

UPDATE ON FUSARIUM OXYSPORUM TROPICAL RACE 4 (TR4)

(Document prepared by the IPPC Secretariat and reviewed by the Bureau member following up this topic)

Background

- [1] The IPPC Secretariat set an **IC Team** on *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4 (TR4) in 2021, considering this pest as an extremely detrimental one against which preventive actions can still prove efficient.
- [2] As TR4 further spread, **CPM-17 requested that the secretariat coordinate global action** on TR4, using the proposals presented in CPM 2023/CRP/08¹ as an initial framework. These include the **coordination** of TR4 activities at a global level by the secretariat, in liaison with international organizations; carrying out a **communication and advocacy** campaign in banana- and plantain-producing countries (including a possible ministerial conference); undertaking **emergency simulations**; promoting the creation of an **international centre** for the improvement of bananas and plantains; and **strengthening capacities** of countries in detection and diagnostics, surveillance and monitoring, containment of outbreaks, biosafety measures, managing and restoring soil health, training and **dissemination of materials** about the prevention or containment of TR4, research (including the development of varieties of banana resistant to TR4), survival and sustainability strategies for affected producers, rapid response teams to respond to outbreaks, and studies and projects.
- [3] This paper **summarizes the IPPC's activities** on TR4.

IPPC Secretariat activities on TR4

Outcomes of the IC Team on TR4

- [4] The IC created an **IC Team on TR4 in 2021** and approved Terms of Reference (ToRs) to select global experts according to technical and practical expertise in the subject matter and areas as surveillance, contingency planning and simulation exercises. As a result, ten (10) qualified experts worldwide composed the Team.
- [5] The Team, together with the IPPC Secretariat, undertook the following activities:
 - **Contributed resources:** A call for technical resources on TR4, resulted in **12 contributed resources** being posted on the IPP, including technical situational reports, guidelines, and training materials <https://www.ippc.int/es/core-activities/capacity-development/guides-and-training-materials/contributed-resource-list>.
 - **Series of webinars:** The **three-part virtual workshop series**, *Fusarium TR4 diagnostic, surveillance, inspection and simulation exercises*, was attended by participants from nearly 125 countries. The presentations and recordings are available on the IPP:

¹ CPM 2023/CRP/08: <https://www.ippc.int/en/publications/92066/>

<https://www.ippc.int/en/news/workshops-events/webinars/workshop-series-fusarium-tr4-diagnostic-surveillance-inspection-and-simulation-exercise/>.

- **Prevention, preparedness, and response guidelines:** In March 2023, the IPPC Secretariat, with the support of the IC Team on TR4, published the *Prevention, preparedness, and response guidelines for Fusarium TR4*, which were peer-reviewed by around forty-nine experts. The English version is available on the IPP, and the FAO Office for Mesoamerica is considering providing the Spanish translation. <https://www.fao.org/documents/card/en/c/cc4865en>.

[6] These outcomes were delivered in the framework of project the FAO support to the COMESA trade facilitation programme (GCP/INT/387/COM) further described in this paper.

Pest Outbreak Alert and Response Systems (POARS) Development Agenda (DAI)

[7] An update on activities undertaken in the framework of the 5th Development Agenda (DA) “Strengthening Pest Outbreak Alert and response Systems” or POARS is provided in paper 31_IC_2023_May_POARS_DAI. The secretariat ensured the POARS DAI and the IC Team on TR4 activities are complementary and fully compliant with the Strategic Framework. The membership of the POARS Steering Group has been set and the IPPC Secretariat is establishing an appropriate team of professionals before activating the steering group.

Strengthening Plant Health Emergency Management Capacities project (OSRO/GLO/208/USA)

[8] The IPPC Secretariat co-implemented the *Strengthening Plant Health Emergency Management Capacities* project with the FAO Emergency Management Centre for Animal Health (EMC-AH), and FAO’s locusts and transboundary plant diseases (NSPMD) team. The project aimed to strengthen plant health emergency management, drawing from the expertise of the EMC-AH's experience in animal health emergency management, and the expertise FAO's NSP holds in plant health emergency management, subsequently strengthening the national capacities of FAO members in preparedness and response to potential plant disease outbreaks.

