

# Introduction of Emergency action plan for **exotic fruit flies** survey

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# 1 Identification of captured fruit flies

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(1) 桔小实蝇 *Bactrocera (B.) dorsalis*





(2) 瓜实蝇 *Zeugodacus cucurbitae*





### 3) 南瓜实蝇 *Zeugodacus tau*





(4)番石榴实蝇 *Bactrocera (B.) correcta*





附录 2: 诱到的其他双翅目昆虫





## (4) Checklist of fruit flies

Me Lure: *B. dorsalis*, *B. correcta*, *B. Zonata*, \*\*\*\*

Cue Lure: *Zeugoducus tau*, *Z. cucurbitae*, \*\*\*

TML: *Ceratitis*. Spp.

PB: \*\*\*\*

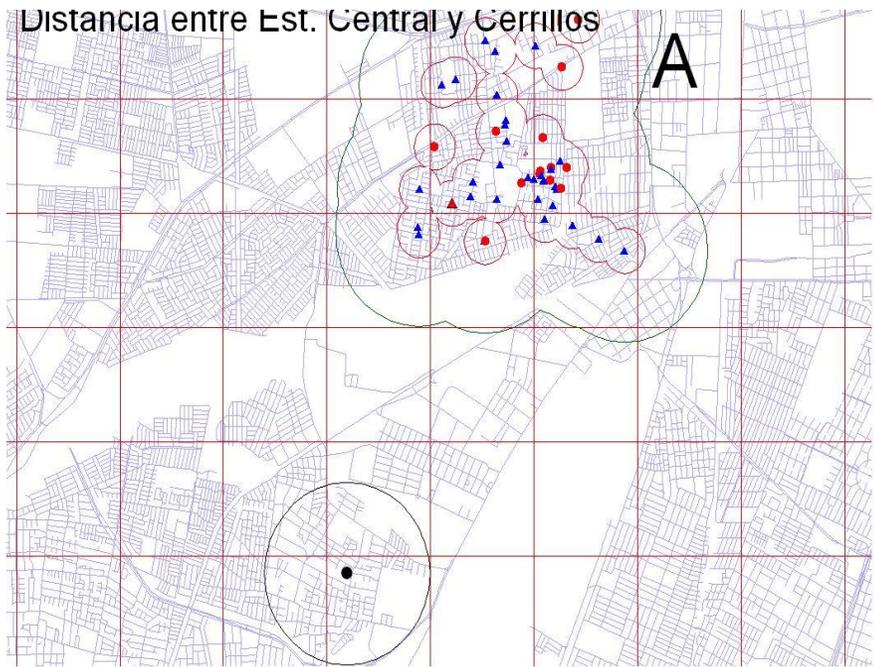




## 2

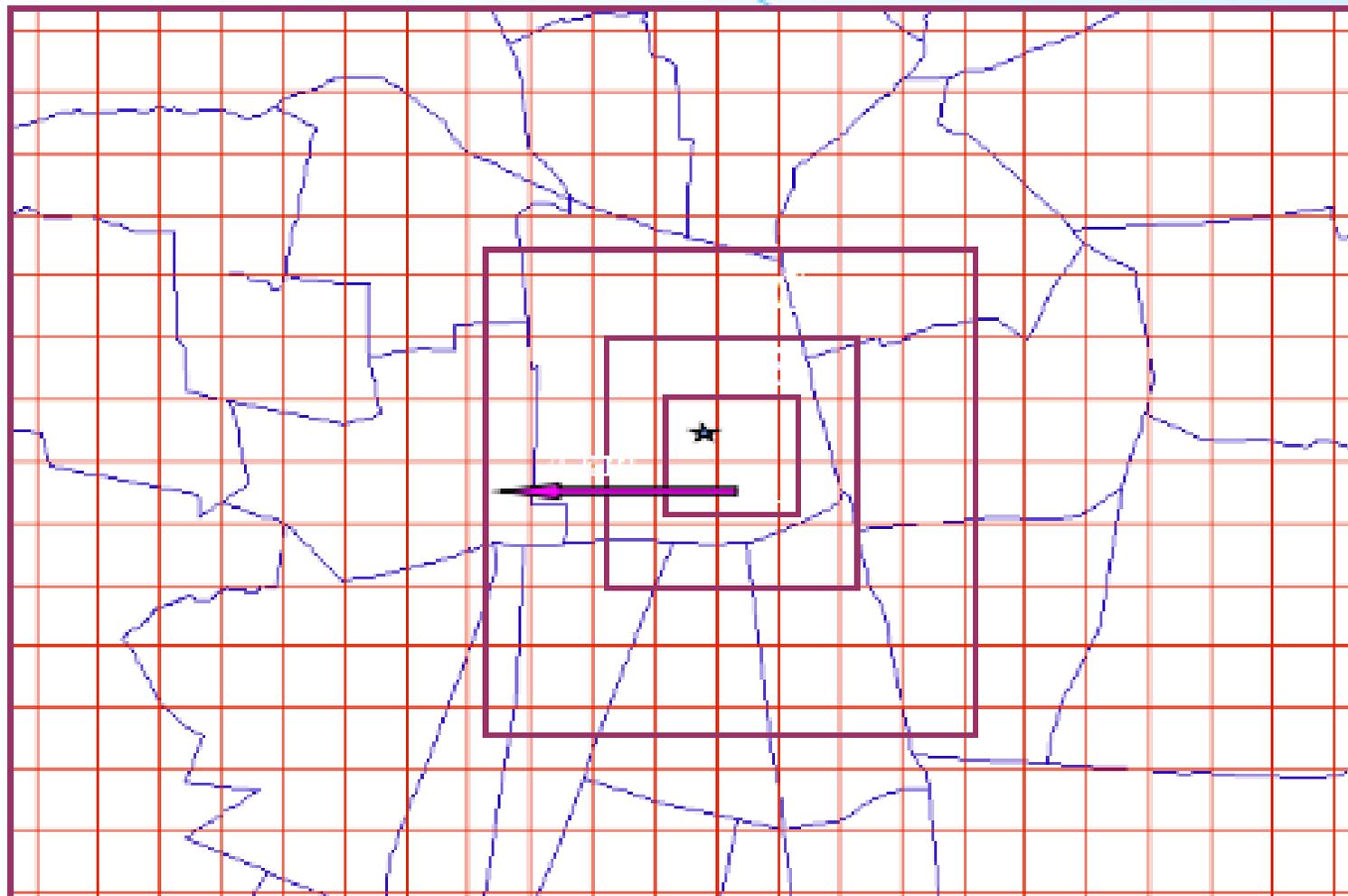
# Delimiting Surveys

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.

