



Food and Agriculture
Organization of the
United Nations



International
Plant Protection
Convention

PT 34:
Cold treatment
for *Ceratitis capitata* on
Prunus avium, *Prunus salicina*
and *Prunus persica*

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ISPM 28

Phytosanitary treatments for regulated pests

PT 34: Cold treatment for *Ceratitis capitata* on *Prunus avium*, *Prunus salicina* and *Prunus persica*

Adopted 2021; published 2021

Scope of the treatment

This treatment describes the cold treatment of fruit of *Prunus avium* (cherry), *Prunus salicina* (Japanese plum) and *Prunus persica* (peach and nectarine) to result in the mortality of eggs and larvae of *Ceratitis capitata* at the stated efficacy.¹

Treatment description

Name of treatment	Cold treatment for <i>Ceratitis capitata</i> on <i>Prunus avium</i> , <i>Prunus salicina</i> and <i>Prunus persica</i>
Active ingredient	n/a
Treatment type	Physical (cold)
Target pest	<i>Ceratitis capitata</i> (Wiedemann, 1824) (Diptera: Tephritidae)
Target regulated articles	Fruit of <i>Prunus avium</i> (cherry), <i>Prunus salicina</i> (Japanese plum) and <i>Prunus persica</i> (peach and nectarine)

Treatment schedules

Schedule 1: 1 °C or below for 16 continuous days

For *Prunus avium* there is 95% confidence that the treatment according to this schedule kills not less than 99.9979% of eggs and larvae of *Ceratitis capitata*.

For *Prunus salicina* there is 95% confidence that the treatment according to this schedule kills not less than 99.9984% of eggs and larvae of *Ceratitis capitata*.

For *Prunus persica* there is 95% confidence that the treatment according to this schedule kills not less than 99.9983% of eggs and larvae of *Ceratitis capitata*.

Schedule 2: 3 °C or below for 20 continuous days

For *Prunus avium* there is 95% confidence that the treatment according to this schedule kills not less than 99.9982% of eggs and larvae of *Ceratitis capitata*.

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.

For *Prunus salicina* there is 95% confidence that the treatment according to this schedule kills not less than 99.9978% of eggs and larvae of *Ceratitis capitata*.

For *Prunus persica* there is 95% confidence that the treatment according to this schedule kills not less than 99.9986% of eggs and larvae of *Ceratitis capitata*.

For both schedules, the fruit must reach the treatment temperature before treatment exposure time commences. The fruit core temperature should be monitored and recorded, and the temperature should not exceed the stated level throughout the duration of the treatment.

This treatment should be applied in accordance with the requirements of ISPM 42 (*Requirements for the use of temperature treatments as phytosanitary measures*).

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).

Schedules 1 and 2 were based on the work of De Lima (2011) and developed using failure to pupariate as the measure of mortality.

The efficacy of schedule 1 was calculated based on the following estimated numbers of treated *Ceratitis capitata* with no survivors:

- for *Prunus avium*: 143 810
- for *Prunus salicina*: 185 646
- for *Prunus persica*: 174 710.

The efficacy of schedule 2 was calculated based on the following estimated numbers of treated *Ceratitis capitata* with no survivors:

- for *Prunus avium*: 163 906
- for *Prunus salicina*: 133 798
- for *Prunus persica*: 218 121.

Schedules 1 and 2 were developed using the following commodities and cultivars:

- *Prunus avium* (cherry) (cultivars ‘Sweetheart’ and ‘Lapin’)
- *Prunus salicina* (Japanese plum) (cultivars ‘Angelino’ and ‘Tegan Blue’)
- *Prunus persica* (peach) (cultivars ‘Snow King’ and ‘Zee Lady’)
- *Prunus persica* var. *nectarina* (nectarine) (cultivars ‘Arctic Snow’ and ‘August Red’).

In this treatment, *Prunus persica* includes all cultivars and varieties, including nectarines (Vendramin *et al.*, 2014).

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>.

De Lima, C.P.F. 2011. *Cold treatment and methyl bromide fumigation of Australian cherries, peaches, nectarines and plums (8 cultivars) infested with eggs and larvae of the Mediterranean fruit fly (Ceratitis capitata Wiedemann) Diptera: Tephritidae*. South Perth, Australia, Department of Agriculture and Food Western Australia. 420 pp.

Hallman, G.J. & Mangan, R.L. 1997. Concerns with temperature quarantine treatment research. In G.L. Obenauf, ed. *Proceedings of the Annual International Research Conference on Methyl*

Bromide Alternatives and Emissions Reduction. San Diego, USA, 3–5 November 1997, pp. 79-1–79-4.

Vendramin, E., Pea, G., Dondini, L., Pacheco, I., Dettori, MT., Gazza, L., Scalabrin, S., Strozzi, F., Tartarini, S., Bassi, D., Verde, I. & Rossini, L. 2014. A unique mutation in a MYB gene cosegregates with the nectarine phenotype in peach. *PLoS ONE*, 9(3): e90574 [online]. [Cited 27 November 2020]. <https://doi.org/10.1371/journal.pone.0090574>

Publication history

This is not an official part of the standard

2017-06 Treatment submitted in response to 2017-02 call for treatments (*Cold treatment of Australian stone fruit against Mediterranean fruit fly and Queensland fruit fly*).

2017-10 Technical Panel on Phytosanitary Treatments (TPPT) reviewed the submission (virtual meeting).

2018-05 Standards Committee (SC) added topic *Cold treatment of stone fruit against Ceratitis capitata* (2017-022A) to the TPPT work programme.

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).

2019-03 SC approved the draft for consultation via e-decision (2019_eSC_May_08).

2019-07 First consultation.

2020-02 TPPT reviewed the responses to consultation comments and the draft and recommended it to the SC for approval for second consultation.

2020-03 TPPT finalized the responses to consultation comments via e-forum (2020_eTPPT_Feb_01).

2020-04 SC approved the responses to comments and the draft for second consultation via e-decision (2020_eSC_May_13).

2020-07 Second consultation.

2020-11 TPPT meeting reviewed and recommended to the SC for approval for adoption by the CPM.

2021-03 CPM-15 adopted the phytosanitary treatment.

ISPM 28. Annex 34. *Cold treatment for Ceratitis capitata on Prunus avium, Prunus salicina and Prunus persica* (2021). Rome, IPPC, FAO.

Publication history last updated: 2021-04

IPPC

The International Plant Protection Convention (IPPC) is an international plant health agreement that aims to protect global plant resources and facilitate safe trade.

The IPPC vision is that all countries have the capacity to implement harmonized measures to prevent pest introductions and spread, and minimize the impacts of pests on food security, trade, economic growth, and the environment.

Organization

- ◆ There are over 180 IPPC contracting parties.
- ◆ Each contracting party has a national plant protection organization (NPPO) and an Official IPPC contact point.
- ◆ 10 regional plant protection organizations (RPPOs) have been established to coordinate NPPOs in various regions of the world.
- ◆ 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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