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NAPPO Regional Standards for Phytosanitary Measures (RSPM)

RSPM 17
Guidelines for the Establishment, Maintenance and Verification of Fruit Fly Pest Free Areas in North America

The Secretariat of the North American Plant Protection Organization
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Review

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

Endorsement

This standard was approved by the North American Plant Protection Organization (NAPPO) Executive Committee on October 18, 2010, and is effective from this date.

Approved by:

Greg Stubbings
Executive Committee Member
Canada

Paul R. Eggert
Executive Committee Member
United States

Javier Trujillo Arriaga
Executive Committee Member
Mexico

Implementation

See the attached Implementation Plans for implementation dates in each NAPPO country.

Amendment Record

Amendments to this Standard will be dated and filed with the NAPPO Secretariat. The most recent version will be posted on the NAPPO website at: www.nappo.org/stds_e.htm

Distribution

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

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Introduction

Scope

This standard provides the guidelines to establish maintain and verify fruit fly free areas in North America. The target fruit fly pests for this standard include insects of the order Diptera, family Tephritidae, and belonging to the genera *Anastrepha, Bactrocera, Ceratitis, Dacus, Rhagoletis* and *Toxotrypana*. It also describes the role of the National Plant Protection Organization (NPPO) to ensure compliance with this standard.

References

FAO and IAEA. 2003. *Trapping Guidelines for Area-Wide Fruit Fly Programmes*. Rome, IPPC, FAO and Vienna, Austria.
ISPM 4. 1996. *Requirements for the Establishment of Pest Free Areas*. Rome, IPPC, FAO.
ISPM 5. 2010, *Glossary of Phytosanitary Terms*. Rome, IPPC, FAO.
ISPM 10. 1999. *Requirements for the Establishment of Pest Free Places of Production and Pest Free Production Sites*. Rome, IPPC, FAO.
ISPM 17. 2002. *Pest Reporting*. Rome, IPPC, FAO.
ISPM 26. 2006. *Establishment of pest free areas for fruit flies (Tephritidae*). Rome, IPPC, FAO.
RSPM 5. 2010. *Glossary of Phytosanitary Terms*. Ottawa, NAPPO.
RSPM 19. 2003. *Guidelines for Bilateral Workplans.* Ottawa, NAPPO.

Definitions, Abbreviations and Acronyms

Definitions of phytosanitary terms used in this standard can be found in RSPM No. 5: 2009 and in ISPM No. 5: 2010.

Outline of Requirements

This standard provides procedures for establishment, maintenance, and verification of Pest Free Areas (PFA) for fruit flies. The standard outlines measures to reduce the risk of introduction and spread of the pest, criteria for monitoring fruit flies, quarantine operations, and corrective action plans. The procedures necessary for suspension, termination, and reinstatement of the PFA are included. A bilateral workplan may be required to elaborate on the issues described in this standard. A checklist of elements to be evaluated is contained in Appendix 1.

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Background

A fruit fly free area can occur naturally, or may be established through a coordinated suppression and eradication program. If no geographic or biological barriers exist to prevent introduction of fruit flies into the free area from adjacent infested areas, then it is necessary to establish a buffer zone. The nature of the control measures employed and the size of the buffer zone will depend upon the particular characteristics of each PFA.

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In the context of this standard, pest free places of production and pest free production sites may also be relevant, although implemented differently from PFAs (ISPM 10: 1999). Other relevant references may be found in Appendix 2.

Fruit flies of the family Tephritidae are among the most injurious pests of fruits and vegetables in the world. Presence of species in this family not only has a negative direct effect on the economy of many countries, but also has implications on international trade. In the Americas, for example, *Ceratitis capitata* and *Anastrepha ludens* cause economic losses from direct crop damage, as well as from quarantine regulations that restrict movement of fruits and vegetables from infested areas. Fruit flies constitute an important barrier to the export of these products, thereby limiting the trade potential of fruit-producing countries.

The PFA concept is designed to produce plants and/or plant products that have minimal phytosanitary restrictions placed upon them. The intent is that fruits and vegetables from these areas can be moved domestically or internationally without postharvest treatment.

Requirements

1. Establishment of Fruit Fly Pest Free Areas

Prior to designating an area as free of fruit flies, the NPPO should ensure that the area meets the requirements of this standard and the relevant International Standards for Phytosanitary Measures, in particular ISPM 4: 1996 and ISPM 26: 2006.

