Submission form for topics for Standards and Implementation

*(Updated by the IPPC Secretariat 2018-04-27)*

Name of Country or Organization China

Introduction

In Accordance with CPM-13 decision, a combined call for topics for standards and tools for implementation is opened in 2018. IPPC contracting parties and RPPOs are invited to submit proposals for topics to be included as gaps in the Framework for Standards and Implementation for consideration to be put onto the IPPC work programme. Each submission should clearly define the problem needing resolution in sufficient detail to determine how it fits into the Framework for Standards and Implementation and the cost/benefit of the development of the standard or tool. Submitters are requested to consult the current IPPC Framework for Standards and Implementation (<https://www.ippc.int/en/publications/82439/>) to identify areas where the proposal can contribute.

Standards

This form covers submissions for new ISPMs, new components to an existing ISPM and revision or amendments to an ISPM, supplement, annex or appendix, including diagnostic protocols. Please note that a separate call for phytosanitary treatments (PTs) is made, more information on this call is available at <https://www.ippc.int/en/core-activities/standards-setting/calls-treatments/>.

Please refer to the IPPC Standard Setting Procedure Manual[[1]](#footnote-1) for an explanation of the hierarchy of terms for standards (technical area, topic and subject). The list of topics for IPPC standards adopted by the CPM is available at <https://www.ippc.int/core-activities/standards-setting/list-topics-ippc-standards>.

Implementation

This form covers submissions for new IPPC implementation resources for implementation of the Convention, ISPMs and CPM recommendations or for revisions to IPPC implementation resources. Please refer to the IPPC Framework for Standards and Implementation on implementation resources that have been adopted/developed, are under development or are planned to be developed.

Submission

This completed form should be submitted by the IPPC official contact point, preferably via e-mail, to the IPPC Secretariat (ippc@fao.org) no later than **31 August 2018**. Please use one form per topic.

An electronic version of this form is available at <https://www.ippc.int/en/core-activities/standards-and-implementation/call-for-topics-standards-and-implementation/>.

Save and submit the completed submission form as:
2018\_TOPIC\_*[Country or organization name – Proposed title of topic]*.docx.

 (Text in brackets given for explanatory purposes)

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| **Submission form for topics for Standards and Implementation** |
| 1. **Proposed by**: (Name of IPPC Official Contact Point)

P.R. China |
| 1. **Contact:** (Contact information of an individual able to clarify issues relating to this submission)

Name: Huijiao Lin Position and organization: Deputy Manager of Quality Department of Comprehensive Technology Service Centre, Huangpu Customs District P.R. CHINA Mailing address: No.17 Chuangye Road, Huangpu District, Guangzhou, 510730, P. R. China Phone: 0086-15920352386 Fax: 0086-20-82092156 E-mail: zjlab@hpciq.gov.cn, 15920352386@163.com  |
| 1. **Proposed Topic (Choose one box only)**

[√] Standard **(go to 4)** [\_\_] Implementation resource **(go to 5)** |

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| 1. **Standards**
	1. **Type of topic: (Choose one box only)**
 |
| A. New ISPM:[\_\_] Concept[\_\_] Pest specific[\_\_] Commodity specific[\_\_] Reference | B. New component to an existing ISPM:[\_\_] Supplement[\_\_] Annex[\_\_] Appendix[\_\_] Technical panel (technical area)[√] Diagnostic protocol (Pathogenic fungus of Bull’s-eye rot on apple) | C. Revision/Amendment of:[\_\_] ISPM[\_\_] Supplement[\_\_] Annex[\_\_] Appendix |
| **Draft specification:**  As agreed by CPM-7 (2012) and CPM-11 (2016), submissions in answer to the call for topics (except for draft diagnostic protocols, which are subject to additional criteria, see below) should be accompanied by a draft specification. Proposals for phytosanitary treatments are submitted using a different submission form in a separate call: <https://www.ippc.int/en/core-activities/standards-setting/calls-treatments/>.An annotated template for the draft specification for Standards is available on the IPP (<https://www.ippc.int/en/publications/81324/>) in English, French and Spanish. **(go to 6)** |

**OR**

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| 1. **Implementation**
	1. **Type of topic: (Choose one box only)**
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| 1. New implementation resource:

