INTERNATIONAL SYMPOSIUM

PEST FREE AREAS (PFA) & SURVEILLANCE

SHIZUOKA, JAPAN, 28 OCTOBER – 1 NOVEMBER 2019

Establishment and Maintenance of Pest Free Areas (PFAs) including Pest Free Places of Production (PFPP) and Pest Free Production Sites (PFPS)

W. Enkerlin

Joint FAO/IAEA Division

Vienna, Austria

Insect Pests 18-20% Direct Crop Loss (USD 470 Billion/Year)

SDG: ZERO HUNGER, POVERTY ALLEVIATION

Horticultural Crops Major Pesticide Targets

SDG: FOOD SAFETY, LIFE ON LAND

Consuming **32%** of global agrochemicals

This is unsustainable due to:

- Resistance development
- Secondary pest outbreaks
- Rejection of imports due to insecticide residues

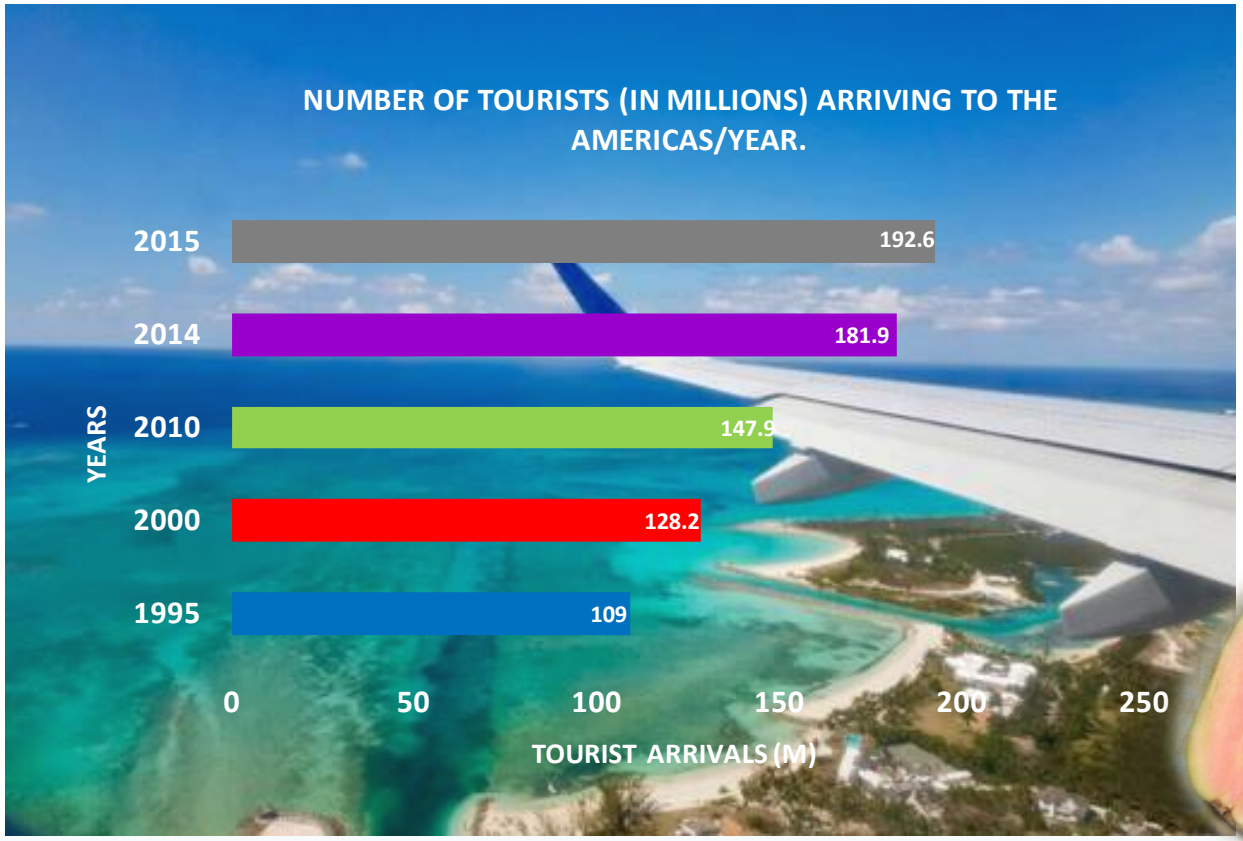
FRUIT AND VEGETABLE CONSUMPTION

SDG: GOOD HEALTH & WELL-BEING

The **WHO** is promoting healthy diets with daily fresh fruit / vegetable consumption of at least 400 g/day

FACTORS THAT CONTRIBUTE TO PEST MOVEMENT & ESTABLISHMENT

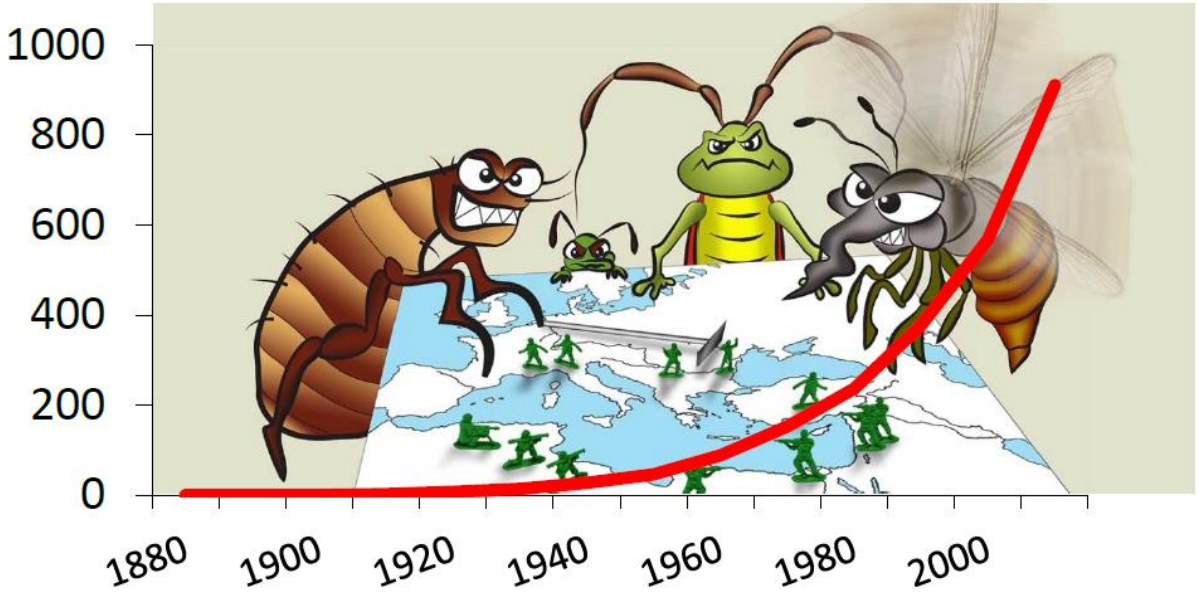
- **INTERNATIONAL TRADE:** 1/3 of world agricultural production
- **HUMAN MOVEMENT/TRAVEL:** The dependence of the rate of introduction of invasive species on the growth of trade and travel is widely recognized
- **CLIMATE CHANGE:** New areas are becoming susceptible to invasive species



https://www.statista.com/statistics/209349/forecast-number-of-international-tourist-arrivals-worldwide-by-region/

