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)

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

Name: Wei-Jun Duan Position and organization: Associate Professor, Ningbo Academy of Inspection and Quarantine Mailing address: No. 8, Huikang Road , Yinzhou District, Ningbo 315012, CHINA Phone: 0086-574-87022951 Fax: 0086-574-87113584 E-mail: weijunduan@tom.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 (subject) | 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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| 1. **Proposed title of document**

 **Draft annex to ISPM 27–***Cronartium comandrae* Peck |
| **7. Proposed priority**  [ √ ] 1 (high) [\_\_] 2 [\_\_] 3 [\_\_] 4 (low) Comments: The pine blister rust diseases, caused by the *Cronartium* (Basidimycota, Pucciniales) species, are one of the three most important forest diseases worldwide. Among them, *C. comandrae*, the causal agent of comandra blister rust, is listed as a quarantine species by many countries. The aecial hosts of *C. comandrae* in North America are two and three-needled *Pinus* spp., of which the most important are jack pine (*P. banksiana*) across Canada, and lodgepole pine (*P. contorta*) and western yellow pine (*P. ponderosa*) in western Canada and USA. The European scots pine (*P. sylvestris*), widely planted in North America, is susceptible. Other *Pinus* spp. are attacked to a limited extent in different parts of North America: knobcone pine (*P. attenuata*) and possibly Jeffrey pine (*P. jeffreyi*) in western USA, table mountain pine (*P. pungens*), red pine (*P. resinosa*) and pitch pine (*P. rigida*) in eastern USA, loblolly pine (*P. taeda*) and shortleaf pine (*P. echinata*) in south eastern USA. The European species maritime pine (*P. pinaster*), mountain pine (*P. mugo*) and Austrian pine (*P. nigra*) have been found to be susceptible in North America. In view of the fact that *P. contorta* is widely planted in northern and western Europe and *P. ponderosa* to a certain extent in central Europe, and that the previously mentioned European species are also susceptible, *C. comandrae* would certainly find aecial hosts on which to establish in the EPPO region. In Asia, there are many pine species planted; most could be infected by *C. comandrae*. This fungus can cause serious epidermics on 19 different pine species, especially on *Pinus ponderosa* and *P. taeda*. This pathogen caused infections and cankers for over 90% of 10 year-old trees and more than 57% of the 2 year-old tree in North America, and the mortality of 1/5 infected trees and over 80% cankers occurred on pine plantation. Until now, no effective diagnostic method is available for plant quarantine because of its taxonomic disorder and complicated life cycle. Comandra blister rust is now only reported in temperate forest in North America. Canada and USA forest products exports have grown tremendously over the years, with a record of $17.1 billion USD and $9.7 billion USD, respectively. The breakouts of comandra blister rust have been frequently reported in these two countries, especially in Canada. Thus, this standard is very important for multiple regions such as China, EU, Japan, Australia and some adjacent countries in North America for pest quarantine and protection. Pines provide forestation in areas where deciduous trees cannot grow due to extreme elevation and latitude. Ecologically it provides forestation in areas where deciduous trees cannot grow, and provides habitat and a food source for wildlifes. Pine trees are economically important primarily because their wood is used for timber, meanwhile, they are also used for the manufacture of substances such as turpentine, rosin, pulp and paper. Protection of pine from comandra blister rust will enhance the ecological, economic and social importance of pine cultivars. This standard is urgently needed for Europe and Asian countries because these regions import North America pine plants as timbers. These regions are exposed to this disastrous pathogen because no reliable detection method has yet been developed. Thus, our proposed standard can be used as an effective method to diagnose the comandra blister rust.Previously, in China and other regions in the world, a series of national standards were published for pine stem rust, but no standard related to comandra blister rust has been published yet. In addition, the diagnostic method in all these published standards was primarily based on morphological observation, and no molecular diagnosis was available. Pine rusts including comandra blister rust are difficult to be detected by using morphology based protocol. Our proposed standard provides not only morphological identification but also an effective molecular diagnostic method. This pathogen can be easily spread to other regions and continents lacking effective control measures, and is thus with high value and priority for many countries. This method can be used to identify the pathogen on any parts of pine or secondary hosts (such as leaves, stem, roots and any other parts), during any stages of its lifecycle. It can be used to a wide range of countries, such as China, Japan and Europe Union. Based on this standard, threat from comandra blister rust can be avoided to the pine cultivars, which were widely cultivated in many countries for lumber, ornamentation, wildlife habitats, food and nutrients. This standard can serve as international standards especially in EU and Asian countries, where pines have been widely planted with serious economic and environmental values. In previous study, we have accumulated a lot