[9] The IPPC Secretariat undertook activity 1 of output 2 – *assessing the existing tools currently applied in plant health and animal health for emergency management for their suitability to be improved/adapted to plant health emergencies*. The IPPC Secretariat launched the [call for plant health tools and guidelines on the preparedness and response to pest outbreaks](#) from 7 December 2022 to 15 January 2023, inviting National and Regional Plant Protection Organizations (NPPO), international organizations, research centres, universities, and the academia sector to share tools and guidelines to improve national, regional and global capacities for preparedness and response to pest outbreaks.

[10] Sixteen resources were received for the assessment, including national, regional, and global tools and resources for plant health and animal health emergency management. The assessment included the recently published IPPC guide the *Emergency Preparedness: A guide for developing contingency plans for outbreaks of quarantine pests*.

[11] The assessment revealed that the existing tools and resources for managing plant health emergencies are abundant and ready to adapt and used in different plant health contexts, be they pest specific or generic. A

report is being finalised based on the assessment results and will be transmitted to the POARS Steering Group.

[FAO support to COMESA trade facilitation programme \(GCP/INT/387/COM\)](#)

- [12] The IPPC Secretariat delivered several key outputs under the framework of the project “*FAO support to Common Market for Eastern and Southern Africa (COMESA) trade facilitation programme*”. The IPPC Secretariat conducted several sub-activities organized as a system and interconnected with each other to cover the overall work plan. Several working groups, made up of global phytosanitary experts were established to develop key knowledge products and training materials and to support national and regional emergency management initiatives.
- [13] A series of webinars on TR4 diagnostic, surveillance, inspection, and simulation exercises were held in March, April and May 2022. The webinars were attended by participants from over 125 countries, including the COMESA Member States. The webinar series was held in English with simultaneous interpretation to both French and Spanish. The IPPC Secretariat partnered with the Comité de Liaison Entrepreneuriat Agriculture Développement (COLEAD), the Latin American Economic System (SELA), and the North American Plant Protection Organization (NAPPO) for the organization of simultaneous interpretation in French and Spanish for the workshop series.
- [14] The IPPC Secretariat developed the following e-Learning courses in cooperation with the FAO e-Learning Academy and Committee Linking Entrepreneurship-Agriculture-Development (COLEAD), to support the capacities of the COMESA Member States and opened them to Plant Health specialists from across the world.
- e-learning course on pest risk analysis (PRA);
 - e-learning course on phytosanitary export certification system;
 - e-learning course on surveillance and reporting obligations;
 - e-learning course on phytosanitary inspection.
- [15] The IPPC Secretariat developed the guidelines on TR4 noted before as part of the COMESA project activities, with a guide on emergency preparedness that together supports worldwide NPPOs’ emergency response capacity. Both guides are published and accessible on the [International Phytosanitary Portal](#):
- *Prevention, preparedness, and response guidelines for Fusarium TR4*; and
 - *Emergency Preparedness: A guide for developing contingency plans for outbreaks of quarantine pests*.
- [16] The project was designed to be implemented from 2018 – 2022. However, some activities were not completed on time due to the COVID-19 Global pandemic and to operational delays. A no cost-extension of the project was sought to allow delivery of the pending activities by May 2024.
- [17] The project started in 2018 and will now end on May 2024. The following activities will be delivered during the remaining period:
- Finalization of the Phytosanitary inspection e-learning course;

- Delivery of the study on risk-based border control workflow including technical IT and infrastructural requirements in COMESA countries;
- Delivery of an online tutored course for export certification;
- Planning and coordination of a desktop simulation exercise for TR4 in one selected COMESA country (virtual);
- Delivery of a desktop simulation exercises for TR4 in one selected COMESA country;
- Order and delivery of lab materials (reagents) for conducting face-to-face training on diagnostics and simulation exercises for TR4;
- Delivery of a hands-on training on TR4 diagnostics for target pests;
- Planning and coordinating simulation exercises for TR4 in one selected COMESA country;
- Delivery of face-to-face simulation exercises for TR4 in one selected COMESA country.

