# INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES

# DRAFT STANDARD

# SYSTEMS APPROACHES FOR PEST RISK MANAGEMENT OF FRUIT FLIES (TEPHRITIDAE)

## (201-)

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**CONTENTS**

# [1] INTRODUCTION

## [2] Scope

[3] This standard provides guidelines for the establishment and use of systems approaches as an option for pest risk management of fruit flies to facilitate trade of fruits. This standard applies to fruit flies (Tephritidae) of economic importance.

## [4] References

[5] **IPPC**. 1997. *International Plant Protection Convention*. Rome, IPPC, FAO.

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

[7] **ISPM 5**. 2009. *Glossary of phytosanitary terms*. Rome, IPPC, FAO.

[8] **ISPM 10**. 1999. *Requirements for the establishment of pest free places of production and pest free production sites*. Rome, IPPC, FAO.

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

[10] **ISPM 14**. 2002. *The use of integrated measures in a systems approach for pest risk management*. Rome, IPPC, FAO.

[11] **ISPM 23**. 2005. *Guidelines for inspection*. Rome, IPPC, FAO.

[12] **ISPM 26**. 2006. *Establishment of pest free areas for fruit flies (Tephritidae)*. Rome, IPPC, FAO.

[13] **ISPM 30**. 2008. *Establishment of areas of low pest prevalence for fruit flies (Tephritidae)*. Rome, IPPC, FAO.

## [14] Definitions

[15] Definition of phytosanitary terms used in the present standard can be found in ISPM 5:2009.

## [16] Outline of requirements

[17] For the establishment of a fruit fly systems approach (FF-SA), the relationship between host, target fruit fly species and specified area for the site, place or area of production of the host commodity should be defined. The pest risk should have been assessed and options for pest risk management measures determined by means of pest risk analysis (PRA).

[18] An important requirement for the establishment of an FF-SA is a low pest population level in the area of production of the host commodity in combination with other measures (such as host status, crop management practices or post-harvest and shipping measures) that are available to be integrated into the FF-SA to reduce pest risk to an appropriate level.

[19] An FF-SA may include a number of independent measures, which may be applied throughout the three stages of the process, namely during pre-harvest and harvest, post-harvest and shipping, and entry and distribution within the importing country, if appropriate.

[20] For establishment and maintenance of the FF-SA, operational procedures should be required. Supervision activities may be agreed between the importing and exporting contracting parties. Guidelines on corrective action plans are described in Annex 1.

[21] The establishment and maintenance of the FF-SA should be adequately documented and the documentation reviewed and updated regularly.

## [22] BACKGROUND

[23] Fruit flies are pests of economic importance affecting trade of hosts and their movement may pose a pest risk for endangered areas. To identify and manage the risk, a pest risk analysis (PRA) should be conducted and risk management measures should be applied. (ISPM 2:2007, ISPM 11:2004).

[24] Contracting parties are obliged to:

> institute only phytosanitary measures that are technically justified, consistent with the pest risk involved and represent the least restrictive measures available, and result in the minimum impediment to the international movement of people, commodities and conveyances. [Article VII.2g of the IPPC]

[25] In many cases, the only phytosanitary measures used by contracting parties for import and/or movement of fruit fly host commodities have been single measures such as phytosanitary treatments or pest free areas for fruit flies (FF-PFAs) (ISPM 26:2006). In other cases, prohibition of the trade of certain host commodities has been the only phytosanitary measure applied. In some cases, based on pest risk assessment, less stringent phytosanitary measures integrated into a systems approach may be sufficient to reduce the risks to an appropriate level.

[26] A systems approach requires two or more measures that are independent of each other, and may include any number of measures that are dependent on each other (ISPM 14:2002). Required phytosanitary security can be achieved through a combination of independent measures, for example a combination of areas of low pest prevalence for fruit flies (FF-ALPPs) (ISPM 30:2008) with fruit fly free places of production (FFF-POP) and fruit fly free production sites (FFF-PS) (ISPM 10:1999).

[27] Systems approaches have been developed as pest risk management options to meet the appropriate level of phytosanitary protection of importing contracting parties in situations where a single measure is not available or practicable, or in cases where a systems approach is more cost-effective than the single measure available. Requirements for the development and evaluation of systems approaches are given in ISPM 14:2002.

