

**INTERNATIONAL STANDARDS FOR  
PHYTOSANITARY MEASURES**

***ESTABLISHMENT OF AREAS OF LOW PEST PREVALENCE  
FOR FRUIT FLIES (TEPHRITIDAE)***

**(200-)**

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## INTRODUCTION

### SCOPE

This standard provides guidelines for the establishment and maintenance of areas of low pest prevalence for fruit flies by a National Plant Protection Organization (NPPO). These areas may then be considered as official pest risk management measures alone, or as part of a system, to facilitate trade of fruit fly host products, or to minimize the spread of regulated fruit flies within a country. This standard applies to fruit flies (Tephritidae) of economic importance.

### REFERENCES

*Agreement on the Application of Sanitary and Phytosanitary Measures*, 1994. World Trade Organization, Geneva.

*Determination of pest status in an area*, 1998. ISPM No. 8, FAO, Rome.

*Establishment of pest free areas for fruit flies (Tephritidae)*, 2006. ISPM No. 26, FAO, Rome.

*Glossary of phytosanitary terms*, 2007. ISPM No. 5, FAO, Rome.

*Guidelines for surveillance*, 1997. ISPM No. 6, FAO, Rome.

*International Plant Protection Convention*, 1997. FAO, Rome.

*Pest reporting*, 2002. ISPM No. 17, FAO, Rome.

*Requirements for the establishment of areas of low pest prevalence*, 2005. ISPM No. 22, FAO, Rome.

*The use of integrated measures in a systems approach for pest risk management*, 2002. ISPM No. 14, FAO, Rome.

### DEFINITIONS

Definitions of phytosanitary terms used in the present standard can be found in ISPM No. 5 (*Glossary of phytosanitary terms*, 2007).

### ABBREVIATIONS USED IN THIS STANDARD

FF-ALPP	area of low pest prevalence for fruit flies
FF-PFA	pest free area for fruit flies
FTD	flies per trap per day
FTW	flies per trap per week

### OUTLINE OF REQUIREMENTS

The general requirements for establishment and maintenance of an area of low pest prevalence for fruit flies (FF-ALPP) include:

- confirming the operational and economic feasibility of the FF-ALPP
- describing the purpose of the area
- listing the target fruit fly species(s) for the ALPP
- operational plans
- determination of the FF-ALPP
- documentation and record keeping
- supervision activities.

For the establishment of the FF-ALPP, parameters used to estimate fruit fly prevalence and the efficacy of trapping devices for surveillance should be determined as stated in Annex 1. Surveillance, control measures and corrective action planning are required for both establishment and maintenance. Corrective action planning is described in Annex 2.

Other specific requirements include phytosanitary procedures, surveillance, and suspension, loss and reinstatement of the status of the FF-ALPP.

## **BACKGROUND**

The International Plant Protection Convention (IPPC, 1997) contains provisions for areas of low pest prevalence (ALPPs), as does the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures (WTO-SPS Agreement). ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*) describes different types of ALPPs and provides general guidance on the establishment of ALPPs. ALPPs may also be used as part of a systems approach (ISPM No. 14: *The use of integrated measures in a systems approach for pest risk management*).

Fruit flies are a very important group of pests for many countries because of their potential to cause damage to fruits and restrict access to international markets for plant products that can host fruit flies. The high probability of introduction of fruit flies associated with a wide range of hosts results in restrictions imposed by many importing countries and the need for exporting countries to apply phytosanitary risk management measures to ensure that the risk of introduction is appropriately mitigated.

This standard provides guidance for the establishment and management by the NPPO or competent authority for FF-ALPPs with the aim to facilitate trade by minimising the spread of regulated fruit flies from a defined area.

An FF-ALPP may be established in an area of low pest prevalence, whether this occurs naturally or as a result of management practices that reduce the number of fruit flies in the area to a low level. This may be a buffer zone protecting an FF-PFA, fruit fly free places of production or fruit fly free production sites. It may also occur as a result of crop production systems that suppress the population of fruit flies in an area to limit their impact on the crop. FF-ALPPs may also develop during official fruit fly suppression or eradication programmes.