The NPPOs of the exporting and importing countries should cooperate on the parameters of the PFA early in the establishment process. The NPPO of the country seeking establishment of a fruit fly PFA should document the following: geographic description, surveillance activities, and other technical information.

1.1 Geographic description

1.1.1 The proposed PFA should be described, with supporting maps demonstrating boundaries of the area, places of production, and isolation of the area by a natural barrier.

1.1.2 In the absence of a natural isolating barrier, the steps taken to create a buffer zone adjacent to the PFA should be described with supporting maps and documentation.

1.2 Movement controls

Regulatory movement controls may be required to prevent the entry of target pests into the proposed PFA during the establishment phase. These include:

- Identification of the pathways and regulated articles that require control to establish the proposed PFA.
- If needed, establishment of an inspection program (e.g., use of inspections at road stations and packing houses) for regulated articles moving into the

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proposed PFA. These may include, but are not limited to, sampling records, identification of intercepted specimens, verification of documents, and confirmation that required treatments occurred.

- Application of any other phytosanitary measures.

1.3 Surveillance Activities

1.3.1 For multivoltine fruit flies survey data should be documented for at least 12 consecutive months, while for univoltine fruit flies survey data should be documented for three growing seasons, demonstrating that populations of fruit flies are not detected in commercial, non-commercial, or wild hosts in the proposed PFA. The detection of a single adult, depending on its status, would not disqualify designation as a pest free area. Detection of an immature specimen, two or more fertile adults, or an inseminated female of the target species would require the reinitiation of the surveillance period (ISPM 26:2006).

1.3.2 Technical reports of fruit fly detections, phytosanitary procedures applied, and results of the survey activities should be produced monthly for a minimum of one year prior to recognition of the PFA.

1.3.3 Traps should be placed in host plants with abundant foliage, preferably while the plants are bearing fruit. Host plants that are likely to receive applications of pesticides should be avoided. Therefore, a minimum of two (2) alternative locations per trap should be identified. The traps should not hang below the foliage of the tree, nor should the entrance of the trap be obstructed by the tree's foliage. Traps should be relocated according to the phenology of the host or at least every 12 weeks.

1.3.4 Surveys for establishment are generally more rigorous than those needed for maintenance of the PFA and should be conducted under the following guidelines. These guidelines may be revised as trap and lure efficiencies improve. Any modifications shall be delineated in the bilateral workplan. It is important to consider that the recommended trap densities should be applied mainly in areas with a significant likelihood of capturing fruit flies such as areas with primary hosts and possible high risk pathways. The recommended minimum trap densities may not be met depending upon the presence or absence of hosts in an area. Surveys for establishment should only be implemented at the recommended levels for the time it takes to verify pest absence (at least the 12 months surveillance period for multivoltine fruit flies and three (3) growing seasons for univoltine fruit flies), then proceed to survey recommendations for maintenance.

1.3.4.1 Surveys for fruit flies that do not respond to parapheromones should be conducted with a trap such as the invaginated McPhail or Multilure baited with liquid hydrolyzed protein, dry synthetic food attractants, the Pherocon AM using ammonium acetate, or an accepted equivalent trap/bait combination with recommended baiting interval. Minimum trap density should be 4 traps per km^2

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(10 traps per mi^2), checked for target flies at least once a week for multivoltine and every 2 weeks for univoltine species.

1.3.4.2 Surveys for fruit flies that respond to parapheromones should be conducted with the Jackson trap (or other traps with demonstrated equal or better efficiency, e.g., yellow panel traps, the three component lure traps) baited with trimedlure, ceralure, capilure, cuelure, or methyl eugenol, as appropriate. The bait servicing interval should follow recommended guidelines. For species that respond to trimedlure, ceralure, capilure, or cuelure, the minimum trap density should be 2 traps per km^2 (5 traps per mi^2), monitored for target fruit flies at least once a week. For species that respond to methyl eugenol, the minimum trap density should be 1 trap per km^2 (3 traps per mi^2), monitored for target fruit flies at least once a week for multivoltine and every 2 weeks for univoltine species.

1.3.4.3 The NPPO should establish a quality control program for the survey to verify and document that all protocols are met. The key elements of the quality control program would include: verification of lure efficacy, placement and recovery of marked target flies, regular reviews of survey documentation, audits of trap placement and servicing, and confirmation of identifier competency.