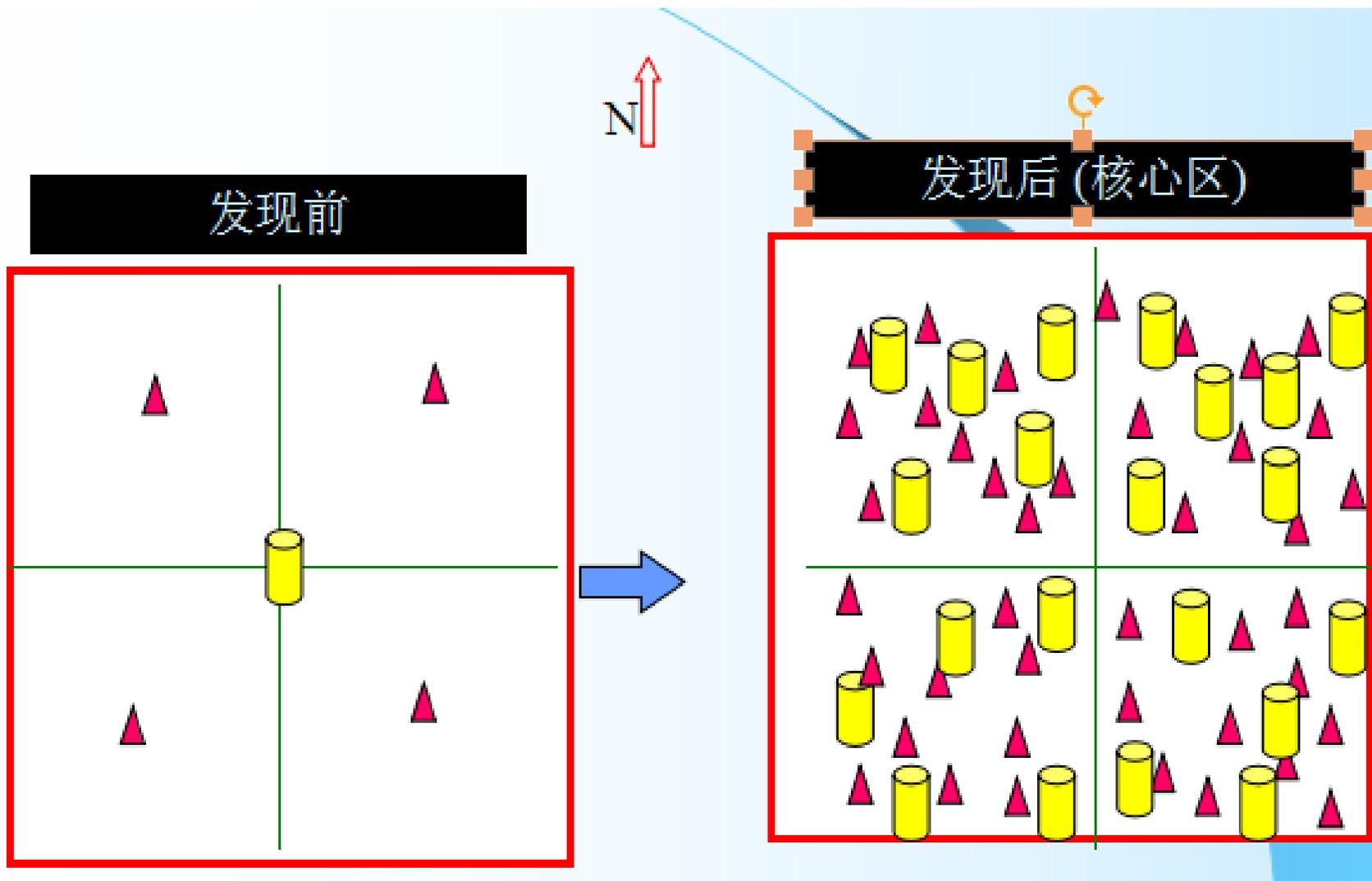


example

单头捕获（雄虫或未怀卵的雌虫）时，诱捕区域图



example



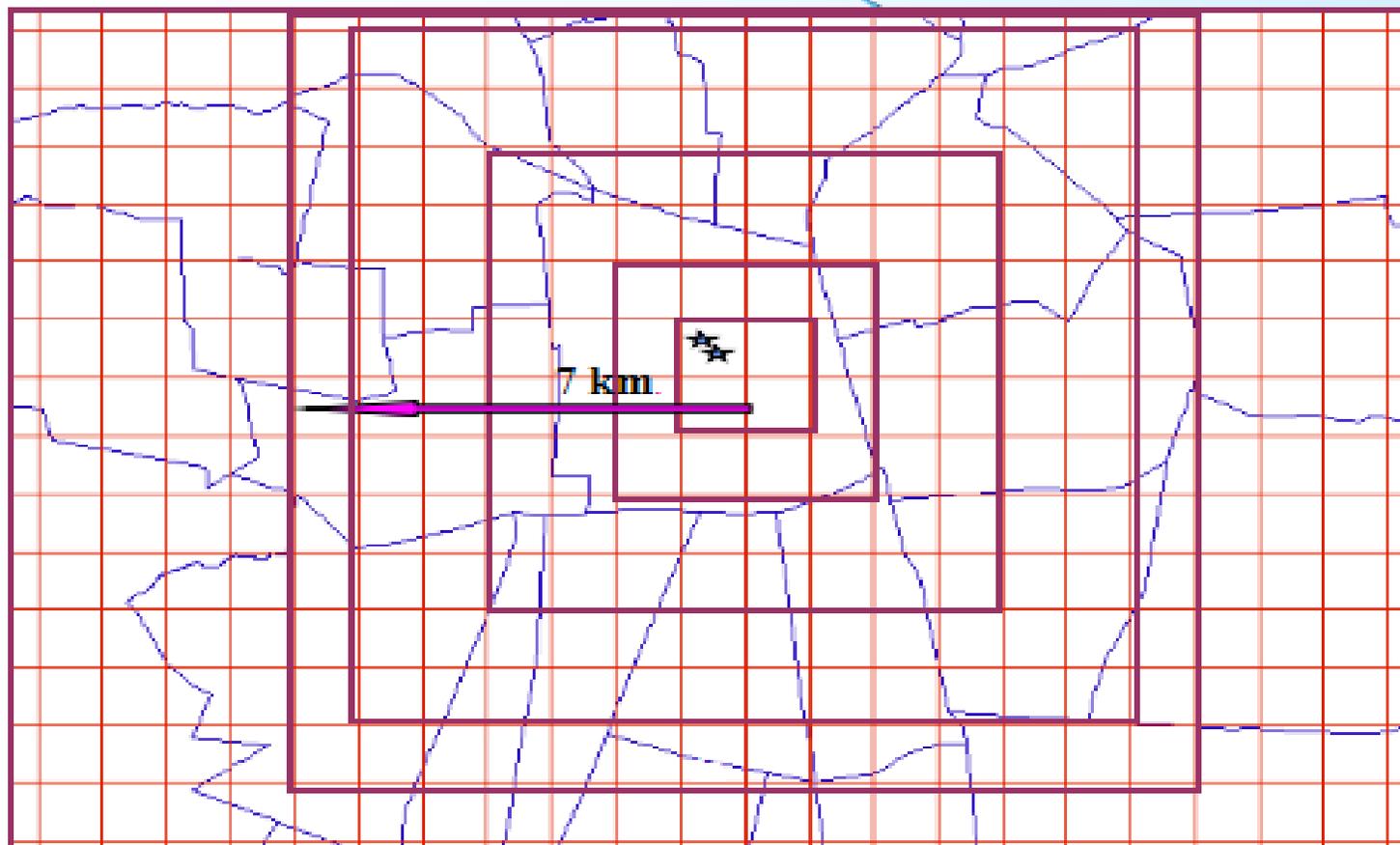
example

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 (20 )	40 (10 )	20	10	10
10	10	20	40 (10 )	40 (10 )	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

Area	Número de trampas
A	210
B	240
C	480
<b>TOTAL</b>	<b>930</b>

example

### 多头捕获时的诱捕区域图



example

多头捕获时，诱捕区内诱捕器数量汇总表

	Hectareas	Normal system		Emergency system	
		Number of TML Traps	TML Trap Density	Number of TML Traps	TML Trap Density
Area A	400	16	1 Tr / 25 ha.	160	1 Tr / 25 ha
Area B	1200	48	1 Tr / 25 ha.	240	1 Tr / 5 ha