The decision to establish an FF-ALPP may be closely linked to market access as well as to economic and operational feasibility.

## **REQUIREMENTS**

### **1. General Requirements**

The concepts and provisions of ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*) apply to the establishment and maintenance of areas for all pests including fruit flies, and therefore it should be referred to in conjunction with this standard.

An FF-ALPP may be established in accordance with this ISPM under a variety of different situations. Some of them require the application of the full range of elements provided by this standard, others require the application of only some of those elements.

Phytosanitary measures and specific procedures as further described in this standard may be required for the establishment and maintenance of an FF-ALPP by the NPPO. The decision to establish an official FF-ALPP may be based on all or some of the technical factors provided in this standard, as appropriate. They include necessary components such as pest biology and control methods, which will vary according to the species of fruit fly for which the FF-ALPP is being established.

The determination to establish an official FF-ALPP should be considered against the overall operational and economic feasibility of establishing a programme to meet and maintain the low pest level and the objectives for which the FF-ALPP is established. The parameters for establishment and maintenance of the FF-ALPP may need to be confirmed through bilateral negotiations with an importing country if the area is to be considered as a phytosanitary risk management measure, either alone or as part of a systems approach.

An FF-ALPP may be applied to facilitate the movement of fruit fly host products from one FF-ALPP to another of the same fruit fly pest status within the same country, or as a part of a system to protect areas endangered by a regulated fruit fly pest.

The essential prerequisite for establishment of an FF-ALPP is an area that exists naturally, or that can be established, and that can be delimited, monitored and verified by the NPPO to be of a known fruit fly prevalence level. The area may be in place to protect a PFA or support sustainable crop production, or may

have developed in response to suppression or eradication actions. It may occur naturally as a result of climatic, biological or geographic factors that reduce or limit the fruit fly population through all or part of a year.

An area can be defined as an FF-ALPP for one or more target fruit fly species. However, for an FF-ALPP covering multiple target fruit fly species, trapping devices and their deployment densities and locations should be specified and low pest prevalence levels determined for each target fruit fly species.

The successful establishment and maintenance of FF-ALPPs is greatly assisted by the support and participation of the public, especially the local community in close proximity to the FF-ALPP. The support of individuals who travel to or through the area, including parties with direct and indirect interest, are also critical to the success of the FF-ALPP. Further details on these aspects are given in section 1.1 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*).

### **1.1 Operational plans**

In most cases, an official operational plan is needed to specify the required phytosanitary procedures to establish and maintain an FF-ALPP.

An operational plan for an FF-ALPP should describe the main procedures to be carried out such as surveillance activities, procedures to maintain the specified level of low pest prevalence, the corrective action plan and any other procedures that are required to achieve the objective of the FF-ALPP.

### **1.2 Determination of an FF-ALPP**

Elements for consideration for the determination of an FF-ALPP are outlined in section 2.1 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*).

The following elements should also be considered for the determination of an FF-ALPP:

- delimitation of the area (extension, detailed maps including an accurate description of the boundaries or GPS coordinates showing the boundaries, natural barriers, entry points and host area locations, urban areas)
- target fruit fly species and its seasonal and spatial distribution within the area
- location and abundance of primary (biologically preferred) and secondary (biologically non-preferred) hosts
- climatic characterization, for example rainfall, relative humidity, temperature, prevailing wind speed and direction
- determination of host status of commodities to be exported from the ALPP.

In areas where prevalence of fruit flies is naturally at a low level because of climatic, geographical or other reasons (e.g. natural enemies, secondary hosts), the target fruit fly population may already be below the specified level of low pest prevalence without applying any control measures. In such cases, surveillance should be undertaken to validate the low prevalence status and may be recognized in accordance with the examples listed in section 3.1.1 of ISPM No. 8 (*Determination of pest status in an area*). If, however, the fruit flies are detected above the specified level of low pest prevalence (for example, because of extraordinary climatic conditions or other reasons) corrective actions must be applied.

### **1.3 Documentation and record keeping**

The phytosanitary procedures used for the determination, establishment, verification and maintenance of an FF-ALPP should be adequately documented. They should be reviewed and updated regularly, including corrective actions if required (as described in ISPM No. 22: *Requirements for the establishment of areas of low pest prevalence*). It is recommended that a manual of procedures relating to the operational plan is prepared for the FF-ALPP.

