NAPPO
North American Plant Protection Organization
Organización Norteamericana de Protección a las Plantas

Specifications for a Standard on Host Status

Proposed by the US: 03-12-2012
Prepared by the NAPPO Standards Panel: 07-12-2013
Approved by the NAPPO Working Group: 18-07-2013

Specification number: NAPPO_ 2012-02

Title: Criteria for the determination of host status of pest arthropods and pathogens based on available information.

Reason for the standard:

Well-documented pest biology, consensus in the scientific literature and consensus among NPPOs often result in a clear determination of host status.
However, there can sometimes be considerable controversy in interpreting information leading to potential disputes between NPPOs, even for organisms that are well understood.

Host status may require regular review for several reasons:

- Errors in the literature or in databases and compendia (e.g. incorrect citations, incorrect interpretations, taxonomic misidentifications).
- Host status of a commodity may be variable depending on host and organism biology/physiology/phenology (e.g. changes in host status depending on season, ripeness or variety).
- Host status is unclear (lack of data in the literature, conflicting information, or only experimental hosts but lacking field data).
- Cases where an organism is associated with a commodity but may not be feeding on that commodity (e.g. contaminating pests)

Determining the host status of an organism is essential to several key activities undertaken by NPPOs. Determining the status of hosts with respect to organisms is one of the central pieces of information needed to conduct a pest risk analysis (PRA). The determination of host status can have major impacts on phytosanitary measures required for importing and exporting commodities, as well as domestic level decisions and actions (e.g. eradication programs, surveys, etc.). In addition, many NAPPO standards include lists of hosts for specific organisms, or lists of organisms that attack specific hosts. In the case of NAPPO standards, host status issues are cross-cutting, and apply to a range of NAPPO work areas, from plants for planting, citrus, fruit, seeds, potato, grain, PRA, to risk management, treatment development, certification etc.

There are many sources of information that provide lists of hosts for organisms. Some of these sources simply associate the organism with a host(s) in a very general sense while other sources of information provide a detailed description of the relationship of the organism to the host(s). Likewise, information sources may describe different types of hosts, according to the status of that host to the organism. The terminology in the literature and in regulations is not harmonized and can be interpreted in many different ways. The diverse terminology and the diversity of descriptions of host – organism interactions may be extremely difficult to interpret.

While regional standards have been developed by NAPPO that address determining host status based on research protocols, there are no consistent criteria for determining host status based on available information (including existing scientific data and NPPO records). The use of inconsistent criteria for listing hosts of organisms has the potential to lead to disputes over whether organisms should be regulated on different hosts. The development of consistent criteria for determining host status will aid NPPOs in performing technically sound, science-based PRAs, and in ensuring that surveillance, inspection and other regulatory programs are appropriately targeted and technically justified.

Relevance to fulfillment of the NAPPO Strategic Plan:

NAPPO's mission is to protect agricultural, forest and other plant resources against regulated plant pests, while facilitating trade. Phytosanitary measures should be technically justified according to requirements of international agreements. Such measures should be based on scientific information and commensurate with the level of risk. Consistent criteria for determining host status of organisms will play an important role in meeting core principles of the IPPC, including managed risk, harmonization, and technical justification.

This standard will address the following objectives under NAPPO's Strategic Goal No. 1, Protecting Plant Resources and the Environment:

- Develop and adopt NAPPO Regional Standards for Phytosanitary Measures (RSPMs) which respond to current and emerging pest and trade issues and trends, in a timely manner.
- Develop and advocate implementation of harmonized phytosanitary measures to protect North America against the introduction and establishment of pests of quarantine significance to the three NAPPO countries, e.g. Asian Gypsy Moth.

Scope and purpose:

Scope:

This standard will provide guidelines for applying consistent criteria for interpreting information regarding organism – host interactions when determining host status for organisms.

Purpose:

The purpose of the standard will be to provide consistent criteria for judging information (e.g. scientific literature, NPPO records, pest reports, etc.) to determine the status of hosts for organisms. These criteria will aid NAPPO and NPPOs in developing host lists used in programmatic activities such as standards development, PRA, surveillance, inspection and development of regulation. The standard will discuss how information can be evaluated for more consistency in decision-making Suggested terminology that should be used to describe the status of host(s) with respect to organisms, or in defining the host – organism interactions will be provided.

Tasks:

The panel should develop a standard that describes specific criteria used to evaluate scientific and other information to determine host status for organisms. This should include:

1. Examining existing documentation related to determining host status for organisms (see references)
2. Identifying and describing the different types of organism-host interactions recognized in scientific and regulatory literature and information
3. Identifying terminology used in describing organism-host interactions in scientific and regulatory literature and information (e.g. host, non-host, conditional host, natural host, non-natural host, reproductive host, alternate host, etc.)
4. Identifying the most relevant types of organism-host interactions and the specific conditions that determine host status (e.g. conditions related to conditional hosts, hitchhiker or contaminating pests, non-hosts, natural hosts, etc.) and propose new categories if appropriate.
5. Describing key criteria that can be used to evaluate organism-host interactions (e.g. what specific information / criteria is needed to determine whether a host is truly a host for a organism)
6. Recommending specific criteria and terminology for describing hosts in NAPPO standards, NPPO documents (e.g. PRAs, surveillance protocols, etc.) and regulations

Expertise:

Expertise in pest risk analysis; general entomology (especially in taxonomic groups of Lepidoptera and / or Tephritidae / Diptera) and general plant pathology; total of 6 – 8 experts across these focus areas with experience in developing lists of hosts of organisms for various reasons (e.g. PRA, surveillance, inspection, standards development, etc.)

Participants:

1-2 experts from each NAPPO country with required experience to accomplish the tasks.

References:

Aluja, M., and R. L. Mangan. 2008. Fruit fly (Diptera: Tephritidae) host status determination: critical conceptual, methodological, and regulatory considerations. *Ann. Rev. Entomol.* 53: 473–502.

Cowley, Baker and Harte. 1992. Definition and determination of host status for multivoltine fruit fly (Diptera: Tephritidae) species. Journal of Economic Entomology. 85(2): 312-317.

ISPM 2. 2007. *Framework for pest risk analysis.* Rome, IPPC, FAO.

ISPM 8. 1998. *Determination of pest status in an area*. Rome, IPPC, FAO.

ISPM 11. 2004. *Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms*. Rome, IPPC, FAO.

ISPM 17. 2002. *Pest Reporting*. Rome, IPPC, FAO.

RSPM 30. 2008. *Guidelines for the determination and designation of host status of a fruit or vegetable for fruit flies (Diptera: Tephritidae)*. Ottawa, NAPPO.

Approval:

This Specification was approved by the North American Plant Protection Organization (NAPPO) Executive Committee on August 5, 2013 and is effective from this date.

Approved by:

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