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| **Cold treatment for *Ceratitis capitata* on *Citrus sinensis* (2007-206A)** | | | |
|  | **Contracting Party** | **Formal objection and Explanation 2014** | **SC Responses** |
| 24 | China | China believes that the conditions for adopting <Cold treatment for *Ceratitis capitata* on *Citrus sinensis* > (CPM 2014/03\_04) are not perfectly satisfied and formally objects to adopting the draft standard. The reasons are as follows:   1. High security of phytosanitary treatment requires a large number of studies and test data. The draft standard is bas 2. ed on 4 references, among which only 3 are drawn from laboratory studies. And one of the major bases, i.e. the study by De Lima *et al.* (2007) is less rigorous and insufficient in data record and test design, which can hardly support the cold treatment standard. | The data and other information submitted by the NPPO for the evaluation of efficacy, feasibility and applicability of these treatments were analyzed by the TPPT and found to fulfill all the requirements stated by ISPM 28 regarding sufficiency of data and requirements for scientific rigour. |
| 25 | China | 2. The study of the cold treatment for *Ceratitis capitata* on *Citrus sinensis* by De Lima *et al*. (2007) demonstrates a treatment schedule of “2 ℃ or below for 18 continuous days”, while the study by Willink *et al.* (2007) supports the schedule of “2 ℃ or below for 21 continuous days”, which indicates that there could be a big difference of low temperature tolerance between different geographical populations of *Ceratitis capitata*. And hence it may incur high phytosanitary risk that the draft standard extrapolates the study findings from a specific geographical population of *Ceratitis capitata* to all the populations of the species worldwide. | The TPPT noted that different research methodologies may result in different, but valid treatment schedules. The TPPT considered a recent scientific study (see 2016-09 TPPT meeting report) undertaken to investigate possible differences in cold toleranceamong populations of *Ceratitis capitata* from geographically separate regions.  Based on the assessment of the findings, the TPPT concluded that there is no evidence to support there are significant differences in cold tolerance among populations of *C. capitata* and that comparisons between the treatment schedules mentioned in the objection (carried out with different research methodologies) do not provide evidence for differences in cold toleranceamong populations of *C. capitata*. Therefore this phytosanitary treatment fully meets the requirements set out in ISPM 28. |
| 26 | China | 3. As the bases for the draft standard, the studies by De Lima *et al*. (2007) and Willink *et al.* (2007) test only a few of cultivars while the difference of cultivars has not been taken into consideration. The extrapolation of the findings from a few cultivars to all the cultivars may incur phytosanitary risk. | The TPPT is unaware of evidence that substantiates cultivar and varietal differences in cold treatment efficacy in *Citrus* species. In addition, Willink et al., 2007 demonstrated the efficacy of the treatment schedule across four varieties of *C. paradisi* and found no significant differences in varietal responses. The TPPT concluded that this study demonstrates that there are no significant differences in varietal responses to cold treatments.  In accordance with ISPM 28 section 3.2.1, the TPPT accepts the treatment applicability at species level. Therefore this phytosanitary treatment fully meets the requirements set out in ISPM 28. |
| 27 | China | 4. The ISPM should provide clear and definite treatment schedules for the purpose of consistent adoption of the Plant Protection Organizations of different counties. The temperature requirements are the same (2℃ or below) in schedule 1 and schedule 3 in the draft standard, while the duration requirements are “18 continuous days” and “21 continuous days” respectively. Should the draft standard be approved, the Plant Protection Organizations of the contracting parties would be confused with the two different schedules of the same temperature, and dispute might arise between the Plant Protection Organizations of the importing and exporting countries. | . Phytosanitary treatments may provide treatment schedule options where different levels of efficacy are provided. |
| 28 | China | 5. The temperature requirements are the same in schedule 1 and schedule 3, the duration in schedule 1 is shorter than that in schedule 3, and hence the efficacy of schedule 3 should be better. However the ED value for schedule 1 is 99.9978, greater than that of 99.9917 for schedule 3 with the same cultivar “Valencia”, which constitutes an obvious logical error. Meanwhile, the ED value of schedule 3 is less than the scientific value of 99.9968, which will incur phytosanitary risk in practical application. | The efficacy level is directly related to the number of insects used in confirmatory trials when developing a treatment schedule. Therefore, the stated efficacy values are merely a reflection of the number of insects used in the different tests (see Couey and Chew, 1986[[1]](#endnote-1)). ISPM 28 only requires efficacy values to be stated and does not prescribe a specific threshold. |
