



# Area Wide Control Program for Fruit Fly Control



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# Part 1:

## Fruit Flies & Current Control Methods

### Fruit Fly (Family Tephritidae)

Major species of economic significance are:

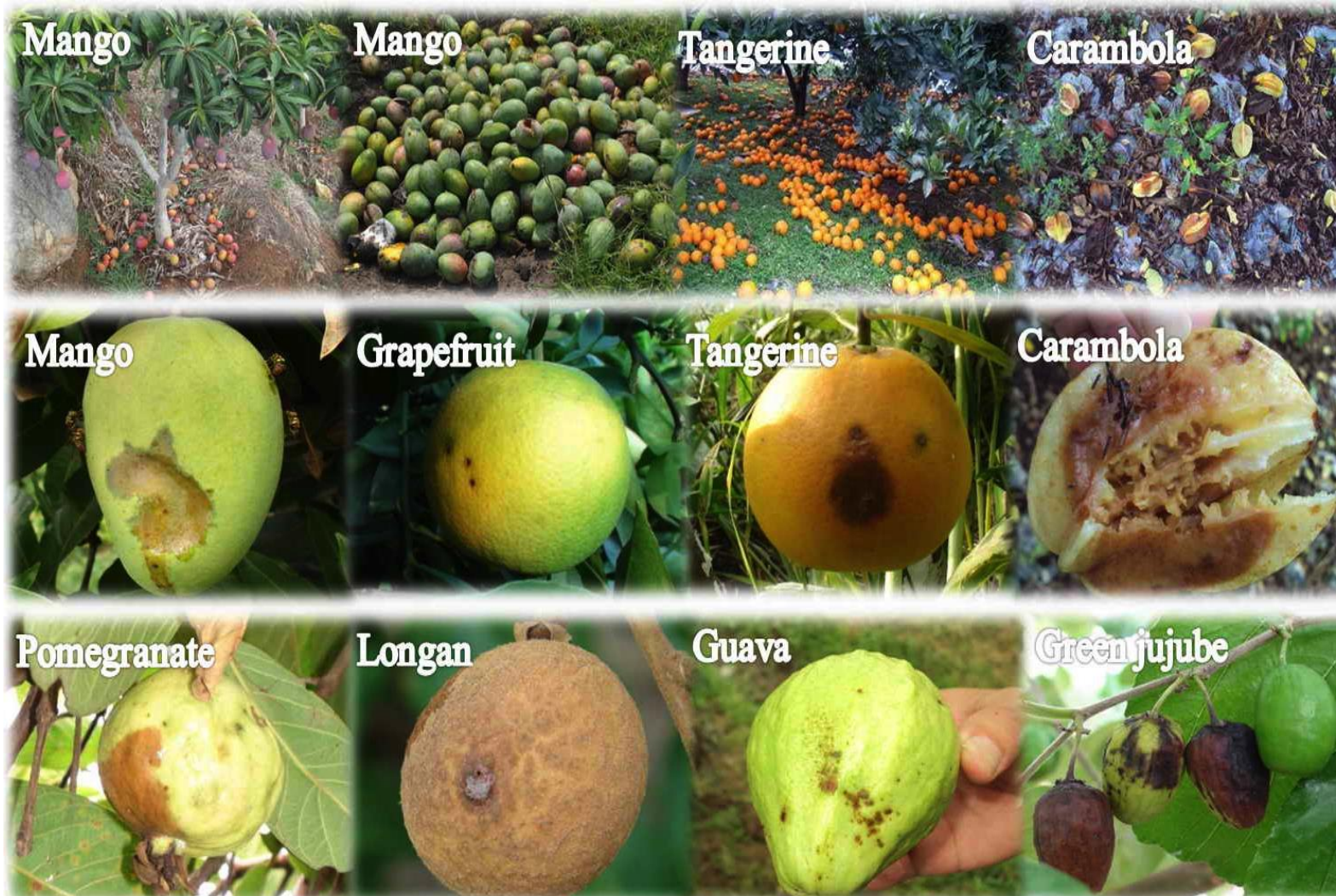
- ❖ Oriental Fruit Fly, *Bactocera dorsalis* (Hendel)
- ❖ Chinese Citrus Fly, *Bactrocera minax* (Enderlien)
- ❖ Melon Fruit Fly, *Bactrocera cucurbitae* (Coquillett)
- ❖ Mediterranean Fruit Fly, *Ceratitis capitata* (Wiedemann)

The genus *Bactrocera* is known for its destructive impact on agriculture worldwide.