Support to Venezuela and participation in the OIRSA regional simulation exercise on TR4

[18] On 9 February 2023, following the report of the TR4 outbreak in Venezuela in January 2023, the IPPC Secretary met virtually with the NPPO of Venezuela, as well as with the country office of the Food and Agriculture Organization (FAO), the FAO sub-regional Office for Mesoamerica and the Regional Plant Protection Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA) to discuss how to best support the NPPO in managing the outbreak. The IFU Lead participated in a field mission held in March 2023 to see the measures undertaken and support the country in implementing the new FAO emergency project to contain TR4.

[19] The IFU Lead also participated in the OIRSA regional simulation exercise on TR4 held in Nicaragua from the 24 to 28 April 2023. All nine OIRSA countries and countries from other regions such as Colombia, Ecuador, Peru and Venezuela participated in this event. The simulation consisted of general presentations on measures taken in other countries, information on the available IPPC guides and training materials, and of different simulation exercises against TR4 at the airport, at the diagnostic laboratory, at a frontier point of entry and in the field.

Networking activities: WBF, IAEA, OER and NSP

[20] During CPM-17 (2023), the IPPC Secretariat organized a side meeting with FAO partners to get a clear picture of each other's activities on TR4, namely the World Banana Forum (WBF), the Joint FAO/IAEA Center of the United Nations (IAEA), the FAO office for emergency (OER) and the FAO Plant Production and Protection Division (NSP).

a) The WBF reported the following activities:

- The WBF has established a TR4 Global Network which is a database where all communication as well as knowledge/training materials and resources are gathered, including 17 factsheets. The resources included in this database are available in English and Spanish. These resources were submitted to the IPPC Secretariat in response to the TR4 call that was launched and are available on the IPP.
- Webinars addressing TR4 diagnostics, new resistant banana varieties were organized and are available on FAO youtube channel.

- A TR4 Task Force was set, that includes stakeholders, including the participation of government representatives, banana farmers, shippers and traders, retailers, scientists, civil society organizations and trade unions.
- Upon consultations with the member states, resources may be available for organization of virtual coordination meetings involving affected countries and key stakeholders from the banana industry.

b) *Currently, there are two projects under implementation related to TR4 within the Joint FAO/IAEA Center of the United Nations (IAEA):*

- Technological transfer project in Latin America: Launched in 2022, implemented in 12 Latin American Countries, aimed at capacity development in screening, detection, tissue culture, and biological management of TR4, as well as provision of equipment. The budget of the project is USD 6 million, for an implementation duration of 5 years. The plan is to expand the project to other parts of the world.
- Coordinated Research Project (CRP) on resistance against TR4. Implementation time frame is 2023- 2027. The project is aimed at developing state-of-the-art tools and methods for managing the disease by developing resistant varieties, developing improved pathogen detection tools, and using beneficial microbes to suppress the disease.
- Published a book on protocols for tissue culture, that is available on the TR4 Global Network, on the WBF website.

c) *FAO Office of Emergency Response (OER) division:*

- In 2018/2019, OER financed a regional emergency project in Latin America addressing TR4, involving 10 countries in the region to draft a regional action plan. Additionally, national action plans for prevention and response of TR4 in 8 of the 10 Latin American countries were drafted.
- The regional plan developed within the framework of the above mentioned OER project was adapted and used by Venezuela in the recent TR4 detection, for which an emergency project is being funded.

d) *FAO Plant Production and Protection (NSP) division:*

- FAO has been working on TR4 for more than 10 years. There are abundant tools, knowledge and training materials available for countries to use and develop capacities to prevent and manage Fusarium TR4.
- NSP organized a global conference on TR4, and three international training workshops. There are technical cooperation projects (TCPs) to build capacities to manage TR4 in Turkey and Lebanon.

e) *Participants to this meeting made the following recommendations:*

- There is a need to organize a workshop/gathering of the (potentially) affected countries to discuss and understand their needs and concerns, and to understand how to help them with available tools and resources, and to produce an action plan. Resources are needed to organize such workshop/gathering.
- FAO regional offices may have resources to organize coordination meetings.

- IPPC Regional Workshops could be extended by 2 to 3 days to include a dedicated programme for TR4 coordination, with an extended audience.
- There is a need to organize and conduct more simulation exercises to develop local emergency management capabilities and the operational capabilities at the national level, to ensure efficient emergency management to any plant health emergencies.
- To implement the above-listed activities, there is a need to identify and involve key stakeholders, public and private, not only the NPPO heads, for tangible results.

