



**2010-106: Draft Annex to ISPM 28:2007 - Vapour heat treatment for *Ceratitits capitata* on *Mangifera indica***

Comm no.	Para no.	Comment type	Comment	Explanation	Country
1.	G	Substantive	I support the document as it is and I have no comments		Singapore, Lao People's Democratic Republic, Canada, Thailand, Nepal, Barbados, Ghana, Belize, Australia
2.	G	Substantive		To allow the standard to suit its purpose, while treatment specifications have been mentioned, it is recommended that the standard also include a section on those situations that make a treatment invalid (eg one of the probe fruit struggles to reach the target temperature and the treatment time has gone over 3 hours.) The standard may also consider a section on pre-treatment activities (thermal mapping to determine cold spots, thermo-tolerance studies etc) posing as a reminder/check so that all the work needed to be done prior is done and finalized as they are not considered in the current draft. Those details will also link in well when contracting parties develop their regulations for the complete confidence required by importing countries.	New Zealand
3.	G	Substantive	<u>Japan appreciates and supports development of phytosanitary treatments as international standards that can be used by a wide range of countries. With the understanding that the standard treatments should meet the requirements described in section 3 of ISPM 28, especially versatility of the treatment e.g. applicable to a wide range of countries, the proposed treatment schedule needs to be reviewed and verified taking into account the possible variation in heat tolerance of fruit fly population in different regions. In this context, available research data supporting existing treatment schedules should be collected from</u>	According to the hot immersion test data submitted by the exporting countries when requesting export of their products to Japan, there is difference in Lethal time for 99% mortality (LT99) for all stages of <i>B. cucurbitae</i> between two countries. This result shows possible difference between fruit fly populations in terms of heat tolerance. LT99	Japan

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			<a href="#">countries where <i>C. capitata</i> is present in order to verify that the proposed treatment schedule achieves the stated efficacy in a wide range of countries. For this purpose, Japan is willing to provide the IPPC Secretariat with available research data which were submitted by exporting countries, subject to the approval of these countries. In addition, target regulated articles should be specified at cultivar level.</a>	of <i>B. cucurbitae</i> after hot water immersion at 45°C is as follows. LT99 of egg is 36.97 (country A) and 76.94 (Country B). LT99 of 1st instar is 30.98 (country A) and 63.31 (country B). LT99 of 2nd instar is 28.40 (country A) and 44.35 (country B). LT99 of 3rd instar is 12.35 (country A) and 15.55 (country B). LT99 is recalculated based on the raw data by Japan. With regard to differences in fruit variety, Yoshinaga et al. (2009) and Omura et al. (2014) suggested difference in mango variety had an effect on the mortality rate in vapour heat treatment. References: Masakuni Yoshinaga, Seiki Masaki and Toshiyuki Dohino. 2009. Vapor heat mortality tests on the eggs of the oriental fruit fly, <i>Bactrocera dorsalis</i> , infesting different sizes and varieties of fresh mango. Res. Bull. Pl. Prot. Japan No. 45: 41-47 Kazutaka Omura, Toshiyuki Dohino, Masahiro Tanno, Isao Miyazaki and Norihito Suzuki. 2014. Vapor Heat Mortality Tests on the Eggs of Oriental Fruit Fly, <i>Bactrocera dorsalis</i> , Infesting Different Fruit Shape of Fresh Mango. Res. Bull. Pl. Prot. Japan No. 50 : 1 -8	
4.	G	Technical		In case of mango, the value of ED may differ depending on the variety. Tests for various varieties should be conducted and the result of the tests should be noted in the references.	Korea, Republic of, NEPPO
5.	1	Editorial	<b>Draft Annex to ISPM 28:2007: <del>v</del>Vapour heat treatment for <i>Ceratitis capitata</i> on <del>M</del><i>Mangifera indica</i> (2010-106)</b>	"Vapour" and "Mangifera" with a capital.	EPPO, European Union, Georgia, Serbia
6.	1	Editorial	<b>Draft Annex to ISPM 28:2007: vapour heat treatment for <i>Ceratitis capitata</i> on <del>M</del><i>mangifera indica</i> (2010-106)</b>	Editorial	United States of America, Mexico