of materials and data, including specimens, sequence data, morphological data of this fungal pathogen and related species, and our research team include several very experienced and well-trained fungal taxonomists. Our research team also have very good experience in developing molecular diagnosis for rust fungi. We have clarified the taxonomic status of this pathogen and successfully developed a series method to extract DNA sequences from fresh materials, as well as from dry materials. Technically, we have resolved most of the serious problems during the development of this standard, and further trials will be conducted to test the stabilities of the protocol. We have also established close cooperative relations with the International Laboratories working on rust fungi, including labs from Japan, The Netherland, USA and other countries. We have already carried out meticulous preliminary experimental work, for the formulation of this standard.The following papers are the main references related to *C. comandrae*. The authors in bold are the person who participated in proposing this standard:1. Aime MC, Toward resolving family-level relationships in rust fungi (Uredinales), Mycoscience, 2006, 47: 112–122
2. Begerow D, Bauer R, Boekhout T, Phylogenetic placements of ustilaginomycetous anamorphs as deduced from nuclear LSU rDNA sequences, Mycological Research, 2000, 104: 53–60
3. Cummins GB, Hiratsuka Y, Illustrated genera of rust fungi, 3rd edn, American Phytopathological Society, St. Paul, Minnesota, 2003
4. Cunnigham GH, Terminology of the spore forms and associated structures of the rust fungi, New Zealand Journal of Science and Technology, 1930, 12: 123–128
5. Gaümann E, Die Pilze, Grundzüge ihrer Entwicklungsfeschte und Morphologie, Birkhäuser, Basel, 1949
6. Hiratsuka Y, Pine stem rusts of the world-frame work for a monograph, Proceedings of the 4th IUFRO Rust of Pines Working Party Conference, Tsukuba, 1995, pp. 1–8
7. Hiratsuka Y, Spore surface morphology of pine stem rusts of Canada as observed under scanning electron microscope, Canadian Journal of Botany, 1971, 49: 371–372
8. Ito K, Uozumi T, Blister rusts of five needle pines, Transactions of the Mycological Society of Japan, 1976, 17: 534–537
9. Laundon GF, Terminology in the rust fungi, Transactions of the British Mycological Society, 1967, 50: 189–193
10. Laundon GF, *Peridermium* (Fungi), Taxon, 1976, 25: 186–187
11. Peterson RS, Jewell FF, Status of American stem rusts of pine, Annual Review of Phytopathology, 1968, 6: 23–40
12. Peterson RS, Studies of *Cronartium* (Uredinales), Reports of the Tottori Mycological Institute, 1973, 10: 203–223
13. Richardson BA, Kim MS, Klopfenstein NB, Ota Y, Woo KS, Hamelin RC, Tracking the footsteps of an invasive plant-pathogen: intercontinental phylogeographic structure of the white-pine-blister-rust fungus, *Cronartium ribicola*, Proceeding of Breeding and Genetic Resources of Five-Needle Pines: Ecophysiology, Disease Resistance and Developmental Biology, Yangyang, Korea, 2008, pp. 56–60
14. Vogler DR, Bruns TD, Phylogenetic relationships among the pine stem rust fungi, Mycologia, 1998, 90: 244–257
15. Vogler DR, Bruns TD, Use of molecular characters to identify holomorphs: An example from the rust genus *Cronartium*, In: Reynolds DR, Talyor JW, eds, The Fungal Holomorph: Mitotic, Meiotic and Pleomorphic Speciation in Fungal Systematics, CAB International, Wallingford, 1993
16. Zhang XY, Lu Q, Sniezko RA, Song RQ, Man G, Blister rusts in China: host, pathogens, and management, Forest Pathology, 2010, 40: 369–381
17. **Zhao P**, Wang QH, Tian CM, Yamaoka Y, **Kakishima M,** A morphological and molecular survey of Japanese *Melampsora* species on willows reveals a new species and two new records, Mycological Progress, 2015, 14: 101
18. **Zhao P**, Taxonomic studies of *Melampsora* species on willows in China based on morphology and molecular phylogeny, Ph.D thesis, University of Tsukuba, Tsukuba, Japan, 2014
19. **Zhao P**, **Kakishima M**, Wang Q, **Cai L**, Resolving the *Melampsora epitea* complex, Mycologia, 2017, 109(3): 391-401.
20. **Zhao P**, Liu F, Li YM, **Cai L**, Inferring phylogeny and speciation of *Gymnosporangium* species, and their coevolution with host plants, Scientific Reports, 2016, 6: 29339.
21. Chen Q, Hou LW, **Duan WJ**, Crous PW\*, **Cai L\***, Didymellaceae revisited, Studies in Mycology, 2017, 87: 105-159.
 |
| **8. Featured outcome of standard/implementation resource** Based on this standard, we can detect the causal agent of the pine blister rust disease, *Cronartium comandrae* from pines, as well as from its secondary hosts. The pathogen can be detected on various parts of plant, such as leaves, stems, flowers and seeds. Based on this proposed standard, we can detect this fungal species and protect the pine plantations in Asia and Europe, where pines were widely planted for environmental protection and economic purpose. |
| **9. Contribution to filling the gaps of the Framework for Standards and Implementation:** (2 lines max) Until now, standards related to rust fungi detection mainly rely on morphology, and no effective molecular method was proposed. This is the standard using both morphology and multi-locus identification to detect the biotrophic rust fungi worldwide for the first time.  |
| **10. Summary of justification for the proposal** (2 lines max)*Cronartium comandrae* is an important fungal pathogen causing pine blister rust disease, which has been widely regarded as one of the most important forestry diseases. This is first standard to detect pine rust by using morphology and molecular method. |

