

[Please Review document review. Review title: 2021 Second Consultation: Draft PT for Vapour heat - modified atmosphere treatment for *Cydia pomonella* and *Grapholita molesta*. Document title: 2017-037038\_Draft\_PT\_Vapour\_MA\_C\_pomonella\_G\_molesta\_2021-03-09.docx]

**[1] DRAFT ANNEX TO ISPM 28: Vapour heat–modified atmosphere treatment for *Cydia pomonella* and *Grapholita molesta* on *Malus pumila* and *Prunus persica* (2017-037 and 2017-038)**

**[2] Status box**

[3] This is not an official part of the annex to the standard and it will be modified by the IPPC Secretariat after adoption.	
[4] <b>Date of this document</b>	[5] 2021-02-15
[6] <b>Document category</b>	[7] Draft annex to ISPM 28
[8] <b>Current document stage</b>	[9] To second consultation
[10] <b>Major stages</b>	<p>[11] 2017-12 Topics CATTs (Controlled Atmosphere/Temperature Treatment System) treatments against codling moth (<i>Cydia pomonella</i>) and western cherry fruit fly (<i>Rhagoletis indifferens</i>) in cherry (2017-037) and CATTs (Controlled Atmosphere/Temperature Treatment System) treatments against codling moth (<i>Cydia pomonella</i>) and oriental fruit moth (<i>Grapholita molesta</i>) in apple (2017-038) submitted in response to the 2017-02 call for treatments.</p> <p>[12] 2018-06 Technical Panel on Phytosanitary Treatments (TPPT) reviewed the submissions and requested further information from submitter.</p> <p>[13] 2018-11 SC added the topics to the TPPT work programme with priority 3.</p> <p>[14] 2019-07 TPPT discussed and merged the topics 2017-037 and 2017-038 (but excluding western cherry fruit fly (<i>Rhagoletis indifferens</i>)), revised the draft and recommended it to the SC for approval for consultation.</p> <p>[15] 2020-02 SC approved for first consultation via e-decision (2020_eSC_May_10).</p> <p>[16] 2020-07 First consultation.</p> <p>[17] 2020-10 TPPT meeting reviewed the draft, approved the responses to consultation comments and recommended the draft for second consultation.</p> <p>[18] 2021-03 SC approved for second consultation via e-decision (2021_eSC_May_11).</p>
[19] <b>Treatment Lead</b>	[20] 2018-06 Michael ORMSBY (NZ)
[21] <b>Notes</b>	[22] 2020-02 Edited [23] 2021-02 Edited

**[24] Scope of the treatment**

[25] This treatment describes the vapour heat treatment under modified atmosphere of fruit of *Malus pumila* and *Prunus persica* to result in the mortality of eggs and larvae of *Cydia pomonella* and *Grapholita molesta* at the stated efficacy.<sup>1</sup>

[26]<sup>1</sup> 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.

## [27] Treatment description

[28] Name of treatment	Vapour heat–modified atmosphere treatment for <i>Cydia pomonella</i> and <i>Grapholita molesta</i> on <i>Malus pumila</i> and <i>Prunus persica</i>
[29] Active ingredient	n/a
[30] Treatment type	Physical (vapour heat) and modified atmosphere
[31] Target pests	<i>Cydia pomonella</i> (Linnaeus, 1758) (Lepidoptera: Tortricidae) and <i>Grapholita molesta</i> (Busck, 1916) (Lepidoptera: Tortricidae)
[32] Target regulated articles	Fruit of <i>Malus pumila</i> (apple) and <i>Prunus persica</i> (peach and nectarine)

## [33] Treatment schedule

[34] Exposure in a vapour heat and modified atmosphere chamber:

- [35] with air temperature held at 45 °C or above;
- [36] in a normal atmosphere with the concentration of oxygen (O<sub>2</sub>) reduced to 1% or below, the concentration of carbon dioxide (CO<sub>2</sub>) raised to 15% ± 1%, and the balance maintained with added nitrogen (N<sub>2</sub>);
- [37] to reach a fruit core temperature of 44.5 °C or above within not more than 2.5 hours;
- [38] to maintain a fruit core temperature of 44.5 °C or above and relative humidity 90% or above for at least 30 minutes.

[39] There is 95% confidence that the treatment according to this schedule kills not less than 99.9884% of eggs and larvae of *Cydia pomonella* and *Grapholita molesta*.

## [40] Other relevant information

[41] The Technical Panel on Phytosanitary Treatments (TPPT) based its evaluation of this treatment on the research reported by Neven, Rehfield-Ray & Obenland (2006), which determined the efficacy of vapour heat and modified atmosphere on *Cydia pomonella* and *Grapholita molesta* in peaches and nectarines, and Neven and Rehfield-Ray (2006), which determined the efficacy of vapour heat and modified atmosphere on *Cydia pomonella* and *Grapholita molesta* in apples. The TPPT also considered information on the effect of vapour heat and modified atmosphere on *Cydia pomonella* in Neven and Hansen (2010) and Neven, Lehrman & Hansen (2014).

[42] The efficacy of this schedule was calculated based on a total of 25 882 fourth- and fifth-instar larvae of *Cydia pomonella* treated with no survivors; the control survival was 89.6%.

[43] The air humidity is lower at the beginning of the treatment to prevent condensation on the fruit and hence maintain fruit quality. To minimize effects on commodity quality, users should refer to Neven & Rehfield-Ray (2006) and Neven, Rehfield-Ray & Obenland (2006).

## [44] References

- [45] 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>.
- [46] Neven, L.G. & Hansen, L.D. 2010. Effects of temperature and controlled atmospheres on codling moth metabolism. *Annals of the Entomological Society of America*, 103: 418–423.
- [47] Neven, L.G., Lehrman, N.J. & Hansen, L.D. 2014. Effects of temperature and modified atmospheres on diapausing 5th instar codling moth metabolism. *Journal of Thermal Biology*, 42: 9–14.

- [48] **Neven, L.G. & Rehfield-Ray, L.** 2006. Confirmation and efficacy tests against codling moth and oriental fruit moth in apples using combination heat and controlled atmosphere treatments. *Journal of Economic Entomology*, 99: 1620–1627.
- [49] **Neven, L.G., Rehfield-Ray, L.M. & Obenland, D.** 2006. Confirmation and efficacy tests against codling moth and oriental fruit moth in peaches and nectarines using combination heat and controlled atmosphere treatments. *Journal of Economic Entomology*, 99: 1610–1619.