



# YOUR EFFECTIVE AND ECONOMIC PHEROMONE LURE TO ATTRACT & KILL

## BACTROCERA DORSALIS



PHEROMONE LURE

# BACTRO-ENEMY™

## Bactrocera Historical Overview

The genus *Bactrocera* was first described in 1912, encompassing hundreds of species of tephritid fruit flies. Over the past century, advances in morphological and molecular science have reshaped our understanding of these pests.

Early classifications relied on wing patterns and body coloration, but DNA barcoding and phylogenetic studies later revealed distinct evolutionary lineages, prompting both reassignments into new genera (notably *Zeugodacus* for cucurbit-specialists) and the consolidation of cryptic ‘complexes’ within *Bactrocera*.

The most striking example is the dorsalis complex: molecular markers, mating compatibility studies, and identical pheromone profiles demonstrated that *Bactrocera invadens*, *B. papayae*, *B. philippinensis* and *B. carambolae* are genetically indistinguishable and now sit collectively as *Bactrocera dorsalis*.

In contrast, true cucurbit-specialists such as *B. cucurbitae* *B. tau* have been reassigned to *Zeugodacus* (*Zeugodacus cucurbitae* and *Zeugodacus tau*), reflecting their unique lineage, while other historically distinct species—*B. zonata* (peach fruit fly), *B. oleae* (olive fruit fly) and *B. tryoni* (Queensland fruit fly)—remain valid members of *Bactrocera*, each defined by subtle differences in morphology, host range, and behavior.

Species & Common Name	Reclassification Status	Current Accepted Name	Primary Hosts
<i>Bactrocera dorsalis</i> (Oriental fruit fly)	✓ Consolidated	<i>Bactrocera dorsalis</i>	Mango, guava, papaya, citrus, peach, plums, avocado many others
<i>Bactrocera cucurbitae</i> (Melon fly)	✓ Renamed	<i>Zeugodacus cucurbitae</i>	Cucurbits (melon, squash), papaya, eggplant, tomato
<i>Bactrocera tau</i> (Pumpkin fruit fly)	✓ Renamed	<i>Zeugodacus tau</i>	Pumpkins, cucurbits, eggplant
<i>Bactrocera zonata</i> (Peach fruit fly)	✗ No change	<i>Bactrocera zonata</i>	Peach, apricot, mango, guava
<i>Bactrocera oleae</i> (Olive fruit fly)	✗ No change	<i>Bactrocera oleae</i>	Olive only
<i>Bactrocera tryoni</i> (Queensland fruit fly)	✗ No change	<i>Bactrocera tryoni</i>	Stone fruits (peach, plum), citrus, tomato

# Bactrocera species identification

## *Bactrocera dorsalis*



**Scutum:**

- Red-brown to black, often red-brown with black streaks
- Postpronotal lobe well separated from anepisternal xanthine
- Lateral yellow stripes present

**Wings:**

- No sharp broadening or apical spot
- Costal band at anterior margin of wing narrow

**Abdomen:**

- Abdominal tergites 3-5 with black T-shaped mark
- Tergites 4-5 often with dark lateral marking

## *Bactrocera zonata*



**Scutum:**

- Red-brown scutum
- Lateral yellow stripes present

**Wings:**

- Small isolated apical spot
- No costal band at anterior margin of wing
- Anal streak absent

**Abdomen:**

- Longitudinal stripe on tergite 4 variable

## *Bactrocera tau*



**Scutum:**

- Three dark vittae on scutum; lateral vittae meet pronotum.

**Wings:**

- Complete costal band expanding into apical spot
- Anal streak present.

**Abdomen:**

- Orange-brown; tergite 3 with transverse band.
- Tergites 4-5 exhibit medial longitudinal dark stripes and anterolateral dark marks

## *Bactrocera oleae*



**Scutum:**

- Variable from red-brown to black
- No lateral or median yellow stripes present
- No prescutellar bristles present
- Base of scutellum usually black

**Wings:**

- Small isolated apical spot
- No costal band at anterior margin of wing

**Abdomen:**

- Abdominal tergites with dark lateral marking

## *Bactrocera tryoni*



**Scutum:**

- Red-brown
- Small semi-circular markings anterior to transverse suture  
Median and lateral yellow stripes present

**Wings:**

- Costal band expanded into a broad apical spot.
- Wing with pre-apical crossband