Area C	4800	192	1 Tr / 25 ha.	480	1 Tr / 10 ha
Area D	8000	320	1 Tr / 25 ha.	640	1 Tr / 12.5 ha
Area E	5200	208	1 Tr / 25 ha.	208	1 Tr / 25 ha
TOTAL	19600	784	1 Tr / 25 ha.	1728	1 Tr / 11.3 ha





ISPM

## Delimiting Surveys -ISPM

The **trap density** may vary by situation, but there are some commonalities. 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.

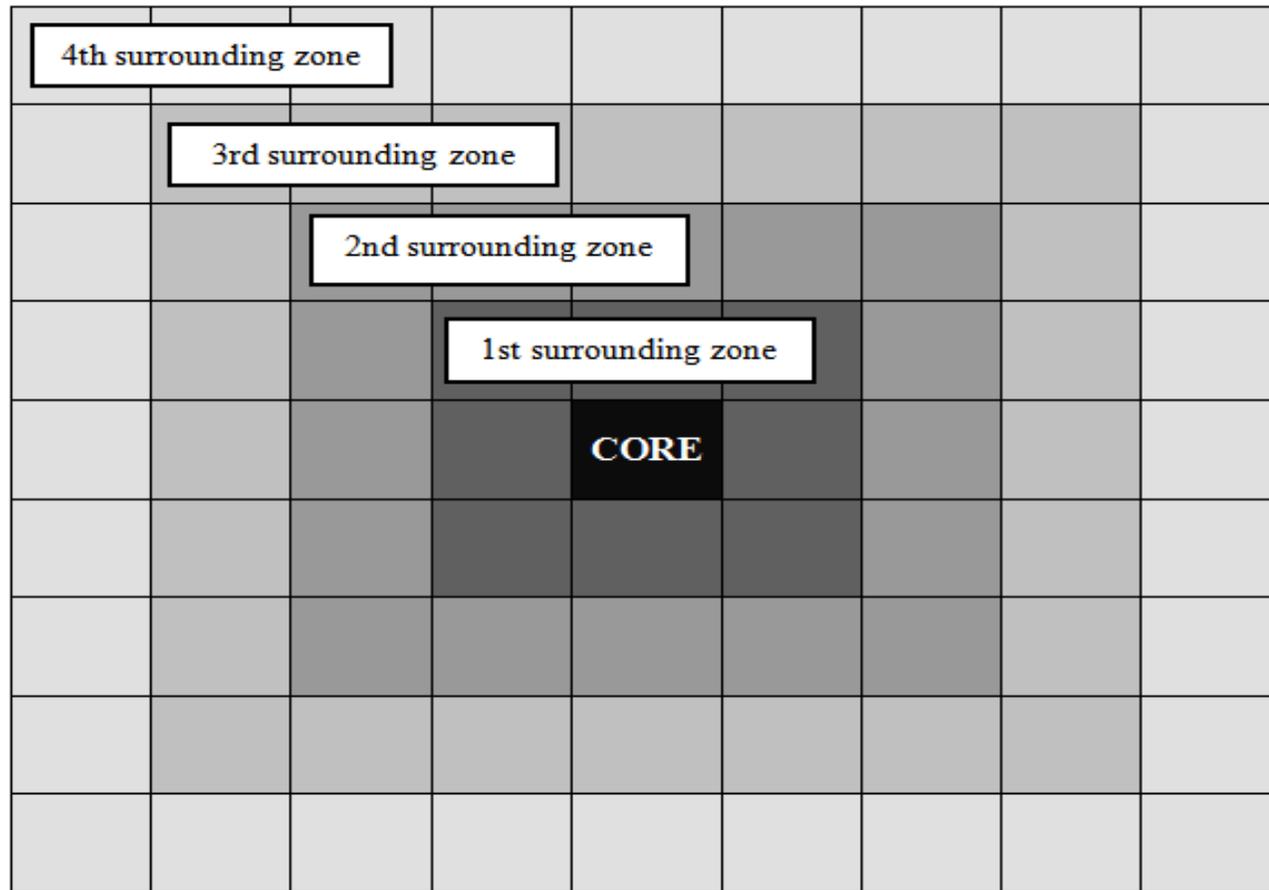
Around the core area may **be one or more surrounding zones** where the trap density is higher than for detection surveys but usually lower than that of the core area, as appropriate.