Invasive pests that preclude access to markets

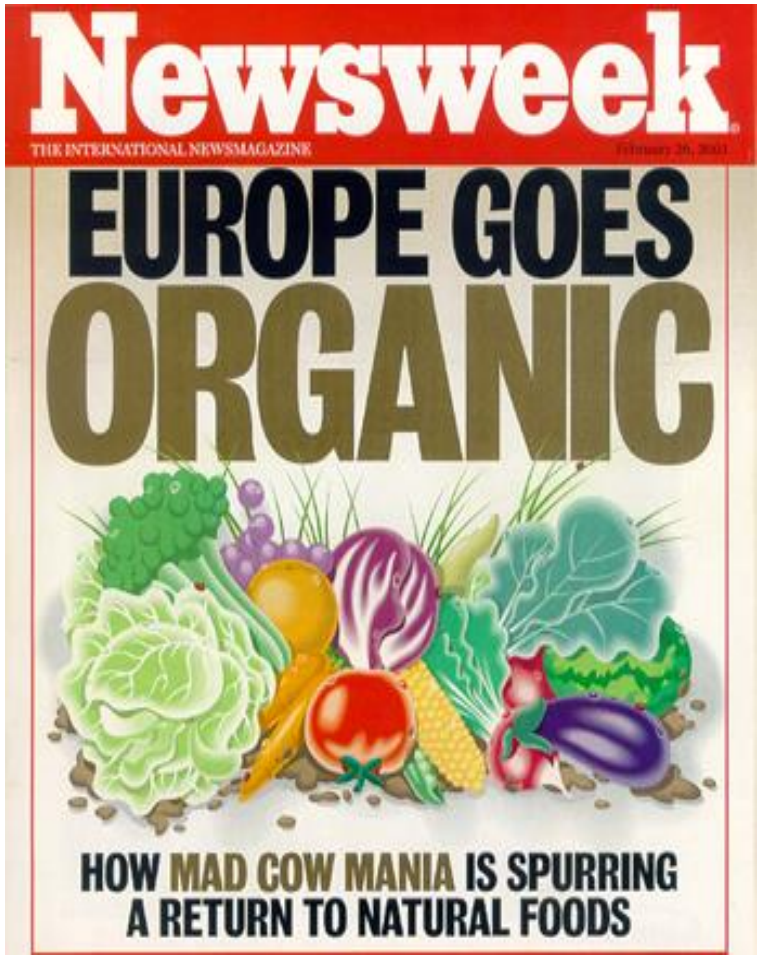
INSECT RESPONSE PROGRAMMES BY YEAR – new pests increasing



Data: http://b3.net.nz/gerda/

OPPORTUNITIES: MARKET TRENDS

- Many tropical and subtropical countries have ideal conditions for producing these high value export commodities
- But increasingly stringent requirements for exports:
  - customers increasingly demand **perfect fruit**, while
  - supermarkets and retailers are requesting ever **lower pesticide residue limits**
  - **stricter phytosanitary** requirements



WTO – Article 6 SPS AGREEMENT

- ✓ **Pest — or Disease — Free Areas and Areas of Low Pest or Disease Prevalence**
  - **Members shall, in particular, recognize the concepts of pest — or disease-free areas and areas of low pest or disease prevalence.**
  - **Determination of such areas shall be based on factors such as geography, ecosystems, epidemiological surveillance, and the effectiveness of sanitary or phytosanitary controls.**
  - **Shall provide the necessary evidence thereof in order to objectively demonstrate to the importing Member the PFA or ALPP status.**
  - **For this, reasonable access shall be given, upon request, to the importing Member for inspection, testing and other relevant procedures.**

IPPC GLOSSARY (ISPM No. 5):
DEFINITIONS - PFA, PFPP / PFPS

Pest Free Area (PFA)

- An **area** in which a specific **pest** is absent as demonstrated by scientific evidence and in which, where appropriate, this condition is being **officially** maintained

Pest Free Place of Production (PFPP)

- **Place of production** in which a specific **pest** is absent as demonstrated by scientific evidence and in which, where appropriate, this condition is being **officially** maintained for a defined period

Pest Free Production Site (PFPS)

- A **production site** in which a specific **pest** is absent, as demonstrated by scientific evidence, and in which, where appropriate, this condition is being **officially** maintained for a defined period

PFA, PFPP / PFPS - “DISTINCTIONS”

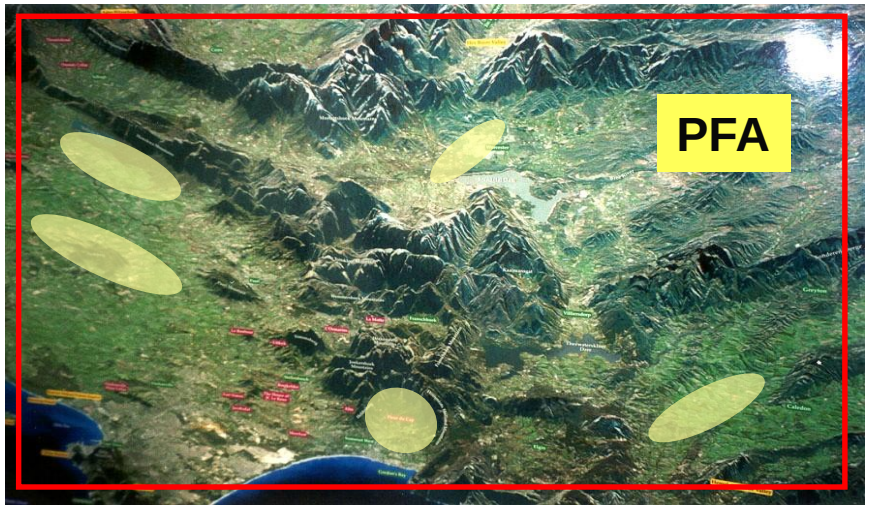
- **Size**
- ✓ **PFA** large scale (area-wide). Country or parts of a country May include many PFPP
- ✓ **PFPP** much smaller scale operated as a single farming unit (farm by farm)
- ✓ **PFPS** a subset of a **PFPP**

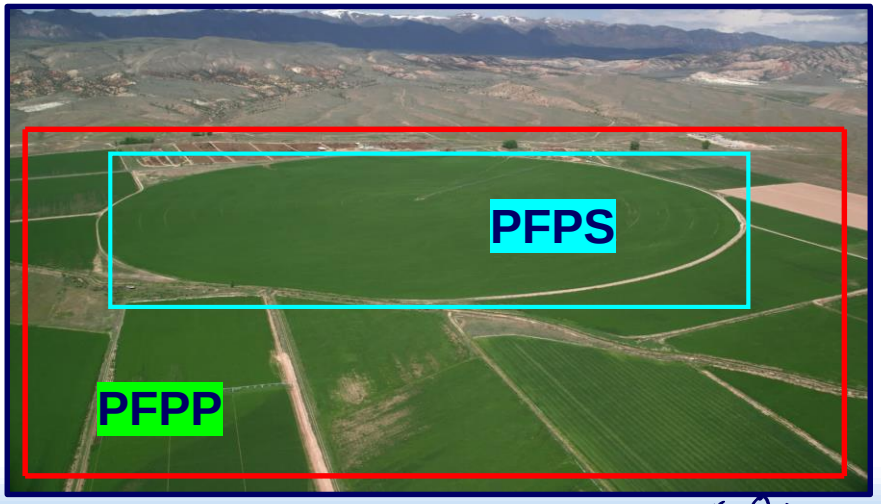
- **Buffer**
- ✓ **PFA** large buffer
- ✓ **PFPP/PFPS** in the immediate vicinity of the farming unit

- **Time frame**
- ✓ **PFA** maintained for years
- ✓ **PFPP/PFPS** can be maintained for one or few growing seasons

- **Management**
- ✓ **PFA** managed by the NPPO as a whole with growers participation
- ✓ **PFPP/PFPS** individually by growers with supervision of NPPO

- **Status**
- ✓ **PFA** if pest is found the status of all the areas is affected
- ✓ **PFPP/PFPS** only the place of production where the pest was found is affected





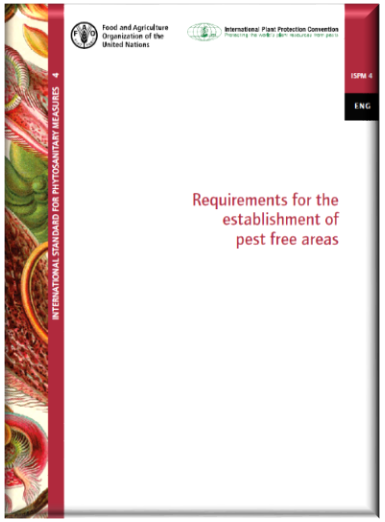
PEST FREE AREA (PFA)

