



Food and Agriculture
Organization of the
United Nations



International
Plant Protection
Convention

PT 45: Irradiation treatment for *Pseudococcus jackbeardsleyi*

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ISPM 28

Phytosanitary treatments for regulated pests

PT 45: Irradiation treatment for *Pseudococcus jackbeardsleyi*

Adopted 2023; published 2023

Scope of the treatment

This treatment describes the irradiation of fruits, vegetables and ornamental plants at 166 Gy minimum absorbed dose to prevent development of F1 second-instar nymphs from mature adult females of *Pseudococcus jackbeardsleyi* at the stated efficacy.¹

Treatment description

Name of treatment	Irradiation treatment for <i>Pseudococcus jackbeardsleyi</i>
Active ingredient	n/a
Treatment type	Irradiation
Target pest	<i>Pseudococcus jackbeardsleyi</i> Gimpel & Miller, 1996 (Hemiptera: Pseudococcidae)
Target regulated articles	All fruits, vegetables and ornamental plants that are hosts of <i>Pseudococcus jackbeardsleyi</i>

Treatment schedule

Minimum absorbed dose of 166 Gy to prevent development to the second-instar nymph stage of progeny from mature adult females of *Pseudococcus jackbeardsleyi*.

There is 95% confidence that the treatment according to this schedule prevents offspring developing to the second-instar nymph stage from not less than 99.9977% of mature adult females of *Pseudococcus jackbeardsleyi*.

This treatment should be applied in accordance with the requirements of ISPM 18 (*Requirements for the use of irradiation as a phytosanitary measure*).

This treatment should not be applied to fruit, vegetables or ornamental plants stored in modified atmosphere because modified atmosphere may affect the treatment efficacy.

¹ The scope of phytosanitary treatments does not include issues related to pesticide registration or other domestic requirements for contracting parties' approval of treatments. Treatments adopted by the Commission on Phytosanitary Measures may not provide information on specific effects on human health or food safety, which should be addressed using domestic procedures before contracting parties approve 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.

Other relevant information

Because irradiation may not result in outright mortality, inspectors may encounter live but non-viable *Pseudococcus jackbeardsleyi* eggs, nymphs and adults during the inspection process. This does not imply a failure of the treatment.

The Technical Panel on Phytosanitary Treatments (TPPT) based its evaluation of this treatment on the research reported by Zhan *et al.* (2016), which determined the efficacy of irradiation as a treatment for this pest on potato (*Solanum tuberosum*) and pumpkin (*Cucurbita pepo*). The TPPT also considered information on the effect of irradiation on *Pseudococcus jackbeardsleyi* in Hofmeyr *et al.* (2016) and Shao *et al.* (2013).

The efficacy of this schedule was calculated based on a total of 131 512 mature adult females treated with offspring prevented from developing to the second-instar nymph stage; in the control, development of the second instar from neonates was estimated at 98.5%.

Extrapolation of treatment efficacy to all fruits, vegetables and ornamental plants 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 commodities. These include studies on the following pests and hosts: *Anastrepha fraterculus* (*Eugenia pyriformis*, *Malus pumila* and *Mangifera indica*), *Anastrepha ludens* (*Citrus paradisi*, *Citrus sinensis*, *Mangifera indica* and artificial diet), *Anastrepha obliqua* (*Averrhoa carambola*, *Citrus sinensis* and *Psidium guajava*), *Anastrepha suspensa* (*Averrhoa carambola*, *Citrus paradisi* and *Mangifera indica*), *Bactrocera tryoni* (*Citrus sinensis*, *Solanum lycopersicum*, *Malus pumila*, *Mangifera indica*, *Persea americana* and *Prunus avium*), *Cydia pomonella* (*Malus pumila* and artificial diet), *Grapholita molesta* (*Malus pumila* and artificial diet), *Pseudococcus jackbeardsleyi* (*Cucurbita pepo* and *Solanum tuberosum*), and *Tribolium confusum* (*Triticum aestivum*, *Hordeum vulgare* and *Zea mays*) (Bustos *et al.*, 2004; Gould and von Windeguth, 1991; Hallman, 2004a, 2004b, 2013; Hallman and Martinez, 2001; Hallman *et al.*, 2010; Jessup *et al.*, 1992; Mansour, 2003; Tunçbilek and Kansu, 1996; von Windeguth, 1986; von Windeguth and Ismail, 1987; Zhan *et al.*, 2016). It is recognized, however, that treatment efficacy has not been tested for all potential fruit, vegetable and ornamental plant 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, the treatment will be reviewed.

References

The present annex may refer to ISPMs. ISPMs are available on the International Phytosanitary Portal (IPP) at www.ippc.int/core-activities/standards-setting/ispms.

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Publication history

This is not an official part of the standard

- 2017-06 Treatment submitted in response to 2017-02 call for treatments.
- 2017-07 Technical Panel on Phytosanitary Treatments (TPPT) reviewed and requested further information from submitter.
- 2018-05 Standards Committee (SC) added topic *Irradiation treatment for Pseudococcus jackbeardsleyi* (2017-027) to TPPT work programme.
- 2018-03 TPPT revised draft PT and requested further information from submitter.
- 2019-07 TPPT requested further information from submitter.
- 2020-06 Submitter provided further information.
- 2020-10 TPPT revised draft PT and recommended it to SC for consultation.
- 2021-03 SC approved for first consultation via e-decision (2020_eSC_May_12).
- 2021-07 First consultation.
- 2022-05 TPPT revised and recommended to SC for consultation.
- 2022-06 SC approved for second consultation via e-decision (2022_eSC_Nov_04).
- 2022-07 Second consultation.
- 2022-10 TPPT revised and recommended to SC for approval for adoption by CPM.
- 2022-12 SC recommended to CPM for adoption via e-decision (2022_eSC_Nov_01).
- 2023-03 CPM-17 adopted the phytosanitary treatment.

ISPM 28. Annex 45. 2023. Irradiation treatment for *Pseudococcus jackbeardsleyi*. Rome, IPPC Secretariat, FAO.

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IPPC

The International Plant Protection Convention (IPPC) is an international plant health agreement that aims to protect global plant resources and facilitate safe trade.

The IPPC vision is that all countries have the capacity to implement harmonized measures to prevent pest introductions and spread, and minimize the impacts of pests on food security, trade, economic growth, and the environment.

Organization

- ◆ There are over 180 IPPC contracting parties.
- ◆ Each contracting party has a national plant protection organization (NPPO) and an Official IPPC contact point.
- ◆ 10 regional plant protection organizations (RPPOs) have been established to coordinate NPPOs in various regions of the world.
- ◆ The IPPC Secretariat 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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