[28] Systems approaches include a combination of measures that interact and that may be applied in different places at different times (i.e. in the exporting country, during transportation or in the importing country). They may therefore involve a number of organizations, individuals and measures. Their successful implementation will depend on effective coordination of actions among participants.

[29] In many cases, exporting contracting parties have developed and established fruit fly systems approaches (FF-SAs) in association with importing contracting parties. The FF-SAs may be equivalent to or alternatives to single measures such as phytosanitary treatments or FF-PFAs. In cases where an effective FF-SA has been applied, the same components could be used by other importing and exporting contracting parties in another area with similar conditions. These FF-SAs have facilitated the export and movement of fruit that are fruit fly hosts into endangered areas.

[30] In addition to the facilitation of trade, the advantages of implementing an FF-SA may include:

- increased fruit production and quality
- promoting the use of environmentally friendly pest control methods
- development of phytosanitary capacity
- increased sustainability of horticultural production systems
- increased cost-effectiveness in achieving an appropriate level of protection
- decreased dependency on chemical pesticides.

[31] An area eligible for the establishment of an FF-SA can be as small as a production site (for further details refer to ISPM 10:1999) or as large as an entire country or region.

[32] The target pests for which this standard was developed include insects of the order Diptera, family Tephritidae, of the genera *Anastrepha*, *Bactrocera*, *Ceratitis*, *Dacus*, *Rhagoletis*, *Toxotrypana* and other genera of economic importance.

[33] ## REQUIREMENTS

[34] ## 1. General Requirements

[35] ### 1.1 Pest risk analysis

[36] PRA determines whether a pest should be regulated and identifies the measures for pest risk mitigation. As a result of PRA, a national plant protection organization (NPPO) may consider that the integration of measures in an FF-SA may reduce the pest risk to an appropriate level (ISPM 2:2007; section 3 of ISPM 14:2002).

[37] The decision to use a specific FF-SA relates to a particular relationship between host, target fruit fly species and specified area, and is closely linked to trade opportunities, and economic and operational feasibility.

[38] Basic information required for the establishment of an FF-SA includes the following:

[39] The host should be identified to the species level. In some cases, when the cultivar is important as a risk mitigation factor, such as resistance to infestation, it is important to identify the host to cultivar level.

[40] Data on the target fruit fly species associated with the host should be available (such as population density and fluctuation, host sequence).

[41] The area proposed for an FF-SA should be described and adequately documented.

[42] In practice, FF-SAs may be specific or broad depending on the host-fruit fly species-area relationships. Systems approaches can be applied to one or more host and/or fruit fly species in the same area.

[43] Measures may be applied at different stages of the production and distribution chain. Some of the measures to be applied under an FF-SA may include FFF-POP, FFF-PS, FF-ALPP, host status and limited distribution in the endangered area.

[44] ### 1.2 Documentation and record-keeping

[45] The establishment and maintenance of an FF-SA should be documented and properly recorded. Control points and stakeholders should be identified. The roles and responsibilities of the NPPOs of the exporting and importing contracting parties and of the producers and exporters should be specified and documented. Corrective action plans should also be documented. (Annex 1 provides guidelines on corrective action plans for an FF-SA.) The documentation and records should be reviewed and updated regularly. Documents should be maintained for at least 24 months and made available to the NPPOs of the importing contracting parties upon request.

[46] Documentation may include:

- pest risk analysis
- operational procedures developed to establish and maintain the FF-SA
- description of corrective actions
- reviews of the FF-SA and any agreed amendments
- details of operational procedures that allow traceability.

### [47] 1.3 Supervision

[48] The FF-SA should be operated in accordance with the officially approved procedures and should be checked to ensure the system achieves its objectives.

[49] Compliance with the FF-SA should be verified by the NPPO of the exporting contracting party, through review of documentation and operational procedures. Supervision can also be done by the NPPO of the importing contracting party.

## [50] 2. Specific Requirements

### [51] 2.1 Establishment of an FF-SA

[52] Establishment of an FF-SA should require consultation and cooperation between the NPPOs of the exporting and importing contracting parties. It is also advisable to involve in this process the interested and affected groups (e.g. other stakeholders) of both contracting parties.

