NAPPO
North American Plant Protection Organization
Organización Norteamericana de Protección a las Plantas
MEXICO - USA - CANADA

NAPPO Regional Standards for Phytosanitary Measures (RSPM)

RSPM 7
Guidelines for Petition for First Release of Non-indigenous Phytophagous or Phytopathogenic Biological Control Agents

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Review

NAPPO Standards for Phytosanitary Measures are subject to periodic review and amendment. The next review date for this Standard is 2019. This standard was last reviewed in 2015. A review of any NAPPO Standard may be initiated at any time upon the request of a NAPPO member country.

Approval

This Standard was approved on October 14, 2001, and updated on April 18, 2007 and October 20, 2008. The current revision was approved by the North American Plant Protection Organization (NAPPO) Executive Committee on August 3, 2015 and is effective immediately.

Approved by:

Greg Wolff
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Executive Committee Member
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Executive Committee Member
Mexico

Implementation

No implementation plans are required for this standard.

Amendment Record

Amendments to this Standard will be dated and filed with the NAPPO Secretariat.

Distribution

This standard is distributed by the NAPPO Secretariat, to the Industry Advisory Group (IAG) and Sustaining Associate Members (SAM), the International Plant Protection Convention (IPPC) Secretariat, and to other Regional Plant Protection Organizations (RPPOs).

Introduction

Scope

These guidelines are intended to assist in drafting a petition for first release of non-indigenous phytophagous or phytopathogenic biological control agents of weeds. A standardized petition will also assist the reviewers and regulators in assessing the risk of non-indigenous introductions intended for biological control of weeds. A petition may not be necessary to import biological control agents into a containment facility for the purposes of research.

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Definitions, Abbreviations and Acronyms

Definitions of phytosanitary terms used in the present standard can be found in NAPPO RSPM 5 and in ISPM 5.

Background

All biological control programs involving the release of non-native species must consider the ecological ramifications associated with this strategy, particularly because the release of a living, self-propagating organism can be a permanent, non-reversible action (e.g. the intent of classical biological control). Protection of the environment is a priority of the governments of NAPPO member countries, and thus there is regulatory oversight for the implementation of biological control. When requesting authority to release arthropod agents for control of pest arthropods, scientifically-based consideration of the potential economic and environmental risks must be demonstrated by those requesting the release. All test results obtained during a biocontrol program, together with other relevant information on the ecology and biology of a candidate agent, must be presented in a petition submitted to the national regulatory authority. A working knowledge of the most pertinent literature associated with biological control and host range testing is expected of the petitioner. Guidance and reference material for conducting the necessary studies and preparing the information required can be found in numerous references, for example, Balciunas (1999), Bloem and Bloem (2012), DeClerck-Floate et al. (2006), Delfosse (2005), Ehlers (2010), Forno and Purcell (1997), Goolsby et al. (2006), Harley et al. (1992), ISPM 3: 2005, McEvoy and Coombs (1999), Medal et al. (2005), National Research Council (1996), Olckers and Hill (1999), RSPM 12: 2015, RSPM 40: 2014, Sheppard (2003), Strong and Pemberton (2001), U.S. Congress, Office of Technology Assessment (1993, 1995), USDA (2015), Van Driesche et al. (2002), Wapshere et al. (1989), Winston et al. (2014), and Withers et al. (1999).

Outline of Requirements

Information is requested on the proposed action including: aspects of the biology, regulatory status, distribution and impact (positive and negative) of the target weed; biology, source, known host range, related species in the proposed area of introduction, quarantine procedures for the biological control agent; host-specificity; expected impacts

(positive and negative) after release; and plans for post-release monitoring and impact assessment.

General Requirements

Each petition should be preceded by a title page, a table of contents, and a summary or abstract (see Appendix 1 for template). A petition to request the first release of non-indigenous phytophagous or phytopathogenic biological control agents of weeds in NAPPO member countries should include the following information, as known or available using reasonable efforts or means:

1. Information on the Proposed Action

1.1 Purpose of the release (reflects the title of the petition and provides more detail of what is expected).
1.2 Need for the release (explains why the agent is being introduced).
1.3 Reasons for choice of the phytophagous biological control agent.
1.4 Specific location of rearing/containment facility and name(s) of qualified personnel operating the facility.
1.5 Timing of the release (approximate month(s) of release), as well as factors that may affect timing of release (e.g. life stage of target pest or of biological agent to be used, season, agricultural practices, weather).
1.6 Location (E.g., province/state and region) of planned first release(s). 1.7 Methods to be used after agent importation (e.g., rearing, multiplication, release).
1.8 Methods to be used for disposing of any host material, pathogens, parasites, and parasitoids accompanying the imported shipment.
1.9 Agencies and/or individuals that will be involved in the release and monitoring.

2. Target Weed Information

2.1 Taxonomy: scientific name, full classification, higher level phylogeny, synonymy, common names (if any), and sufficient characterization (including specific molecular characterization where needed) to allow unambiguous identification.
2.2 Biology and reproductive potential of the target weed.
2.3 Economic, environmental and health impacts, and benefits of the target weed.
2.4 Global distribution of the target weed.
2.5 Economically, ecologically important (e.g., keystone, endangered) species in North America (introduced and native) that are phylogenetically related or occur in the same habitat as the target weed.
2.6 Regulatory or pest status of the target weed in state, provincial or federal law.
2.7 Knowledge of status of other biological control agents (indigenous and introduced) that attack the target weed.
2.8 Life stage(s) and plant part(s) of target weed that are vulnerable to the biological control agent.

