

DRAFT ANNEX TO ISPM 28: Irradiation treatment for *Bactrocera dorsalis* (2017-015)**Status box**

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| This is not an official part of the annex to the standard and it will be modified by the IPPC Secretariat after adoption. | |
| Date of this document | 2020-11-30 |
| Document category | Draft annex to ISPM 28 |
| Current document stage | To CPM-15 (2021) for adoption |
| Major stages | <p>2017-06 Treatment submitted in response to 2017-02 call for treatments.</p> <p>2018-01 Technical Panel on Phytosanitary Treatments (TPPT) reviewed and requested further information from submitter.</p> <p>2018-04 Submitter supplied additional information.</p> <p>2018-05 SC added the topic <i>Irradiation treatment for oriental fruit fly Bactrocera dorsalis on all fresh commodities</i> (2017-015) to the TPPT work programme with priority 3.</p> <p>2018-06 TPPT revised the draft and recommended 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_06).</p> <p>2019-07 First consultation.</p> <p>2020-02 TPPT reviewed and approved the responses to consultation comments and recommended the draft for second consultation.</p> <p>2020-06 SC approved for second consultation via e-decision (2020_eSC_May_22).</p> <p>2020-07 Second consultation.</p> <p>2020-11 TPPT virtual meeting recommended to SC for approval for adoption by the CPM.</p> |
| Treatment Lead | <p>2019-07 Peter LEACH (AU)</p> <p>2017-07 Andrew PARKER (IAEA)</p> |
| Notes | <p>2018-07 Edited</p> <p>2020-11 Edited</p> |

Scope of the treatment

This treatment describes the irradiation of fruits and vegetables at 116 Gy minimum absorbed dose to prevent the emergence of adults of *Bactrocera dorsalis* at the stated efficacy.¹

Treatment description

Name of treatment Irradiation treatment for *Bactrocera dorsalis*

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.

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| Active ingredient | n/a |
| Treatment type | Irradiation |
| Target pest | <i>Bactrocera dorsalis</i> (Hendel, 1912) (Diptera: Tephritidae) |
| Target regulated articles | All fruits and vegetables that are hosts of <i>Bactrocera dorsalis</i> |

Treatment schedule

Minimum absorbed dose of 116 Gy to prevent the emergence of adults of *Bactrocera dorsalis*.

There is 95% confidence that the treatment according to this schedule prevents emergence of the adult stage from not less than 99.9963% of eggs and larvae of *Bactrocera dorsalis*.

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

This treatment should not be applied to fruit and vegetables stored in a modified atmosphere because the modified atmosphere may affect the treatment efficacy.

Other relevant information

Because irradiation may not result in outright mortality, inspectors may encounter live but non-viable *Bactrocera dorsalis* (eggs, 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 Zhao *et al.* (2017), which determined the efficacy of irradiation as a treatment for this pest in *Psidium guajava*. In addition, the work of Follett and Armstrong (2004) supports this schedule.

The efficacy of this schedule was calculated based on a total of 100 684 third-instar larvae treated with no adult emergence; the control emergence was 81%.

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 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*, *C. sinensis* and *Psidium guajava*); *Anastrepha suspensa* (*Averrhoa carambola*, *C. paradisi* and *Mangifera indica*), *Bactrocera tryoni* (*C. sinensis*, *Solanum lycopersicum*, *Malus pumila*, *Mangifera indica*, *Persea americana* and *Prunus avium*), *Cydia pomonella* (*Malus pumila* and artificial diet) and *Grapholita molesta* (*Malus pumila* and artificial diet), *Pseudococcus jackbeardsleyi* (*Cucurbita* sp. and *Solanum tuberosum*), *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 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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