pakistan, Indonesia, China, Taiwan, Malaysia and Australia;
- Diverse range of varieties – small growers supplying into a central market in all countries across the Asia-Pacific and Africa; and
- Diverse range of varieties in subsistence farming systems – small farmers for local community trading in all countries across the Asia-Pacific and Africa.

Due to the vegetative propagation technique of bananas, the transmission and movement of many troublesome pests and diseases have impacted significantly on the production and sustainability of the commodity. Additionally, the limited capacity to conduct convention breeding programmes, due to seed sterility, has restricted the ability to develop resistant varieties. Hence, over the decades, viruses, nematodes, foliar and soil borne pathogens disasters occurred, when the ecology of the production systems has moved into an imbalance.

However, throughout history, few plant disease epidemics have devastated production as severely as *Fusarium* wilt, caused by *Fusarium oxysporum* f. sp. *cubense* (Foc). Whilst the Cavendish plantations in Central America remain unaffected by *Foc* race 1 that destroyed Gros Michel in the 1950s, the recent occurrence of a virulent strain in Asia gives cause for grave concern. Known as "tropical race four" (TR4), this strain of *Foc* has caused epidemics in Cavendish and Cavendish types in the tropics different from the less severe infections previously reported in the subtropics. The devastating impact of TR4 on Cavendish plantations in Asia was first observed in Taiwan in the late 1960s. By 2000, plantations in Indonesia, Malaysia and the Northern Territory of Australia were decimated. Further spread was dramatic: TR4 now has hold of 40 000 hectares in China (2004) and threatens the USD 400 million banana export industry of the Philippines (2008). Although TR4 is so far found only in Asia and Australia, it continues to spread rapidly within the Asian region, threatening for instance banana production in India – the world's top banana producing country. Between 2012 and 2013, three confirmations *Foc*TR4 have been made in Oman, Jordan and Mozambique. This move into the African continent is now a significant threat to the Latin American countries.

In addition, *Fusarium* wilt also severely affects many other banana cultivars planted for food and income by small-scale farmers in most banana-growing countries of the world, which accounts for about 85 percent of world production. As such, the disease affects the livelihoods and income of millions of the rural poor.

Banana is the largest traded fresh fruit in the world, by value. In 2012, more than 17 million tonnes were exported worldwide, almost exclusively of the Cavendish variety, valued at USD 8.4 billion. Banana is also the fourth most important food crop in agriculture after rice, wheat and maize. Therefore, the implications of TR4 on international fruit trade and food security are immeasurable.

In 2001, BAPNET, a Bioversity International-coordinated regional platform of banana research and development (R&D) collaboration in Asia, gaveTR4 research a high priority and commenced a project to improve the understanding of the distribution of *Foc* TR4 in Indonesia, Papua New Guinea and Australia for quarantine and prevention of spread purposes; and for prospecting disease management tactics that will tackle problems of small-scale growers. From 2003, BAPNET and its partner country research agencies, have surveyed all countries within the Asia-Pacific, improved the diagnostic capacity to identify the pathogen, determined the pathogenicity of a large percentage of varieties found in the region, implemented field based inoculum reduction and soil health studies; and implemented a genetics improvement programme incorporating convention breeding and selection and evaluation of TR4 resistant somaclonal variants into some production areas and are now ready to be out scaled to broader agro-eco-production systems, especially in those countries currently affected by TR4 epidemics.

Extensive training programs have been provided to regional practitioners in the areas of diagnostics, varietal identification, tissue cultural techniques for somaclonal variant production, diagnostic protocols to determine characteristics of suppressive soil. Regional quarantine officers and regulators have been encouraged to adopt stricter controls on the movement of contaminated planting material through the development of Quality Assured Banana Nurseries.

BAPNET has also been active in informing the global banana network of the impact of this disease and immediate strategies for them to adopt.

It is thus an opportune time to develop a strategy that would mobilize international, national and regional stakeholders both in research, policy and regulation, to build global mitigation and readiness and strengthen the knowledge base for the quarantine and management of *Fusarium*. These activities would mitigate current damages caused by the disease and pre-empt serious production constraints where the disease has not been detected.

The International Tropical Fruits Network (TFNet) is a network that is mandated to sustainably develop the global tropical fruit industry in relation to production, consumption and trade and is membership based. Countries grappling with the *Fusarium* wilt problem in bananas, such as China, Malaysia, Vietnam, Philippines, Australia, India and Indonesia, are all members of TFNet. It is therefore pertinent for TFNet to collaborate with BAPNET in its holistic approach to mitigate and prevent spread of this dreaded disease.

The partnership between TFNet and Bioversity will bring the strengths of both groups to the strategy in R&D, training and the implementation of sanitary and phytosanitary measures that impact on production, to enhance to outcome of a global program against TR4.

FAO has been concerned about the spread of TR4 and is working on identifying the areas of intervention and priorities for management and prevention of this race. The issue has already been incorporated into the ongoing activities, including raising awareness and issuing alerts at the global and regional level. As a result of recent consultations and in view of the needs of the countries already affected and those at risk, a framework of activities has been developed in context of a global programme.

The programme is being prepared under the Emergency Prevention System and is fully in line with the Strategic Objectives of the Organization. In this context, promotion of preventive measures, integrated approaches and international collaboration are given specific emphasis. Implementation of the activities will be through collaboration and partnerships with international and national partner organizations, institutions and initiatives.

Key Goals of the Strategy

In helping to ensure the long-term sustainability of the banana industry, a twin-pronged goal of the strategy is to:

1. Mitigate the threat of *Fusarium* wilt of banana with emphasis on *Foc* TR4 that is already causing severe epidemics in some countries; and
2. Prevent *Foc* TR4 from spreading to other countries and other regions and develop readiness to cope with the disease in case of incursion.

Strategy Specific Objectives

1. To determine the global agro-ecological distribution of *Foc* races and varietal susceptibility as a basis for developing programmes to manage and prevent further spread to new territories through measures such as regulation and quarantine.
2. To develop mitigating measures that will tackle disease problems in areas where *Foc* TR4 is already causing epidemics and provide ready options to cope with and to contain the disease in case of occurrence in places where it is not yet found, which includes the use of resistant cultivars.
3. To create awareness, capacity and programmes to prevent *Foc* TR4 introduction and spread, and a ready capacity to contain *Foc* TR4in places where it is not yet found.

Panel

1. Dr Yi Ganjun, Vice President, Guangdong Academy of Agricultural Science, Guanzhou, China

2. Mr Bob Williams, Director , Plant Industries, Department of Primary Industry and Fisheries, Darwin, Northern Territory, Australia

3. Dr Agustin B. Molina, Senior Scientist and Regional Coordinator for Asia and the Pacific, Bioversity International, Asia Pacific Office, Los Banos, Philippines

4. Mr Yacob Ahmad, Chief Executive Officer, International Tropical Fruits Network

Provisional Agenda and Timetable

12:45 – 12:50

Welcome Address
David Hallam, Director Trade and Markets Division, FAO

12:50 – 13:00

Status of collaboration between TFNet and other partners
Yacob Ahmad

13:00 – 13:15

Current status of Foc TR4 epidemic and mitigation R&D in Asia and relevant future R&D
Dr Agustin B. Molina

13:15 – 13:45

Holistic approaches to overcome the threat of banana wilt disease caused by FOC TR4
Bob Williams

13:45 – 13:55

Global programme on prevention of *Fusarium* wilt disease (Foc TR4) of banana
Fazil Dusunceli, Agricultural Officer, Plant Production and Protection Division, FAO

13:55 – 14:15

Discussion