IMPLEMENTATION FRAMEWORK

ISPMs (13) DIRECTLY ASSOCIATED TO PFA

Establishment (Phase 3) – 9 ISPMS

- **ISPM 9** Guidelines for pest eradication programmes
- **ISPM 25** Consignments in transit
- **ISPM 6** Surveillance
- **ISPM 10** Requirements for the establishment of pest free places of production and pest free production sites
- **ISPM 4** Requirements for the establishment of pest free areas
- **ISPM 26** Establishment of pest free areas for fruit flies (Tephritidae)
- **ISPM 8** Determination of pest status in an area
- **ISPM 29** Recognition of pest free areas and areas of low pest prevalence



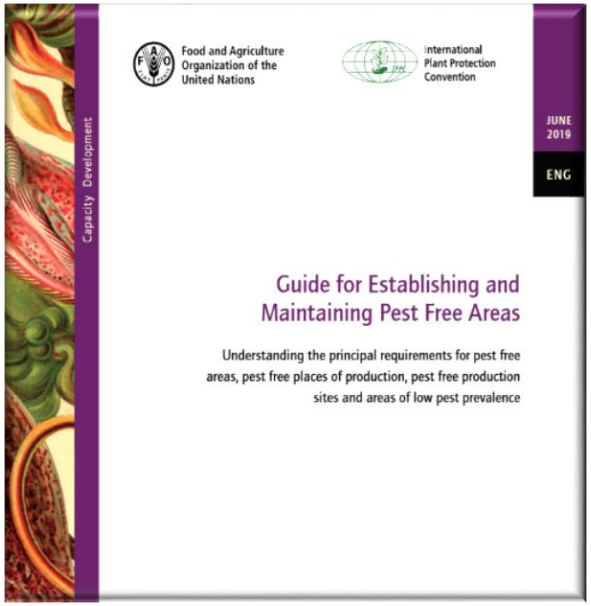
Maintenance (Phase 4) – 6 ISPMS

- **ISPM 4, 10, 25**
- **ISPM 9, 26**
- **ISPM 4,8,10**
- **ISPM 4, 26**
- **ISPM 4, 10, 26**

Market Access (Phase 5) – 5 ISPMS

- **ISPM 7** Phytosanitary certification system
- **ISPM 13** Guidelines for the notification of non-compliance and emergency action
- **ISPM 15** Regulation of wood packaging material in international trade
- **ISPM 23** Guidelines for inspection
- **ISPM 31** Methodologies for sampling of consignments

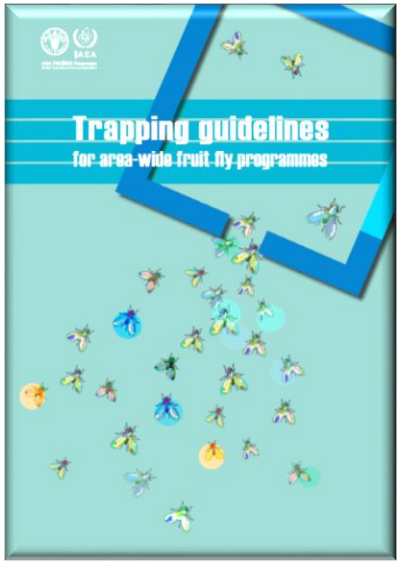
GUIDELINES AND PROCEDURES MANUALS

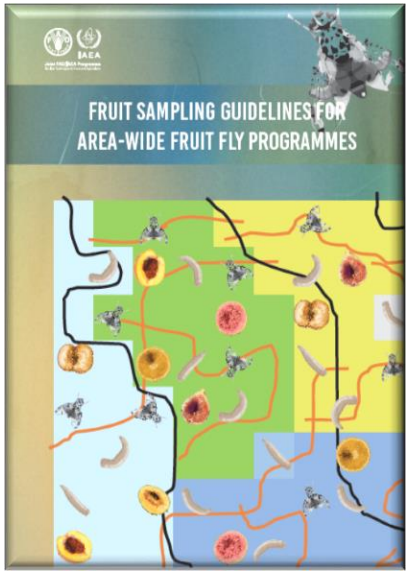


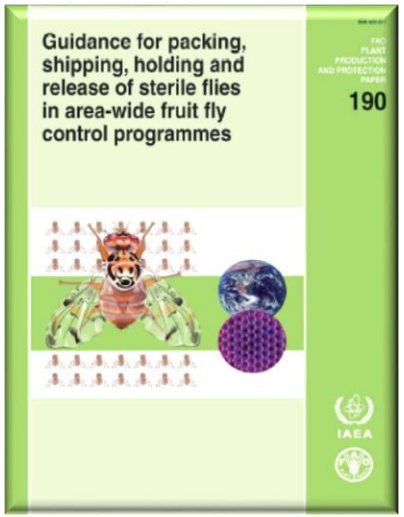
Guide for Establishing and Maintaining Pest Free Areas

Understanding the principal requirements for pest free areas, pest free places of production, pest free production sites and areas of low pest prevalence

FAO/IAEA RESOURCE DOCUMENTS FOR ISPMs







PEST RISK MANAGEMENT OPTIONS TO ESTABLISH AND MAINTAIN A PFA

- ✓ Pest Eradication (Establish PFA)

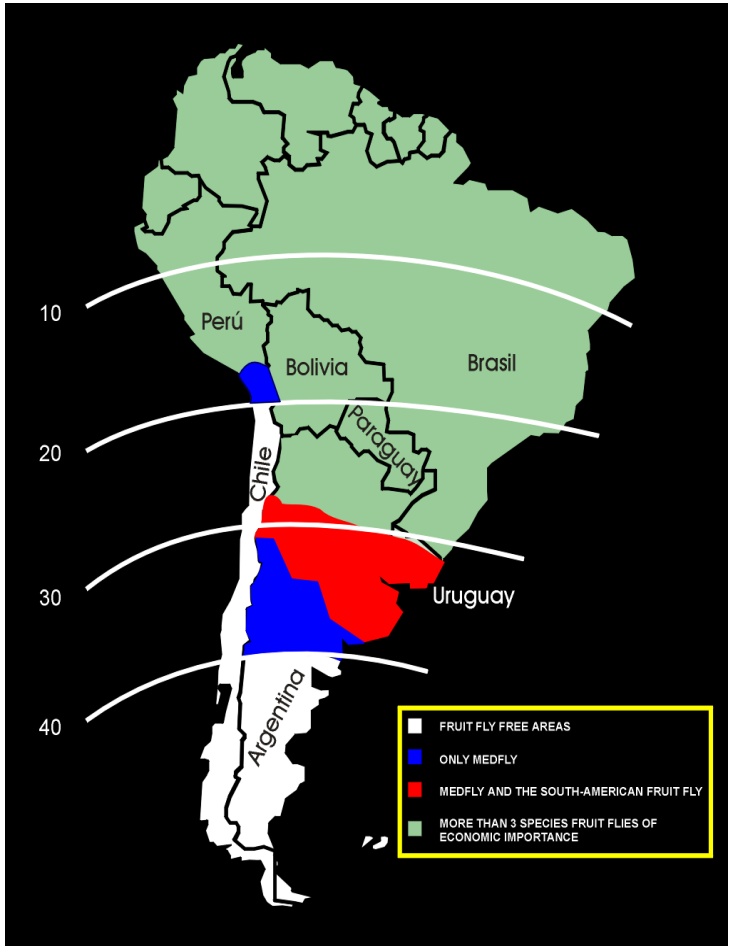
  The application of phytosanitary measures to **eliminate** the pest from an area

- ✓ Pest Containment (Maintain PFA)

  The application of phytosanitary measures in and around an infested area **to prevent the spread** of a pest

- ✓ Pest Exclusion (Maintain PFA)

  Application of **phytosanitary measures** to prevent the **entry** or **establishment** of a **pest** into an **area**



