[DRAFT ANNEX TO ISPM 28: Irradiation treatment for Bactrocera dorsalis (2017-015)]

[Status box]

[1] This is not an official part of the annex to the standard and it will be modified by the IPPC Secretariat after adoption.


[10] Major stages


[14] 2018-05 SC added the topic Irradiation treatment for oriental fruit fly Bactrocera dorsalis on all fresh commodities (2017-015) to the TPPT work programme with priority 3.

[15] 2018-06 TPPT revised the draft and recommended to SC for consultation.


[18] 2019-07 first consultation

[19] 2020-02 TPPT reviewed and approved the compiled comments and recommended the draft for second consultation


[21] Treatment Lead [22] 2019-07 Mr Peter LEACH (AU)

[23] 2017-07 Mr Andrew PARKER (IAEA)


[26] Scope of the treatment

[27] 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 efficacy¹.

[28] Treatment description

[29] 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.
Active ingredient: n/a

Treatment type: Irradiation

Target pest: *Bactrocera dorsalis* (Hendel, 1912) (Diptera: Tephritidae)

Target regulated articles: All fruits and vegetables that are hosts of *Bactrocera dorsalis*

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 of 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 fruits and vegetables stored in modified atmospheres because modified atmospheres 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* (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 uvalha, Malus pumila* and *Mangifera indica*), *A. ludens* (*Citrus paradisi, Citrus sinensis, M. indica* and artificial diet), *A. obliqua* (*Averrhoa carambola, C. sinensis* and *Psidium guajava*), *A. suspensa* (*A. carambola, C. paradisi* and *M. indica*), *Bactrocera tryoni* (*C. sinensis, Solanum lycopersicum, M. pumila, M. indica, Persea americana* and *Prunus avium*), *Pseudococcus jackbeardsleyi* (*Cucurbita sp. and Solanum tuberosum*), *Tribolium confusum* (*Triticum aestivum, Hordeum vulgare* and *Zea mays*), *Cydia pomonella* (*M. domestica* and artificial diet) and *Grapholita molesta* (*M. pumila* and artificial diet) (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; Tuncbilek 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](https://www.ippc.int/core-activities/standards-setting/ispm).