3. Biological Control Agent Information

3.1 Taxonomy: scientific name (order, family, genus, species, scientific authority),

synonymy, common names and name of the taxonomic specialist confirming the identification of the biological control agent.

3.2 Methods used to identify the biological control agent (e.g., morphological, molecular).

3.3 Location of reference specimens (national collection).

3.4 Natural geographic range, other areas where introduced, and expected attainable range in North America (also habitat preference and climatic requirements of the organism).

3.5 Source of the biological control agent (laboratory/rearing facility/containment facility, original collection locality, name of collector, and name of identifier).

3.6 Biology and reproductive potential (including dispersal capability and damage inflicted on host plant).

3.7 Known host range based on published scientific literature, host data from museum specimens, and unpublished records.

3.8 History of past use of the biological control agent.

3.9 Pathogens/parasites/hyperparasitoids (order, family, genus, species, scientific authority) of agent and how they will be eliminated from the imported culture of the agent.

3.10 Procedures stating how the agent will be handled in containment (e.g., scaling up for release of a pure culture of the agent).

3.11 Other closely related genera, sibling species, cryptic species and ecologically similar species of the biological control agent in North America, when they occur.

4. Host-Specificity Testing

4.1 Selection of test plants: subspecies, species, subgenera, genera and other closely-related plants and plants recorded as hosts in the literature, museum labels or other unpublished collection records, agriculture pest reports, etc.; hosts of close relatives (i.e. in the same genus) of the candidate agent; unrelated plants having physical and chemical similarities to the weed, habitat associates, rare and endangered species (or their surrogates), and economic plants.

4.2 Laboratory tests (replicated no-choice and choice feeding tests, oviposition tests, development tests).

4.3 Information from the area of origin based on field surveys or experimental field manipulation.

5. Environmental and Economic Impacts of the Proposed Release

5.1 Known impact of the biological control agent on humans and other vertebrates.

5.2 Expected benefits of releasing this biological control agent (e.g., pesticide use, physical controls, no weed control, benefit-cost (see RSPM 40: 2014 for guidelines on cost-benefit analysis of management measures).

5.3 Direct impact of the biological control agent, including pre-release efficacy studies, intended effects on target plants, and direct effects on non-target plants.

5.4 Indirect impact of the biological control agent (e.g., potential effects on organisms that depend on the target pest and non-target species, including potential competition with resident biological control agents and other natural enemies).

5.5 Possible direct or indirect impact of the biological control agent on threatened and endangered species in North America.

5.6 Impact of the biological control agent on physical environment (e.g. water, soil and air

resources).

5.7 Proposed contingency plan to mitigate undesired environmental impacts.

6. Post-Release Monitoring

A post-release monitoring plan should be included in the submission. Comparing predicted and observed behaviour and performance of biological control agents is necessary to validate and improve regulatory systems. Post-release monitoring of released agents can inform the development and screening of other biological control agents that are being considered for release. For example, additional screening or releases of new agents may be suspended or modified if a released agent proves to be ineffective, when control/suppression is achieved, or if unintended impacts are observed. Therefore, to assist in assessing program impacts, information is requested on plans for post-release monitoring.

In designing monitoring plans, the fact that pre-release baseline measurements of targets and non-target species provide for better monitoring data and documentation of impact should be taken into account. Also, some impacts may take years or decades to manifest while others may not be long lasting.

The key elements to monitor are:

6.1 Biological control agent establishment and spread.

6.2 Biological control agent and target weed densities and distribution over time.

6.3 Impact on the target weed and selected non-target species for which potential impacts are identified (e.g., threatened or endangered species, and taxonomically related or beneficial species). Data collected should include biological control agent host preference and development, and changes in the growth, survival, and reproduction of the target weed and selected non-target plants.

Researchers and practitioners should notify the National Plant Protection Organization (NPPO) and publish details on the economic and environmental impacts of programs, as soon as practical after release of the biological control agent.

7. Pre-Release Compliance

7.1 Reference specimens (10 or more) must be deposited in the National Collection of the permitting country in advance of approval for release. The specimens should be of good condition for DNA extraction and with clear labels, indicating collection locality, latitude and longitude, date of collection, name of collector and any other pertinent information.

A letter explaining that the specimens are biological control agents and are being donated to the National Collection as part of the conditions under which release will be granted should accompany the specimens when they are submitted. A copy of the letter should be included in the submission to the permitting NPPO.

7.2 Information on the planned location and timing of the first release(s) should be included in the submission. Note: a letter confirming the release date and location

should be provided to the NPPO within 3 months after release.

This appendix was adopted by the NAPPO Executive Committee in August, 2015.
The appendix is for reference purposes only and is not a prescriptive part of the standard.

Appendix 1

Title (e.g., 'Petition to introduce as a Biological Control Agent for, in.' or 'Host Plant Test List for')

Date:

Applicant: Name(s)
Applicant's Organization
Address

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4. Host-Specificity Testing

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5. Environmental and Economic Impacts of the Proposed Release

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6. Post-Release Monitoring

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6.3 Impact on the target weed and selected non-target species for which potential impacts are identified

7. Pre-Release Compliance

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8. Acknowledgements