TECHNICAL FEASIBILITY PFA

- **Availability of cost-effective tools to establish and maintain status**

Biocontrol

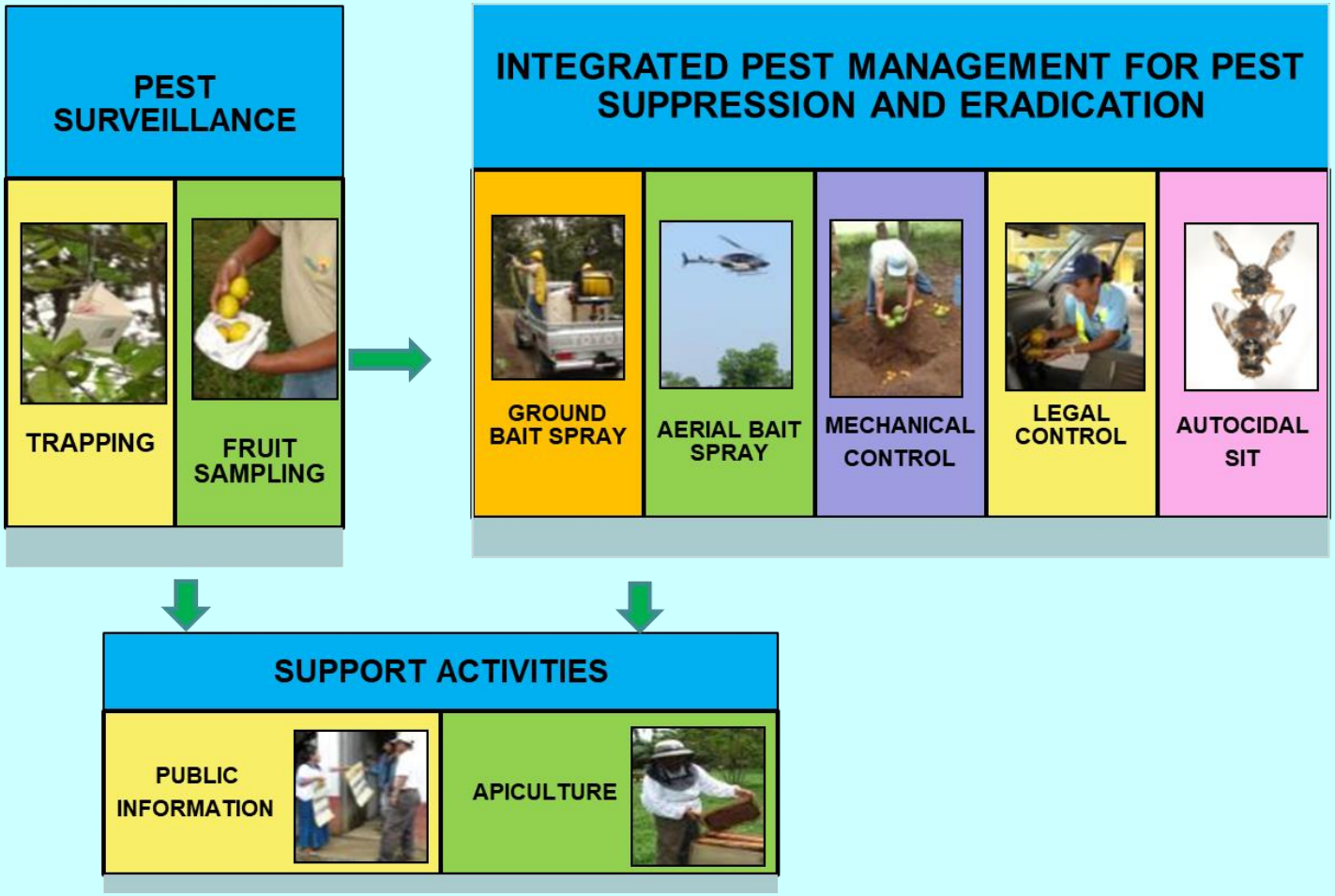
- **Level of risk associated with target pest incursions to the PFA**