For determination and establishment, documentation may include:

- list of hosts known to occur in the area, including description of host fruit production in area
- delimitation records: (a) detailed maps showing the boundaries, natural barriers (if present) and entry points; (b) description of agro-ecological features such as the location of main host areas, marginal host areas and urban areas; and (c) meteorological conditions

- surveillance records: types of surveys, number and type of traps and lures, frequency of trap inspection, trap density, trap array, type, amount, date and frequency of fruit sampled, number of target fruit flies captured by species for each trap
- record of control measures used: type(s) and locations.

For verification and maintenance, documentation should include the data recorded to demonstrate the population levels of the target fruit fly species. The records of surveys and results of other operational procedures should be retained for at least 24 months. If the FF-ALPP is being used for export purposes, records should be made available to the NPPO of the importing country on request.

#### **1.4 Supervision activities**

The FF-ALPP programme, including regulatory control, surveillance procedures (e.g. trapping, fruit sampling) and corrective action planning, should comply with officially approved procedures. Such procedures may include official delegation of responsibility assigned to key personnel, for example:

- a person with defined authority and responsibility to ensure that the systems/procedures are implemented and maintained appropriately
- entomologist(s) with responsibility for the authoritative identification of fruit flies to species level.

The NPPO should evaluate or audit the operation of the procedures for establishment and maintenance of the FF-ALPP to ensure that effective management is maintained even where the responsibility to carry out specific activities has been delegated to outside the NPPO. Critical control points in which results should be monitored and processes actively managed include:

- operation of surveillance procedures
- surveillance capability
- trapping materials (traps, attractants) and procedures
- identification capability
- application of control measures
- documentation
- implementation of corrective actions, where applied.

## **2. Specific Requirements**

### **2.1 Establishment of the FF-ALPP**

Elements for consideration when establishing an FF-ALPP are described in section 2.1 and 2.2 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*).

The following should be developed and implemented:

- determination of the specified level of low pest prevalence
- surveillance system to validate low pest prevalence status
- trapping materials (traps, attractants) and procedures where applicable
- reduction of the risk of entry of the target fruit fly species
- domestic declaration of low pest prevalence.

#### **2.1.1 Determination of the specified level of low pest prevalence**

Specified levels of low pest prevalence will depend on the level of risk associated with the target fruit fly species–host–area interaction. These levels should be established by the NPPO of the country where the FF-ALPP is located with sufficient precision to allow assessment of whether surveillance data and protocols are adequate to determine that pest prevalence is below these levels. Establishment of the parameters used to estimate the level of fruit fly prevalence is described in Annex 1.

If an FF-ALPP is established for export of host fruit, the specified level of low pest prevalence should be established in conjunction with the importing country taking into account factors and elements previously mentioned.

#### **2.1.2 Geographic description**

The NPPO defines the limits of a proposed FF-ALPP. Isolation (physical or geographic) is not necessarily required for establishment of FF-ALPP.

Boundaries used to describe the delimitation of the FF-ALPP should be established and closely related to the relative presence of primary hosts of the target fruit flies or adjusted to readily recognizable boundaries.

### **2.1.3 Documentation and verification**

The NPPO should verify and document all procedures implemented, elements of which are described in ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*).

### **2.1.4 Surveillance activities prior to establishment**

Prior to the establishment of an FF-ALPP, surveillance to assess the presence and abundance of the target fruit fly species should be undertaken for a period determined by its biology, behaviour, climatic characteristics of the area, host availability and as technically appropriate for at least 12 consecutive months.

## **2.2 Phytosanitary procedures**

### **2.2.1 Surveillance activities**

Surveillance systems based on traps are similar in any type of fruit fly prevalence area. The surveillance used in an FF-ALPP may include those processes described in ISPM No. 6 (*Guidelines for surveillance*), section 2.2.2.1 on trapping procedures of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*), and any other relevant scientific information.

Fruit sampling as a routine surveillance method is not widely used for monitoring fruit flies in low prevalence areas except in areas where sterile insect technique (SIT) is applied, where it may be a major tool.