1.4 Other Technical Information

- Historical records of detection, population dynamics, and survey activities for the designated target pest(s) in the proposed PFA should be retained for at least 24 months.
- Records of the commercial production of host crops in the area, and an estimate of non-commercial production, and the presence of wild host material, should be retained.
- If detections of fruit flies have occurred in the proposed PFA during the establishment phase, the phytosanitary measures taken (e.g., delimiting trapping, fruit sampling, pest eradication techniques) and the results of those measures should be documented.
- An official list of the other target arthropod pest species that may be present in the proposed PFA should be established.

2. Maintenance of Fruit Fly Pest Free Areas

In order to maintain the PFA status the NPPO should document movement controls and surveillance activities.

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2.1 Movement Controls

The movement controls and surveillance activities described in sections 1.2 and 1.3 are required to be applied on an ongoing basis to maintain fruit fly pest free area status.

2.2 Surveillance Activities

The following requirements apply to surveillance for maintenance of a fruit fly pest free area, which are different from those described for establishment. In order to properly protect a FF-PFA from pest incursions, trapping should be a continuous activity. Trap density and the trap service schedule are dependent upon the target species and the prevailing climatic conditions; the recommended minimum trap densities may not be met depending upon the presence or absence of hosts in an area. For trap relocation a minimum of two (2) alternative locations per trap should be identified in accordance with these guidelines. Surveillance parameters may be detailed in a bilateral workplan.

2.2.1 Traps for survey of target pest(s) that do not respond to parapheromones should be as described in sections 1.3.3 and 1.3.4.1, with densities as described below. Traps should be relocated according to the phenology of the host or at least every 12 weeks. The trap servicing interval should follow recommended guidelines. Traps should be monitored for target species at least once every two weeks. Minimum trap density should be based on the level of risk. Proximity of alternative hosts, markets, packing houses, and warehouses, the separation of commercial production areas from urban, suburban areas, and location of points of entry should be taken into consideration when assessing the level of risk (ISPM 26: 2006, FAO & IAEA 2003). The following are recommended minimum trap densities based on risk level:

- 5 traps per km^2 (12 traps per mi^2) in high risk areas, such as points of entry to the FF-PFA and known fruit fly pathways.
- 2 traps per km^2 (5 traps per mi^2) in urban and suburban areas within the commercial production area and in buffer zones.
- 1 trap per km^2 (3 traps per mi^2) in commercial production areas.

2.2.2 Traps for survey of the target pest(s) that respond to parapheromones should be as described in Sections 1.3.3 and 1.3.4.2, with densities as described below. The trap servicing interval should follow recommended guidelines. Traps should be monitored for target species at least once every two weeks. The following are recommended minimum trap densities based on risk level:

2.2.2.1 For species that respond to trimedlure, ceralure, capilure, or cuelure:

- 3 traps per km^2 (7 traps per mi^2) in high risk areas, such as points of entry to the FF-PFA and known fruit fly pathways.
- 2 traps per km^2 (5 traps per mi^2) in urban and suburban areas within the commercial production areas and in buffer zones.
- 1 trap per km^2 (3 traps per mi^2) in commercial production areas.

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2.2.2.2 For species that respond to methyl eugenol:

- 3 traps per km^2 (7 traps per mi^2) in high risk areas, such as points of entry to the FF-PFA and known fruit fly pathways.
- 1 trap per km^2 (3 traps per mi^2) in urban and suburban areas within the commercial production areas and in buffer zones.
- 1 trap per 2 km^2 (3 traps per 2 mi^2) in commercial production areas.

2.2.3 Specimen identification and reporting

All specimens captured should be identified to species, sex, and reproductive status, where appropriate, within 4 days of their capture to determine if they are quarantine fruit flies. In the case of single females, determine whether they are inseminated. IPPC pest reporting obligations apply, as described in ISPM 17: 2002.

2.2.4 The NPPO should establish a quality control program for the survey to confirm and document that all protocols are met. The key elements of the quality control program should include: verification of lure efficacy, placement and recovery of marked target flies, regular reviews of survey documentation, audits of trap placement and servicing, and confirmation of identifier competency (FAO & IAEA 2003).

3. Verification of Fruit Fly Pest Free Areas

The NPPO should verify that the requirements to maintain the PFA continue to be met. In addition to the surveillance activities and movement controls detailed in this standard, routine inspection and fruit sampling in the PFA should be carried out. The absence of reports of target pests on commodities moved out of the PFA can contribute to verification that the PFA is being maintained.