Trap densities in the surrounding zones may be proportionally tiered in a decreasing density the further away they are from the core area.

Examples of delimiting surveys for single and multiple core areas are presented in Figures 20 and 21, respectively.



# ISPM Delimiting Surveys-ISPMS



**Figure 20.** Example of delimiting survey using single km<sup>2</sup> core and surrounding zones for various flies (number of traps per km<sup>2</sup>)



# ISPM Delimiting Surveys

Surrounding zones	km <sup>2</sup>	<i>Anastrepha</i> McP	<i>Bactrocera</i> spp. CUE + McP (McP core only)	<i>B. dorsalis</i> ME + McP (McP core only)	<i>Ceratitis capitata</i> TML + MLT (MLT core only)
Core	1	32	20 + 10	10 + 10	40 + 10
1st	8	16	10	2	20
2nd	16	8	6	2	10
3rd	24	4	4	2	8
4th	32	2	2	2	4



# ISPM

## Delimiting Surveys

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

Surrounding zones	km <sup>2</sup>	Number of traps per km <sup>2</sup>	Total traps
Core	4	40	160
1st	12	20	240
2nd	48	10	480

**Figure 21.** Sample delimiting survey showing a multiple km<sup>2</sup> core and surrounding zones (number in squares represent traps per km<sup>2</sup>)



ISPM

## Delimiting Surveys

A delimiting survey **must be implemented as soon as possible** after the initial detection of a targeted fly.

The duration of a delimiting survey should be dependent on the developmental biology of the species. In general, delimiting survey trapping occurs for **three life cycles past the last find** for multivoltine species.

However, one or two generations may be used for particular situations or fly species based on scientific information, as well as that provided by the surveillance system in place.

[Chinese citrus fruit fly (*B. minax*), Japanese orange fly (*B. tsuneonis*)



3

## **Emergency action plan and relevant measures**



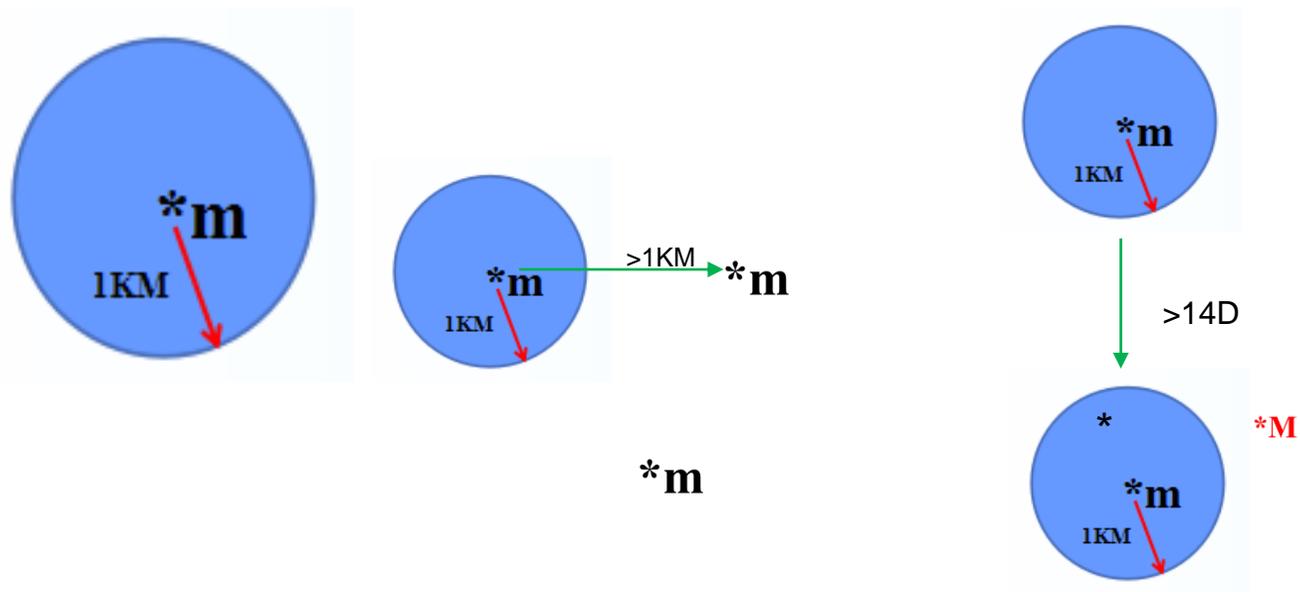
## 3-1 Classification of detection for exotic fruit flie

For the quarantine (exotic) species never recorded in areas (Country), such as *Ceratitis capitata*



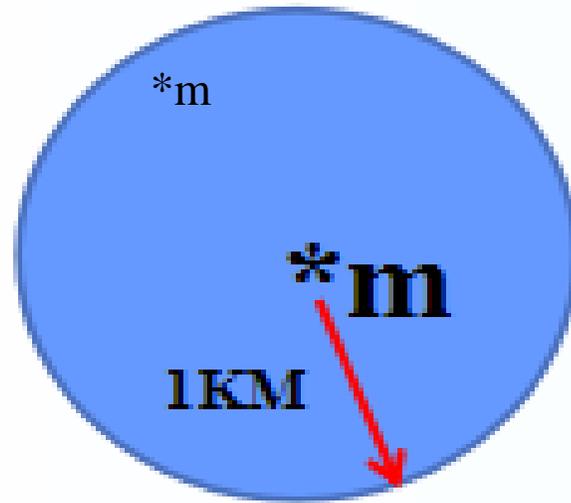
● Class III (Alert )