[\_\_] Guide (e.g. Manual)[\_\_] Training material (e.g. e-Learning)[\_\_] Awareness material[\_\_] Other (Please specify )  | 1. Revision of implementation resource

[\_\_] Guide (e.g. Manual)[\_\_] Training material (e.g. e-Learning)[\_\_] Awareness material[\_\_] Other (Please specify )  |
| * 1. Featured Convention articles, ISPMs and CPM recommendations in the proposed implementation resource

[\_\_] for Convention articles (Please specify ) [\_\_] for ISPM (Please specify ) [\_\_] for CPM Recommendation (Please specify )  |
| **Draft outline:**  Submissions for topics on implementation should be accompanied by a draft outline of implementation resource defining a scope and purpose, or a draft implementation resource. Commitment for financial/in-kind resources to support the development of the implementation resource may be included in the submission (non-obligatory).**(go to 6)** |

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| **6. Proposed title of document**ISPM27 DP: Pathogenic fungus of Bull’s-eye rot on apple（*Neofabraea* spp.） |
| **7. Proposed priority**  [√] 1 (high) [\_\_] 2 [\_\_] 3 [\_\_] 4 (low) Comments:Bull’s eye rot of apple is one of the most frequent and damaging postharvest decays in the Pacific Northwest region and also occurs in Europe and other apple growing areas (Kienholz 1951; Spotts 1990; de Jong *et al.* 2001). Four species of *Neofabraea* (Dermateaceae, Helotiales) have been associated with bull’s eye rot on apple, including *N. malicorticis*, *N. perennans*, *N. kienholzii* and *N. vagabunda* (synonym: *Phlyctema vagabunda*)(Kienholz 1939; Guthrie 1959; de Jong *et al.* 2001; Spotts *et al.* 2009; Johnston *et al.* 2014). It seems that bull’s eye rot pathogens are easier to be missed in plant quarantine for their long-term latent feature. Since 2009, AQSIQ (General Administration of Quality Supervision, Inspection and Quarantine of the People’s Republic of China) has sent out multiple phytosanitary caution announcements about the intercepting of bull’s eye rot on the imported apple fruits. With the thriving international fruit trade, unintentional transport of pests has become more and more threatening to the world fruit industry. Once bull’s eye rot pathogens have been introduced into new areas, it is difficult to control or eradicate them. Algeria, Ecuador, Peru and China have listed *N. malicorticis* (synonyms: *Pezicula malicorticis*, *Cryptosporiopsis curvispora*) in the official quarantine list, while USA, Canada and European Union also pay high attention to its spreading. The overall highlights the import quarantine efforts to prevent the spread of such harmful organisms, and underlined the need for reliable diagnostic tools for accurate and sensitive detection. It is imperative that a standard is established to envisage possible measures to prevent their further spread.Following are the main papers already published by proposer related to *Neofabraea* spp.:[1] **Lin H**, Jiang X, Yi J, *et al*. Molecular identification of *Neofabraea* species associated with bull’s-eye rot on apple using rolling-circle amplification of partial *EF-1α* sequence[J]. Canadian Journal of Microbiology, 2018, 64(1): 57-68.[2] **Lin H**, Wang W, Yi J, et al. Development of TaqMan probes real-time fluorescence PCR method for the rapid detection of the causal fungal agents of bull's-eye rot on apple (in Chinese) [J]. Plant Quarantine, 2016, 30(2):55-62.[3] **Lin H**, Wang W, Hu X, et al. Review on the taxonomic progress of the genus *Neofabraea* and its some important pathogenic species (in Chinese) [J]. Plant Quarantine, 2016, 30(1):1-8. |
| **8. Featured outcome of standard/implementation resource** The purpose of this proposed topic is to develop rapid detection techniques for monitoring bull’s eye rot pathogens in port quarantine and promote appropriate measures to prevent their further spread. |
| **9. Contribution to filling the gaps of the Framework for Standards and Implementation:** (2 lines max) Now there is no IPPC diagnostic protocol related to the disease of bull’s eye rot of apple, which is one of the most damaging postharvest decays of apple and pear. So it’s urgent to establish this standard. |
| **10. Summary of justification for the proposal** (2 lines max)The proposer has been studying pathogenic fungus of bull’s eye rot of apple since 2012, both strains and DNA are preserved, and morphological and molecular identification methods are established. |

