



***Annex 1 to ISPM No. 26 (ESTABLISHMENT
OF PEST FREE AREAS FOR FRUIT FLIES
(TEPHRITIDAE))***

***Fruit fly trapping
(200-)***

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OUTLINE OF PRESENTATION

- **Trapping Survey Objectives and Control Situations**
- **Trapping Scenarios**
- **Trapping Systems for Fruit Fly Surveys**
- **Trap densities**
- **Delimiting Survey**
- **Supervision activities**
- **Selected references**





FRUIT FLY TRAPPING

This annex provides detailed information for trapping surveys under different scenarios of pest population and control situations for different fruit fly species (Tephritidae) of economic importance. Different trapping systems and procedures should be used depending on the fruit fly status of the target area, which can be either an infested area, an area of low pest prevalence (ALPP), or a pest free area (PFA). The information in this annex can therefore be applied to other ISPMs relating to fruit flies.

The annex describes the most widely used trapping systems and procedures.





Trapping Survey Objectives and Control Situations

Objectives:

- **Monitoring surveys.** To verify the characteristics of the pest population
- **Detection surveys.** To determine if the pest is present in an area
- **Delimiting surveys.** To determine the boundaries of an area considered to be infested or free from the pest

Control Situations:

- **No control.** The pest population is present but not subject to any suppression measures.
- **Suppression.** surveys are required to monitor the efficacy of these measures.
- **Eradication of established population.** surveys are required to monitor the progress towards eradication of the pest population.
- **Exclusion.** The pest free area (PFA) is under exclusion measures, and surveys are required to detect the entry of the pest.
- **Eradication of incursion.** After detection of an incursion of the target pest, delimiting surveys are required. Once surveys have determined the nature and extent of the incursion and if it is actionable (an outbreak), eradication surveys may be required.





Trapping Scenarios

Trapping survey required for each specific control situation

Control situations

Trapping surveys	No control (FTD>Suppression)	Suppression (FTD>Eradication)	Eradication established population (FTD~0)	Exclusion (FTD=0)	Eradication of incursion (FTD~0)
Monitoring	A	B	C		
Detection				D	
Delimiting					E





Interaction of the three types of trapping surveys and the five control situations:

- **Scenario A:** uncontrolled population subject to monitoring surveys
- **Scenario B:** population under suppression subject to monitoring surveys
- **Scenario C:** population under eradication subject to monitoring surveys
- **Scenario D:** no population, detection surveys for exclusion in a PFA
- **Scenario E:** incursion detected through ongoing detection surveys, therefore additional implementation of delimiting surveys.



Trapping Systems for Fruit Fly Surveys

Componentes:

- Attractants and lures (pheromones, para-pheromones or food attractants)
- Killing agents (dry and wet)
- Devices for trapping (The most common traps used are described in detail)
- Procedures for use of the traps (layout, deployment, mapping, servicing and inspection, records, flies per trap per day (FTD))





Trapping Systems for Fruit Fly Surveys cont....

This Section presents the following Tables:

- **Table 2.** Major fruit fly species of economic importance and their attractants
- **Table 3a.** Attractants and traps for male fruit fly surveys
- **Table 3b.** Attractants and traps for female-biased fruit fly surveys
- **Table 4.** List of attractants



Flies Per Trap Per Day (FTD)

- FTD is a population index that indicates the average number of flies of the target species captured per trap per day during a specified period in which the trap was exposed in the field.
- The function of this population index is to have a comparative measure of the size of the adult pest population in a given space and time.
- It is used as baseline information to compare the size of the population before, during and after the application of a fruit fly control programme.
- The FTD should be used in all report of trapping surveys.
- $$FTD = \frac{F}{T \times D}$$

F = total number of flies

T = number of inspected traps

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





Trap Densities

Trap density is critical for fruit fly surveys. The trap densities need to be adjusted based on many factors including type of survey, trap efficiency, location regarding type and presence of host, climate, topography and programme phase. In terms of type and presence of hosts, as well as the risk involved, the following types of location are of concern:

- + production areas
- + marginal areas
- + urban areas
- + points of entry (and other high-risk areas such as fruit markets).





Trap density cont.....

Trap densities have to vary as a gradient from production areas to marginal areas, urban areas and points of entry (Tables 5a to 5f).

Production area	Marginal area	Urban area	Points of entry
	Free area (trap density)		
Low prevalence (trap density)			





Delimiting Surveys

A delimiting survey is designed to determine the boundaries of an incursion into a fruit fly free area and to determine if it is an outbreak. The area immediately surrounding each find is termed a core area. The core area is defined by a set radius surrounding each find. The area defined by this radius is often squared off to produce a grid. The trapping density in the core area is higher than that used for detection surveys. Around the core area may be one or more surrounding zones where the trap density is higher than for detection surveys but usually lower than that of the core area, as appropriate. Trap densities in the surrounding zones may be proportionally tiered in a decreasing density the further away they are from the core area.





Example of a delimiting survey showing a multiple km² core and surrounding zones (number in squares represent traps per km²)

10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10
10	10	20	20	20	20	10	10
10	10	20	40	40	20	10	10
10	10	20	40	40	20	10	10
10	10	20	20	20	20	10	10
10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10





Supervision Activities

Supervision of trapping activities includes assessing the quality of the materials used and reviewing the effectiveness of the use of these materials and trapping procedures.





Selected References

References to accessible scientific publications may provide further guidance on the methods and procedures contained in this document.



THANK YOU FOR YOUR ATTENTION