**Abdomen:**

- Abdominal tergites 3-5 with black T-shaped mark

## *Zeugodacus cucurbitae*



**Scutum:**

- Red-brown
- Small semi-circular markings anterior to transverse suture  
Median and lateral yellow stripes present

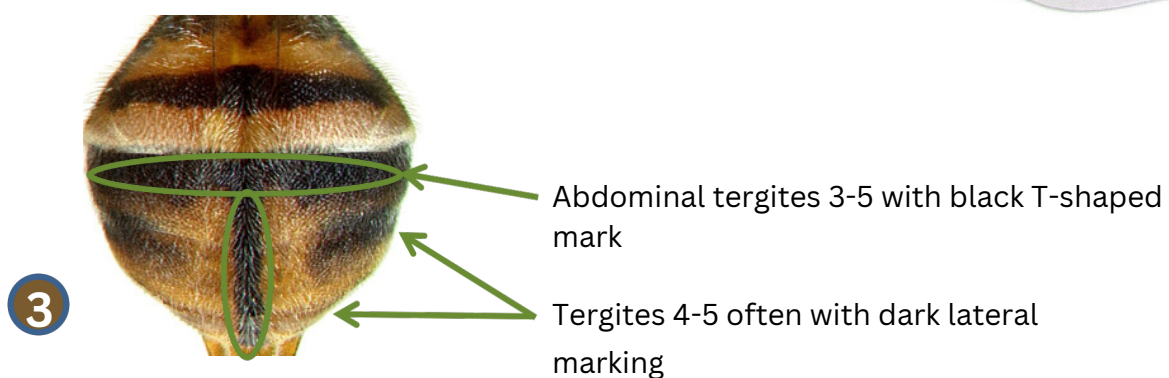
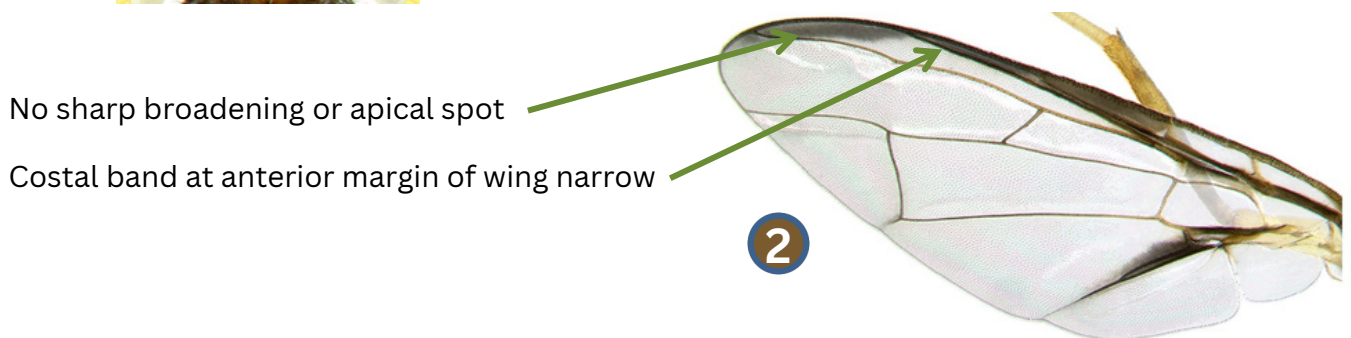
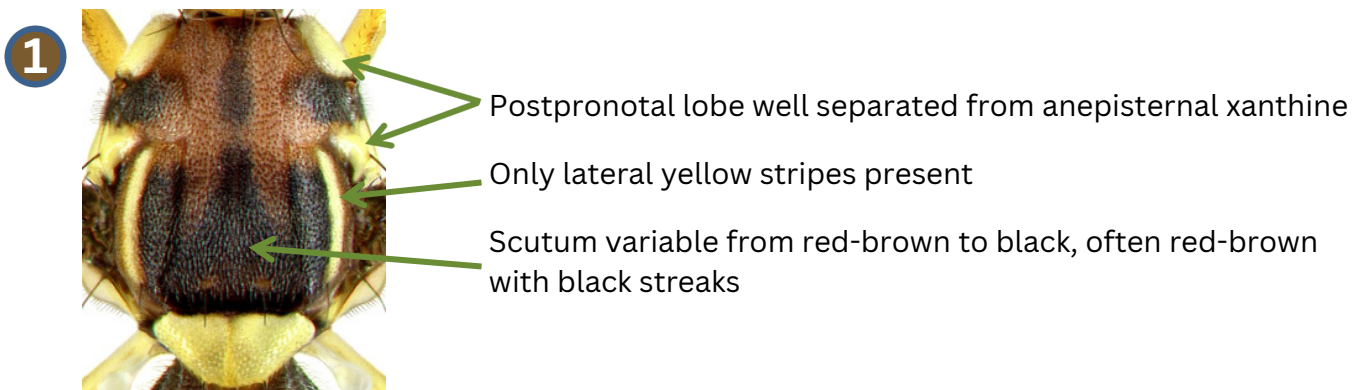
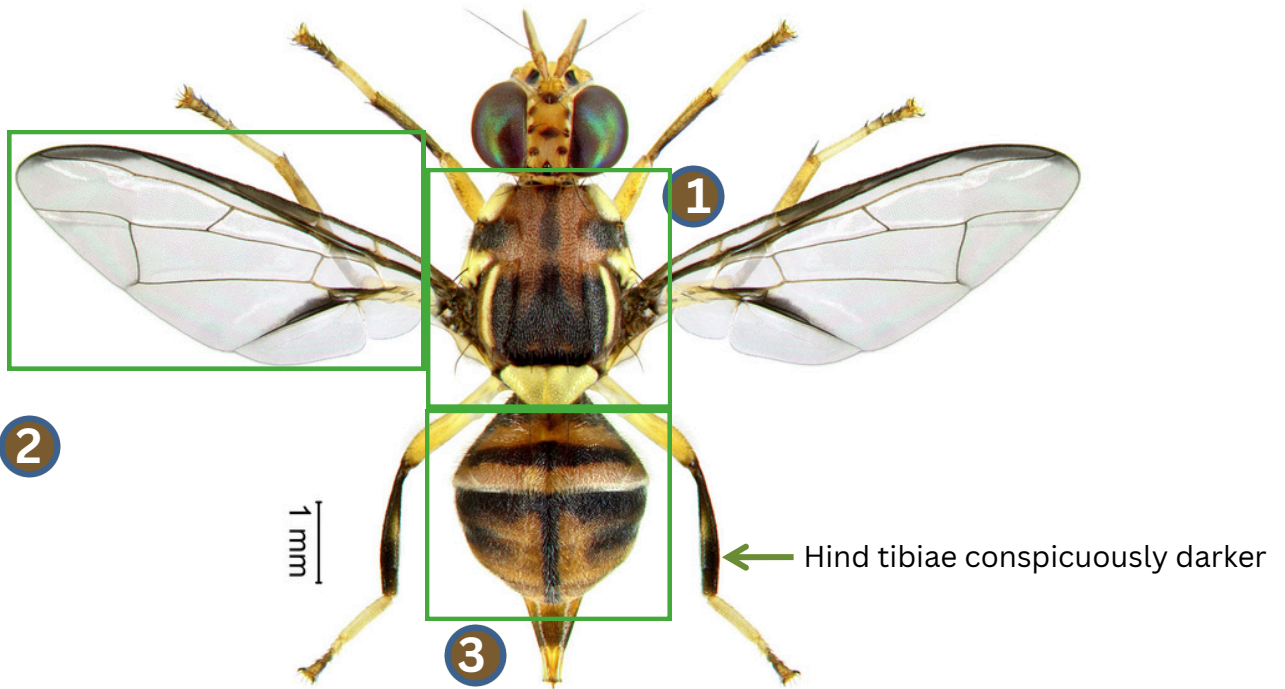
**Wings:**