# Part 1: Fruit fly (FF) damaging fruits





ZAP MALE FLIES WITH RADIATION  
TO MAKE THEM STERILE



RELEASE MILLIONS OF STERILE MALES



MALES MATE WITH WILD FEMALES



BUT EGGS DON'T HATCH

**Sterile Insect Technique**

**Pheromones**



**Current  
Control  
Methods**



**Bagging**

**Chemical Spray**



## Part 1:

# Drawbacks of current control methods

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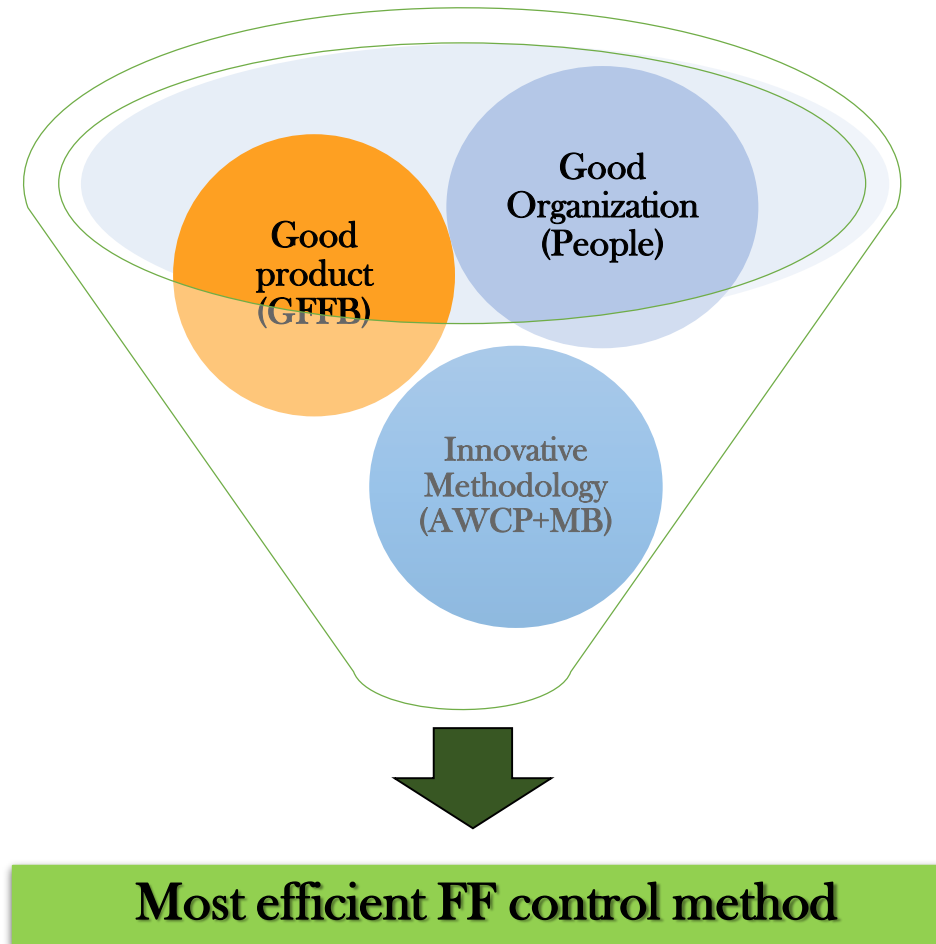
- ❖ Ineffective in lowering the fruit damage rate in the long term (without raising other environmental/financial risks)
- ❖ Not always effective on both male and female flies
- ❖ Usually labor intensive
- ❖ Unaffordable, though effective
- ❖ Lack of coordinated action
- ❖ Not environment friendly