Isolation

- **Feasibility of artificially isolating the area to prevent reinfestations**

Checkpoints

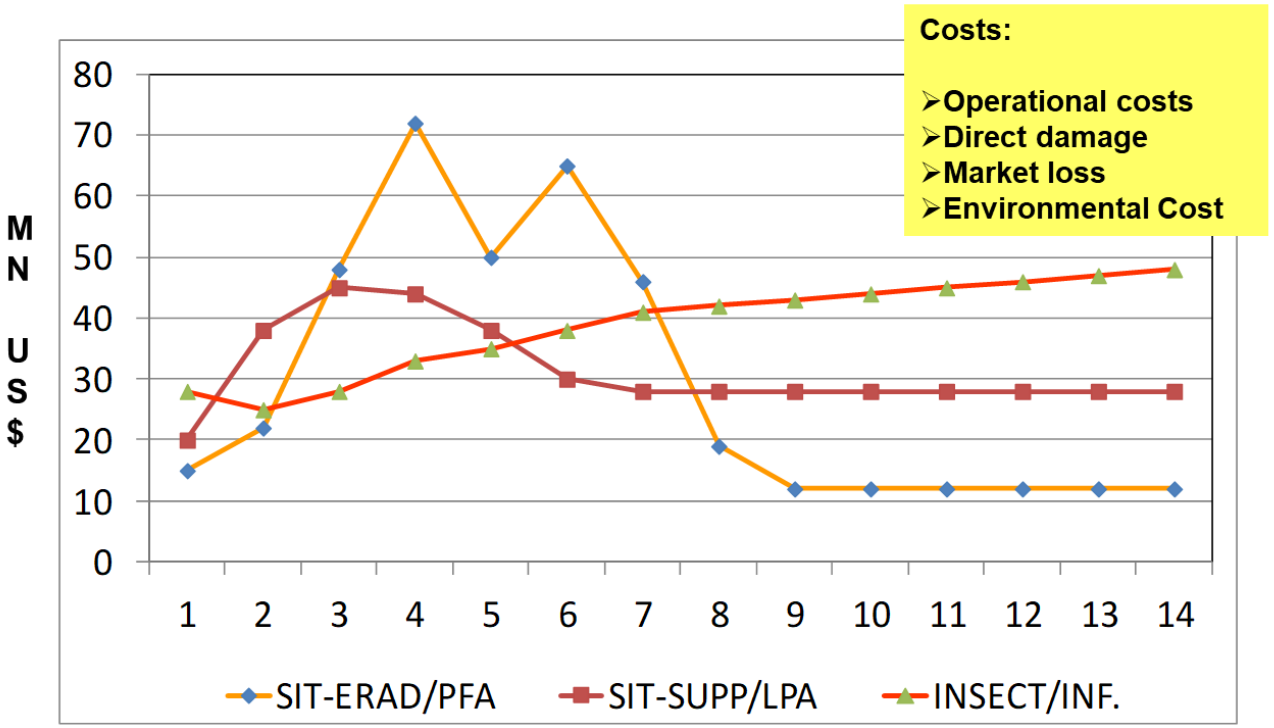
INTEGRATING PHYTOSANITARY MEASURES FOR PEST CONTROL



INDUSTRIAL COMPLEX:
FOR STERILE FRUIT FLY MASS REARING AND STERILIZATION

ECONOMIC FEASIBILITY PFA: Costs and Benefits

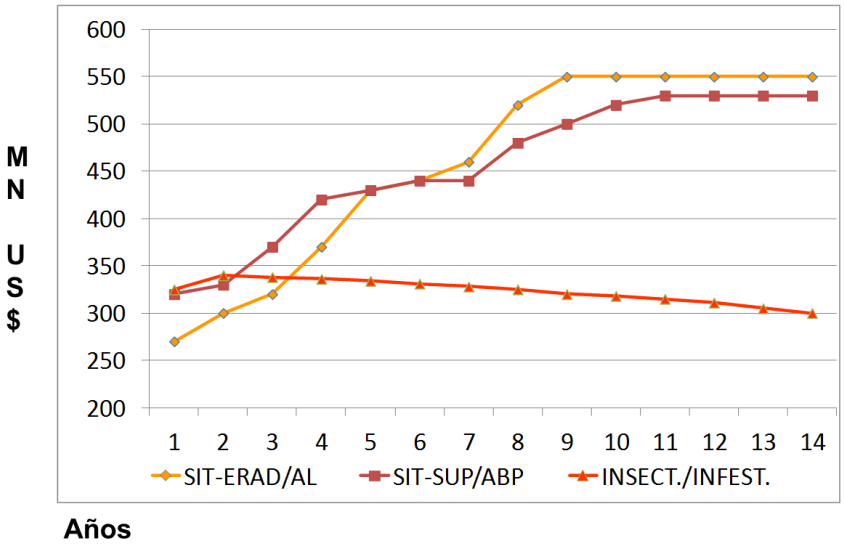
Typical Cost Flow



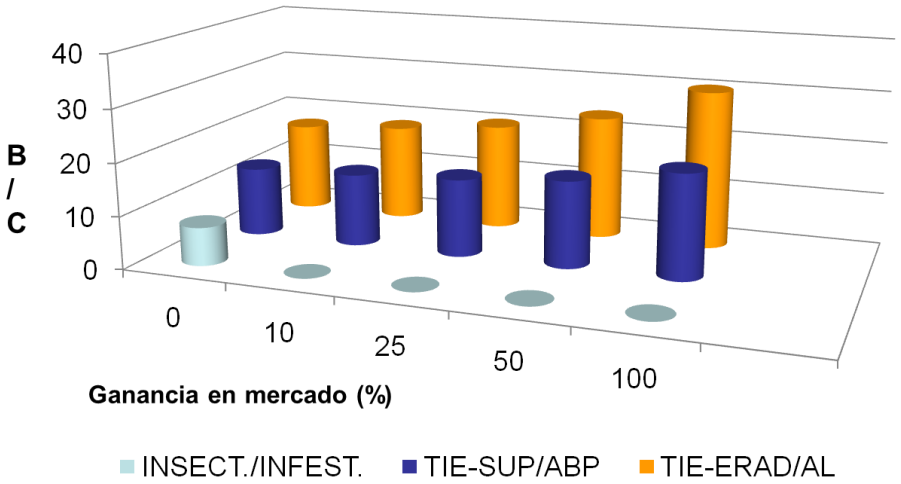
Enkerlin and Mumford. 1997.
Journal of Economic Entomology 90: 1066-1072

