Submissions for topics for Standards and Implementation

1. General information

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| **Submission number** | 2021-0XX |
| **Title of Proposal** | Cold treatment of ‘Red Globe’ grape (Rhamnales:Vitaceae) for Drosophila suzukii (Diptera:Drosophilidae) |
| **Submitted by** | IPPC Contracting Party  China |
| **Submission supported by** | China |

1. Contact information

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1. Summary of proposal

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| **Summary of justification for the proposal** | The spotted wing drosophila, Drosophila suzukii Matsumura is a worldwide important pest and that has infested more than 60 plant species of berries and stone fruits, with economic losses of up to 100% reported in more than 30 countries in Asia, the Americas, and Europe. In order to develop a phytosanitary cold treatment measure for preventing the movement of this drosophila fly, cold tolerance of six immature life stages of D. suzukii was compared followed by time-mortality and large-scale confirmatory tests on the most tolerant stage in grape fruit. The research results showed that egg was the most cold-tolerant stage. The time–response test and large-scale confirmatory test suggested that a minimum of 11-d cold treatment at 0°C and 12-d at 2°C were recommended for disinfesting D. suzukii in grapes with efficacy of 99.9941 and 99.9948%, in order to provide postharvest pest control and quarantine security for international trade. |
| **Expected outcome of standard / implementation resource** | This standard will develop phytosanitary cold treatment against D. suzukii to promote the import and export of grapes all around the world.  This standard will determine the minimum temperature-time combination required for probit 9 mortality (a mortality of 99.9968%) of D. suzukii in ‘Red Globe’ grapes to ensure quarantine security.The minimal lethal time (LT) for cold treatment were 11 d (at 0°C) and 12 d (at 2°C), which resulted in the efficacy of 99.9941 and 99.9948% mortality of D, suzukii (95% confidence level (CL)), respectively. |
| **Contribution to filling gaps in the Framework for Standards and Implementation** | Drosophila suzukii Matsumura is a worldwide important pest of berries and stone fruits with soft skin. It is listed as quarantine pest by European and Mediterranean Plant Protection Organization (EPPO)，Australia and New Zealand，etc. But there is still no international standard for D. suzukii.  It is necessary to develop phytosanitary treatment against D. suzukii to promote and protect the international trade of soft skin fruit. |

1. Type of proposed material

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| **Proposed material** | Standards |
| **Type** | New ISPM or component to an existing ISPM  Appendix to ISPM 28 |

1. Literature review

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| **Literature review** | The spotted wing drosophila, Drosophila suzukii Matsumura is a worldwide important pest and that has infested more than 60 plant species of berries and stone fruits, with economic losses of up to 100% reported in more than 30 countries in Asia, the Americas, and Europe. It is listed as quarantine pest by European and Mediterranean Plant Protection Organization (EPPO), Australia and New Zealand，etc. In order to develop a phytosanitary cold treatment measure for preventing the movement of this drosophila fly, cold tolerance of six immature life stages of D. suzukii was compared followed by time-mortality and large-scale confirmatory tests on the most tolerant stage in grape fruit. Egg was defined as the most cold-tolerant stage by comparing the mortality of all the immature stages (egg, first, second, and third instars, early and late pupa) treated at 0 and 2°C. The minimal lethal time (LT) for 99.9968% mortality (95% confidence level [CL]) estimated by the probit model was 10.47 d at 0°C and 11.92 d at 2°C, respectively. Hence, 11 d (at 0°C) and 12 d (at 2°C) were chosen as the target time to conduct the confirmatory tests. No survivors were found among the estimated 50,385 and 57,366 treated eggs, which resulted in the efficacy of 99.9941 and 99.9948% mortality (95% CL) at 0 and 2°C, respectively. The study suggests a technical basis for cold disinfestation on D. suzukii in cage-infested ‘Red Globe’ (Vitis vinifera L.) grape, which could provide flexible phytosanitary treatment for control of D. suzukii in the international trade of grape. |