4. Change in the Pest Free Area Status

The detection of an adult target pest(s) within the PFA should result in the implementation of a corrective action plan as specified in Section 5 of this standard and immediate notification of trading partners. Confirmation of a reproducing population (e.g., fertilized female) of the target pest(s) in the PFA or detection of target pest(s) during inspection of host products (e.g., larvae or pupae) should result in immediate suspension of the PFA status. PFA status may be terminated if appropriate emergency measures are not taken in response to the detection of a target pest. Trading partners should also be notified immediately of any change in PFA status.

If the target pest is detected in a limited area that can be identified and isolated, then the PFA may be redefined to exclude the infested area.

The PFA status should be terminated if it is determined that the target pest is established in the PFA.

Failure to apply phytosanitary measures necessary to maintain the PFA may result in termination of the PFA status.

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5 Corrective Action Plan

The NPPO should have a documented plan of corrective actions to be implemented if the target pest is detected in the PFA. The corrective actions should be initiated within 48 hours of the identification of a target pest in the surveillance program or identification of an immature life stage in the fruit. Failure to implement corrective actions should result in termination of PFA status (see ISPM 26: 2006, Annex 1).

6 Reinstatement of the Pest Free Area Status

Eradication of the target pest with a 12 month surveillance period for multivoltine fruit flies and 3 growing seasons for univoltine fruit flies is the basis for reinstatement of the PFA status (see ISPM 26: 2006, Annex 1). If the PFA was terminated due to lack of compliance of phytosanitary measures, then the exporting country must resume and document compliance with required phytosanitary measures.

7 Documentation

Documentation supporting PFA status should be available to the importing country upon request.

8. Bilateral Workplans

A PFA may form a critical element of bilateral workplans to facilitate trade of fruit. Further details on the elaboration of workplans are contained in RSPM 19: 2003. It is recommended that workplans related to fruit fly PFAs include the following parameters on identification:

- All fruit fly specimens captured should be identified by the authorized person(s) to species and sex within 4 days of their capture to determine if they are quarantine pests.
- Within 24 hours after positive identification of a quarantine fruit fly capture, the NPPO of the exporting country should notify the NPPO of the importing country in writing, the location where the fruit fly was trapped, as well as the sex and physiological state of captured specimens.

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Appendix 1

The following is a list of elements that should be considered in order to determine if a PFA meets the conditions of this standard:

1. Geographic description of the proposed PFA
   a. maps
   b. places of production
   c. natural barriers
   d. buffer zone
   e. size
   f. location of regulatory control check points, as appropriate

2. Survey protocols for establishment and maintenance of PFA
   a. trap type
   b. bait or lure type
   c. target pest
   d. density of traps
   e. servicing intervals
   f. reporting of survey results

3. Quality control protocols for surveillance
   a. verification of lure efficacy
   b. placement and recovery of marked target flies
   c. regular reviews of survey documentation
   d. audits of trap placement and servicing
   e. confirmation of identifier competency

4. Movement controls
   a. sampling records
   b. identification of intercepted specimens
   c. verification of documents
   d. confirmation that required treatments occurred
   e. documentation of any other phytosanitary procedures

5. Corrective action plan
   a. trigger for plan implementation
   b. delimiting survey
   c. mitigation measures

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Appendix 2: Additional References Related to the Standard

Anonymous, 1996. *Areas in Mexico Free from Fruit Flies* (ALMF, 8/96). Bilingual Document, English-Spanish, Support document to the Quarantine Bilateral Agreement between MAF New Zealand and SAGARPA, Mexico.

ISPM 6. 1997. *Guidelines for Surveillance*. Rome, IPPC, FAO.

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SAGARPA. 1999. *Norma Oficial Mexicana NOM-023-FITO-1995, Por la que se Establece la Campaña Nacional Contra Moscas de la fruta*. Mexico.

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SARH/DGSV-USDA/APHIS. 1990 *Work Plan for the Sonora Fruit Fly Free Zone Program for the 1990 Export Season*. Bilingual English-Spanish. 21 pp.

USDA-APHIS-PPQ. 2003. *National Exotic Fruit Fly Trapping Protocol*.
Guatetemala-Mexico-Estados Unidos. 1998. *Manual de Procedimientos, Plan de Emergencia*.

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