Food and Agriculture Organization of the United Nations

International Plant Protection Convention
Protecting the world's plant resources from pests

ISPM 28
ANNEX 14

ENG

INTERNATIONAL STANDARD FOR PHYTOSANITARY MEASURES 28

PHYTOSANITARY TREATMENT

PT 14: Irradiation treatment for *Ceratitis capitata*

Produced by the Secretariat of the
International Plant Protection Convention (IPPC)

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This phytosanitary treatment was adopted by the Sixth Session of the Commission on Phytosanitary Measures in 2011.
The annex is a prescriptive part of ISPM 28.

ISPM 28
Phytosanitary treatments for regulated pests

PT 14: Irradiation treatment for *Ceratitis capitata*

Adopted 2011; published 2016

Scope of the treatment

This treatment applies to the irradiation of fruits and vegetables at 100 Gy minimum absorbed dose to prevent the emergence of adults of *Ceratitis capitata* at the stated efficacy. This treatment should be applied in accordance with the requirements outlined in ISPM 18[1] (*Guidelines for the use of irradiation as a phytosanitary measure*).

Treatment description

Name of treatment	Irradiation treatment for *Ceratitis capitata*
Active ingredient	N/A
Treatment type	Irradiation
Target pest	*Ceratitis capitata* (Diptera: Tephritidae) (Mediterranean fruit fly)
Target regulated articles	All fruits and vegetables that are hosts of *Ceratitis capitata*.

Treatment schedule

Minimum absorbed dose of 100 Gy to prevent the emergence of adults of *Ceratitis capitata*.

There is 95% confidence that the treatment according to this schedule prevents emergence of not less than 99.9970% of adults of *Ceratitis capitata.*

Treatment should be applied in accordance with the requirements of ISPM 18.

This irradiation treatment should not be applied to fruits and vegetables stored in modified atmospheres.

Other relevant information

Since irradiation may not result in outright mortality, inspectors may encounter live but non-viable *Ceratitis capitata* (larvae and/or pupae) during the inspection process. This does not imply a failure of the treatment.

The Technical Panel on Phytosanitary Treatments based its evaluation of this treatment on the research work undertaken by Follett and Armstrong (2004) and Torres-Rivera and Hallman (2007), which determined the efficacy of irradiation as a treatment for this pest in *Carica papaya* and *Mangifera indica*.

Extrapolation of treatment efficacy to all fruits and vegetables was based on knowledge and experience that radiation dosimetry systems measure the actual radiation dose absorbed by the target pest independent of host commodity, and evidence from research studies on a variety of pests and

[1] The scope of phytosanitary treatments does not include issues related to pesticide registration or other domestic requirements for approval of treatments. Treatments also do not provide information on specific effects on human health or food safety, which should be addressed using domestic procedures prior to approval of a treatment. In addition, potential effects of treatments on product quality are considered for some host commodities before their international adoption. However, evaluation of any effects of a treatment on the quality of commodities may require additional consideration. There is no obligation for a contracting party to approve, register or adopt the treatments for use in its territory.

commodities. These include studies on the following pests (with hosts in parentheses): *Anastrepha ludens* (*Citrus paradisi* and *Mangifera indica*), *A. suspensa* (*Averrhoa carambola, Citrus paradisi* and *Mangifera indica*), *Bactrocera tryoni* (*Citrus sinensis, Lycopersicon lycopersicum, Malus domestica, Mangifera indica, Persea americana* and *Prunus avium*), *Cydia pomonella* (*Malus domestica*; also artificial diet) and *Grapholita molesta* (*Malus domestica*; also artificial diet) (Bustos *et al*., 2004; Gould and von Windeguth, 1991; Hallman, 2004, Hallman and Martinez, 2001; Jessup *et al*., 1992; Mansour, 2003; von Windeguth, 1986; von Windeguth and Ismail, 1987). It is recognized, however, that treatment efficacy has not been tested for all potential fruit and vegetable hosts of the target pest. If evidence becomes available to show that the extrapolation of the treatment to cover all hosts of this pest is incorrect, then the treatment will be reviewed.

References

The present standard refers to International Standards for Phytosanitary Measures (ISPMs). ISPMs are available on the International Phytosanitary Portal (IPP) at https://www.ippc.int/core-activities/standards-setting/ispms.

Bustos, M.E., Enkerlin, W., Reyes, J. & Toledo, J. 2004. Irradiation of mangoes as a postharvest quarantine treatment for fruit flies (Diptera: Tephritidae). *Journal of Economic Entomology*, 97: 286−292.

Follett, P.A. & Armstrong, J.W. 2004. Revised irradiation doses to control melon fly, Mediterranean fruit fly, and Oriental fruit fly (Diptera: Tephritidae) and a generic dose for tephritid fruit flies. *Journal of Economic Entomology*, 97: 1254−1262.

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von Windeguth, D.L. & Ismail, M.A. 1987. Gamma irradiation as a quarantine treatment for Florida grapefruit infested with Caribbean fruit fly, *Anastrepha suspensa* (Loew). *Proceedings of the Florida State Horticultural Society*, 100: 5−7.

Publication history

This is not an official part of the standard.

2007-12 TPPT developed draft text.

2008-04 CPM-3 added topic *Irradiation treatment for* Ceratitis capitata (2007-204).

2008-11 SC revised draft text and approved for MC.

2010-06 SC sent for MC under fast-track process.

2010-12 SC recommended draft text to CPM via e-decision.

2011-03 CPM-6 adopted Annex 14 to ISPM 28.

ISPM 28. **Annex 14** *Irradiation treatment for* Ceratitis capitata (2011). Rome, IPPC, FAO.

2014-10 Secretariat made minor formatting changes.

2015-07 IPPC Secretariat incorporated editorial amendments and reformatted standards following revoking of standards procedure from CPM-10 (2015).

2016-04 CPM-11 noted ink amendments in relation to "effective dose".

2016-04 IPPC Secretariat incorporated ink amendments from CPM-11 (2016).

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IPPC

The International Plant Protection Convention (IPPC) is an international plant health agreement that aims to protect cultivated and wild plants by preventing the introduction and spread of pests. International travel and trade are greater than ever before. As people and commodities move around the world, organisms that present risks to plants travel with them.

Organization

- There are over 180 contracting parties to the IPPC.
- Each contracting party has a national plant protection organization (NPPO) and an Official IPPC contact point.
- Nine regional plant protection organizations (RPPOs) work to facilitate the implementation of the IPPC in countries.
- IPPC liaises with relevant international organizations to help build regional and national capacities.
- The Secretariat is provided by the Food and Agriculture Organization of the United Nations (FAO).

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