Next steps

- [21] The Latin American and Caribbean Group (GRULAC) [paper CPM 2023/CRP/08](#) will further be taken as a basis to define next activities to be undertaken by the IPPC secretariat for discussion during the June 2023 Bureau meeting.
- [22] To implement activities planned in the framework of project FAO support to COMESA trade facilitation programme (GCP/INT/387/COM) detailed above, the following steps were agreed upon by the IC:
- Issue a call to reinforce the membership of the IC Team on TR4 as some members left the group or were not attending meetings.
 - Consistent with its ToRs, the IC Team on TR4 will be tasked to support the production of a priority 1 package of materials in the IC List of Topics:
 - o The setting of a face-to-face surveillance course on TR4;
 - o The setting of a face-to-face diagnostic course on TR4;
 - o The setting of a TR4 tabletop exercise;
 - o The setting of a face-to-face simulation exercise on TR4.
- [23] The secretariat will develop these materials for delivery of face-to-face courses in Africa. These materials should also be made available globally. To do so, these materials should be proposed as priority 1 topics through the 2023 Call for Topics as IC proposals.
- [24] In particular, the tabletop exercise could be delivered as additional days during the 2023 IPPC Regional Workshops, in interested regions, as agreed by the IC.
- [25] Planned activities to be implemented by the IPPC secretariat on TR4 are reflected in table 1, structured as per the GRULAC recommendations. The need for resources to implement certain activities is also clearly indicated.
- [26] The Bureau is invited to:
- *Note* on-going activities and synergies among various projects and initiatives to reach global coordination on TR4.
 - *Brainstorm* on activities to be implemented for the global coordination on TR4.
 - *Define* the global coordination by the IPPC secretariat to avoid duplication of efforts with other FAO networks.
 - *Identify* financial resources to implement efficiently the global coordination on TR4.

Activity	Priority level and sub-activities	Timeline
<p>1. Manage before the FAO, international organizations related to agriculture and marketing, as well as other sources of financing, a program for the prevention, containment and management of banana wilt through the implementation and facilitation unit led by Sarah Brunel and in full compliance with the IPPC Development Agenda implementation on Pest Outbreak Alert and Response Systems.</p>	<p>Priority 1</p> <ul style="list-style-type: none"> - Create a TR4 webpage on the IPP with all relevant information. - Map all partners and activities related to TR4: NSP, IAEA, WBF, IICA, CGIAR, Bioversitas, etc (resources necessary). - Set regular coordination meetings with identified partners (resources necessary). - Bring the topic to the TC-RPPO and Regional Workshops. - Activate the POARS Steering Group and consider the best governance to coordinate activities on TR4. - Develop a resource mobilization plan (resources necessary). <p>Create a network of TR4 experts to be actualized on the IPP (in simulation exercises, in diagnostic, in surveillance, etc.) (resources necessary).</p> <p>Develop risk maps according to production zones (resources necessary).</p> <p>Promote liaison with the private sector in relation to international banana trade and for better awareness raising and mobilization of resources (resources necessary).</p>	<p>By end of 2023</p> <p>By April 2024</p> <p>By August 2024</p>
<p>2. Carry out a communication and sensitivity campaign before authorities of the banana and plantain producing countries, for example, through notes and face-to-face</p>	<p>Priority 1</p> <ul style="list-style-type: none"> - Secretary Osama to attend the Latin America Ministers of Agriculture meeting. 	<p>By August 2023</p>