# Part 2: Fruit Fly Control - Our Mantra

Area wide control program  
(AWCP) through Mass  
Baiting(MB) using Great<sup>®</sup>  
Fruit fly bait (GFFB)



## Part 2: Fruit Fly Control - Our Mantra





# Part 2: Area Wide Control Program

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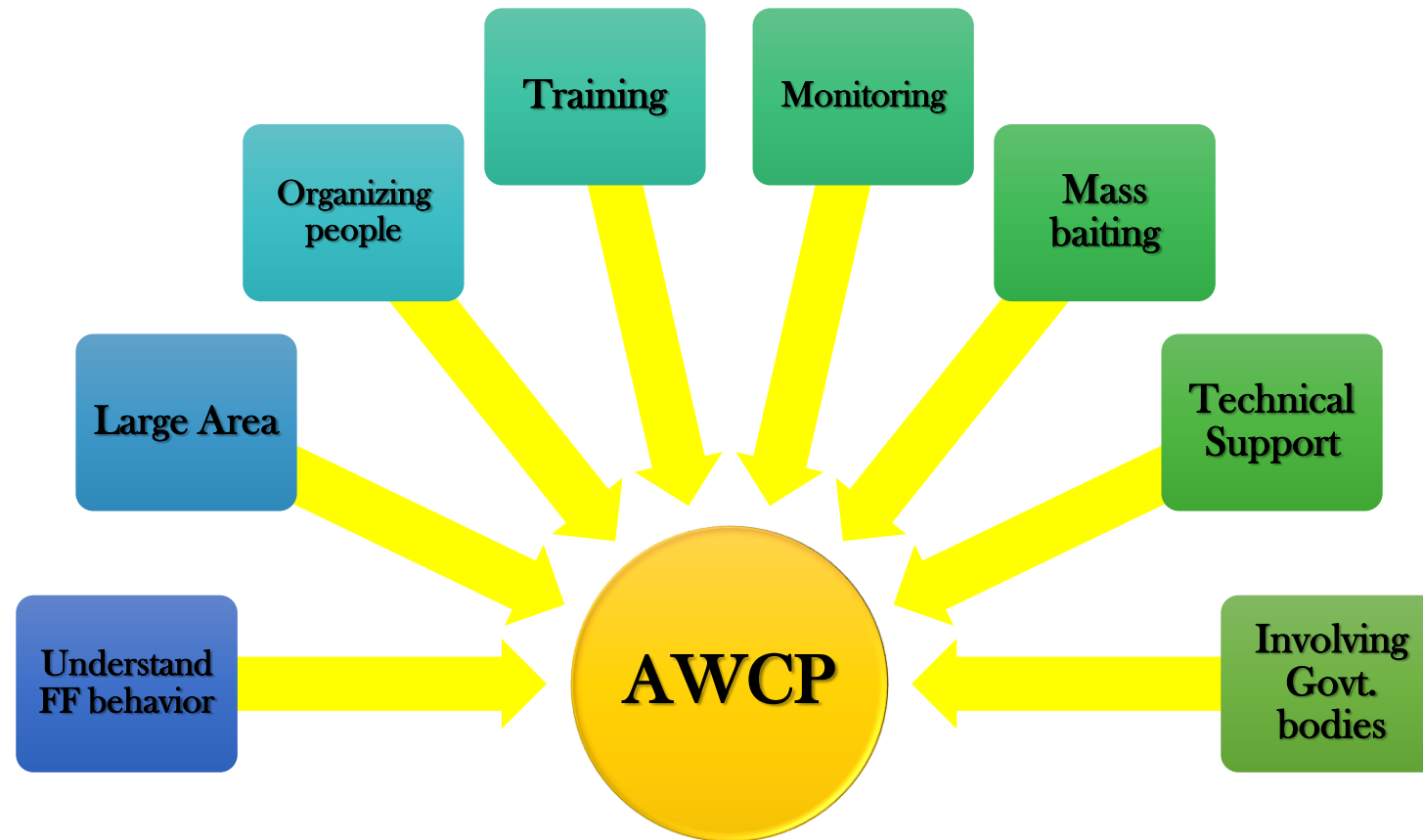