1 male is detected within a 1 km-radius in a 14 day period





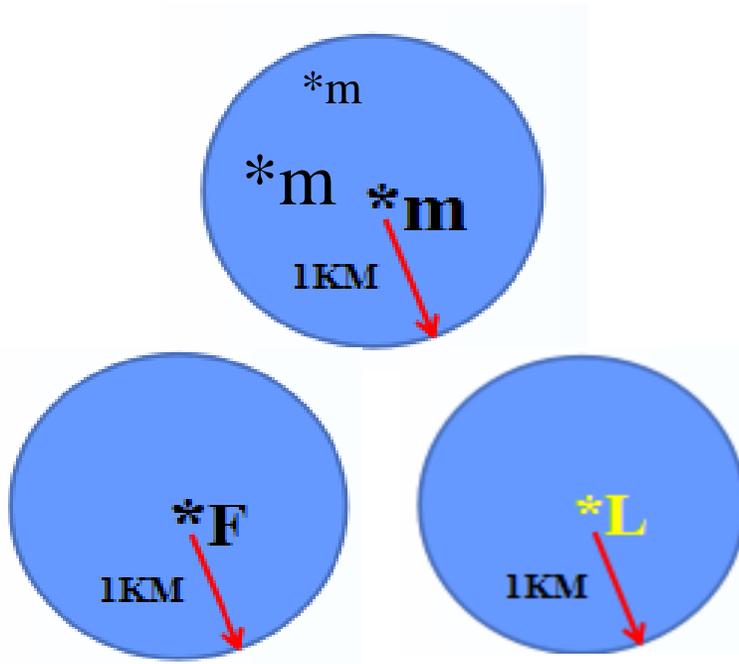
- Class II ( Suspicious outbreak)



2 male is detected within a 1 km-radius in a 14 day period



## ● Class I (Outbreak)



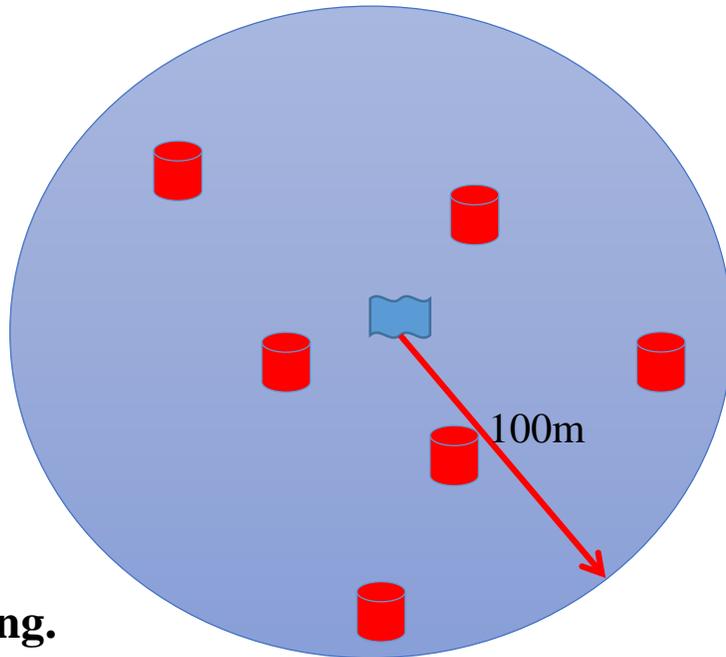
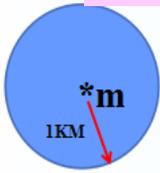
within a 1 km-radius in a 14 day.

a single larva is found in a local planted fruit, or  
a female is detected, or  
more than 2 males are detected.



## 3-2 Phytosanitary measures of detection

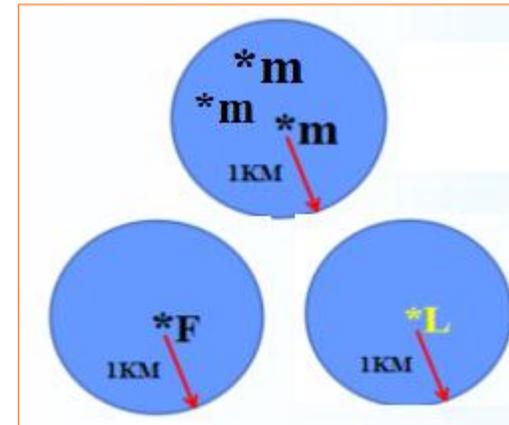
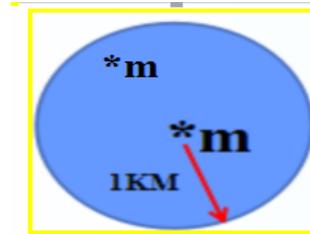
FOR--Class III



Twice every week (first Week) or once every week

Last one m

解除



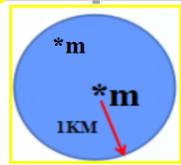
### Additional trapping.

No less than 6 supplementary traps should be set with 3-5 days within the area of 100 radius after the detection.



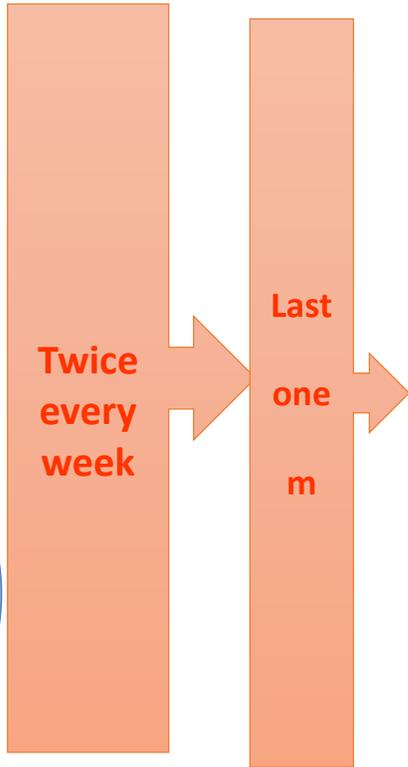
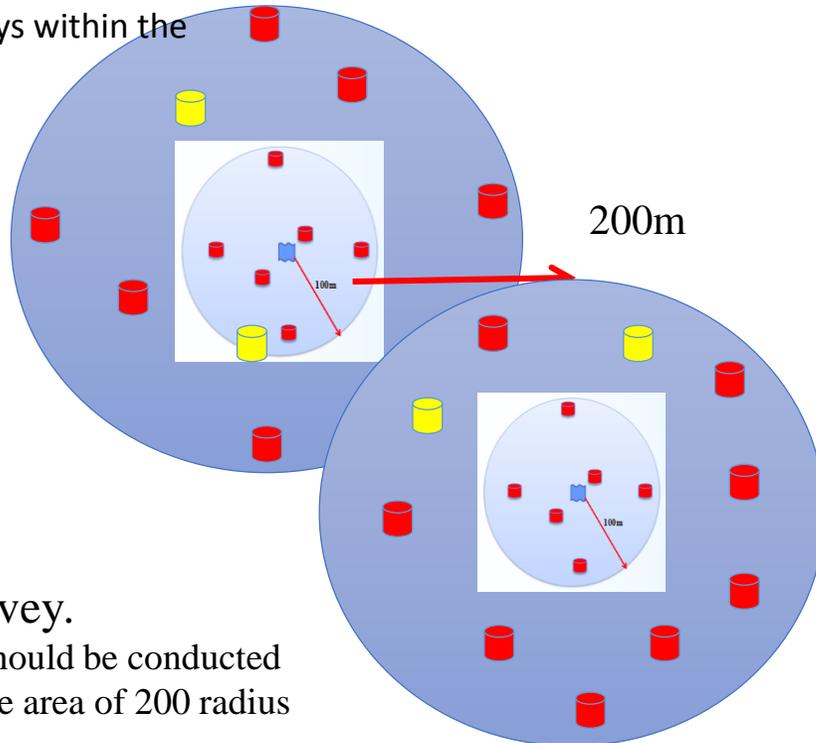
# Phytosanitary Measures

