DRAFT ANNEX TO ISPM 28: Irradiation treatment for the genus *Anastrepha* (2017-031)

Status box	
This is not an official part of 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	2017-06 Treatment submitted in response to 2017-02 call for treatments. 2017-11 Technical Panel on Phytosanitary Treatments (TPPT) reviewed submission. 2018-05 Standards Committee (SC) added topic *Irradiation treatment for the genus* Anastrepha (2017-031) to the TPPT work programme with priority 1. 2018-06 TPPT revised the draft and recommended it to SC for consultation. 2018-11 TPPT final review via e-forum (2018_eTPPT_Oct_01). 2019-01 SC approved the draft for consultation via e-decision (2019_eSC_May_03). 2019-07 First consultation. 2020-03 TPPT approved the responses to consultation comments and recommended the draft for approval for second consultation. 2020-06 SC approved for second consultation via e-decision (2020_eSC_May_23). 2020-07 Second consultation. 2020-11 TPPT meeting reviewed and recommended to the SC for approval for adoption by the CPM.
Treatment Lead	2018-06 Matthew SMYTH (AU) 2017-11 Guy HALLMAN (US)
Notes	2018-06 TPPT: efficacy was calculated based on data for *A. ludens* (most tolerant species within the genus) 2018-07 Edited 2020-06 Edited 2020-11 Edited

Scope of the treatment

This treatment describes the irradiation of fruits and vegetables at 70 Gy minimum absorbed dose to prevent the emergence of adults of *Anastrepha* spp. at the stated efficacy.[1]

[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.

Treatment description

Name of treatment	Irradiation treatment for the genus *Anastrepha*
Active ingredient	n/a
Treatment type	Irradiation
Target pest	Fruit flies of the genus *Anastrepha* Schiner, 1868 (Diptera: Tephritidae)
Target regulated articles	All fruits and vegetables that are hosts of the genus *Anastrepha*

Treatment schedule

Minimum absorbed dose of 70 Gy to prevent the emergence of adults of *Anastrepha* spp.

There is 95% confidence that the treatment according to this schedule prevents the development to the adult stage of not less than 99.9968% of eggs and larvae of *Anastrepha* spp.

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

This irradiation 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 *Anastrepha* spp. (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 reviewed in Hallman (2013), which determined the efficacy of irradiation as a treatment for this pest on *Citrus paradisi*. In addition, the research reported in FAO/IAEA (2017) supports this schedule.

The efficacy of this schedule was calculated based on a total of 94 400 third-instar larvae of *Anastrepha ludens* treated with no adult emergence. The data for *A. ludens* were used as it is considered the most radio-tolerant of the economically important species studied in the genus.

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/ispms.

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