VIRTUAL AWARENESS RAISING WORKSHOP SERIES ON FUSARIUM TR4 DIAGNOSTIC, SURVEILLANCE, INSPECTION, AND SIMULATION EXERCISES.

Concept Note

1. Background and scope

[1] In the mid-20th century (the 50s–60s), the epidemic of *Fusarium oxysporum* f. sp. *cubense* (Foc) race 1 affected the Gros Michel banana variety and caused the disappearance of most commercial plantations. A feasible solution was to shift to resistant varieties of the Cavendish subgroup, but this was only short-lived as race 4 of Foc (TR4) reportedly affected Cavendish banana in Taiwan in the late 1960s.[1] By the '90s, it had severely affected the Cavendish subgroup varieties under tropical conditions in Southeast Asia. At present, the Cavendish varieties have succumbed to TR4, and other banana cultivars are also susceptible. During the past ten years, TR4 made an intercontinental jump to Africa (2013) and South America (2019), putting it at high risk of incursion into countries where this pathogen is a quarantine pest. TR4 can survive in the soil either as chlamydospores[2] or as an asymptomatic endophyte in several non-host plants, including weeds[3]. The introduction and spread of this pest[4] should be prevented where still possible. To contribute to addressing this urgent issue, the IC created an IC Team on *Fusarium* TR4, which has prioritized delivering training on diagnosis, inspection, and surveillance of TR4. The workshop series prepares the participants on diagnostic, surveillance, and inspection for Fusarium TR4. These critical aspects need to be ready before performing simulation exercises on pest outbreak response. Two pilot countries will be selected under the COMESA (Common Market for Eastern and Southern Africa) project to perform simulation exercises about pest outbreak response. The workshop series will be extended globally, including two countries in Asia, under the IPPC-China project. The IC Team on Fusarium TR4 will also develop prevention, preparedness, and response guidelines, subject to future specific training sessions.

2. Objectives of the training

[2] After having followed this awareness-raising workshop, the attendees should be able to:

- Understand the importance of the appropriate TR4 diagnostic for early warning, including field recognition, sample, and sampling management, and know the available tools and protocols (classical and molecular) needed for TR4 diagnosis.
- Be aware of the significance of carrying out specific surveillance for the Fusarium TR4 detection and delimitation (in case of entry) and know the International Standards for Phytosanitary Measures (ISPMs) that should be implemented for surveillance purposes.
- Be mindful of the international trade pathways of significant concern for the Fusarium TR4 spread, and the commodities should be subject to inspection.

[1] Zheng S-J, García-Bastidas FA, Li X, Zeng L, Bai T, Xu S, Yin K, Li H, Fu G, Yu Y, Yang L, Nguyen HC, Douangboupha B, Khaing AA, Drenth A, Seidl MF, Meijer HJG and Kema GHJ (2018) New Geographical Insights of the Latest Expansion of Fusarium oxysporum f.sp. cubense Tropical Race 4 Into the Greater Mekong Subregion. Front. Plant Sci. 9:457. doi: 10.3389/fpls.2018.00457

[2] Fungi reproductive structures

[3] Kema GHJ, Drenth A, Dita M, Jansen K, Vellema S and Stoorvogel JJ (2021) Editorial: Fusarium Wilt of Banana, a Recurring Threat to Global Banana Production. Front. Plant Sci. 11:628888. doi: 10.3389/fpls.2020.628888

[4] Pathogen is also considered a pest: "Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products" (ISPM 5 Glossary of phytosanitary terms, IPPC 2017 publication)

- Be better informed on the concept of simulation exercises and understand their usefulness to improve the quarantine pest outbreak response and how to prevent the introduction and spread of quarantine pests such as Fusarium TR4

3. Proposed awareness-raising workshop programme

[3] The proposed dates are:

- Session 1: Thursday 24 March 2022 (Diagnostic)
- Session 2: Tuesday 19 April 2022: (Surveillance and early warning)
- Session 3: Tuesday 10 May 2022 (Inspection and simulation exercises)

The detailed program is shown in Annex 1.

4. Participants

[4] The workshop series is targeted at staff from the National Plant Protection Organizations (NPPOs) in countries where TR4 is or may be considered a quarantine pest and at stakeholders involved or interested in preventing the spread and incursion TR4 to new areas. It might include:

- NPPO representatives (pest outbreak response experts, inspectors, administrators, PRA (Pest Risk Analysis) experts, policy developers, and laboratory technicians),
- Researchers supporting NPPOs,
- Producer/exporter associations
- Extension services
- Local government authorities

5. Interpretation:

[5] The workshops will be conducted in English, with simultaneous interpretation into French and Spanish, that will be provided by the Comité de Liaison Europe-Afrique-Caraïbes-Pacifique (COLEACP) and the Latin American Economic System (SELA), respectively.

