Report from the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture to CPM-19 (2024)

1. The International Atomic Energy Agency (IAEA), in partnership with the Food and Agriculture Organization of the United Nations (FAO), through their Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture (Joint FAO/IAEA Centre), has been actively supporting the Secretariat of the International Plant Protection Convention (IPPC) since 2004 in the development and review of International Standards for Phytosanitary Measures (ISPMs) and its activities to improve phytosanitary capacity of IPPC Contracting Parties.

2. The Joint FAO/IAEA Centre continued to support the IPPC Secretariat in 2024.

3. Eradication of Mediterranean fruit fly in Dominican Republic: In February 2024, and September 2024, two Technical Advisory Committees (TACs) composed of IAEA, FAO, and OIRSA experts visited the area to provide guidance on eradication strategies and technical recommendations. The eradication of the pest was officially declared on 27 September 2024. Activities were implemented through an FAO-TC Project. (*https://www.iaea.org/newscenter/news/dominican-republic-successfully-eradicate-mediterranean-fruit-fly-infestation-in-record-time*).

4. In support of the *Technical Panel on Phytosanitary Treatments* (TPPT) activities, the Joint FAO/IAEA Centre provided expertise, reviewed supporting data related to ISPMs, and conducted research to fulfil requirements for treatment recommendation. Support was provided in leading the promising phytosanitary irradiation treatment of fresh commodities against *Liriomyza sativa*, *L. trifolii*, and *L. huidobrensis* (2018-001). The treatment 2018-001 was revised and is currently pending minor additional information by the submitter to be considered for recommendation to the Standard Committee (SC). In addition, the Joint FAO/IAEA Centre was assigned as the treatment lead of the generic irradiation treatment against all insects except Lepidoptera larvae and pupae (2017-030). The following phytosanitary treatment was adopted as an annex to ISPM 28 at CPM-18 in 2024:

    - PT 46 (Cold treatment for *Thaumatotibia leucotreta* on *Citrus sinensis*) as Annex 46 to ISPM 28 (*Phytosanitary treatments for regulated pests*)

5. The Insect Pest Control Laboratory (IPCL) of the Joint FAO/IAEA Centre completed research projects on cold treatment for *Zeugodacus tau* and phytosanitary irradiation treatment for *Drosophila suzukii*. A cold treatment for *Zeugodacus tau* on *Citrus sinensis* was submitted to the IPPC using our study as the baseline information supporting the treatment. Our study validating an irradiation treatment for *D. suzukii* was conducted, addressing the TPPT's recommendations on the most adequate treatment endpoint and how to achieve an appropriate level of efficacy. Consequently, an irradiation treatment for *D. suzukii* with the potential to be adopted as an international treatment might be re-submitted to the IPPC. Ongoing studies targeting *D. suzukii* are evaluating the efficacy of the proposed phytosanitary irradiation treatment under modified atmosphere and chilling conditions.

6. In addition, the FAO/IAEA Centre also contributed to the development of Annex 1 (Criteria for evaluation of available information for determining host status of fruit to

fruit flies) to ISPM 37 (*Determination of host status of fruit to fruit flies ((Tephritidae*), adopted at CPM 18.

7. The Joint FAO/IAEA Centre is implementing a coordinated research initiative on Novel Irradiation Technology for Phytosanitary Treatment of Food Commodities and Promotion of Trade (CRP D61026). With 13 institutions collaborating to validate radiation doses that can be considered as generic irradiation treatments for key groups of pests. Research is also investigating factors that might affect treatment efficacy. The 3rd research coordination meeting was held in December, we are very thankful that the IPPC Secretariat was available online to provide valuable input to the meeting. Research activities are on target to yield data to support dose treatments for five generic groups: weevils, mealybugs, egg and larval Lepidoptera, pupal Lepidoptera, and all insects except pupae and adult Lepidoptera. Proposals for several species specific irradiation treatments may also result from this research. The final coordination meeting is scheduled in 2026.