[53] Once the basic information has been gathered and the required appropriate level of protection is established, the available measures should be determined. The number and combination of the appropriate measures should be agreed by the contracting parties involved. Measures chosen should be feasible, cost-effective and the least trade-restrictive.

[54] During this process, it is useful to identify the control points in the FF-SA (Appendix, ISPM 14:2002). The appropriate number and combination of measures should be selected and their efficacy agreed upon by the importing and exporting contracting parties.

[55] Based on the place and time of their application, there are three stages where measures can be applied from production of the host within the exporting country to its distribution within the importing country. These stages are:

- pre-harvest and at harvest
- post-harvest and shipping
- entry and distribution.

#### [56] 2.1.1 Pre-harvest and at harvest

[57] Measures applied in this stage are used to minimize infestation in the production area, such as selection of resistant cultivars, harvesting time, pest exclusion structures and specified pest population levels. Specified pest population levels are required for establishing the FF-SA under a different relationship between host, target fruit fly species and specified area.

##### [58] 2.1.1.1 Low level of pest population

[59] In many cases, a requirement for establishing an FF-SA is a specified pest population level of the target fruit fly species in the defined area, for example an ALPP, among others. This may be as a result of a naturally occurring pest population or as a result of the implementation of control measures. Evidence to support the stated pest population level may be required and, if so, should be obtained as a result of surveillance using the methods described in the draft annex on trapping of ISPM 26:2006). Surveillance of population levels of target fruit flies may be conducted not only during the production phase of the host commodity but also during non-production periods.

[60] Nevertheless, areas with low pest population levels may not conform to the requirements of FF-ALPPs. If so, the measures used to achieve a specified pest population level may include:

- growing hosts in areas not suitable for the target fruit fly (e.g. because of geographic location, altitude, climate)
- growing hosts at specific periods when the pest is at low levels

- crop management including cultural control practices and other measures, such as:
  - . fruit stripping
  - . collection and destruction of mature and fallen fruit
  - . elimination or replacement of other host plants by non-host plants where appropriate
  - . discouraging intercropping with fruit fly host plants
  - . flowering control and management of time of fruit production
  - . management of non-commercial hosts within the production area
  - . chemical control such as insecticide bait treatments, bait stations and male annihilation technique
  - . biological control such as natural enemies or sterile insect technique
  - . bagging and mass trapping
  - . other practices found suitable by the contracting parties that may help in achieving a specified pest population level
- control of movement of host material into the area.

*[61]* **2.1.1.2 Fruit fly free places of production and fruit fly free production sites**

*[62]* FFF-POP and FFF-PS are important risk mitigation measures that, when used in conjunction with other independent measures, can provide the appropriate level of protection. They have been shown to be feasible and sustainable, and are widely used as components of an FF-SA.

*[63]* They may assure localized or temporal fruit fly freedom (ISPM 10:1999) and may include the following activities:

- growing products in specific fruit fly proof conditions such as pest free production structures (e.g. protected environments such as greenhouses with double doors, air curtains etc.)
- growing products in FFF-POP and FFF-PS geographically isolated from fruit flies
- growing products in seasons not suitable for fruit flies.

*[64]* For maintenance of FFF-POP and FFF-PS, the critical activities are:

- surveillance to confirm fruit fly freedom and to apply control measures in case of fruit fly detections (see ISPM 26:2006)
- phytosanitary certification to confirm compliance with the requirements of the FFF-POP or FFF-PS
- implementation of roles and responsibilities of NPPOs and stakeholders
- public awareness to assist in the maintenance of the status of FFF-POP and FFF-PS.

*[65]* **2.1.1.3 Status of the host**

*[66]* Host status is an important risk mitigation measure that, when used in conjunction with other independent measures, can provide the appropriate level of protection. Measures to prevent fruit fly host infestation may include:

- selection of less susceptible fruit fly hosts
- selection of specific resistant varieties or cultivars
- harvesting at a less susceptible stage or at a particular time.

*[67]* **2.1.2 Post-harvest and shipping**

*[68]* A range of measures may be applied in this stage, which may include post-harvest treatments and other post-harvest measures to ensure mitigation of risks in the consignment from harvest until arrival at the point of entry.

