



**INTERNATIONAL STANDARDS FOR
PHYTOSANITARY MEASURES**

**DRAFT ANNEX to
ISPM 28:2009**

Irradiation treatment for *Ceratitis capitata*

(201-)

**DRAFT
DOCUMENT**

Comment [AMJ1]: Global change: Add authority
(correct taxonomy)

Date of this document	5 May 2010
Document category	Draft new annex to ISPM 28:2009 (<i>Phytosanitary treatments for regulated pests</i>)
Current document stage	Draft for member consultation 2010
Origin	Work programme topic: Irradiation treatment for <i>Ceratitis capitata</i> , CPM-3 (2008)
Major stages	Approved for member consultation via email by the SC in September 2008
Notes	File template: IPPCStyles, April 2010.

[1] Adoption

[2] This phytosanitary treatment was adopted by the Commission on Phytosanitary Measures in ----.

[3] Scope of the treatment

[4] This treatment applies to the irradiation of fruits and vegetables at 100 Gy minimum absorbed dose to prevent the emergence of adults of *Ceratitis capitata* at the stated efficacy. This treatment should be applied in accordance with the requirements outlined in ISPM 18:2003¹.

[5] Treatment description

[6] Name of treatment	[a] Irradiation treatment for <i>Ceratitis capitata</i>
[7] Active ingredient	[b] N/A
[8] Treatment type	[c] Irradiation
[9] Target pest	[d] <i>Ceratitis capitata</i> (Diptera: Tephritidae) (Mediterranean fruit fly)
[10] Target regulated articles	[e] All fruits and vegetables that are hosts of <i>Ceratitis capitata</i>
[11] Treatment schedule	<p>[f] Minimum absorbed dose of 100 Gy to prevent the emergence of adults of <i>Ceratitis capitata</i>.</p> <p>[g] Efficacy and confidence level of the treatment is ED_{99.9970} at the 95% confidence level under non-modified atmospheric conditions.</p> <p>[h] Treatment should be applied in accordance with the requirements of ISPM 18:2003.</p> <p>[i] This irradiation treatment should not be applied to fruit and vegetables stored in modified atmospheres.</p>
[12] Other relevant information	<p>[j] Since irradiation may not result in outright mortality, inspectors may encounter live but non-viable <i>Ceratitis capitata</i> (larvae and/or pupae) during the inspection process. This does not imply a failure of the treatment.</p> <p>[k] The Technical Panel on Phytosanitary Treatments based its evaluation of this treatment on the research work undertaken by Follett and Armstrong (2004) and Torres-Rivera and Hallman (2007), which determined the efficacy of irradiation as a treatment for this pest in <i>Carica papaya</i> and <i>Mangifera indica</i>. This dosage is effective on all commodities for Mediterranean fruit fly providing that they adhere to the requirements set forth in ISPM 18.</p> <p>[l] 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 (with hosts in parentheses): <i>Anastrepha ludens</i> (<i>Citrus paradisi</i> and <i>Mangifera indica</i>), <i>A. suspensa</i> (<i>Averrhoa carambola</i>, <i>Citrus paradisi</i> and <i>Mangifera indica</i>), <i>Bactrocera tryoni</i> (<i>Citrus sinensis</i>, <i>Lycopersicon lycopersicum</i>, <i>Malus domestica</i>, <i>Mangifera indica</i>, <i>Persea americana</i> and <i>Prunus avium</i>), <i>Cydia pomonella</i> (<i>Malus domestica</i>; also artificial diet) and <i>Grapholita molesta</i> (<i>Malus domestica</i>; also artificial diet) (Bustos et al., 2004; Gould and von Windeguth, 1991; Hallman, 2004; Hallman and Martinez, 2001; Jessup et al., 1992; Mansour, 2003; von Windeguth, 1986; von Windeguth and Ismail, 1987). 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, then the treatment will be reviewed.</p>

Comment [AMJ2]: Alternative to deletion: "Referenced studies were not conducted in modified atmosphere, therefore this irradiation treatment should not be applied to fruit and vegetables stored in modified atmospheres."

¹ The scope of phytosanitary treatments does not include issues related to pesticide registration or other domestic requirements for approval of treatments. Treatments also do not provide information on specific effects on human health or food safety, which should be addressed using domestic procedures prior to approval of 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.

References

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- [16] ~~Gould, W.P. & von Windeguth, D.L.~~ 1991. ~~Gamma irradiation as a quarantine treatment for carambolas infested with Caribbean fruit flies.~~ *Florida Entomologist*, 74: 297–300.
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- [19][16] **ISPM 18.** 2003. *Guidelines for the use of irradiation as a phytosanitary measure*. Rome, IPPC, FAO.
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- [21] ~~Mansour, M.~~ 2003. ~~Gamma irradiation as a quarantine treatment for apples infested by codling moth (Lepidoptera: Tortricidae).~~ *Journal of Applied Entomology*, 127: 137–141.
- [22][17] **Torres-Rivera, Z. & Hallman, G.J.** 2007. Low-dose irradiation phytosanitary treatment against Mediterranean fruit fly (Diptera: Tephritidae). *Florida Entomologist*, 90: 343–346.
- [23][18] **von Windeguth, D.L.** 1986. Gamma irradiation as a quarantine treatment for Caribbean fruit fly infested mangoes. *Proceedings of the Florida State Horticultural Society*, 99: 131–134.
- [24][19] **von Windeguth, D.L. & Ismail, M.A.** 1987. Gamma irradiation as a quarantine treatment for Florida grapefruit infested with Caribbean fruit fly, *Anastrepha suspensa* (Loew). *Proceedings of the Florida State Horticultural Society*, 100: 5–7.

Comment [AMJ3]: Leave only Medfly references. Add Follett reference provided by Pat Gomes.

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