## Part 2: What is an AWCP?



- ❖ An integrated and systematic program using our GREAT® Fruit Fly Bait for Fruit Fly Control (FFC) in large areas.
- ❖ Includes several stages to achieve the required results with high standards of FFC.

# Part 2: AWCP - Our Mantra

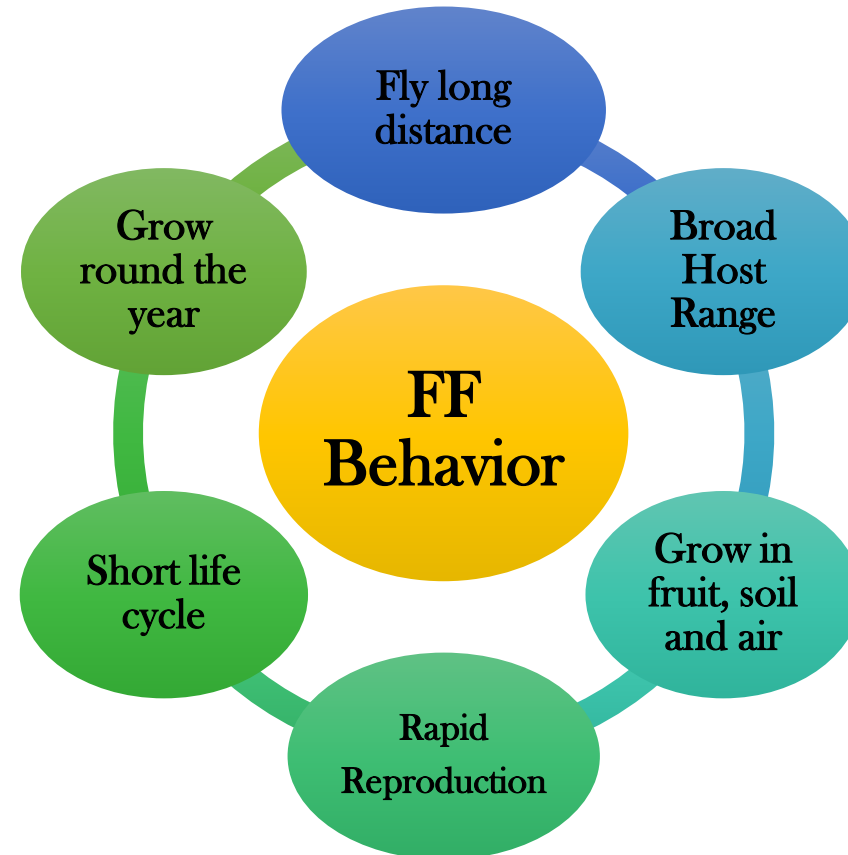


*We offer our products at 50% subsidized prices for 1<sup>st</sup> trial*