**Criteria for justification and prioritization of proposed topics[[2]](#footnote-2):**

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| Submissions should address the applicable criteria for justification of the proposal (as listed below). Where possible, information in support of the justification and that may assist in the prioritization should be indicated. All core criteria must be addressed; supporting criteria should be addressed if applicable.Priority will be given to topics with the largest global impact. |
| **Core criteria (must provide information. It is expected that all submissions meet the following core****criteria)** |
| Contribution to the purpose of the IPPC as described in article I.1.This proposed topic could be conducive to monitoring bull’s eye rot pathogens in port quarantine and preventing their further spread. |
| Linkage to IPPC Strategic Objectives (SOs) and Organizational results demonstrated.The purpose of this proposed topic is linkage to sustainable production and trade facilitation. |
| Feasibility of implementation at the global level (consider ease of implementation, technical complexity, capacity of NPPO(s) to implement, relevance for more than one region).Morphological coupled with molecular identification method provides an ideal detection platform for the accurate identification of target organisms with high specificity, which has become a routine method for the rapid diagnosis of harmful organisms. |
| Clear identification of the problems that need to be resolved through the development of the standard or implementation resource.Development of reliable diagnostic tools for rapid and accurate identification of the pathogens at species level remains a priority for preventing the spread of bull’s eye rot of apple. |
| Availability of, or possibility to collect, information in support of the proposed standard or implementation resource (e.g. scientific, historical, technical information, experience).Based on the previous research work, both strains and DNA of bull’s eye rot pathogens are preserved, and morphological and molecular identification methods are established. |

