



## MELONFLY-ENEMY™

Parapheromone Lure  
for the melon fly  
(*Zeugodacus cucurbitae*)

**Target Crops:**

Watermelon, Pumpkin, Butternut,  
Cucumber, Courgette



**The Eco-Smart Answer  
to Melon Fly Control**

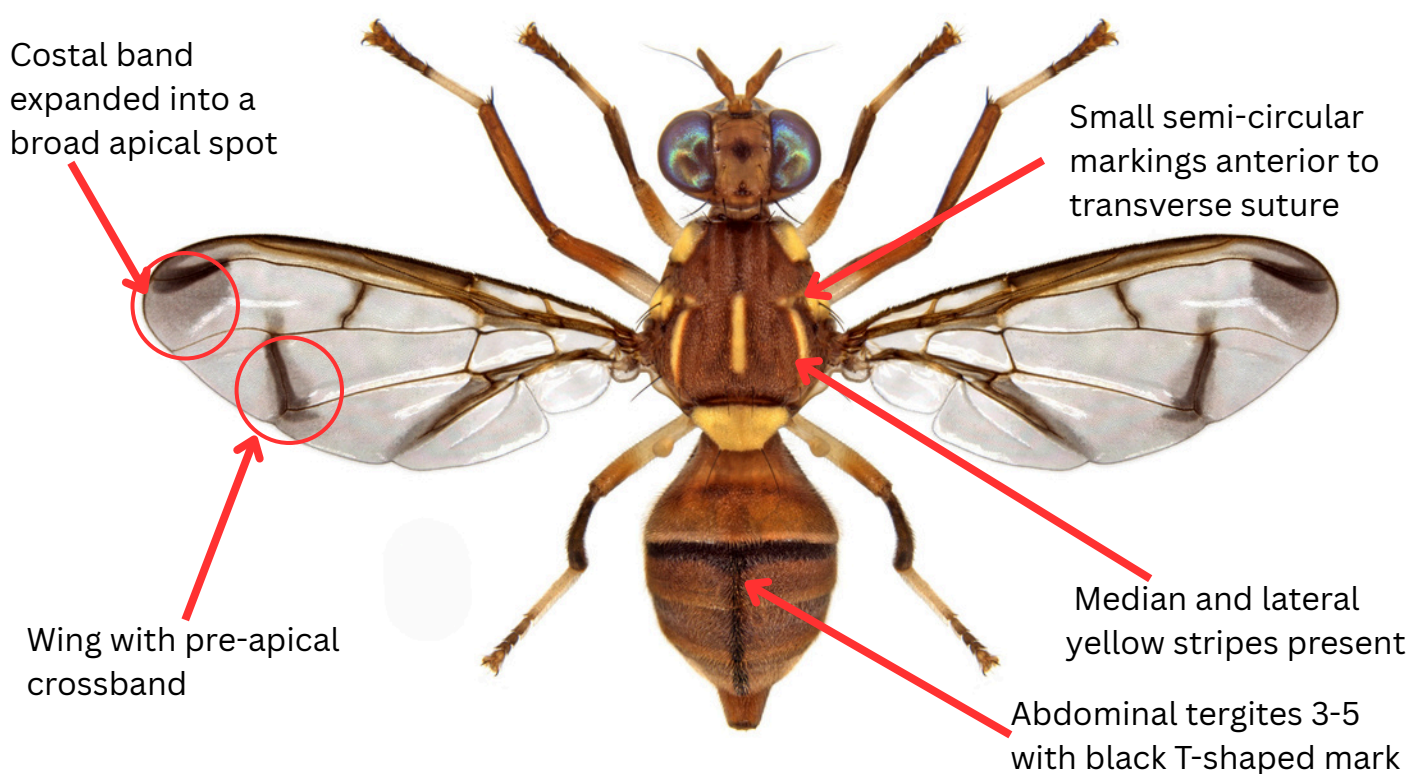
## Overview

The Melon Fly (*Zeugodacus cucurbitae*) is an invasive pest native to tropical Asia, where it evolved with wild cucurbit plants. It spread globally through infested fruits, reaching the Pacific Islands in the 19th century and later establishing across the Indian Ocean and mainland Africa.

In Kenya and East Africa, it thrives in warm climates with year-round host crops, making it a major threat to cucurbit production. Its rapid reproduction, lack of natural predators, and limited pest control in smallholder farms often result in severe yield losses if not managed effectively.

Historically, the melon fly was classified under the genus *Bactrocera*, and for many years was referred to as *Bactrocera cucurbitae*. However, advances in molecular phylogenetics and morphological analysis led to a taxonomic revision in 2015, in which the subgenus *Zeugodacus* was elevated to full genus status. As a result, the species was reclassified as *Zeugodacus cucurbitae*, reflecting its distinct evolutionary lineage and helping to clarify relationships within the Tephritidae fruit fly complex.

