



Food and Agriculture
Organization of the
United Nations



International
Plant Protection
Convention

INTERNATIONAL STANDARD FOR PHYTOSANITARY MEASURES 28

PHYTOSANITARY TREATMENT

ISPM 28
ANNEX 32

ENG

PT 32: Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya*

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ISPM 28

Phytosanitary treatments for regulated pests

PT 32: Vapour heat treatment for *Bactrocera dorsalis* on *Carica papaya*

Adopted 2018; published 2018

Scope of the treatment

This treatment describes the vapour heat treatment of fruit of *Carica papaya* to result in the mortality of eggs and larvae (all instars) of *Bactrocera dorsalis* at the stated efficacy¹.

Treatment description

Name of treatment	Vapour heat treatment for <i>Bactrocera dorsalis</i> on <i>Carica papaya</i>
Active ingredient	n/a
Treatment type	Physical (vapour heat)
Target pest	<i>Bactrocera dorsalis</i> (Hendel, 1912) (Diptera: Tephritidae)
Target regulated articles	Fruit of <i>Carica papaya</i>

Treatment schedule

Exposure in a vapour heat chamber:

- with air temperature increasing over a minimum of three hours from room temperature to 47 °C or above at a maximum of 80% relative humidity
- with air temperature then held at 47 °C or above at a minimum of 90% relative humidity, during which time all fruit within the chamber maintains a core temperature of 46 °C or above for a minimum of 70 minutes.

After treatment the fruit should not be exposed to accelerated cooling, for example by water or forced air.

There is 95% confidence that the treatment according to this schedule kills not less than 99.9841% of eggs and larvae of *Bactrocera dorsalis*.

Other relevant information

In evaluating this treatment the Technical Panel on Phytosanitary Treatments considered issues associated with temperature regimes and thermal conditioning, taking into account the work of Hallman and Mangan (1997).

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 prior to contracting parties approving 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.

This schedule was based on the work of Santos (1996) and the BPI-PQS and JICA cooperative study (1988), the latter identifying the egg stage of *B. dorsalis* as the most thermotolerant. The fruit crop used to develop the schedule was the ‘Solo’ cultivar of *C. papaya*.

The air humidity is lower at the beginning of the treatment to prevent condensation on the fruit and hence maintain fruit quality.

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>.

BPI-PQS & JICA. 1988. *Vapour heat treatment of papaya for oriental fruit flies disinfestation and fruit quality*. A joint report by the Japan International Cooperation Agency (JICA) and the Plant Quarantine Service Bureau of Plant Industry (BPI-PQS). Manila, Department of Agriculture Bureau of Plant Industry. 58 pp.

Hallman, G.J. & Mangan, R.L. 1997. Concerns with temperature quarantine treatment research. In: G.L. Obenauf, ed. *Proceedings of the 1997 Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reduction*, San Diego, CA, 3–5 November 2017, pp. 79-1–79-4. Fresno, CA, Methyl Bromide Alternatives Outreach. Available at <https://www.mbao.org/static/docs/confs/1997-sandiego/papers/079hallman.pdf> (last accessed 1 September 2017).

Santos, W. 1996. *Confirmatory test of vapour heat treatment of Solo papaya against oriental fruit fly (Dacus dorsalis Hendel)*. Pampanga Agricultural College, Manila. (Master’s thesis)

Publication history

This is not an official part of the standard

2009 *Vapour heat treatment for Bactrocera dorsalis on Carica papaya var. ‘Solo’* submitted.

2010-07 Technical Panel on Phytosanitary Treatments (TPPT) reviewed treatment and requested additional information.

2012-05 Standards Committee (SC) noted the treatment was pending submission of data.

2012-12 TPPT requested additional information.

2013-07 TPPT reviewed Submitter response and recommended to SC for consultation.

2013-09 TPPT approved treatment schedule (virtual meeting).

2014-02 SC approved draft treatment for consultation via e-decision (2014_eSC_May_03).

2014-07 First consultation.

2015-11 SC assigned the status “pending”.

2016-07 Modified by Treatment Lead in response to consultation comments.

2016-09 TPPT meeting requested additional data or studies.

2016-11 SC noted the change in the title.

2017-03 Submitter provided additional information.

2017-07 TPPT meeting revised draft text based on additional information from the Submitter and recent research results.

2017-10 SC approved the draft treatment for adoption by CPM, via e-decision (2017_eSC_Nov_07).

2018-04 CPM-13 adopted the phytosanitary treatment.

ISPM 28. Annex 32. *Vapour heat treatment for Bactrocera dorsalis on Carica papaya* (2018). Rome, IPPC, FAO.

Publication history last updated: 2018-05.

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IPPC

The International Plant Protection Convention (IPPC) is an international plant health agreement that aims to protect cultivated and wild plants by preventing the introduction and spread of pests. International travel and trade are greater than ever before. As people and commodities move around the world, organisms that present risks to plants travel with them.

Organization

- ◆ There are over 180 contracting parties to the IPPC.
- ◆ Each contracting party has a national plant protection organization (NPPO) and an Official IPPC contact point.
- ◆ Nine regional plant protection organizations (RPPOs) work to facilitate the implementation of the IPPC in countries.
- ◆ IPPC liaises with relevant international organizations to help build regional and national capacities.
- ◆ The Secretariat is provided by the Food and Agriculture Organization of the United Nations (FAO).

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