



## DRAFT ANNEX TO ISPM 28: Irradiation treatment for *Zeugodacus tau* (2017-025)

### Status box

This is not an official part of the annex to the standard and it will be modified by the IPPC Secretariat after adoption.	
<b>Date of this document</b>	2021-11-01
<b>Document category</b>	Draft annex to ISPM 28
<b>Current document stage</b>	To CPM for adoption
<b>Major stages</b>	<p>2017-06 Treatment submitted in response to 2017-02 call for treatments (<i>Irradiation treatment for Bactrocera tau</i>).</p> <p>2018-01 Technical Panel on Phytosanitary Treatments (TPPT) reviewed the submission (virtual meeting) and requested further information from submitter.</p> <p>2018-05 Submitter supplied additional information.</p> <p>2018-05 SC added the topic <i>Irradiation treatment for Bactrocera tau</i> (2017-025) to the TPPT work programme with priority 3.</p> <p>2018-06 TPPT revised the draft and asked the SC to change to priority 2 (because of economic importance of the pest) and recommended draft to SC for consultation.</p> <p>2018-11 TPPT final review via e-forum (2018_eTPPT_Oct_02).</p> <p>2019-01 SC approved the draft for consultation via e-decision (2019_eSC_May_05)</p> <p>2019-07 First consultation.</p> <p>2020-02 (second meeting) TPPT revised and recommended the draft for second consultation.</p> <p>2020-07 TPPT approved the responses to first consultation comments</p> <p>2021-03 SC approved for second consultation via e-decision (2021_eSC_May_13).</p> <p>2021-07 Second consultation.</p> <p>2021-10 TPPT revised and recommended to the SC for approval for adoption by the CPM.</p> <p>2021-12 SC approved for adoption by the CPM via e-decision (2022_eSC_May_03)</p>
<b>Treatment Lead</b>	2019-07 Peter LEACH (AU) 2017-07 Andrew PARKER (IAEA)
<b>Notes</b>	<p>2018-07 Edited</p> <p>2020-02 The name of the target pest <i>Bactrocera tau</i> was changed to <i>Zeugodacus tau</i> when the subgenus <i>Bactrocera</i> (<i>Zeugodacus</i>) was elevated to genus level (Virgilio <i>et al.</i> 2015). The name change is now widely recognized (Doorenweerd <i>et al.</i> 2018).</p> <p>2021-02 Edited</p> <p>2021-11 Edited</p>

## Scope of the treatment

This treatment describes the irradiation of fruits and vegetables at 72 Gy or 85 Gy minimum absorbed dose to prevent the emergence of adults of *Zeugodacus tau*<sup>1</sup> at the stated efficacy.<sup>2</sup>

## Treatment description

<b>Name of treatment</b>	Irradiation treatment for <i>Zeugodacus tau</i>
<b>Active ingredient</b>	n/a
<b>Treatment type</b>	Irradiation
<b>Target pest</b>	<i>Zeugodacus tau</i> (Walker, 1849) (Diptera: Tephritidae)
<b>Target regulated articles</b>	All fruits and vegetables that are hosts of <i>Zeugodacus tau</i>

## Treatment schedules

**Schedule 1:** Minimum absorbed dose of 72 Gy to prevent the emergence of adults of *Zeugodacus tau*.

There is 95% confidence that the treatment according to this schedule prevents emergence of the adult stage from not less than 99.9933% of eggs and larvae of *Zeugodacus tau*.

**Schedule 2:** Minimum absorbed dose of 85 Gy to prevent the emergence of adults of *Zeugodacus tau*.

There is 95% confidence that the treatment according to this schedule prevents emergence of the adult stage from not less than 99.9970% of eggs and larvae of *Zeugodacus tau*.

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

## Other relevant information

Because irradiation may not result in outright mortality, inspectors may encounter live but non-viable *Zeugodacus tau* (larvae or puparia) 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 reported by Zhan *et al.* (2015), which determined the efficacy of irradiation as a treatment for this pest in *Cucurbita maxima*.

The efficacy of schedules 1 and 2 was calculated based on a total of 48 700 and 107 135 third-instar larvae treated, respectively, with no adult emergence; the control adult emergence was above 90% in all confirmatory trials conducted.

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

<sup>1</sup> Species names is in accordance with Doorenweerd *et al.* (2018), following the elevation of the subgenus *Bactrocera* (*Zeugodacus*) to genus level (Virgilio *et al.*, 2015).

<sup>2</sup> 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.

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* sp. 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, 1966; 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 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, the treatment will be reviewed.

## References

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

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