## Part 2: Why AWCP?

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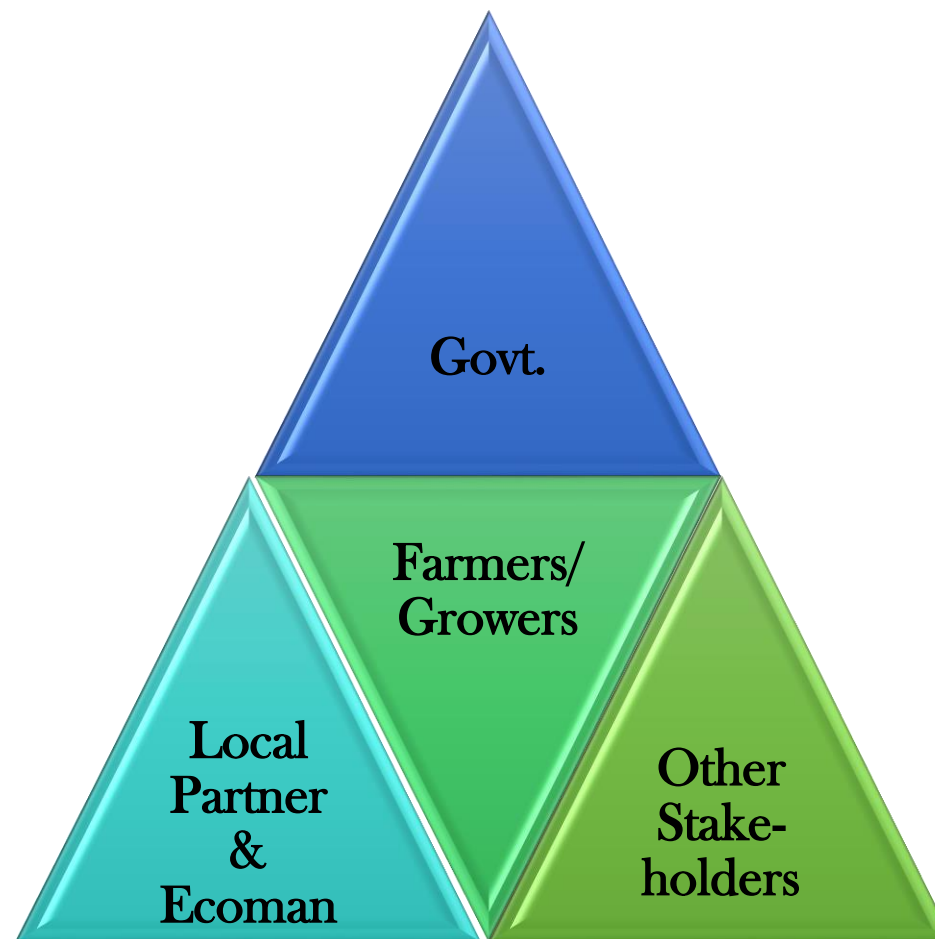


AWCP in large areas helps in better control of FF population density

## Part 2: Why AWCP?

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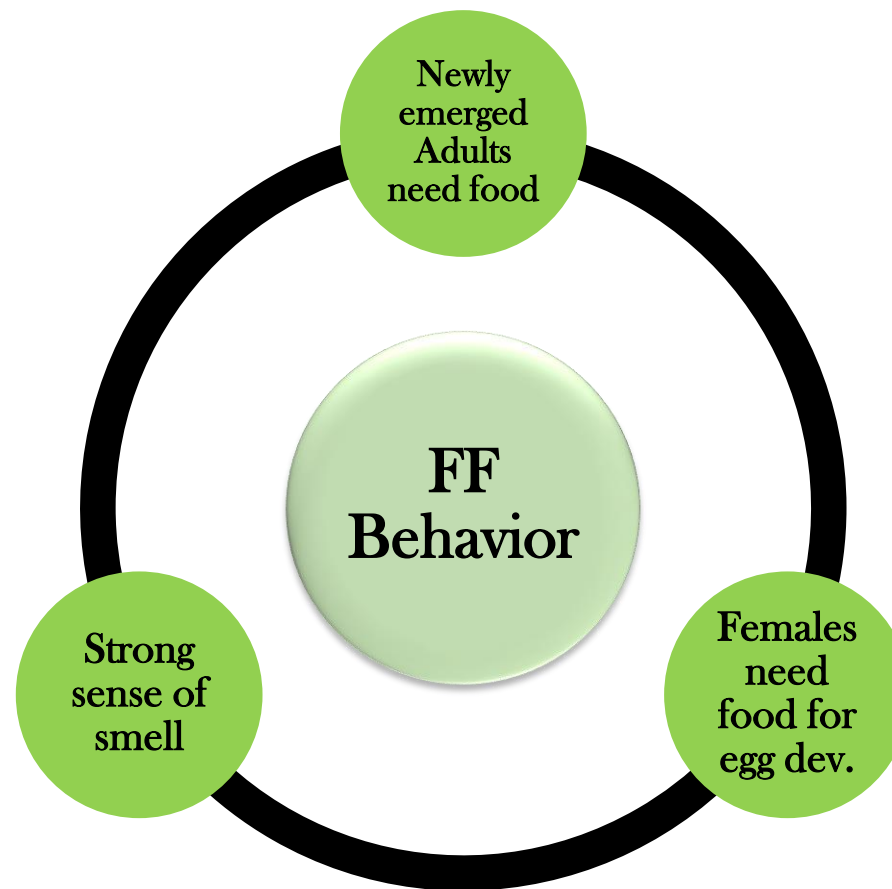
- ❖ Organized action
- ❖ Systematic approach
- ❖ Unites stakeholders involved