8. As a result of the comprehensive report presented by the Focus Group (FG) on the global system titled “Strengthening Pest Outbreak Alert and Response System (POARS)” to the CPM Strategic Planning Group (SPG) in 2022, a Steering Group (SG) was created which entered into force in January 2024. The objective of the SG is to follow-up on the recommendations provided by the FG available in the report. This includes development of the different elements of the global system such as establish criteria for assessing emerging pests, develop a methodology to assess emerging pests based on the criteria, testing the methodology, developing a framework for alert system to communicate to Member States, developing a framework for an emergency response system, mobilizing resources to support POARS tools such as the development of a POARS webpage and others. The global system will be presented to CPM and SPG during the next meeting in March 2025. A decision will be made to create an independent POARS Committee as part of the IPPC organizational structure or to place POARS under the existing Implementation Committee. A staff Member of the Joint FAO/IAEA was nominated and accepted to be part of the POARS Steering Group

9. In 2024, the Joint FAO/IAEA Centre contributed to the expansion of activities of an Interregional project "Strengthening Member State Capacities to Combat Banana Fusarium Wilt (TR4) through Early Detection, New Resistant Varieties, and Integrated Management" to Asia and Africa in addition to Latin America (20 countries). Two trainings were conducted in Brazil and Austria with a total of 30 professionals trained. During April 2024, Plant Breeding and Genetics Laboratory of the Joint FAO/IAEA Centre in collaboration with International Plant Protection Convention (IPPC) under the framework of the “FAO support to COMESA trade facilitation programme”, carried out a diagnostic training course focusing on Fusarium TR4 for member states of the Common Market for Eastern and Southern Africa (COMESA) countries. The training supported hand on practical knowledge on timely diagnosis, early warning, and response activities using molecular methods, to strengthen preparedness and management strategies.

10. As well, the Joint FAO/IAEA Centre is conducting the R&D project An Integrative Approach to Enhance Disease Resistance Against Fusarium Wilt (*Foc* TR4) in Banana with the participation of 13 institutions from 12 countries from Asia, Africa, and Latin America. The second RCM was conducted in April 2024 with great progress on all

objectives of the project including the development of mutant lines for several local banana varieties to be tested for disease resistance and the isolation of beneficial microbes tested for biological control.

11. In terms of development of technical materials to support the implementation of the ISPMs, upon the request of FAO Members and IAEA Member States the following materials were produced in 2024:

    - *FAO/IAEA. (2024). Guideline on phytosanitary procedures for area-wide management of fruit fly pests. Vienna, FAO, 194 pp. https://doi.org/10.4060/cc9843en.*
    - *FAO/OIEA. (2024). Plan Rector Regional para la Aplicación del Manejo Integrado de Moscas de la Fruta (MIP) de Importancia Económica y Cuarentenaria, Basado en la Técnica del Insecto Estéril (TIE), con Énfasis en la Mosca Sudamericana de la Fruta, (Anastrepha fraterculus, Wied.) y la Mosca del Mediterráneo, (Ceratitis capitata, Wied.). Vienna, Austria, 188 pp. (https://www.iaea.org/sites/default/files/plan-rector.pdf).*

12. In terms of capacity building, the Joint FAO/IAEA Centre has devoted part of its technical assistance to regulatory aspects and facilitating the implementation of the ISPMs in developing countries through regional workshops and technical meetings. In 2024, seven FAO/IAEA training events (courses and workshops) were held, addressing the following topics:

    - *FAO/IAEA Coordination Meeting on Validating the Sterile Insect Technique for the Control of the South American Fruit Fly (under Regional TC Project RLA5087). 8–12 April 2024, Lima, Peru.*
    - *FAO/IAEA National Coordination Meeting on Strengthening and Harmonizing Surveillance and Suppression of Fruit Flies in Regional Asia and the Pacific (Under Regional TC project RAS5097). 11–13 May 2024, Beijing. China.*
    - *FAO/IAEA National Training Course on Fruit Fly Surveillance Systems (under national TC Project JAM5015). 28–31 May 2024, Kingston, Jamaica.*
    - *FAO/IAEA Regional Training Course on Fruit Fly Surveillance and Identification (under Regional TC Project RAS5097). 29 July–2 August 2024, Serdang, Malaysia.*