meetings between Secretary Osama and the Ministers of Agriculture that allow leading regional strategies.	- Set and implement a TR4 communication strategy (resources necessary).	By March 2024
3. Implement at the emergency level action simulacrum for the prevention, containment and management of the pest under the governance of the IPPC Secretariat and RPPOs from different parts of the world.	Priority 1 - Table top TR4 simulation exercise to be developed and held during 2023 IPPC Regional Workshops. - Simulation exercises to be prepared and held in Africa in 2024. - Simulation exercises to be replicated in other regions upon request and following resource mobilization (resources necessary).	By end of 2023 By May 2024 Pending
4. Promote an international center for the improvement of bananas and plantains in homology to that of corn and wheat (CIMYT) or that of potatoes (CIP), in compliance with the IPPC development Agenda on Research Coordination	Priority 2 - Establishment of the IPPC Focus Group on Research Coordination to introduce the topic.	By May 2024
5. Strengthen capacities in: a. Detection and integral diagnosis --- as a target pest: FOC R4t, in addition to other soil pathogens and those of viral and bacterial etiology, which are or will be the intermediate epidemics before the collapse due to FOC R4T.	Priority 1 - Identify national, regional and international research organizations and encourage the research of rapid diagnosis protocols on TR4. - Develop training material on the diagnostic of TR4. - Deliver the diagnostic training course in person in Africa by 2024. - Deliver the training course in other regions upon request and following resource mobilization (resource necessary).	By May 2024 Pending
5. Strengthen capacities in: b. Surveillance or monitoring for an early warning system with an early warning reaction capacity for TR4. It includes	Priority 1:	

<p>satellite detection, the use of drones, specific canine units, among others that allow the rapid location of the presence of the pest.</p>	<ul style="list-style-type: none"> - Gather all innovative researches and technologies for the surveillance of TR4. - Identify national, regional and international research organizations and encourage research on the surveillance for early detection of TR4. - Develop training material on TR4 surveillance with the latest technologies. - Deliver training courses on innovative TR4 surveillance virtually or face-to-face. - Introduce the topic to the IPPC Focus Group on Research coordination 	<p>By May 2024</p>
<p>5. Strengthen capacities in: c. Containment of existing outbreaks for TR4 in the affected countries, which implies eradication strategies and biosecurity cordons between affected areas and those that are free of wilt. d. Biosafety measures and actions for TR4, at the level of entry or cross-border points, of wide areas, farms and affected areas.</p>	<p>Priority 1</p> <ul style="list-style-type: none"> - Provision of a standard emergency project to eradicate or contain TR4 to NPPOs, in coordination with the POARS Steering Group. 	<p>By May 2024</p>
<p>5. Strengthen capacities in: e. Management or health of the soil that implies the conservation and increase of beneficial organisms or biological controllers.</p>	<p>Priority 2</p> <ul style="list-style-type: none"> - IPPC Secretariat to liaise with the FAO Soil unit to define activities (resources necessary). 	<p>By end of 2024</p>
<p>5. Strengthen capacities in: f. Development of tolerant or resistant varieties to TR4, involving plantains and not just bananas.</p>	<p>Priority 2</p> <ul style="list-style-type: none"> - Liaise with and provide support to IAEA as the leader on the topic (resources necessary). 	<p>By end of 2024</p>
<p>5. Strengthen capacities in: g. Training and dissemination, for all levels or publics involved with an emphasis on virtual and face-to-face</p>	<p>Priority 2</p>	<p>Pending</p>

<p>courses, field schools, simulacrum for the prevention or containment of FOC R4T.</p>	<ul style="list-style-type: none"> - Implementation at the national level of the communication strategy in collaboration with NPPOs, RPPOs and FAO offices (resources necessary). 	
<p>5. Strengthen capacities in: h. Development of a phytosanitary extension plan for TR4, for the transfer of knowledge and adoption by producers as soon as possible. i. Support for research and specific product proposals to support the integrated management of FOC R4T. j. Promote survival or sustainability strategies for affected producers, such as crop substitution or agricultural insurance for small producers. l. Studies and projects for the implementation of alternative production systems to banana cultivation in regions affected by the plague.</p>	<p>Priority 2:</p> <ul style="list-style-type: none"> - Define long-term management plans with NSP and WBF and FAO offices. 	<p>By May 2024</p>
<p>5. Strengthen capacities in: k. Support the mobilization of the FOC R4T phytosanitary commando led by OIRSA as a specialized technical group to deal with outbreaks or in actions to contain and prevent Fusarium wilt.</p>	<p>Priority 2:</p> <ul style="list-style-type: none"> - Bring the topic to get further advice to the TC-RPPO, Regional Workshops and the POARS Steering Group. 	<p>Pending</p>