● For Class II

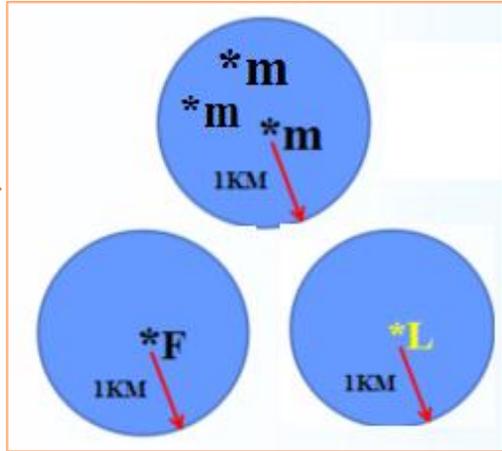


### Additional trapping.

No less than 16 supplementary traps should be set with 3-5 days within the area of 200 radius.



解除



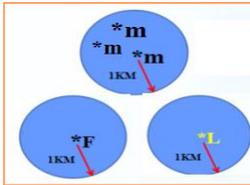
### Fruit infestation survey.

Fruit infestation survey should be conducted once each week within the area of 200 radius after the detection



# Phytosanitary Measures

## ● Class I



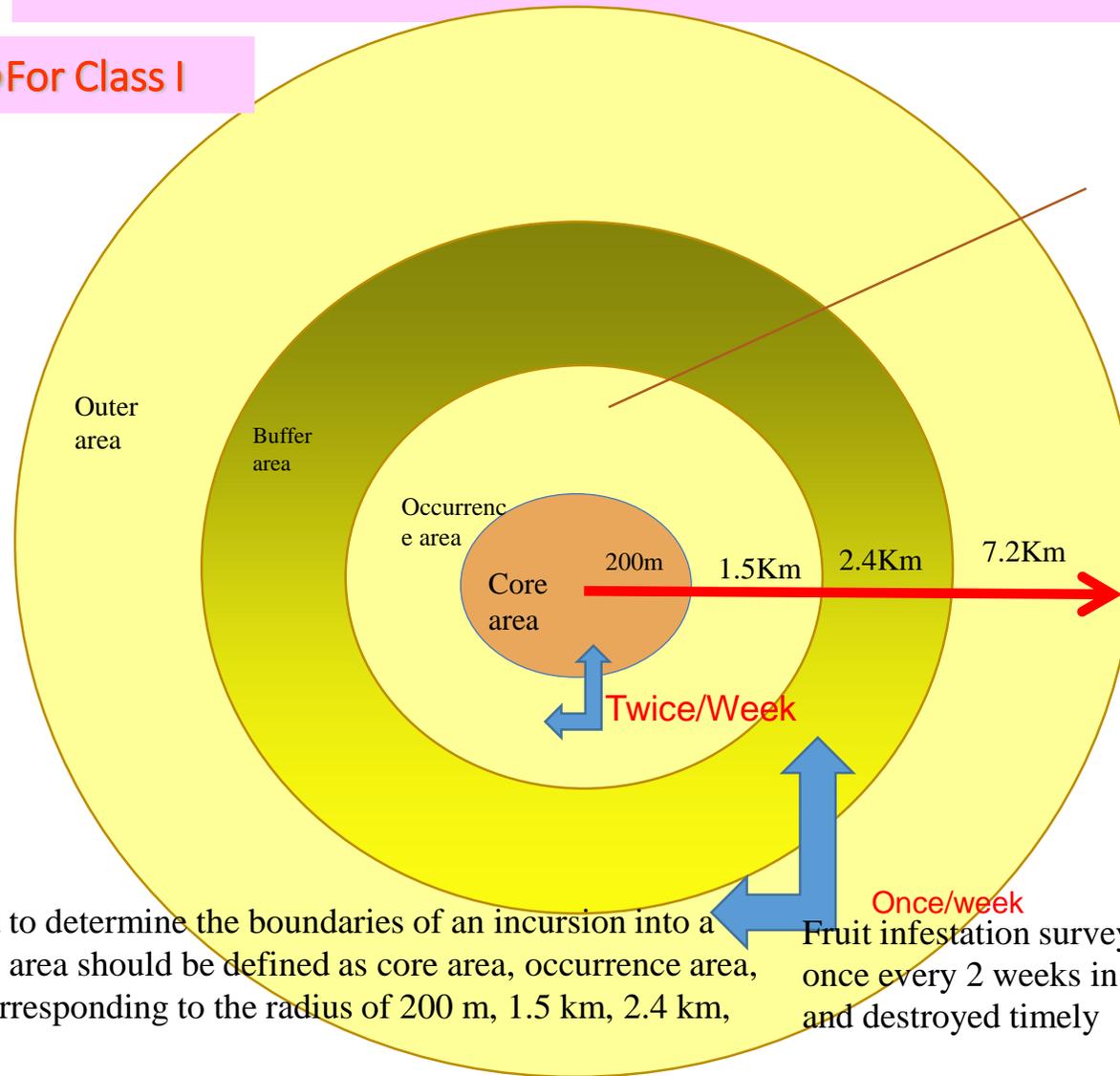
**Meas.**

- Delimiting survey -- Regulated area
- Regulation control
- Fruit infestation survey and destroyed
- Chemical control
- Re-lease