*Stakeholders*

## Part 2:

# Why AWCP through Mass-baiting(MB)?



Bait acts as the best attractant both for male and female population, while they are in search of food.



# Part 2:

## Why AWCP through MB using GFFB?

Easy to apply

Provide special nutrients to male/female adults after emerging from the pupa

Less labor intensive - easy to cover large areas in 1 day by spot spray method.

Strong attractant - effective when spot sprayed in 60-70 points/acre

Effective for longer duration. Needs to be reapplied every 5-7 days

Moist mix makes it easy for FF to feed

Effective on more than 1 species of FF

# Part 2: Other Advantages

<b>GFFB</b>	
Eco friendly	✓
Doesn't affect non-target species	✓
No residue on fruits	✓
Cost effective	✓

<b>AWCP</b>	
Economic (Shared costs)	✓
Cost effective (ROI)	✓

## Part 2:

# How an AWCP?

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- In depth analysis of the trial area
- Training & Organizing
- Technical Support
- Monitoring
- Mass Baiting using GFFB
- Efficacy evaluation
- Meeting with Stakeholders to showcase results



## Part 2:

# 1. In depth analysis of trial area

- ❖ Collect Preliminary info (Questionnaire)
- ❖ Schematic diagram of trial/surrounding area
- ❖ Create a plan of action



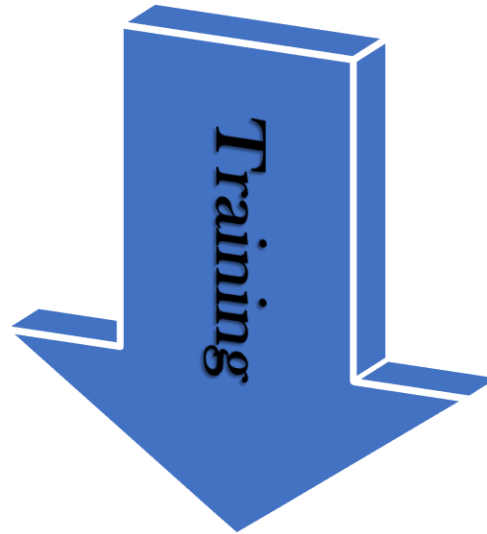
## Part 2: 2. Training & Organizing



**Builds confidence among end-users to adopt our innovative methodology and stop using previous control methods.**



## Part 2:



- ❖ About FF behavior
- ❖ Right Time to Spray
- ❖ Right Place to Spray
- ❖ Right Method of Spray
- ❖ Cost Benefit analysis
- ❖ Environmental Safety



- ❖ Form Teams
- ❖ Define roles
- ❖ Unify actions
- ❖ Systematic approach



*Sprayer Team*

# Part 2:

## 3. Technical Support



Technical experts provide live support and guidance to end users

## Part 2:

# 4. Monitoring

- ❖ Understand FF population dynamics
- ❖ Key factors – Placement density  
Trap recordings  
Refill frequency
- ❖ Results determine the Right time, Right place, Right dosage of GFFB application