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7.	1	Translation	<b>Draft Annex to ISPM 28:2007: vapour heat treatment for <i>Ceratitis capitata</i> on <i>mangifera indica</i> (2010-106)</b>	"vapour heat treatment for <i>Ceratitis capitata</i> " should be translated into Spanish as "tratamiento con vapor caliente contra <i>Ceratitis capitata</i> "	OIRSA
8.	4	Editorial	This treatment comprises the vapour heat treatment of fruit of <i>Mangifera indica</i> to result in the mortality of eggs and larvae (of all ages) of <i>Ceratitis capitata</i> ( <del>Mediterranean fruit fly</del> ) at the stated efficacy <sup>1</sup> .	Edit. The Secretariat should ensure that all treatments not include the common name because common names are varied across regions and across languages. In addition, common names have not been included in adopted standards.	United States of America
9.	4	Technical	This treatment comprises the vapour heat treatment of fruit of <i>Mangifera indica</i> to result in the mortality of eggs and larvae (of all <del>instars</del> ages) of <i>Ceratitis capitata</i> (Mediterranean fruit fly) at the stated efficacy <sup>1</sup> .	More technically correct	United States of America, Mexico
10.	4	Translation	This treatment comprises the vapour heat treatment of fruit of <i>Mangifera indica</i> to result in the mortality of eggs and larvae (of all ages) of <i>Ceratitis capitata</i> (Mediterranean fruit fly) at the stated efficacy <sup>1</sup> .	"This treatment comprises the vapour heat treatment of fruit of <i>Mangifera indica</i> to result in the mortality of eggs and larvae (of all ages) of <i>Ceratitis capitata</i> (Mediterranean fruit fly) at the stated efficacy." Should be translated into Spanish as "Este tratamiento consiste en el tratamiento con vapor caliente a frutos de <i>Mangifera indica</i> para provocar la mortalidad de los huevos y larvas (de todas las edades) de <i>Ceratitis capitata</i> (mosca mediterránea de la fruta) con el nivel de eficacia indicado."	OIRSA
11.	8	Translation	<b>Treatment type</b> Physical (vapour heat)	"Treatment type Physical (vapour heat)" should be translated into Spanish as "Tipo de tratamiento Físico (aplicación de vapor caliente)."	OIRSA
12.	9	Editorial	<b>Target pest</b> <i>Ceratitis capitata</i> (Wiedemann)(Diptera: Tephritidae)( <del>Mediterranean fruit fly</del> )	Common name already given in paragraph [4].	EPPO, European Union, Georgia, Serbia
13.	9	Editorial	<b>Target pest</b> <i>Ceratitis capitata</i> (Wiedemann)(Diptera: Tephritidae)( <del>Mediterranean fruit fly</del> )	Edit	United States of America
14.	13	Editorial	_ at a minimum of 95% relative humidity	Dash missing.	EPPO, European

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					Union, Georgia, Serbia
15.	13	Editorial	<ul style="list-style-type: none"> <li>at a minimum of 95% relative humidity<sub>1</sub></li> </ul>	For better understanding	OIRSA
16.	14	Editorial	- <u>with</u> to air temperature increasing from room temperature to 47 °C	1) Dash missing. 2) "Exposure to..." (cf. PT 15, annex 15 of ISPM 28).	EPPO, European Union, Georgia, Serbia
17.	14	Editorial	<ul style="list-style-type: none"> <li>with air temperature increasing from room temperature to 47 °C<sub>1</sub></li> </ul>	For better understanding	OIRSA
18.	14	Substantive	with air temperature <u>???</u> increasing from room temperature to 47 °C	VHT chanber temperature. Referring to iar temperature may be ambiguous. Also, this air temp might not translate to all VHT apparatus. Horizontal or vertical airflow VHT machines may differ in external vs internal fruit pulp ramp up temps. Might be better to refer to minimum ramp up times or temps, or furit pulp temp only.	New Zealand
19.	15	Editorial	- <u>for</u> at least two hours or until fruit core temperature reaches 46.5 °C	1) Dash missing. 2) Or "- for at least two hours, until..."? (cf. PT 15, annex 15 of ISPM 28). The meaning of the two sentences is slightly different.	EPPO, European Union, Georgia, Serbia
20.	15	Editorial	<ul style="list-style-type: none"> <li>for at least two hours or until fruit core temperature reaches 46.5 °C<sub>1</sub></li> </ul>	For better understanding	OIRSA
21.	15	Substantive	for at least two hours or until fruit core <u>???</u> temperature reaches 46.5 °C	Consistency between use ofg core and pulp temp?? - Why do we also have to include a target air temp when teh fruuit core temp is the main target temp we are interested in ?? Prefer to have the sentence to read : with air temperature increasing from room temperature until the fruit core reaches 46.5C .... to avoid confusion especially if countries choose to refer to both as target temperatures (one for chamber and one for the fruit core) and the fact that treatments should perform strictly on those temps. - The air chamber temp can also be more that 47C if it is a full load of fruits bigger than mango	New Zealand