## Morphological characteristics



**Fig. 1. *Zeugodacus cucurbitae***

## Life Cycle

### Egg:

Female *Zeugodacus cucurbitae* use their sharp ovipositor to puncture the skin of young or ripening cucurbit fruits, depositing small, elongated white eggs just beneath the surface. Each egg measures about 1 mm in length. Females may lay singly or in small clusters. Under optimal tropical conditions (25–30 °C), the eggs hatch within 1.5 to 2.5 days.

### Larva:

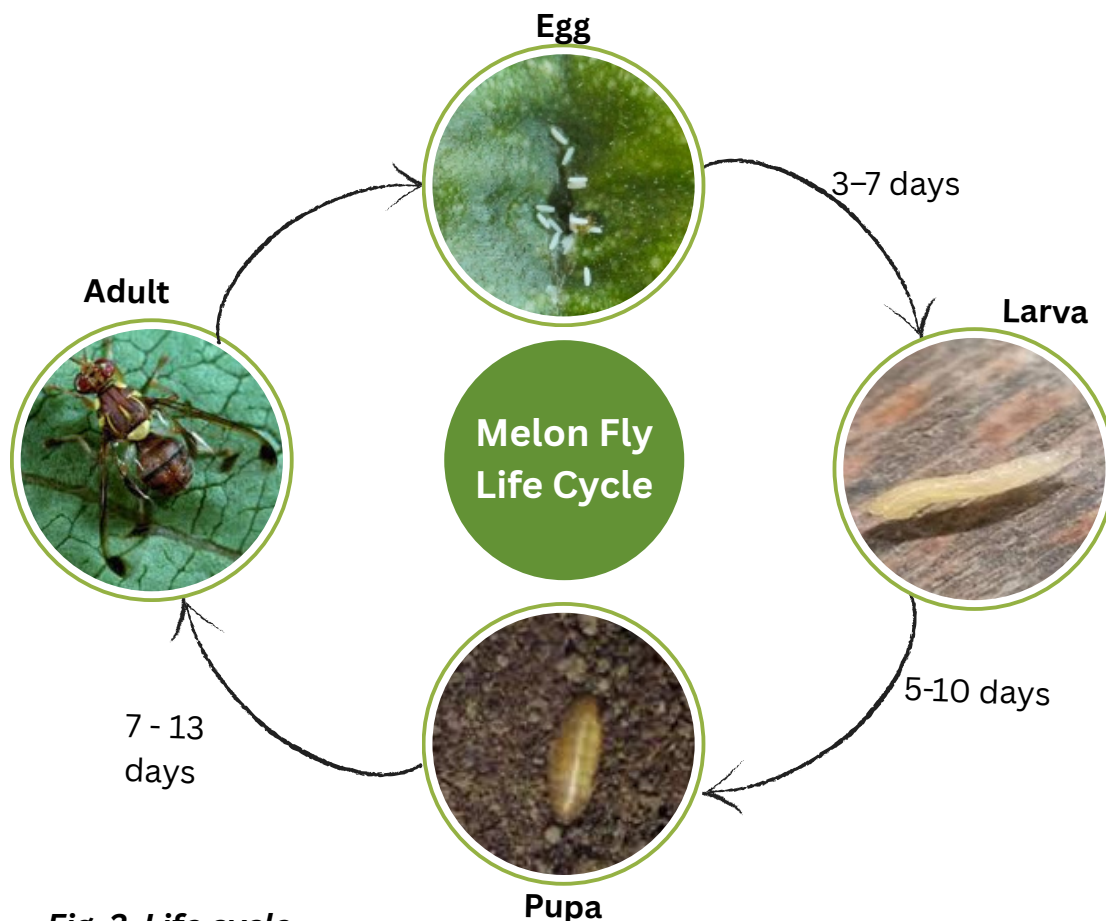
Once hatched, the legless larvae (maggots) tunnel into the fruit pulp and begin feeding aggressively on the moist inner tissues. The larvae pass through three instars over 5–10 days, depending on temperature and fruit firmness. Their feeding causes internal rotting, tissue breakdown, and premature fruit drop. Infected fruits may show visible “wet spots,” collapsed areas, or brown frass trails.

### Pupa:

When fully grown, third-instar larvae exit the fruit and drop to the soil, where they burrow 1–5 cm deep to pupate. They form reddish-brown, barrel-shaped puparia in which metamorphosis occurs. The pupal stage lasts 7–13 days, though this may be extended in cooler or dry conditions. Pupae are vulnerable to soil disturbance and natural enemies.

### Adult:

Newly emerged adults remain in the soil for a few hours to allow their wings to fully expand and the exoskeleton to harden. Adults are strong fliers and begin mating within 2–4 days of emergence. Females can live 30–60 days, during which they may lay up to 300–400 eggs, though some reports suggest up to 800 under ideal conditions. Males are slightly shorter-lived but remain active in mating and locating hosts via pheromone cues. The cycle then repeats, with multiple overlapping generations possible in warm climates like Kenya.



**Fig. 2. Life cycle**

## Damage

The melon fly causes significant economic damage to a wide range of fruits and vegetables, particularly cucurbits, through both direct feeding and indirect physiological effects. Both adults and larvae contribute to crop damage, but it is the larval stage that causes the most destructive internal injury.