In some cases, the NPPO may complement trapping with fruit sampling for fruit fly surveillance and/or monitoring. However, fruit sampling will not provide sufficient accuracy for describing the size of the population and should not be solely relied on to validate or verify the FF-ALPP status. Surveillance procedures may include those described in section 2.2.2.2 on fruit sampling procedures of ISPM No. 26: (*Establishment of pest free areas for fruit flies (Tephritidae)*).

The presence and abundance of fruit fly hosts should be recorded separately identifying commercial and major non-commercial hosts. This information will help in planning the trapping and host sampling activities and may help in anticipating the potential ease or difficulty of defining and maintaining the phytosanitary status of the area.

The NPPO should have identification capabilities or have access to suitable specialists for the target fruit fly species detected during the surveys (whether adult or larvae). This capability should also exist for the ongoing verification of FF-ALPP status.

### **2.2.2 Reduction and maintenance of the level of target fruit fly populations**

Specific control measures may be applied to reduce fruit fly populations to or below the specified level of low pest prevalence. Suppression of fruit fly populations may involve the use of more than one control option. Since the target fruit fly species are permanently present in the area, preventive and/or sustainable control measures to maintain fruit fly populations at or below the specified level of low pest prevalence are necessary. Efforts should be made to select those measures with least environmental impact.

Suppression of fruit fly populations may involve the use of more than one control option described in section 3.1.4.2 of ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*).

Available methods may include:

- chemical control (e.g. selective insecticide bait, aerial and ground spraying, bait stations and male annihilation technique)
- physical control (e.g. fruit bagging, fruit stripping)
- biological control (e.g. natural enemies, SIT)
- cultural control (e.g. destruction of mature and fallen fruit, replacement of host plants by non-host plants, early harvesting, discouraging intercropping with fruit fly host plants, pruning before the fruiting period, removal of shade trees, removal of untreated non-commercial hosts).

### **2.2.3 Reduction of the risk of entry of the target fruit fly species**

Phytosanitary measures may be required to reduce the risk of entry of the specified pests into the FF-ALPP. These are outlined in Section 3.1.4.3 of ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*).

#### **2.2.4 Domestic declaration of low pest prevalence**

The NPPO should verify the FF-ALPP status of the area (in accordance with ISPM No. 8: *Determination of pest status in an area*) specifically by confirming compliance with the procedures set up in accordance with this standard (surveillance and controls). The NPPO should declare and notify the establishment of the FF-ALPP, as appropriate.

In order to be able to verify the FF-ALPP status in the area and for purposes of internal management, the continuing FF-ALPP status should be checked after the ALPP has been established and any phytosanitary measures for the maintenance of the FF-ALPP have been put in place.

### **2.3 Maintenance of the FF-ALPP**

Once an FF-ALPP is established, the NPPO should maintain the established documentation and verification procedures (auditable), and continue to follow phytosanitary procedures and movement controls, and keep records.

#### **2.3.1 Surveillance**

In order to maintain the FF-ALPP status, the NPPO must continue surveillance, as described in section 2.1.2.

#### **2.3.2 Measures to maintain specified levels of target fruit fly populations**

In most cases the control measures as identified in section 2.2.2 may need to be applied to maintain the FF-ALPP, since the target fruit flies are still present in the established area.

If the monitored fruit fly level is observed to be increasing (but remains below the specified level for the area) a threshold for action established by the NPPO may be reached. At this point the NPPO may require implementation of additional control measures (e.g. as described in section 3.1.4.2 of ISPM No. 22: *Requirements for the establishment of areas of low pest prevalence*). This threshold should be set to provide adequate warning of potentially exceeding the specified level of low pest prevalence and avert suspension.

If additional measures are required to prevent the entrance of other target fruit fly species into the FF-ALPP, options to strengthen procedures include:

- physical and biological barriers, such as elimination of host plants that fruit at the same time as the host commodity around the FF-ALPP
- perimeter trap-hosts
- elimination of other primary or secondary hosts around the FF-ALPP
- reduction in the number of trees that provide shelter to fruit flies around the FF-ALPP.