**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 standard contributed to IPPC because it provides an effective way to recognize a severe biotrophic fungal pathgen,. |
| Linkage to IPPC Strategic Objectives (SOs) and Organizational results demonstrated.Based on this standard, we can manage the threat from comandra blister rust to pine cultivars, which were widely cultivated for lumber, ornamentation, wildlife habitats, food, and other different purposes. This standard contributed to IPPC because it provides an effective way to recognize biotrophic fungal species, especially rust fungi. This standard can be used for plant quarantine and can serve as international standards especially for EU and Asian countries, where pines served important roles in environmental protection and economy.  |
| 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).This standard can be used for plant quarantine and can serve as international standards especially in EU and Asian countries, where pines have been extremely widely planted for environmental protection and economy. |
| Clear identification of the problems that need to be resolved through the development of the standard or implementation resource.We have clarified the taxonomic status of this pathogen and successfully developed a series method to extract DNA sequences from fresh materials as well as dry materials. We have resolved most technical problems impeding this standard development, and further trials need to be conducted to test the stabilities of this method.  |
| Availability of, or possibility to collect, information in support of the proposed standard or implementation resource (e.g. scientific, historical, technical information, experience).We have accumulated a lot of materials, including specimens, sequence data, morphological data of this fungal pathogen and related species, and our research team have involved very experienced scientists working on fungal systematics.  |

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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.
 |
| **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)**.** |

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

**E-mail:** ippc@fao.org Food and Agriculture Organization of the UN

(Subject line: “Call for topics 2018”) Viale delle Terme di Caracalla

 00153 Rome, Italy

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)