| 29 | China | 6. For most fruit flies, usually the third instar is the most tolerant larva stage for low temperature. The second instar larvae of *Ceratitis capitata* were tested by De lima *et al*. (2007), the reliability of the tolerance needs to be validated. Especially, it deserves much attention that there is a broad difference between the test results in the references and the phytosanitary treatment requirements which has been proven to be effective by the practical application by the contracting parties. For that reason, the draft standard should be treated cautiously and further test is in need. | The TPPT re-examined the data from De Lima et al. (2007) and concluded that the difference in tolerance between second and third instar were extremely small. The TPPT noted that the study was highly robust and that it demonstrated that all life stages were killed after treatment application. |
| 30 | China | 7. Pre-cooling before treatment, temperature monitoring and recording during the treatment have a direct influence on the efficiency. The draft standard sets only the temperature and duration requirements for the treatment without illustrating the approach to meeting such requirements. The wording in the draft standard “Pre-cooling of the commodity to treatment temperature may be required” is ambiguous, and some important operational requirements such as temperature monitoring and recording are not addressed in the draft at all. Should the draft standard be approved, the ambiguous and incomplete operational requirements could render the treatment invalid. Considering the wide application and significant influence of the cold treatment worldwide, it is recommended that taking the example of setting the series of irradiation treatment standards, an comprehensive operational standard similar to < *Gidelines for the Use of Irradiation as a Phytosanitary Measure> (ISPM 18) be set in advance to standardize the operational requirements including pre-cooling, temperature monitoring and recording, and then proceed to specific cold treatment measures* | The TPPT considered that pre-cooling, temperature monitoring and recording are important operationally but are not part of the treatment schedule. NPPOs certifying the use of cold treatments should therefore ensure these operational issues are managed appropriately. Further guidance to NPPOs on these issues will be addressed by the drafting of the ISPM on requirements for the use of temperature treatments. Reference to pre-cooling has therefore been removed from the draft treatment schedule. |
| 31 | China | 8. China further maintains that the treatment standards differ from the conceptual standards. It has a direct relationship with the spread of pests infesting agricultural products and the achievement of the purpose and responsibility of the International Plant Protection Convention. The treatment standard approved by CPM should be based on sufficient test data or a large volume of the practical application of the treatment by the contracting parties. If the method concluded from a few tests was promoted globally in a form of ISPM, it would turn the contracting parties into trial sites of new methods and technologies and finally significantly increase the risk of pest spread. | The TPPT considers that the treatment submission conformed with ISPM 28 requirements, including the level of evidence provided. Therefore this phytosanitary treatment fully meets the requirements set out in ISPM 28. |
| 32 | Japan | Japan appreciates the extensive discussions and efforts of the SC and the TPPT in developing important phytosanitary treatments over the years.  Japan would like to express its formal objections with regards to this draft cold treatment because the schedule is not deemed to fulfil the requirements for phytosanitary treatment in section 3 of ISPM 28. Japan does not object to the treatment schedules proposed, insofar as they will be used in certain countries where research was conducted and they are well supported by research data and rationale for presenting the schedules. However Japan has concerns about the feasibility and applicability (especially versatility of the treatment e.g. application to a wide range of countries) of the above-mentioned four treatments proposed as international standards.  For the purpose of developing efficient phytosanitary treatments to be used as international standards by contracting countries that wish to use them, Japan suggests that the adoption of the said four standard treatments be suspended until the following points are reviewed.This cold treatment standard provides two different treatment schedules for a cultivar Valencia at the same temperature (Schedule 1: 2 °C for 18 days, Schedule 3: 2 °C for 21 days) based on different research results, De Lima *et al*. (2007) and Willink *et al.* (2007a and b) respectively (Refer to Table A).  According to Willink *et al*.