### **2.4 Corrective action plans**

A corrective action plan for the FF-ALPP should be applied by the NPPO when the population level of the target fruit fly exceeds the specified level of low pest prevalence. The corrective action plan should be based on the measures described in Annex 2.

### **2.5 Suspension, loss and reinstatement of FF-ALPP status**

#### **2.5.1 Suspension of FF-ALPP status**

If the specified pest level of the target fruit fly species is exceeded **either** throughout the whole FF-ALPP area or within a sector **of** the FF-ALPP, **the entire FF-ALPP** is normally suspended. However, where the affected area within the FF-ALPP can be identified and clearly delimited, then the FF-ALPP may be redefined to suspend only that area. When such a suspension is put in place, the criteria for lifting the suspension and restoring the original FF-ALPP status should be made clear. Importing NPPOs should be notified of these actions (further information on pest reporting requirements is provided in ISPM No. 17: *Pest reporting*).

Suspension may also apply if faults in the procedures are found (for example inadequate trapping or pest control measures).

If an FF-ALPP is suspended, an investigation by the NPPO should be initiated to determine the cause of the failure.

### **2.5.2 Loss of FF-ALPP status**

Loss of FF-ALPP status should occur if the specified level of low pest prevalence of the target fruit fly species has been exceeded and after the application of corrective actions that level cannot be achieved again, or if critical failures in the procedures occur and the integrity of the system is unlikely to be restored. Importing NPPOs should be notified of any change in status (further information on pest reporting requirements is provided in ISPM No. 17: *Pest reporting*).

In order to achieve FF-ALPP status again, the procedures for establishment and maintenance outlined in this standard should be followed, taking into account all background information related to the area.

### **2.5.3 Reinstatement**

Reinstatement of FF-ALPP status may take place when:

- the population level no longer exceeds the specified level of low pest prevalence and this is maintained for a period determined by the biology of the species and the prevailing environmental conditions
- non-compliance to procedures has been corrected and verified.

Once technical conditions are achieved again, through the application of corrective actions contained in the plan, recognition of reinstatement should be carried out without undue delay.

## PARAMETERS USED TO ESTIMATE THE LEVEL OF FRUIT FLY PREVALENCE<sup>1</sup>

Parameters used to determine the level of fruit fly prevalence in the FF-ALPP are defined by the NPPO. The most widely used parameter is the FTD (flies per trap per day). More precise spatial data may be presented on the basis of trap density (e.g. FTD per unit area) or temporally for each trap present in an area over time.

FTD values should be established in relation to the risk of infestation of the fruits that are intended to be protected by the FF-ALPP, and in relation to any specific related objectives of the ALPP (e.g. fruit-fly free commodities for export). In situations where a single FF-ALPP contains more than one host species (i.e. the ALPP is intended to protect mixed harvest objectives), the FTD value should be based on scientific information relating to the primary host of the fruit fly species, the risks of infestation, and comparative preferences of the target fruit fly species for the different hosts. However, in situations where the ALPP contains only one type of host, lower FTD values are usually established for the primary host(s) of the target fruit fly species for which the FF-ALPP is established and higher values for secondary hosts.

The biology of the target fruit flies (including number of generations per year, host range, host species present in the area, temperature thresholds, behaviour, reproduction and dispersion capacity) plays a major role in determining appropriate FTD levels. For FF-ALPP with several hosts present, the derived FTD level will need to reflect host diversity and abundance, host preference and host sequence for each target fruit fly species present. Although an FF-ALPP may have different FTD levels for each relevant target species, the level will remain fixed for the whole area and duration of the FF-ALPP operation.

The FTD is a population index used to estimate the average number of flies captured by one trap in one day. This parameter estimates the relative number of fruit fly adults in a given time and space. It provides baseline information to compare fruit fly populations among different places and/or times.

The FTD value is the result of dividing the total number of captured flies by the product obtained from multiplying the total number of inspected traps by the average number of days the traps were exposed. The formula is as follows:

$$\text{FTD} = \frac{\text{F}}{\text{T} \times \text{D}}$$

Where

F = total number of flies captured

T = number of inspected traps

D = average number of days traps were exposed in the field.