1. Criteria for justification and prioritization of proposed topics
   1. Core criteria

| **Core Criteria** | **Information provided by Submitter** |
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| **1. Contribution to the purpose of the IPPC as described in article I.1** | The spotted wing drosophila, Drosophila suzukii Matsumura is a worldwide important pest and that has infested more than 60 plant species of berries and stone fruits, with economic losses of up to 100% reported in more than 30 countries in Asia, the Americas, and Europe. Because of the high potential for spread and the serious economic damage it causes, D. suzukii is considered a quarantine pest by the European and Mediterranean PlantProtection Organization (EPPO), Comité de Sanidad Vegetal (COSAVE), the Eurasian Economic Union (EAEU), Jordan, Kazakhstan, Turkey, Morocco, and Mexico. The formulation of standards can promote the prevention and control of pests, reduce the spread and harm of pests, and ensure global agricultural security. |
| **2. Linkage to IPPC SOs and Organizational results demonstrated** | The formulation of standards on Phytosanitary treatment plays an important role in protecting plant resources from pests and promoting trade facilitation. This is closely related to the strategic objectives of IPPC. |
| **3. Feasibility of implementation at the global level** | Cold treatment has been studied and widely used as phytosanitary treatment in controlling immature stages of fruit flies and moths in various fresh fruits for many years. There are several cold treatment standards in ISPMs. Cold treatment has the characteristics of easy implementation, low technical complexity, strong implementation ability of NPPO and high correlation with multiple regionsClear identification of the problems that need to be resolved through the development of the standard or implementation resource. |
| **4. Clear identification of the problems that need to be resolved through the development of the standard or implementation resource** | D. suzukii has infested more than 60 plant species of berries and stone fruits, with economic losses of up to 100% reported in more than 30 countries in Asia, the Americas, and Europe. In general, the drosophila is only harmful to rotten fruits or damaged fruits, while the D. suzukii can lay eggs via serrated ovipositor under the skin of healthy ripened fruits. After hatching, the larvae move into the fruit pulp for feeding. Besides this, secondary infection by pathogens often results in fruit rotting, reduction of yield, and loss of marketability. Because of the high potential for spread and the serious economic damage it causes; it is necessary to develop phytosanitary cold treatment against D. suzukii to control of pests and ensure global agricultural security. |
| **5. Availability of, or possibility to collect, information in support of the proposed standard or implementation resource** | The research paper with the title of “Cold Disinfestation for ‘Red Globe’ Grape (Rhamnales: Vitaceae) Infested With Drosophila suzukii (Diptera: Drosophilidae)” has been published in the Journal of Insect Science (2020) 20(3): 11; 1–6. doi: 10.1093/jisesa/ieaa043 |

* 1. Supporting criteria

| **Supporting Criteria** | **Information provided by Submitter** |
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| **Practical** | 1. No, there isn’t a regional standard and/or implementation resource on the same topic already available and used by NPPOs, RPPOs or international organizations. 2. The institution proposing the standard is a research institution specializing in quarantine treatment research. The person in charge of the project has been engaged in phytosanitary treatment research for more than ten years and has expertise needed to develop the proposed standard. |
| **Economic** | 1. Soft skinned fruits such as cherry, blueberry, grape, peach, nectarine, etc. are all suitable hosts for D. suzukii. In China, grape is one of the four major fruits and cherry, blueberry, raspberry etc. are high-value fruits and the quantity of these fruits import -exported has gradually increased in recent years. In China, the value of protected plants is about hundreds of millions dollars a year. It is about billions of dollars a year all over the world. 2. The volume of new trade affected by the proposed standards will increase and the estimated value of trade will increase accordingly. |
| **Environmental** | Cold treatment could be used as a methyl bromide alternative for quarantine control of D. suzukii in fruits. This phytosanitary measure has no potential negative environmental consequences. |
| **Strategic** | One NPPO has requested it in China. Two or three repeated bilateral discussions are needed, as identified in the submission, which is the root cause of trade interruption or difficulty in starting new trade.The relevance and utility to developing countries are the same as those to developed countries.The proposed standard is applicable to a wide range of countries.The proposed standard is potential for the standard to be used as part of a systems approach for D. suzukii. Because D. suzukii is a widespread and harmful pest, need for this proposed standard is Urgent |