(2007b) which is the basis for Schedule 3 (2 °C for 21 days), one larva survived on day 19 at 2 °C. This result suggests that schedule 1 is not applicable to a wide range of countries where *C. capita* is present, and for which in turn the schedules are lacking in versatility. Furthermore, two different treatment periods for the same target regulated article (cultivar) at the same treatment temperature may cause unnecessary confusion about which schedule should be applied by the NPPOs.  The summary of research submitted by the exporting countries to Japan as well as data referred to in the draft ISPMs (Table attached to this document) shows differences between fruit fly populations in terms of their cold hardiness. This is likely because there are notable differences in treatment days for the same target article at the same treatment temperature (5-7days). Japan suggested in the member consultation in 2009 that the differences between fruit fly populations in terms of cold hardiness possibly indicate tolerance (susceptibility) to cold treatment differs by origins. However, the TPPT concluded that “*while there were considered to be phenotypic differences (plasticity) induced by the environment and as a result of seasonal or geographical effects, it was not thought that this was a significant issue.”* (2010 TPPT Meeting Report) It has not been explained the rationale as to why the TPPT concluded the differences are not thought to be a significant issue in terms of effectiveness of phytosanitary treatment. Japan underlines the difference between fruit fly populations in terms of cold hardiness should be duly taken into account so that the treatments can achieve stated efficacy in any circumstances.  In addition, the proposed standard treatment on orange (CPM 2014/03\_04) seems to support the differences between fruit fly populations in terms of their cold hardiness because it presents different treatment schedules (18 days / 21 days) at the same temperature (2.0°C) based on the different results conducted in different countries. | The TPPT noted that different research methodologies may result in different, but valid treatment schedules. The TPPT considered a recent scientific study (see 2016-09 TPPT meeting report) undertaken to investigate possible differences in cold toleranceamong populations of *Ceratitis capitata* from geographically separate regions.  Based on the assessment of the findings, the TPPT concluded that there is no evidence to support there are significant differences in cold tolerance among populations of *C. capitata* and that comparisons between the treatment schedules mentioned in the objection (carried out with different research methodologies) do not provide evidence for differences in cold toleranceamong populations of *C. capitata*. Therefore this phytosanitary treatment fully meets the requirements set out in ISPM 28. |
| 33 | Japan | Suggestions for improvement to the draft ISPM  Japan would like to suggest that the said four standard treatments be reviewed while taking into account the following points, with the understanding that the standard treatment should be feasible and applicable to a wide range of countries without inviting any confusion in implementing them once they are adopted by the CPM.  1. It is requested that a treatment schedule which is the least restrictive measure available but is effective in disinfecting target pests in any circumstances be developed. It is also requested that available research data and existing treatment schedules used in many countries be collected. For this purpose, Japan is willing to provide available research data submitted by exporting countries to the IPPC Secretariat when requesting export of their products to Japan, subject to the approval of these countries. | The TPPT has considered the four treatment schedules and agreed that they fulfil the requirements in ISPM 28. The TPPT supports transparency and encourages treatment submitters to make data available to all IPPC contracting parties. |
| 34 | Japan | 2. More detailed information on the rationale and validity of presenting draft standard treatments made by the SC and TPPT should be available to the contracting countries for their scrutiny. | The TPPT and the IPPC Secretariat have taken steps to include more of the rationale and validity for the draft treatments to satisfy these suggestions. |
| 35 | Korea | According to Willink et al (2007b), one larva survived on day 19 at 2C, which does not support the Schedule 1 (2C for 18 days).  In addition, 2 different periods were suggested at the same temperature (2C) for the same commodity which may lead confusion and debate. Rep. of KOREA hopes, ISPMs are developed with through analysis to provide effective and least trade restricted schedules in harmonized way. | ]Initial acceptance of the schedule was based on unpublished data in addition to the studies by Willink *et al.* 2007 and Gastaminza *et al.* 2007 as part of the original submission. The additional data was included in the list of references for the proposed schedule.  Phytosanitary treatments may provide treatment schedule options where different levels of efficacy are provided. |

1. Couey, H.M., & V. Chew. 1986. Confidence limits and sample size in quarantine research. *J. Econ. Entomol*. 79: 887 – 890. [↑](#endnote-ref-1)