In cases where traps are regularly inspected on a weekly basis, or longer in the case of winter surveillance operations, the parameter may be “flies per trap per week” (FTW). It estimates the number of flies captured by one trap in one week. Thus, FTD can be obtained from FTW by dividing by 7.

Efficiency of the types of traps and attractants used to estimate the levels of the pest population and the procedures applied for servicing the traps should be taken into consideration. The rationale is that different trap efficiencies could lead to different FTD values at the same location for a given population, so they have a significant effect in measuring the prevalence level of the target fruit fly species. Thus, when specifying the level of low pest prevalence accepted in terms of an FTD value, the corresponding trapping system should be stated as well.

Once an FTD has been derived for a given situation using a specific lure/attractant, the lure/attractant used in the FF-ALPP must not be changed or modified until an appropriate FTD is derived for the new formulation. For FF-ALPPs with multiple target fruit fly species present that are attracted to different lures/attractants, trap placement should take into consideration possible interactive effects between lures/attractants.

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<sup>1</sup> This annex is an official part of the standard.

Fruit sampling can be used as a complementary surveillance method to trapping to assess the profile of the fruit fly population levels.

However, fruit sampling will not provide sufficient accuracy for describing the size of the population and should not be solely relied on to validate or verify the FF-ALPP status.

## **GUIDELINES ON CORRECTIVE ACTION PLANS FOR FRUIT FLIES IN AN FF-ALPP<sup>2</sup>**

The detection of a population level higher than the specified level of low pest prevalence of the target fruit fly species in the FF-ALPP should trigger a corrective action plan. The objective of the corrective action plan is to ensure suppression of the fruit fly to below the specified level for low pest prevalence as soon as possible. It is the responsibility of the NPPO to ensure that appropriate corrective action plans are developed.

The corrective action plan should be prepared taking into account the biology of the target fruit fly species, the geography of the FF-ALPP, climatic conditions, phenology and host distribution within the area, time of year and extent to which the population level exceeded the specified level of low pest prevalence.

The elements required for implementation of a corrective action plan include:

- declaration of loss of status
- legal framework under which the corrective action plan can be applied
- time scales for the initial response and follow-up activities
- delimiting survey (trapping and fruit sampling), and application of the suppression actions
- identification capability
- availability of sufficient operational resources
- effective communication within the NPPO and with the NPPO(s) of the relevant importing country(s), including provision of contact details of all parties involved
- a detailed map and definition of the suspension area.

### **Application of the corrective action plan**

#### **1. Notice to implement corrective actions**

The NPPO notifies interested stakeholders and parties, when initiating the application of a corrective action plan. The NPPO, or an NPPO-nominated agency, is responsible for supervising the implementation of corrective measures after the declaration of loss of status.

#### **2. Determination of the phytosanitary status**

Immediately after detecting a population level higher than the specified level of low pest prevalence, a delimiting survey (which may include the deployment of additional traps, fruit sampling of primary host fruits and increased trap inspection frequency) should be implemented to determine the size of the affected area and more precisely gauge the level of the fruit fly prevalence.

#### **3. Suspension of FF-ALPP status**

If the specified level of low pest prevalence of the target fruit fly species is exceeded, the FF-ALPP status should be suspended as stated in 2.4.1.

#### **4. Implementation of control measures in the affected area**

Specific suppression actions should immediately be implemented in the affected area(s). Available methods include:

- selective insecticide-bait treatments (aerial and/or ground spraying and bait stations)
- sterile fly release
- male annihilation technique
- collection and destruction of affected fruit
- stripping and destruction of primary host fruits, if possible
- insecticide treatments (ground, cover).

#### **5. Notification of relevant agencies**

Relevant NPPOs and other agencies should be kept informed of corrective actions. Information on pest reporting requirements under the IPPC is provided in ISPM No. 17 (*Pest reporting*).

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<sup>2</sup> This annex is an official part of the standard.

**GUIDELINES ON TRAPPING PROCEDURES<sup>3</sup>**

Information about trapping is available in the following publication of the International Atomic Energy Agency (IAEA): *Trapping Guidelines for area-wide fruit fly programmes*, IAEA/FAO-TG/FFP, 2003. IAEA, Vienna.