### 1. Adult Feeding and Oviposition Damage

- **Oviposition punctures:** Female flies use a hardened ovipositor to puncture the fruit skin and lay eggs under the surface. These punctures, often called “sting marks,” appear as tiny brown or black spots (1–2 mm) and are the first visible sign of infestation.



Fig. 3. Adult puncturing the fruit to lay eggs



Fig. 4. Oviposition punctures

- **Surface blemishes:** Oviposition wounds heal poorly, leading to localized discoloration or necrosis. These blemishes make fruits unsellable in fresh markets, even if the internal tissues remain intact.



Fig. 5. Surface blemishes

- **Sap exudation:** In some cases, the puncture site exudes a sticky, sugary sap that attracts secondary pests like ants, wasps, and fungal pathogens.
- **Physiological stress:** Multiple stings on young fruit can stunt development or cause early abortion of fruit before it matures.



Fig. 6. Sap oozing from the puncture site

**STOP THE STING BEFORE IT STARTS.  
TAKE CONTROL WITH MELONFLY-ENEMY.**



## 2. Larval Feeding Damage

- **Internal rotting:** Upon hatching, the larvae burrow into the fruit and begin feeding on the soft inner tissues. This results in wet breakdown of the pulp and rapid tissue decomposition.
- **Maggot tunneling:** The maggots form feeding tunnels that weaken fruit structure, often leading to collapse of the internal cavity.
- **Secondary infections:** The damaged tissue becomes an entry point for bacteria and fungi, accelerating rot and producing foul odors.
- **Premature fruit drop:** Severely infested fruit will drop before reaching maturity, reducing overall marketable yield.
- **Hidden infestations:** Externally, infested fruits may appear normal or show only minor blemishes—making early detection difficult and increasing the risk of post-harvest spread through trade or transport.



*Fig. 6. Rotting fruit*



*Fig. 7. damage on Courgettes*

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## 3. Impact on Crop Health and Yields

- Up to 80–100% crop loss can occur in heavily infested cucurbit fields without intervention.
- Continuous infestations can depress yields across multiple planting cycles, as the soil serves as a pupation reservoir.
- Farmers may respond with frequent insecticide sprays, increasing production costs, health risks, and the likelihood of pesticide resistance in fly populations.
- Because larvae remain hidden inside fruit, contact insecticides are largely ineffective, making mass trapping and lure-based control critical.



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# MELONFLY-ENEMY™

**Melonfly-Enemy™** is a ready-to-use, slow-release wooden block lure designed for the monitoring and mass trapping of male *Zeugodacus cucurbitae* (melon fly). It contains Enriched Ginger Oil (EGO), a natural zingerone-rich male attractant, combined with Deltamethrin 100 g/L, a fast-acting contact insecticide.

Encapsulated in a biodegradable wooden matrix, this attract-and-kill solution offers a sustainable, pesticide-reducing approach to managing melon fly populations in cucurbit and fruit crops.

## Advantages & Benefits of Melonfly-Enemy

### 1. Powerful Attract-and-Kill System



- Combines natural attractants (Enriched Ginger Oil) with a fast-acting insecticide (Deltamethrin 100 g/L).
- Effectively targets male melon flies, reducing mating rates and suppressing population growth.

### 2. Highly Effective & Species-Specific



- Attracts only male *Zeugodacus cucurbitae*, minimizing harm to non-target insects.
- Reduces the chances of reinfestation, especially when deployed early in the season.

### 3. Eco-Friendly & Sustainable



- Uses a plant-derived semiochemical (zingerone-based), safe for pollinators and natural enemies.
- Biodegradable wooden block – leaves no plastic waste in the field.
- Ideal for IPM and organic farming systems (check local certifier compatibility).

### 4. Long-Lasting Protection



- Slow-release wooden matrix ensures steady emission of attractant.
- Lasts up to 8 weeks in field conditions – less labor, more coverage.

### 5. Improves Yield and Quality



- Prevents fruit damage and rot caused by larvae.
- Results in cleaner, more marketable produce, especially for fresh markets and exports.

### 6. Cost-Effective Pest Control



- Reduces the need for repeated insecticide spraying.
- Saves money on labor, fuel, and chemical inputs.

## Recommended Trap



Lynfield/Container trap.



### Trap Density

4 - 5 traps per hectare for monitoring.

10-16 traps per hectare for mass trapping.

### **Optimal Trap Placement**

**Height:** Suspend traps 1.5 m above the ground to ensure unobstructed airflow and even dispersal of the pheromone plume throughout the canopy.

**Clear Entry:** Position each trap so that entry slots are free from nearby branches, leaves, or other objects that might block fly access.

### **Trap Maintenance**

- Inspect the traps on a regular basis.
- Replace the wooden block every 8 weeks to achieve optimum results.

### **Pro Tips for Maximum Efficacy**

- **Rotate Trap Locations:** Slightly shift trap positions within blocks at each servicing to intercept flies moving through different flight paths.
- **Combine with Sanitation:** Pair trapping with regular removal of fallen or damaged fruit to eliminate breeding sites.



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### **Contact us!**



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