Ecoman® Oriental Fruit Fly  
Sex Pheromone Lure



# How we do Monitoring?



1. Examining Pupa



2. Pheromone Traps (Bait Traps - CCF)



3. Spot Spraying with GFFB




## Part 2:

# 5. Mass baiting using GFFB

- ❖ Unique adaptive formula based on the knowledge of the biological behaviors and dynamics of fruit flies
- ❖ Key factors–
  - Right Timing
  - Right Spots to spray
  - Right Dosage
  - Frequency




# GFFB - Application Method




Dilute bait with 2 times water and mix well before spraying

Spray on the back of the foliage



Spray in a 0.5-1 sq. meter area in every 8-10 meters at 60-70 points per acre by spot spray method



# Part 2:

## 6. Efficacy Evaluation

❖ To compare results with previous control methods.

❖ To assess effect of GFFB in terms of:

Hunan 2011/Name of Crop	Fruit damage rate in 2010 without GREAT® (%)	Fruit damage rate in 2011 with GREAT® (%)
Navel Orange	20-40	1.2-2.6
Ponkan	8-32	0.8-1.2

Hubei 2012/Description	Benefits for 1 Hectare	Benefits for 140 Hectares
Increase in yield	4.5 Metric Tonnes	630 Metric Tonnes
Increase in income	USD 2250	USD 315,000
Reduced Labor cost	USD 125	USD 17,500
Reduced pesticide usage	15kg	2100 kg



## Part 2:

# 7. Meeting with Stakeholders to showcase results



**Mr. Zhong Tianrun, Deputy  
Director, Agricultural Technology  
Extension Center, MOA, China**



**Experts from University of Ghana  
& Atomic Energy Institute, Ghana**



**Mr. Jinhui Wang, Head of Plant Protection Bureau,  
Hunan Province, China**



## Part 2:

# Result of our Successful AWCP (Over 5 years of experience)

Reduced Average Fruit damage rate to near zero percent

Efficacy proven over conventional control methods

Increased productivity and income


Mass baiting with GFFB - the most economic and cost effective method of FF control

*Long-term fruit fly control method especially in developing nations in well established fruit fly species in an area*

# Part 3: AWCP - Other aspects

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## Our Successful Model



Connect with right  
local partner



Conduct **AWCP** using  
GFFB with local  
partner support



Showcase successful  
trial results to  
stakeholders



Execute on Market  
Expansion Strategy

# Part 3: In an AWCP

What we PROVIDE	What we NEED
Systematic Planning and Organizing	100 acre trial plot, picture of the trial area
Products at 50% subsidized price	Funding for the subsidized goods
Education & Training materials/Technical Plan for trial in <b>English, Spanish, Chinese</b>	Translation of education & training materials in local language
Training programs	List of participant details, support in organizing meetings with them
Technical experts' support till end of trial	Bear local expenses for expert during his stay
Handle logistics in China	Handling logistics and storage at local level
Support for liaising with Govt. bodies	Arrange meeting with potential stakeholders/government officials

## Part 3:

# Criteria for local partner

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- ❖ Looking for a long term solution for FF control
- ❖ Willing for a long term commitment
- ❖ Has local connections with Government or Agricultural organizations
- ❖ Sound knowledge about the local regulatory norms
- ❖ Shares the same vision and core values- *Innovating for a greener future....*

## Part 3:

# Support from Government

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- ❖ Fund projects fully/partially (Reduces financial burden of end users)
- ❖ Offer subsidies (Acts as an incentive)
- ❖ Actively participate in creating awareness through promotional campaigns, dedicated team of officials (Builds confidence among end users for implementing our innovative methodology)
- ❖ Provide assistance in product registration procedures (For instance, Green Channel facility for fast registration of biological control products)



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Thank You!