# Delimiting survey

For Class I



Core Area: 16 traps  
 Occurrence A.: 5-10T/Km<sup>2</sup>  
 Buffer A: 2- 5T/Km<sup>2</sup>  
 Outer A: 1-2T/Km<sup>2</sup>

supplementary traps should be set with 3-5 days ( Core A) after the detection /7-10d

delimiting survey is designed to determine the boundaries of an incursion into a fruit fly free area. The survey area should be defined as core area, occurrence area, buffer area and outer area, corresponding to the radius of 200 m, 1.5 km, 2.4 km, 7.2 km from the finding

Fruit infestation survey should be conducted once each week in core area, and once every 2 weeks in the other areas. Ripen or rotten fruits should be removed and destroyed timely

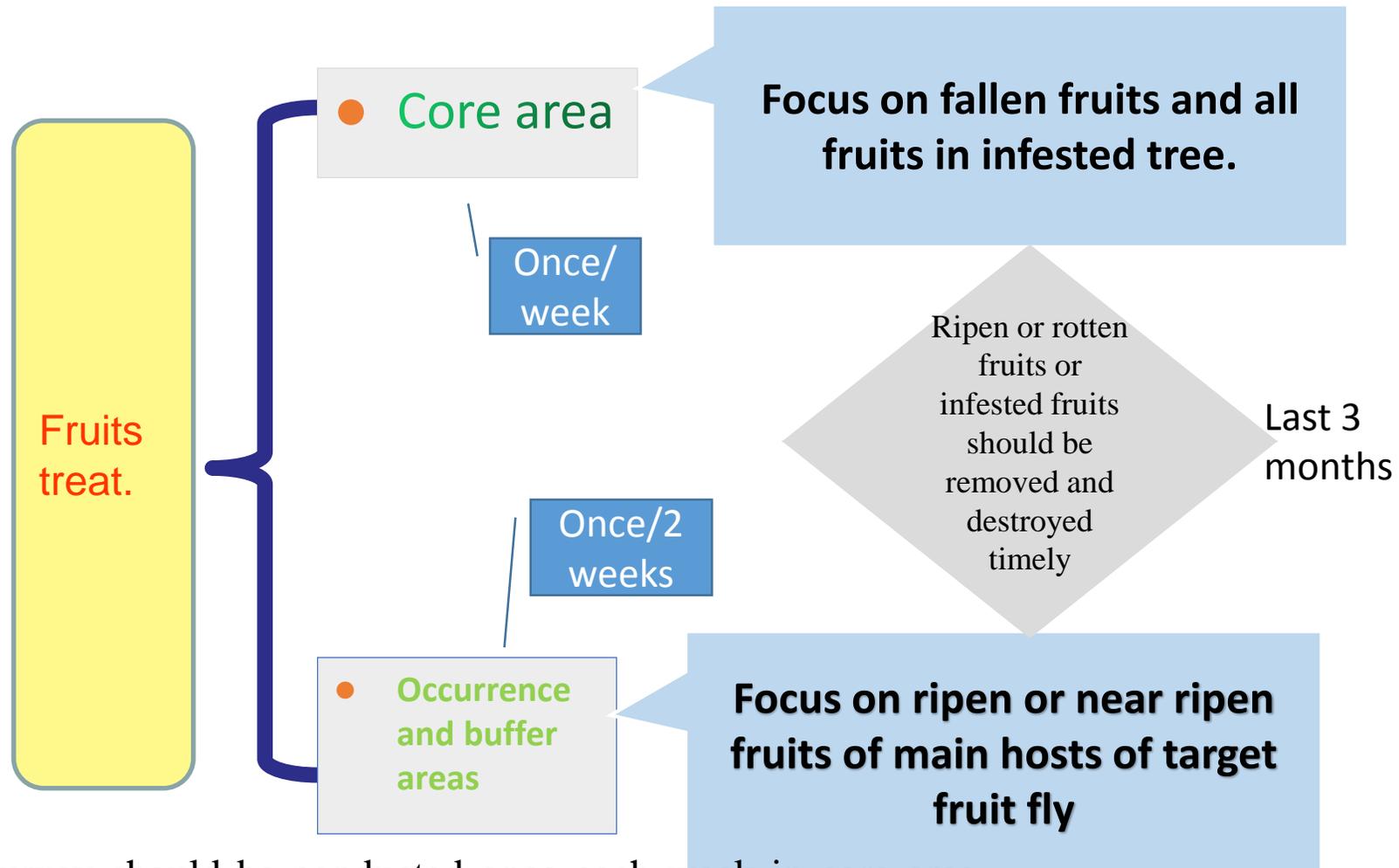


## ● Regulation control

- Suspend the pest free area within a \*\*km radius
- Host fruits remove control.
- Measures avoid reinfestation
- Measures in packinghouse and \*\*