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| **Supporting criteria (information may be provided, as appropriate):** |
| **Supporting criteria (Practical)**1. Is there a regional standard and/or implementation resource on the same topic already available and used by NPPOs, RPPOs or international organizations.
2. Availability of expertise needed to develop the proposed standard and/or implementation resource.
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| **Supporting criteria (Economic)**1. Estimated value of the plants protected.
2. Estimated value of trade including new trade opportunities affected by the proposed standard and/or implementation resource (e.g. volume of trade, value of trade, the percentage of Gross Domestic Product of this trade) if appropriate.
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| **Supporting criteria (Environmental)**1. Utility to reduce the potential negative environmental consequences of certain phytosanitary measures, for example reduction in global emissions for the protection of the ozone layer.
2. Utility in the management of non-indigenous species which are pests of plants (such as some invasive alien species).
3. Contribution to the protection of the environment, through the protection of wild flora, and their habitats and ecosystems, and of agricultural biodiversity.
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| **Supporting criteria (Strategic)**1. Extent of support for the proposed standard and/or implementation resource (e.g. one or more NPPOs or RPPOs have requested it, or one or more RPPOs have adopted a standard on the same topic).
2. Frequency with which the issue to be addressed, as identified in the submission emerges as a source of trade disruption (e.g. disputes or need for repeated bilateral discussions, number of times per year trade is disrupted).
3. Relevance and utility to developing countries.
4. Coverage (application to a wide range of countries/pests/commodities).
5. Complements other standards and/or implementation resources (e.g. potential for the standard to be used as part of a systems approach for one pest, complement treatments for other pests).
6. Conceptual standard and/or implementation resource to address fundamental concepts (e.g. treatment efficacy, inspection methodology).
7. Urgent need for the standard and/or implementation resource.
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| **Diagnostic protocols are subject to additional criteria. For proposals for DPs, please elaborate on the following criteria to help the future consideration of the subject proposed:*** Need for international harmonization of the diagnostic techniques for the pest (e.g. due to difficulties in diagnosis or disputes on methodology)
* Relevance of the diagnosis to the protection of plants including measures to limit the impact of the pest.
* Importance of the plants protected on the global level (e.g. relevant to many countries or of major importance to a few countries).
* Volume/importance of trade of the commodity that is subjected to the diagnostic procedures (e.g. relevant to many countries or of major importance to a few countries).
* Other criteria for topics as determined by CPM that are relevant to determining priorities
* Balance between pests of importance in different climatic zones (temperate, tropics etc.) and commodity classes.
* Number of labs undertaking the diagnosis.
* Feasibility of production of a protocol, including availability of knowledge and expertise.
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| **Literature review**[[3]](#footnote-3) (This section will provide a **summary of the topic** based on scientific and technical publications, including a referenced **list of literature reviewed**. This will help provide the scientific basis for the content of the standard/implementation resource to be used by the selected experts during the development of the standard/implementation resource)**.**Bull’s eye rot of apple is one of the most frequent and damaging postharvest decays in the Pacific Northwest region and also occurs in Europe and other apple growing areas (Kienholz 1951; Spotts 1990; de Jong *et al.* 2001). Four species of *Neofabraea* (Dermateaceae, Helotiales) have been associated with bull’s eye rot on apple, including *N. malicorticis*, *N. perennans*, *N. kienholzii* and *N. vagabunda* (Kienholz 1939; Guthrie 1959; de Jong *et al.* 2001; Spotts *et al.* 2009; Johnston *et al.* 2014). These fungal pathogens also cause cankers on branches and twigs, and even cause girdling and result in death of limbs. Cankers are believed to be the source of inoculum from which spores are dispersed by rain splash onto fruits (McLarty 1933; Tan and Burchill 1972; Grove 1990; Verkley 1999; de Jong *et al.* 2001). Fruits can be infected in the orchard at any time during the growing season, but spores or incipient infections can remain latent for several months (generally 3 to 4 months in cold storage) before development of symptoms (Spotts 1990). It seems that bull’s eye rot pathogens are easier to be missed in plant quarantine for their long-term latent feature. This case highlights the quarantine importance of bull’s eye rot pathogens for preventing their worldwide spread through international fruit trade, and underlined the need for an accurate and sensitive diagnostic tool for the identification of these fungal pathogens. Although there are taxonomic differences among the four species of bull’s eye rot pathogens, the symptom of fruit rots on apple caused by these organisms are indistinguishable. They are difficult to distinguish from each other with similar morphology and physiology, and even sometimes are confusing because of overlapping characteristics (Dugan *et al.