[69] #### 2.1.2.1 Post-harvest measures

[70] Measures at the post-harvest and shipping stage may include:

- activities to prevent infestation (e.g. processing in screen-protected packing rooms and warehouses, using cold storage, wrapping of fruit)
- selection and packing of commodities at a certain ripeness/maturity stage and quality
- sampling
- inspection (ISPM 23:2005)
- phytosanitary certification.

[71] An FF-SA may also take into consideration the effects of measures applied for other pests that contribute to reducing the risk of fruit flies (e.g. waxing, water dipping, cold storage).

[72] In cases where the combination of such measures adequately reduces the pest risk, there is no need to apply a supplementary phytosanitary treatment.

[73] #### 2.1.2.2 Post-harvest treatments

[74] Post-harvest treatments may be used in combination with other measures in an FF-SA. These treatments as part of an FF-SA are not those applied as a stand-alone measure. Less efficacious treatments may be used as long as the other measures in combination with the treatment meet the appropriate level of protection of the importing contracting party. The type and efficacy of such supplementary post-harvest treatments should be agreed to by the importing and exporting contracting parties.

[75] ### 2.1.3 Entry and distribution

[76] In some cases, in cooperation with the exporting contracting party, the NPPO of the importing contracting party may agree to implement one or more measures on arrival of the consignment as part of the FF-SA. Such measures may include:

- sampling and inspection
- limiting the points of entry
- seasonal periods of entry
- limiting the distribution of the commodity within the importing country.

[77] ## 2.2 Maintenance of a fruit fly systems approach

[78] Operational procedures should be required. Such procedures may take the form of a written document (work plan, protocol etc.) outlining the specific activities as part of a bilateral arrangement between the NPPOs of the importing and exporting contracting parties.

[79] The operational procedures developed to establish and maintain the FF-SA generally include the following:

- description of the area of production intended for the FF-SA
- fruit host being exported and related target fruit fly
- participating organizations and their roles and responsibilities
- operational elements:
  - . surveillance and control programme
  - . training
  - . identification capacity
  - . procedures that allow traceability
- NPPO and stakeholders' compliance arrangement

- corrective actions (see Annex 1).

*[80]* The measures implemented in the FF-SA should be carried out in accordance with the agreed operational procedures.

*[81]* The NPPO should monitor all stages and control points, verifying compliance with the operational procedures and implementing corrective actions, as appropriate.

[82] This annex is a prescriptive part of the standard.

## [83] ANNEX 1: Guidelines on corrective action plans for a fruit fly systems approach

[84] During establishment and maintenance of an FF-SA, the success or failure of any of the measures should be determined by monitoring the procedures during their application. In the case of any faults in the measures that comprise the systems approach, corrective actions should be taken.

[85] Non-compliance may occur in the application of one or more of the measures of the FF-SA. Ongoing verification may indicate the necessity to revise the system to ensure the appropriate level of protection is reached.

### [86] 1. Non-compliance

[87] Non-compliance involves incorrect implementation of the FF-SA operational procedures. Non-compliance may occur in one or more of the stages of the FF-SA (pre-harvest and harvest, post-harvest and shipping, or entry and distribution). It is important to identify in which stage or stages the non-compliance has occurred.

### [88] 1.1 Non-compliance at the pre-harvest and harvest stage

[89] In cases of non-compliance of operational procedures at pre-harvest or harvest, the relevant site, place or area involved in the FF-SA may be suspended until the non-compliance has been rectified.

### [90] 1.2 Non-compliance at the post-harvest and shipping stage

[91] In cases of non-compliance of operational procedures at the post-harvest and shipping stage, the relevant stakeholders involved with treatment, packing or shipping under an FF-SA may be suspended until the non-compliance has been rectified.

### [92] 1.3 Non-compliance at entry and distribution

[93] The NPPO of the importing country may take corrective action in cases of non-compliance of operational procedures at entry or distribution.

### [94] 2. Ongoing verification of the systems approach

[95] In cases in which the operational procedures of the FF-SA were properly implemented, but where, however, one or more of the components did not provide the appropriate level of protection, a revision of the system should be conducted to ensure the appropriate level of protection. This revision may not necessarily involve the suspension of trade.