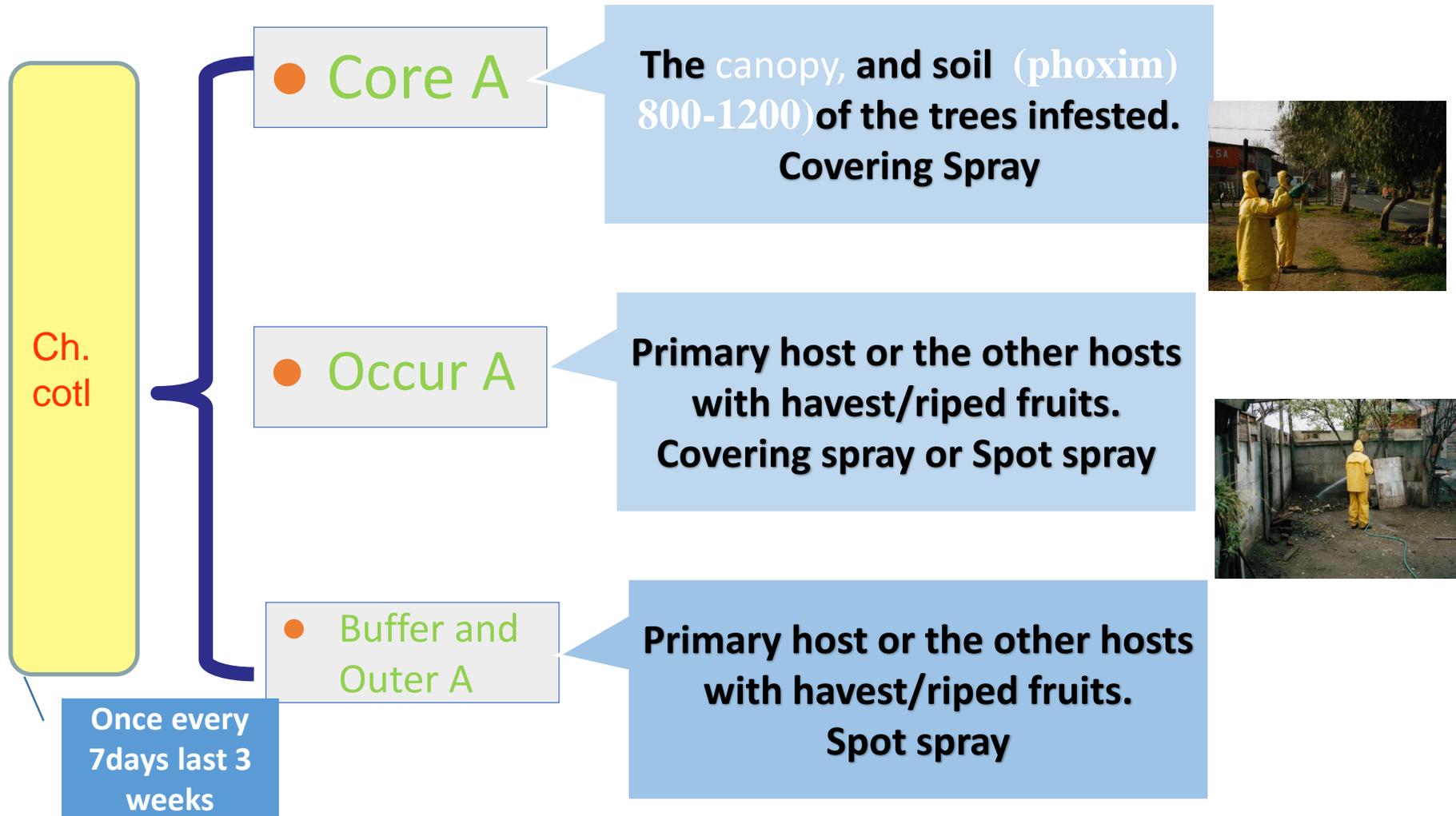
- Fruit infestation survey and destroyed



Fruit infestation survey should be conducted once each week in core area, and once every 2 weeks in the other areas. Ripen or rotten or infested fruits should be removed and destroyed timely.



## ● Chemical control





## ● Chemical Control

### ● Covering spray

**Malathion or other insecticide.  
1000-1500 times**

### ● Spot spray

**Malathion+Protein ( )+Water with  
1:6:100 [Mixture]**

**100-200 spots/hc (Occurrence A)  
15-30 spots/hc (Buffer A)**

**About 100 mL mixture each spot.**





## 4

# 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.**

The materials used should perform effectively and reliably at an acceptable level for a prescribed period of time. The traps themselves should maintain their integrity for the entire duration that they are anticipated to remain in the field. The attractants should be certified or bioassayed for an acceptable level of performance based on their anticipated use.

Formal independent evaluations should occur periodically to assess the effectiveness of the trapping survey. In order to allow for an independent evaluation, formal evaluations of the trapping programme should be conducted by someone who is not a part of the trapping programme.

The timing of evaluations will vary by programme, but it **is recommended to occur at least twice a year in programmes** that run for six months or more. The evaluation addresses all aspects related to the ability of the trapping programme to detect targeted pests in a timely manner.

Aspects of an evaluation include **quality of trapping materials, record-keeping, layout of the trapping network, trap mapping, trap placement, trap condition, trap servicing, trap inspection frequency and capability for fruit fly identification.**



## 4

# Supervision Activities

The trap deployment should be evaluated to ensure **that the prescribed types and densities of traps are in place**. Field confirmation is achieved through inspection of individual routes.

Trap placement should be evaluated for proper host selection, trap relocation schedule, height, light/shade balance, fly access to trap, and proximity to other traps.

Host selection, trap relocation and proximity to other traps can be evaluated from the records for each trap route. Host selection, placement and proximity can be further evaluated by field examination.

Proper record-keeping is key to the proper functioning of a trapping programme. The records for each trap route should be inspected to ensure that they are complete and up to date. Field confirmation can then be used to validate the accuracy of the records.

Traps should be evaluated for their overall condition, correct attractant, proper trap servicing and inspection intervals, correct identifying markings (such as trap identification and date placed), evidence of contamination and proper warning labels. This is performed in the field at each site where a trap is placed.



## 4

# Supervision Activities

Evaluation of identification capability can occur via target flies that have been marked in some manner in order to distinguish them from wild trapped flies.

These marked flies are placed in traps in order to evaluate the trapper's diligence in servicing the traps, competence in recognizing the targeted species, and knowledge of the proper reporting procedures once a fly is found.

Commonly used marking systems are fluorescent dyes and/or wing clipping. In some programmes that survey for eradication or exclusion, the flies may also be marked by using sterile irradiated flies in order to further reduce the chances of the marked fly being falsely identified as a wild fly and resulting in unnecessary actions by the programme. A slightly different method is necessary under a sterile fly release programme in order to evaluate the screeners on their ability to accurately distinguish target wild flies from the released sterile flies.

The marked flies used are sterile and lack the fluorescent dye, but are marked physically by wing clipping or some other method. These flies are placed into the trap samples after they have been collected in the field but before they are inspected by the screeners.



## 4

# Supervision Activities

The independent evaluation should be summarized in a report detailing how many inspected traps on each route were found to be in compliance with the accepted standards in categories such as trap mapping, placement, condition, and servicing and inspection interval.

Aspects that were found to be **deficient should be identified**, and specific recommendations should be made to correct these deficiencies.

In cases where the trapping programme is a component of an export programme, records of independent evaluations should be **retained for at least 24 months** because trading partners may request this information or some evidence of an active independent evaluation programme.

Alternatively, trading partners may request that they conduct their own independent evaluation programme.



## Documents and records

- Keep 2 years



- re-admitted of pest free status

3 lifecycles for *target* fruit fly of negative surveillance data after the detection will be required before the status of Pest Free may be readmitted.



# Public awareness, public education, and public participation





# NEW GREEN GREAT WALL





**Thanks for your attention**  
**Q & A ?**