* 1993; de Jong *et al.* 2001). Appreciable variation among strains within a species further complicates the distinction among these pathogens (Kienholz 1939; Cunnington 2004). Actually, *N. malicorticis* and *N. perennans* have been considered to be conspecific (Boerema and Gremmen 1959; Guthrie 1959; von Arx 1970). Some researchers even believe that *N. vagabunda* (*N. alba*) historically has been confused with *N. malicorticis* (Henriquez *et al.* 2004). In addition, early specimens (strain CBS 355.72 from Nova Scotia and strain CAL 107 from Portugal) of *N. kienholzii* had initially been classified as *N. malicorticis* and *N. perennans*, respectively (de Jong *et al*. 2001). The overall indicated that the identification of *Neofabraea* based solely on morphological features is unreliable.The continued development of reliable diagnostic tools for rapid and accurate identification of the pathogens at species level remains a priority for preventing the spread of bull’s eye rot of apple. de Jong et al. (2001) firstly identified four species of Neofabraea associated with bull’s eye rot by phylogenetic study based on DNA sequencing. Subsequently, Gariépy *et al*. (2003) designed species-specific primers for the detection of *Neofabraea* spp. by multiplex PCR, and these primers were modified and improved by other researchers in practical applications (Soto-Alvear *et al*. 2013; Michalecka *et al.* 2016). Recently, the research team of the proposer have successively developed a real-time fluorescence PCR method with TaqMan probes and a rolling-circle amplification (RCA) method with padlock probes for the rapid detection of the pathogens of bull’s-eye rot on apple (Lin *et al*.2016; Lin *et al*. 2018). **References**Boerema G H, Gremmen J. Een opperblakkige bastkanker bij appel en peer veroorzaakt door *Pezicula corticola*[J]. Tijdschr Plantenziekten, 1959, 65: 165-176.Cunnington J H. Three *Neofabraea* species on pome fruit in Australia[J]. Australasian Plant Pathology, 2004, 33: 453-454.Dugan F M, Grove G G, Rogers J D. Comparative studies of *Cryptosporiopsis curvispora* and *C. perennans*. I. Morphology and pathogenic behavior[J]. Mycologia, 1993, 85: 551-564.de Jong S N, Lévesque C A, Verkley G J M, *et al*. Phylogenetic relationships among *Neofabraea* species causing tree cankers and bull’s-eye rot of apple based on DNA sequencing of ITS nuclear rDNA, mitochondrial rDNA, and the β-tubulin gene[J]. Mycological Research, 2001, 105(6): 658-669.Gariépy T D, Lévesque C A, de Jong S N, *et al*. Species specific identification of the *Neofabraea* pathogen complex associated with pome fruits using PCR and multiplex DNA amplification[J]. Mycological Research, 2003, 107: 528-536.Grove G G. Anthracnose and perennial canker[A]// Compendium of Apple and Pear Diseases[C]. St. Paul: APS Press, 1990: 36-38.Guthrie E J. The occurrence of *Pezicula alba* sp. nov. and *P. malicorticis*, the perfect states of *Gloeosporium* *album* and *G. perennans*, in England[J]. Transactions of the British Mycological Society, 1959, 42(4): 502-506.Henriquez J L, Sugar D, Spotts R A. Etiology of bull’s eye rot of pear caused by *Neofabraea* spp. in Oregon, Washington, and California[J]. Plant Disease, 2004, 88(10): 1134-1138.Johnston P R, Seifert K A, Stone J K, *et al*. Recommendations on generic names competing for use in Leotiomycetes (Ascomycota)[J]. IMA fungus, 2014, 5(1): 91-120.Kienholz J R. Comparative study of the apple anthracnose and perennial canker fungi[J]. Journal of Agricultural Research, 1939, 59: 635-665.Kienholz J R. The bull’s eye rot problem of apples and pears. [J]. Proceedings of the Oregon Horticultural Society, 1951, 43, 75-77.McLarty H R. Perennial canker of apple trees[J]. Canadian Journal of Research, 1933, 8(5): 492-507.Michalecka M, Bryk H, Poniatowska A, *et al*. Identification of *Neofabraea* species causing bull’s eye rot of apple in Poland and their direct detection in apple fruit using multiplex PCR[J]. Plant Pathology, 2016, 65(4): 643-654.Soto-Alvear S, Lolas M, Rosales I M, *et al*. Characterization of the bull’s eye rot of apple in Chile[J]. Plant Disease, 2013, 97(4): 485-490.Spotts R A. Bull’s eye rot[A]// Compendium of Apple and Pear Diseases[C]. St. Paul: APS Press, 1990: 56-57.Spotts R A, Seifert K A,Wallis K M, *et al*. Description of *Cryptosporiopsis kienholzii* and species profiles of *Neofabraea* in major pome fruit growing districts in the Pacific Northwest USA[J]. Mycological Research, 2009, 113: 1301-1311.Tan A M, Burchill R T. The infection and perennation of the bitter rot fungus, *Gloeosporium album*, on apple leaves. Annals of Applied Biology[J], 1972, 70(3), 199-206.Verkley G J M. A monograph of the genus *Pezicula* and its anamorphs[J]. Studies in Mycology, 1999, 44: 1-180.von Arx J A. A revision of the fungi classified as *Gloeosporium*[J]. Bibliotheca Mycologica, 1970, 24: 1-203.Lin H, Wang W, Yi J, et al. Development of TaqMan probes real-time fluorescence PCR method for the rapid detection of the causal fungal agents of bull's-eye rot on apple (in Chinese) [J]. Plant Quarantine, 2016, 30(2):55-62.Lin H, Jiang X, Yi J, *et al*. Molecular identification of *Neofabraea* species associated with bull’s-eye rot on apple using rolling-circle amplification of partial *EF-1α* sequence[J]. Canadian Journal of Microbiology, 2018, 64(1): 57-68. |

**Send submissions to:** **Address:** IPPC Secretariat (AGDI)

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1. IPPC Standard Setting Procedure Manual URL: <https://www.ippc.int/en/publications/85024/> [↑](#footnote-ref-1)
2. As agreed by CPM-13 (2018) [↑](#footnote-ref-2)
3. As agreed by CPM-7 (2012) and CPM-11 (2016). [↑](#footnote-ref-3)