This publication is widely available, easily accessible and generally recognized as authoritative.

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<sup>3</sup> This appendix is for reference purposes only and is not a prescriptive part of the standard.

## TYPICAL APPLICATIONS OF AREAS OF LOW PEST PREVALENCE FOR FRUIT FLIES<sup>4</sup>

FF-ALPPs are generally used:

- as a buffer zone for FF-PFAs, fruit fly free places of production or fruit fly free production sites (either as a permanent buffer zone or as part of an eradication process)
- for export purposes, usually in conjunction with other risk mitigation measures as a component of a systems approach (this may include all or part of an FF-ALPP that acts as a buffer zone).

### 1 An FF-ALPP as a buffer zone

In cases where the biology of the target fruit fly species is such that it is likely to disperse from an infested area into a protected area, it may be necessary to define a buffer zone with a low fruit fly prevalence (as described in ISPM No. 26: *Establishment of pest free areas for fruit flies (Tephritidae)*). These FF-ALPPs are usually established at the same time as establishing the FF-PFA and may be subsequently redefined to improve protection of the FF-PFA.

#### 1.1 Determination of an FF-ALPP as a buffer zone

Determination procedures may include those listed in section 1.1<sup>5</sup>. In addition, in delimiting the buffer zone, detailed maps may be included showing the boundaries of the area to be protected, location of major host areas, location of urban areas, entry points and control checkpoints. It is also relevant to include data related to natural biogeographical features such as prevalence of other primary or secondary hosts, climate, location of valleys, plains, deserts, rivers, lakes and sea, and those areas that function as natural barriers. The size of the buffer zone in relation to the size of the area being protected will depend on the biology of the target fruit fly species (including behaviour, reproduction and dispersal capacity), the intrinsic characteristics of the protected area, and the economic and operational feasibility of establishing the FF-ALPP.

#### 1.2 Establishment of an FF-ALPP as a buffer zone

The establishment procedures are described in section 2.1. The movement of relevant fruit fly host commodities into the area may need to be regulated. Additional information can be found in section 2.2.3 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*).

#### 1.3 Maintenance of an FF-ALPP as a buffer zone

Procedures include those listed in section 2.3. Since the buffer zone has features similar to the area or place of production it protects, procedures for maintenance may include those listed for the FF-PFA as described in section 2.3 of ISPM No. 26 (*Establishment of pest free areas for fruit flies (Tephritidae)*) and sections 3.1.4.2, 3.1.4.3 and 3.1.4.4 of ISPM No. 22 (*Requirements for the establishment of areas of low pest prevalence*).

### 2 FF-ALPPs for export purposes

FF-ALPPs may be used to facilitate fruit exports from the area. In most cases the FF-ALPP is the main component of a systems approach as a pest risk mitigation measure. Examples of measures and/or factors used in conjunction with FF-ALPPs include:

- pre- and (less than probit 9) post-harvest treatments
- poor hosts, less attractive hosts or non-hosts
- export of host material to areas not at risk during particular seasons
- physical barriers (e.g. pre-harvest bagging, insect-proof structures).

#### 2.1 Determination of an FF-ALPP for export purposes

Determining procedures may include those listed in section 1.2. In addition, the following elements should be considered for the determination of an FF-ALPP:

- a list of products (hosts) of interest
- a list of other commercial and non-commercial hosts of the target fruit fly species present but not intended for export and their level of occurrence, as appropriate

<sup>4</sup> This appendix is not an official part of the standard. It is provided for information only.

<sup>5</sup> Unless other ISPMs are specified, section numbers refer to the preceding text of this standard.

- additional information such as any historical records in connection with biology, occurrence and control of the target fruit fly species or any other fruit fly species that may be present in the FF-ALPP.

## **2.2 Maintenance of an FF-ALPP for export purposes**

Maintenance procedures may include those listed in section 2.3 Surveillance and control measures should be applied while hosts are available. If appropriate, surveillance may continue at a lower frequency during the off-season period. This will depend on the biology of the target fruit fly species and its relationship with hosts present during the off-season period.