RETURN ON INVESTMENT

Net-Benefits

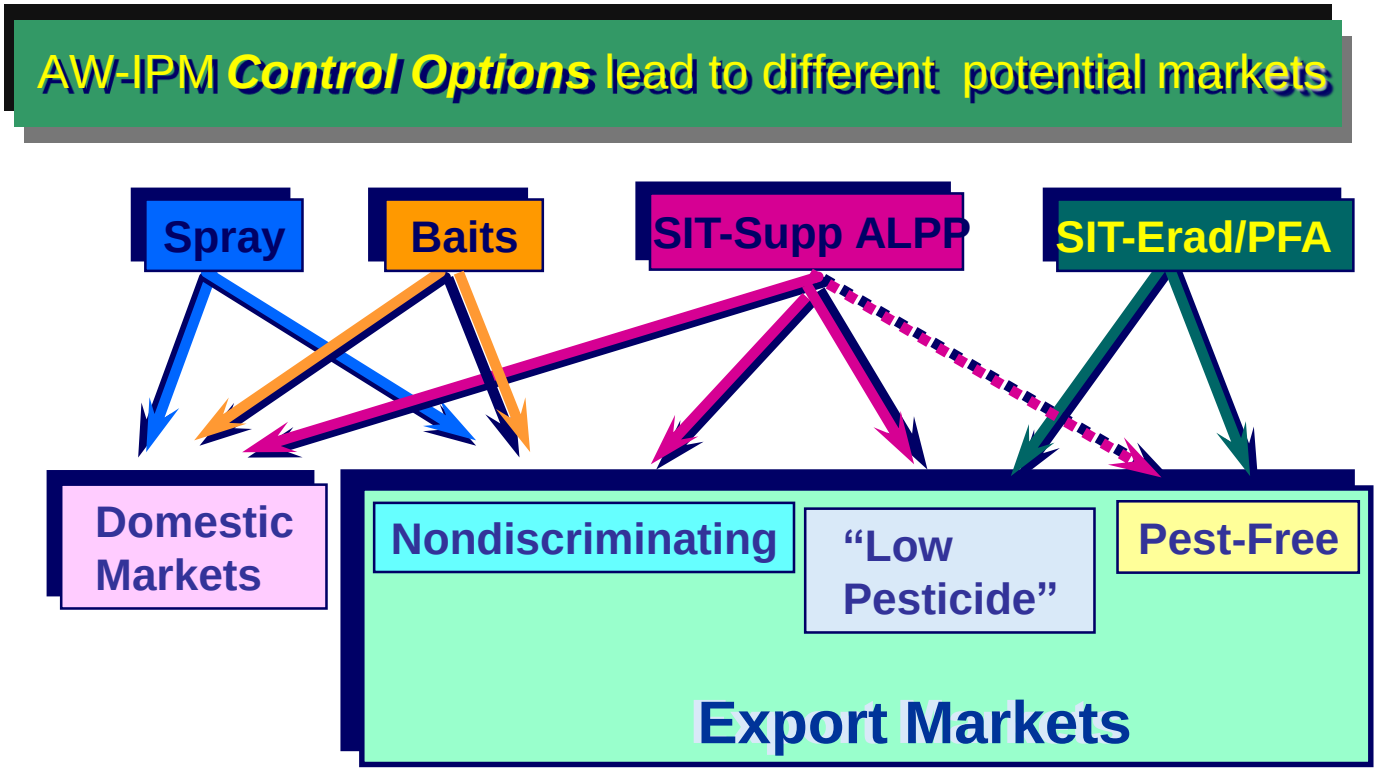


Benefit/Cost Ratio

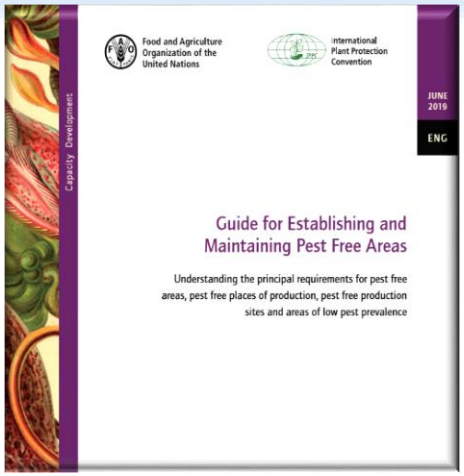


Enkerlin and Mumford. 1997.
Journal of Economic Entomology 90: 1066-1072

MARKET ACCESS

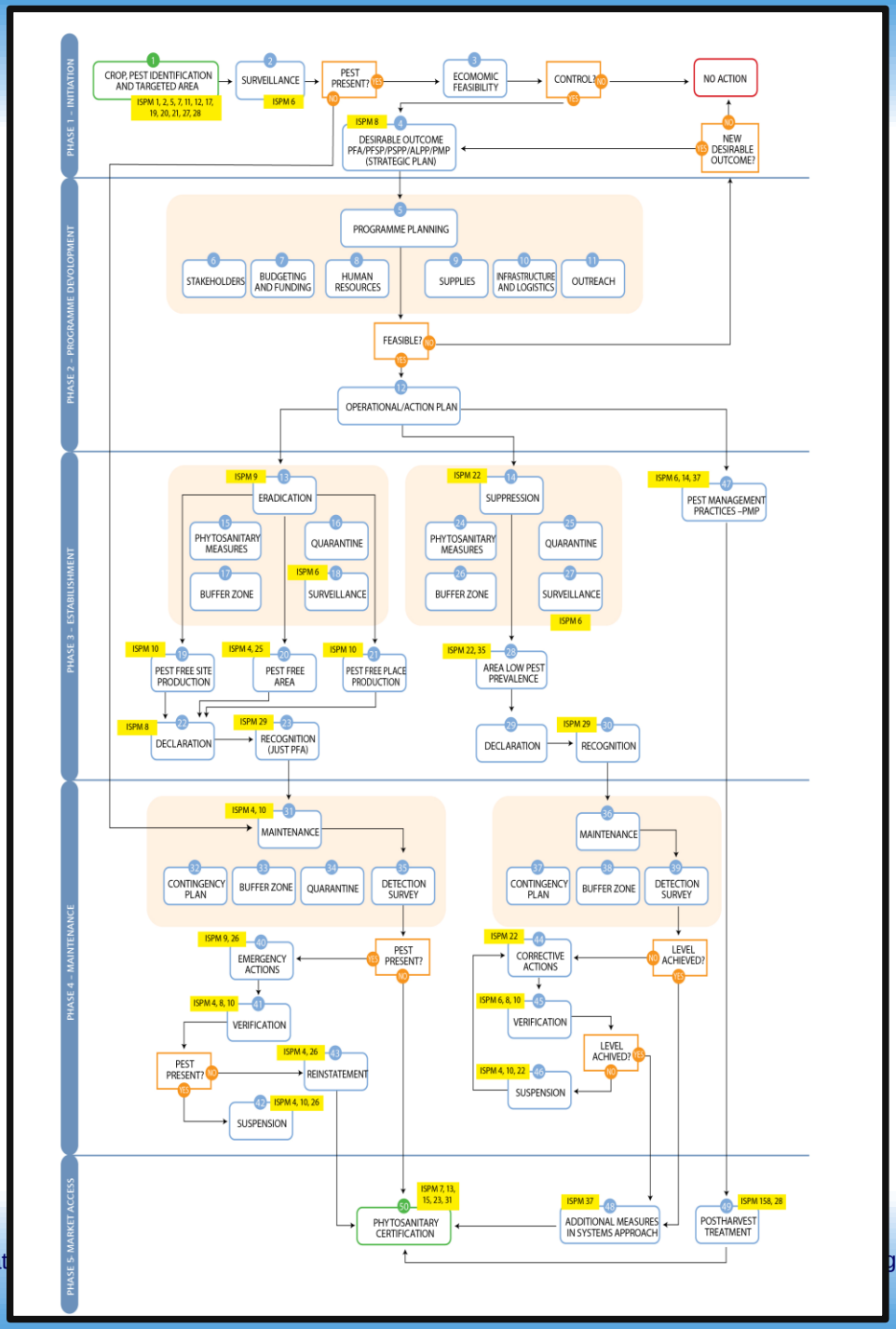


Modified from J. Mumford

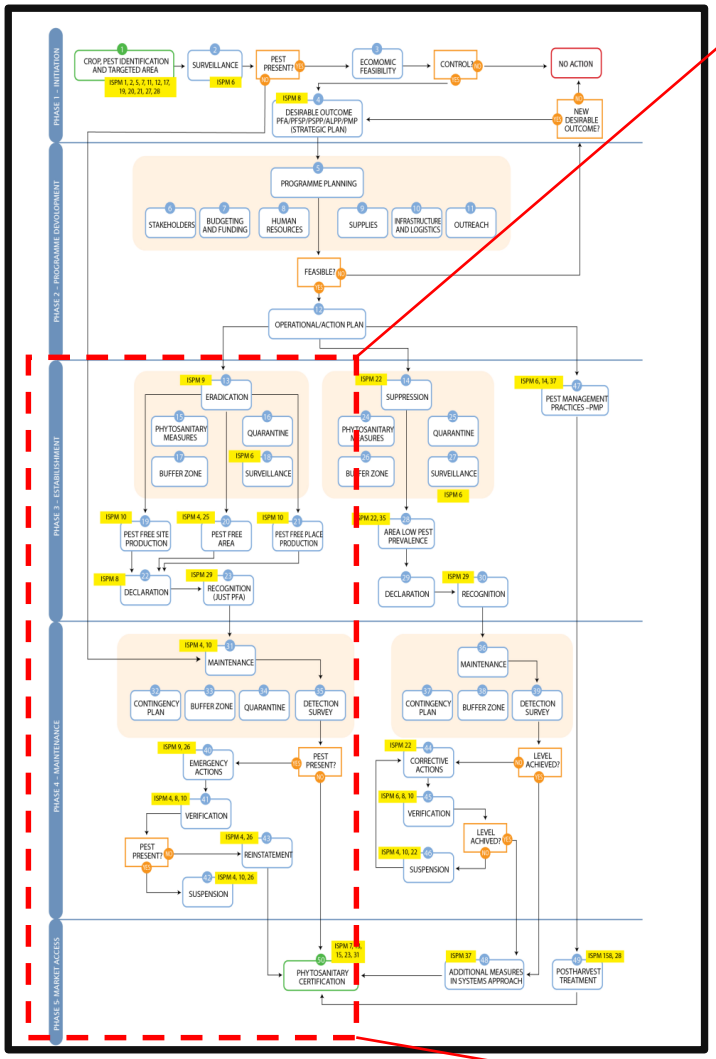


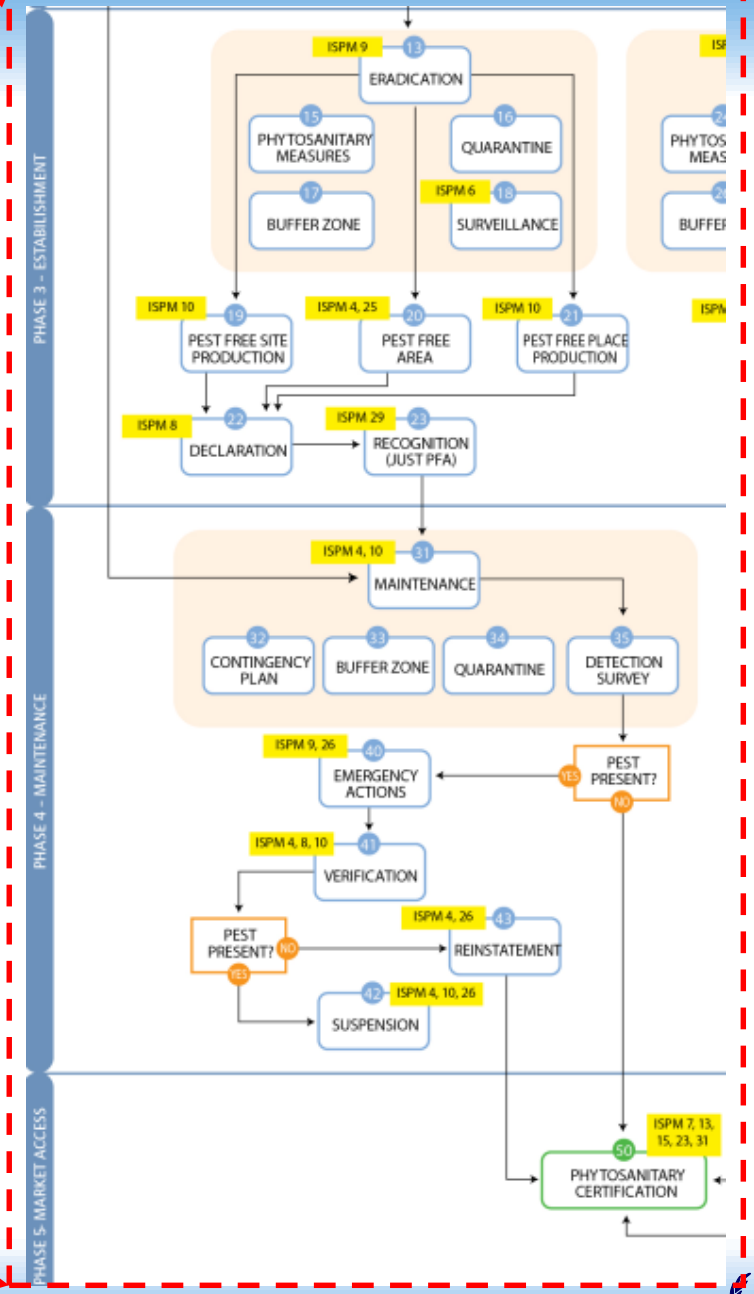
Decision Tree

For Establishment and Maintenance of PFA, PFPP, PFPS and ALPP



Decision tree for establishment and maintenance of PFAs, PFPPs, PFPSs and ALPPs





PHASE 3 ESTABLISHEMENT OF A PFA

BILATERAL BASIS / NPPO IMPORTER & EXPORTER

Eradication (Step 13)