Annex 1: Tentative agenda for the awareness-raising workshop

Session 1: diagnostic (Date: 24, March 2022)
(11:00 to 13:30 Rome Time - 2.5 hours)

	Session 1		
NO	**Agenda item**	**Presenter**	**Timing**
1	Opening remarks	Mr Osama El-Lissy Secretary, IPPC Secretariat	5 minutes
2	Introduction of the COMESA project and the content of the workshop	Camilo Beltran Montoya International Phytosanitary Specialist IPPC Secretariat	10 minutes
3	Recognition of suspect plants, characterization of TR4 symptoms in banana, sampling, sample preparation, and fungus isolation	Gert Kema Professor of Phytopathology, Wageningen University	30 minutes
4	Overview of the available tools for classical and molecular TR4 diagnostic, their usefulness, and minimum tools needed to perform a correct first diagnosis of TR4 in banana crops	Fernando Garcia-Bastidas Head of the banana breeding program Keygene	30 minutes
5	Break		15 minutes
6	Case study: Colombian NPPO experiences implementing and performing TR4 diagnostic in banana crops	Mariluz Ayala Vasquez Technical Lead of Fusarium TR4 Diagnostic, Instituto Colombiano Agropecuario (ICA)	30 minutes
7	Q&A session	Moderators	25 minutes
8	Closure and evaluation	Moderators	5 minutes

The session will be moderated by Sarah Brunel, OIC IFU Lead for daily matters, IPPC, FAO, and Camilo Beltran Montoya, International Phytosanitary Specialist, IPPC, FAO

Session 2: Surveillance (Date: 19, April 2022)
(11:00 to 13:30 Rome Time - 2.5 hours)

	Session 2		
NO	**Agenda item**	**Presenter**	**Timing**
1	Opening remarks	Sarah Brunel, IPPC Secretariat	5 minutes
2	Introduction of the COMESA project and the content of the workshop	Camilo Beltran Montoya International Phytosanitary Specialist IPPC Secretariat	10 minutes

3	Surveillance: Overview, ISPM 6, and IPPC Surveillance guide	Chris Dale International Biosecurity Specialist, Australian Department of Agriculture, Water, and the Environment (DAWE).	30 minutes
4	What to consider when performing detection and delimitation surveys for Fusarium TR4: case study from the NPPO of Mozambique	Antónia Augusto S. Vaz Head of Plant Health Department Ministry of Agriculture and Rural Development	30 minutes
5	Break		15 minutes
6	Overview of the remote sensing tools to identify changes in plants and their uses for plant health	Lizbeth Parra Garzón Researcher Geomatic Green	30 minutes
7	Q&A session	Moderators	25 minutes
8	Closure and evaluation	Moderators	5 minutes

The session will be moderated by Sarah Brunel, OIC IFU Lead for daily matters, IPPC, FAO, and Camilo Beltran Montoya, International Phytosanitary Specialist, IPPC, FAO

Session 3: Inspection and simulation exercises (Date: 10, May 2022)
(11:00 to 13:30 Rome Time - 2.5 hours)

	Session 3		
NO	**Agenda item**	**Presenter**	**Timing**
1	Opening remarks IPPC	Osama El-Lissy IPPC Secretary (TBC)	5 minutes
	Opening remarks COMESA	Providence Mavubi, Director - Industry and Agriculture Programmes, COMESA Secretariat	5
2	Introduction of the COMESA project and the content of the workshop	Camilo Beltran Montoya International Phytosanitary Specialist IPPC Secretariat	10 minutes
	Update on the TR4 Global Network activities	Victor Prada Secretary of the World Banana Forum Secretariat	20 minutes

		Matheus Lima Specialist in Sustainable Development World Banana Forum Secretariat	
3	Pathways and commodities of significant concern and critical aspects to perform inspections at critical stages in a potential entry: case study from an NPPO	Monica Gallo, Agencia Ecuatoriana de Regulación y Control Fito y Zoosanitario (AGROCALIDAD)	20 minutes
4	Break		15 minutes
5	Simulation exercises: overview, concept, purposes, and usefulness	Nancy Villegas, Pest Risk Analisis responsible, Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA	20 minutes
6	Simulation exercises as an approach to be prepared for a TR4 outbreak: experiences from regions that have carried out simulations	Raixa Llaugier Agriculture Officer Food and Agriculture Organization (FAO) Jaime Cardenas Food and Agriculture Organization (FAO)	20 minutes
7	Q&A session	Moderators	20 minutes
8	Closure and evaluation	Moderators	5 minutes

The session will be moderated by Sarah Brunel, OIC IFU Lead for daily matters, IPPC, FAO, and Camilo Beltran Montoya, International Phytosanitary Specialist, IPPC, FAO