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				adn airchamber temp tehn is used against the treatment instead of the fruit core temperature	
22.	15	Technical	<del>for at least two hours or</del> until fruit core temperature reaches 46.5 °C	The hot steam can reach the temperature in spending more or less time. What is important in treatment is that the temperature at the center of the fruit reaches 46.5 °C.	COSAVE, Uruguay, Chile, Brazil, Peru, Argentina
23.	16	Editorial	_ followed by ten minutes at a minimum of 95% relative humidity in an air temperature of 47 °C and with fruit pulp temperature at a minimum of 46.5 °C (seed surface of largest fruit).	Dash missing.	EPPO, European Union, Georgia, Serbia
24.	16	Editorial	<ul style="list-style-type: none"> <li>followed by ten minutes at a minimum of 95% relative humidity in an air temperature of 47 °C and with fruit pulp temperature at a minimum of 46.5 °C (seed surface of largest fruit).</li> </ul>	For better understanding	OIRSA
25.	16	Substantive	<p>followed by ten minutes at a minimum of 95% relative humidity in an air temperature of 47 °C and with fruit pulp temperature at a minimum of 46.5 °C (seed surface of largest fruit).</p> <p><u>Delete "in an air temperature of 47 C"; or change "air temperature" to "minimum air temperature"</u></p> <p><u>Ten minutes is too short.</u></p>	1.It is very difficult for fruit pulp temperature high up to 46.5 C under the air temperature of 47 C. 2.Ten minutes is too short.	China
26.	16	Substantive	followed by ten minutes at a minimum of 95% relative humidity in an air temperature of 47 °C and with fruit pulp temperature at a minimum of 46.5 °C (seed surface of largest fruit).	It is considered that the 47C air temperature might bnot always be teh same as the treatment progresses. It often rises too.	New Zealand
27.	16	Technical	followed by <del>thirty ten</del> minutes at a minimum of 95% relative humidity in an air temperature of 47 °C and with fruit pulp temperature at a minimum of 46.5 °C (seed surface of largest fruit).	The efficacy of treatment of 10min of 46.5 C treatment could not guarantee the phytosanitary security.	China
28.	17	Substantive	Recording interval is five minutes.?? Once the treatment is complete fruits are hydro-cooled in a shower ??of water to reach ambient temperatures in less than 40 minutes.	Recording... This should be in other relevant information cooling .... Type of cooling should not be the consideration as air cooling may also be possible in 40 mins. The	New Zealand

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				specification may exclude the use of some VHT machines which can achieve the same treatment parameters	
29.	17	Technical	Recording interval is <del>one five</del> minutes. Once the treatment is complete fruits are hydro-cooled in a shower of water to reach ambient temperatures in less than 40 minutes.	5 minutes recording interval is too large for 10 minutes duration.	China
30.	17	Technical	Recording interval is five minutes. Once the treatment is complete fruits are hydro-cooled in a shower of water to reach ambient temperatures <del>in less than 40 minutes.</del>	What is the ambient temperature to be considered ??? Inside or outside the packinghouse? "In less than 40 minutes" is proposed to be deleted once it is not relevant for the treatment.	COSAVE, Uruguay, Chile, Brazil, Peru, Argentina
31.	18	Editorial	The efficacy is: effective dose (ED) <sub>99,9968</sub> at the 95% confidence level.	For better understanding	OIRSA
32.	18	Translation	The efficacy is effective dose (ED) <sub>99,9968</sub> at the 95% confidence level.	"The efficacy is effective dose (ED) <sub>99,9968</sub> at the 95% confidence level" should be translated as "La eficacia es: dosis efectiva (DE) <sub>99,9968</sub> a un nivel de confianza de 95 %."	OIRSA
33.	19	Substantive	<b>Other relevant information</b>  <u>Specifications on the accuracy and placement of temperature sensing devices in the largest fruit and at cool spots within the VHT apparatus might be required.</u>	Could b considered for addition.	New Zealand