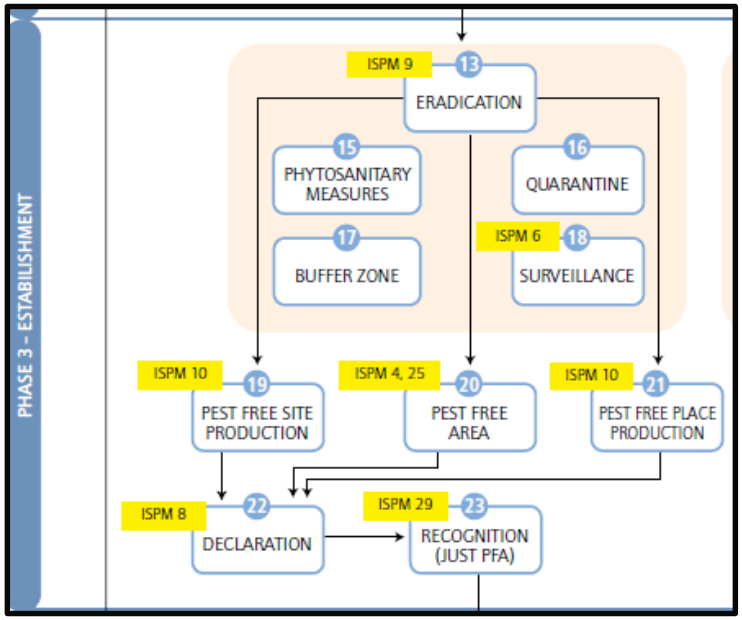
1. Phytosanitary measures for pest eradication are being applied
2. Pest eradication has been verified

Declaration (Step 22)- NPPO Exporter

1. Verification of phytosanitary status – NPPO Exporter – Step 18
2. National declaration of pest freedom (first time)
3. Official request for recognition of phytosanitary status to importer

Recognition (Step 23) - NPPO Importer

1. Official request to the exporter of information for recognition of PFA
2. On-site verification and recognition of PFA
3. Recognition of PFA
4. Publication in the federal journal of the rule for import of the commodity



PHASE 4 AND 5: MAINTENANCE AND MARKET ACCESS

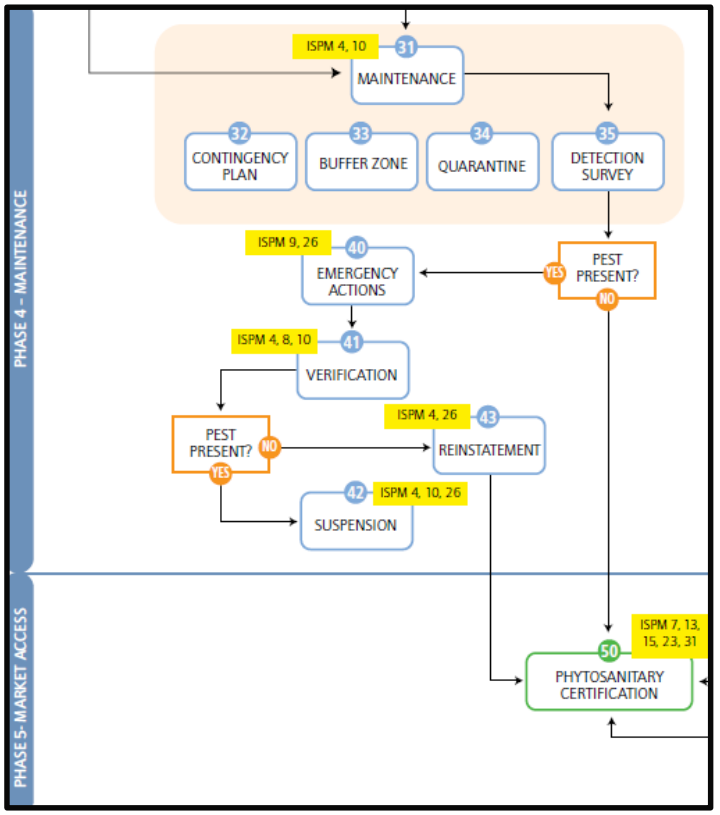
BILATERAL BASIS / NPPO IMPORTER & EXPORTER

Maintenance

1. Pest status in the area is being mantained – Step 31
2. Emergency actions are being implemented to eliminate pest outbreaks – Step 40
3. Eradication of pest outbreak is being verified – Step 41

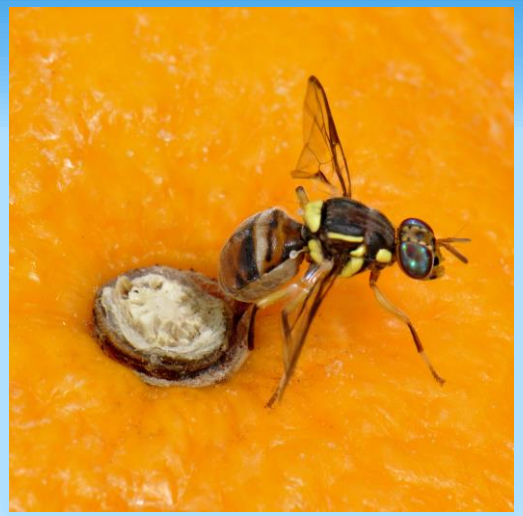
Phytosanitary certification

1. Subscription of bilateral work plan – NPPO of both countries
2. Initiation of commodity exports – Industry & NPPO Exporter
3. Phytosanitary certification – NPPO Exporter - Step 50
4. Periodic on-site visits for verification of work plan – NPPO importer – Step 41



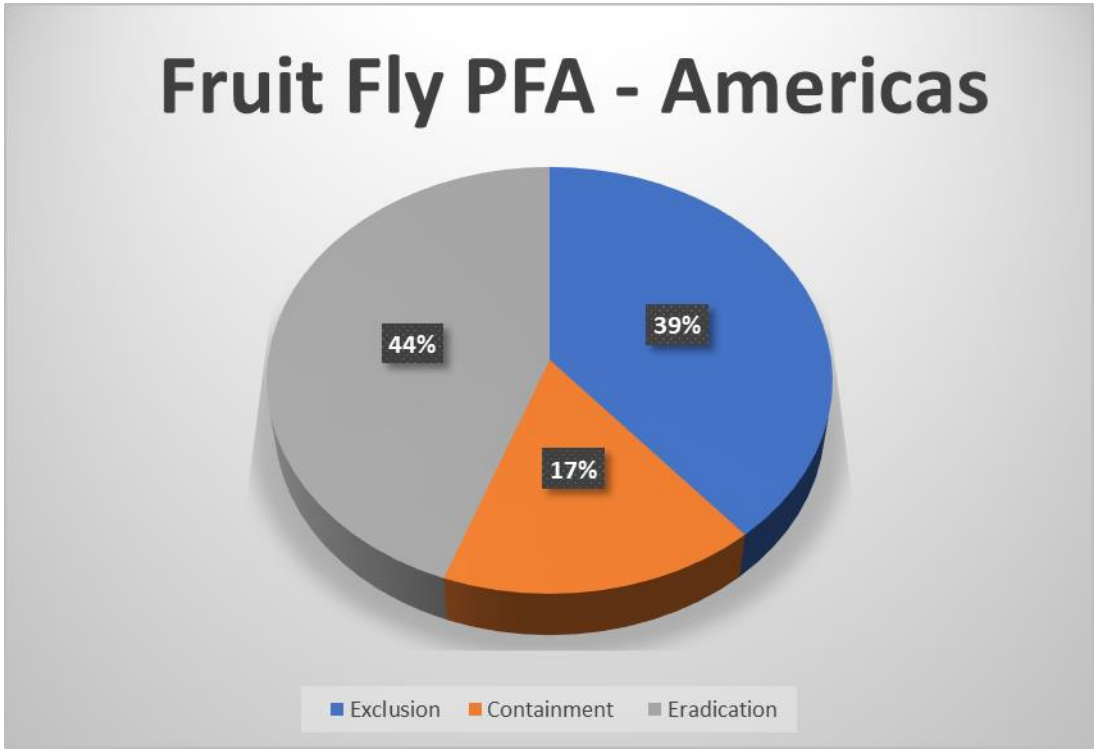
FRUIT FLY PFA IN LATIN AMERICA

Strategic Objective	Area-wide Programme	References
Exclusion/Containment (6)	Chile's National Fruit Fly Programme, 1980 – present	Olalquiaga, and Lobos 1993; Rodríguez et al. 2016
	Mexican Fruit Fly Preventive Release Programme (Rio Grande Valley, Texas, Mexico – USA border), 1980s – present	Holler et al. 1984
	Mexican Fruit Fly Preventive Release Programme (Tijuana, Baja California, Mexico – USA border), 1980s – present	Dowell et al. 2000
	Binational Chile-Peru Programme for Mediterranean Fruit Fly Eradication, 1996 – present	Wedekind 2007; Rodríguez et al. 2016
	Carambola fruit fly containment programme in Guyana, Surinam, French Guiana and Brazil, 1998 – present (only Brazil) Note.- Eradication efforts where discontinued for the rest of the countries in 2003.	Malavasi et al. 2000; Midgarden et al 2016; IDB 2018
	Melon fruit fly prevention programme in north east Brazil to protect PFA, 1990 – present	Razera Papa 2019
Eradication (7)	PFA in the State of Sonora, Mexico (Recognized by the USDA in 1988) – 1988 - present	SAGAR (Secretaría de Agricultura y Ganadería). 1999
	Guatemala-Mexico-USA Moscamed Programme for the Containment and Eradication of the Mediterranean Fruit Fly, 1975 – present	Hendrichs et al. 1983; Enkerlin et al. 2017
	Mediterranean Fruit Fly Eradication Programme "PROCEM" (Patagonia – Mendoza – San Juan, Argentina), 1992 – present	De Longo et al. 2000; Guillen and Sanchez 2007; Wedekind 2007; Borges et al. 2016; Quiroga et al. 2016
	Mediterranean Fruit Fly Free Places and Sites of Production, Honduras, Central America, 2017 – present	Noe Pino 2016
	Mediterranean Fruit Fly Eradication Programme (Altagracia, Dominican Republic), 2015 – 2017	Zavala et al. this volume
	The Mexican and West Indian Fruit Flies Suppression and Eradication Programme – The National Fruit Fly Programme in Mexico, 1991 – present	Reyes et al. 2000; Gutierrez et al. 2013; Liedo et al. this volume
	Establishment of Fruit Fly ALPP and PFA in Central America, 2007 – present	Reyes et al. 2007



- **Exclusion (7)**
- **Containment (3)**
- **Eradication (8)**

18



SIT ERRADICATION! PFA

Apple and pear production areas in **Patagonia, Argentina**

Eradication of *C. capitata* represents the elimination of costly quarantine treatments to most of the 3 million boxes of quality pears and apples that this region exports yearly.

PEST FREE PLACES OF PRODUCTION (PFPP)

HONDURAS – SENASA

- ✓ Mediterranean fruit fly/Melon
- ✓ Assessment of pest absence
- ✓ Conditional host
- ✓ Surveillance
- ✓ Export market: Taiwan

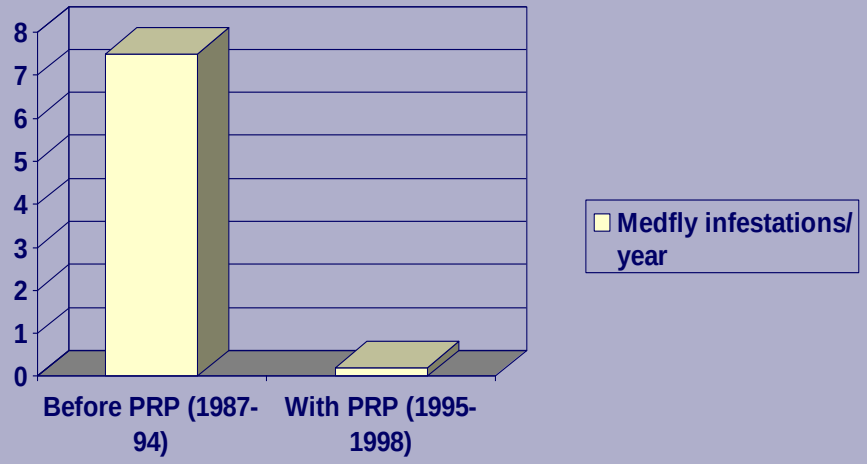
Melons from fruit fly free places of production in Honduras

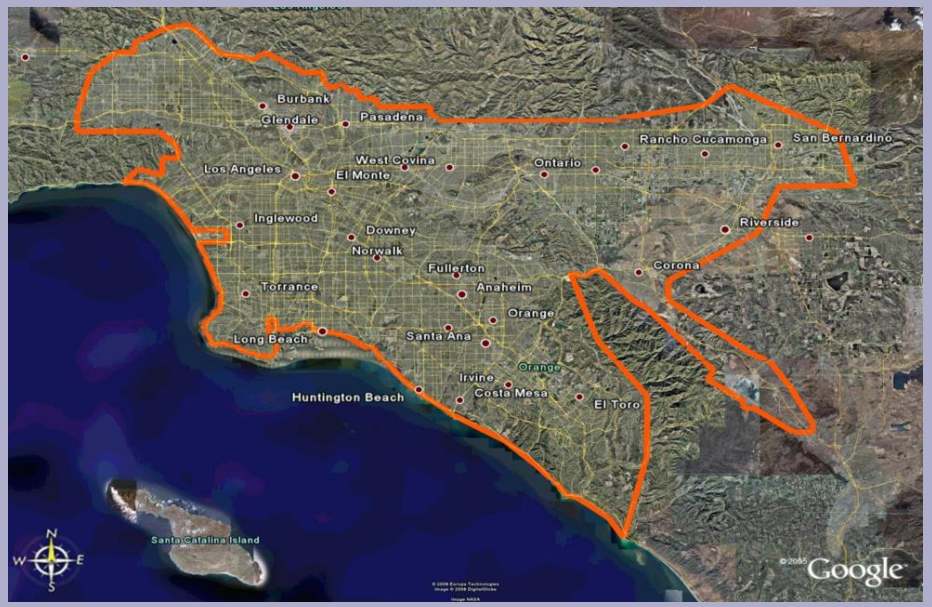
Prevention! California USA

Medfly Preventive Release Programme
California

2,489 sq. miles

Approach: Weekly release of 400 million sterile M





PFA and ALPP in Central America

Pilot fruit fly free and low prevalence areas, generating thousands of rural jobs and revenues


eco
PAPAYAS


PAPAYAS
eco
PAPAYAS

CURRENT ACTIONS TO ADVANCE PFA

- ✓ Technology transfer to FAO and IAEA Member Countries through technical cooperation projects
- ✓ Harmonization of technology – Fruit fly surveillance and emergency response, establishment of PFA and ALPP
- ✓ Drafting reference documents in support of international standards (guidelines and procedures manuals)
- ✓ Training courses and knowledge management

TRAINING / COURSES

- Training through fellowships, scientific visits, students, group training, etc.: a) in host institutions, b) directly at projects, or c) in Seibersdorf (although limited capacity).

- National and regional training courses
- Interregional training courses.

CONCLUSIONS

- ✓ Today PFAs have been established in a number of countries from where very large volumes of fruits and vegetables are being exported to high value markets without quarantine restrictions.
- ✓ Nevertheless, most of the PFAs have been established for fruit fly pests.
- ✓ It is critical that decisions on the type of option that will be selected to mitigate pest risk are based on a solid analysis that incorporates technical and economic feasibility.
- ✓ The FAO-IPPC provides a framework to establish and maintain PFA.
- ✓ PFA contribute to UN Sustainable Development Goals (SDGs) including: Zero Hunger, Poverty Alleviation, Good Health and Well-Being and Life on Land.


CHERRIES - CEREZAS
PLU #4045
ro y Neuquén
ro and Neuquén
UIT S.A.
Importador
. 1190
XAB
Argentina
9199
nfruit.com
.com
AUSTRAL
THIS FRUIT WAS GROWN
IN A USDA APPROVED
FRUIT-FLY FREE ZONE
IN PATAGONIA ARGENTINA

Thank you!