- Costal band expanded into a broad apical spot.
- Wing with pre-apical crossband

**Abdomen:**

- Abdominal tergites 3-5 with black T-shaped mark

*Bactrocera dorsalis*



## Taxonomy & Identification

**Family:** Tephritidae

**Genus & Species:** Bactrocera dorsalis

**Common Names:** Oriental fruit fly, mango fruit fly

**Every fruit fly you trap is a step closer to a bountiful, protected harvest – deploy Bactro-Enemy™ to protect your orchard**



## Life Cycle



**Eggs:** Eggs are elongate, creamy-white, and slightly curved, measuring about 1.0–1.3 mm in length. They are laid in batches of 5–30 beneath the fruit skin using the female's ovipositor. Puncture marks on the fruit surface indicate egg-laying activity. Eggs hatch in 2–4 days under warm tropical conditions.



**Larval Morphology:** There are three larval instars, ranging from approximately 1.5 mm at hatching to 6–8 mm at maturity. Maggots are legless, creamy-white to yellowish in color, with a tapered body and no distinct head capsule. Mature larvae are cylindrical and blunt-ended, with internal mouth hooks visible under magnification. They feed internally in fruit pulp, forming irregular galleries filled with frass.



**Pupae:** After exiting the fruit, mature larvae pupate in the top 1–4 cm of soil or decaying plant matter. Puparia are oblong and brown, about 5–6 mm long, with a hardened outer shell formed from the larval skin. The pupal stage lasts 10–14 days, depending on soil temperature and humidity.



**Adult Morphology:** Adults are medium-sized fruit flies, measuring 6–8 mm in length with a wingspan of 9–11 mm. The body is predominantly yellow-brown to reddish-brown, with a distinct black T-shaped marking on the thorax. The forewings are transparent with dark brown costal bands and faint cross-veins; eyes are iridescent green to reddish. Females have a prominent, pointed ovipositor used for egg laying.

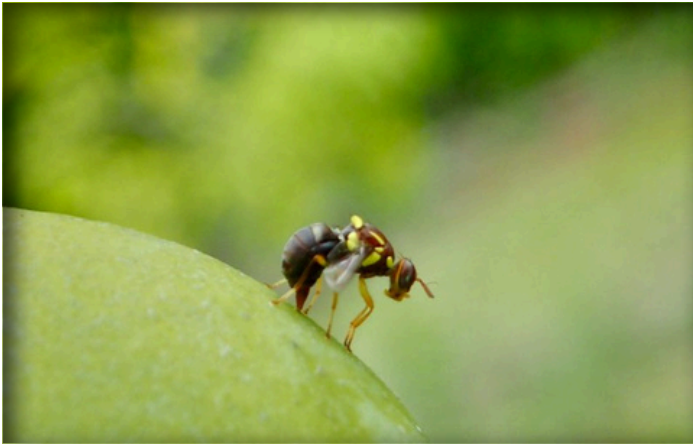
## Host range

The Bactrocera fruit fly represents one of the most economically devastating insect pests across tropical and subtropical regions worldwide.

Bactrocera species are highly polyphagous. Their primary hosts include mango, guava, papaya, citrus fruits, avocado, peaches, and plums.

Secondary hosts span a wide variety of vegetables and less-preferred fruits, such as tomato, passion fruit, bell pepper, eggplant, and even cucurbits.

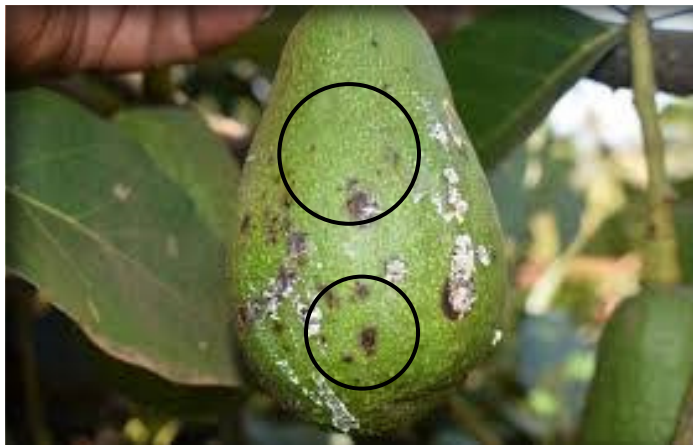
Adult females, after mating, use their sharp ovipositors to pierce the skin of ripening fruits and lay clusters of 5 to 30 eggs just beneath the surface.



The wounds left behind also open a pathway for fungal and bacterial infections, further exacerbating rot and making it impossible to store or transport the fruit



*Rotten mango from severe infestation*



*Oviposition sites*

Within 2 to 3 days, the eggs hatch into small, legless larvae—commonly known as maggots—which begin feeding voraciously on the fruit pulp. It is at this larval stage that the bulk of the economic damage occurs. The maggots create tunnels as they move and feed through the soft tissues, causing rapid internal decomposition of the fruit.

The larval phase typically lasts 8 to 12 days, depending on temperature and fruit type. Once fully fed, larvae exit the fruit and burrow into the soil to pupate. Although the pupal stage does not directly damage crops, it is a critical contributor to population buildup, as it often occurs undetected in the orchard soil. After 10 to 14 days, adult flies emerge, ready to continue the cycle.

Adults may live for over a month under favorable conditions. While males are attracted to certain plant volatiles and pheromone compounds, females cause the most visible damage due to egg-laying behavior. Notably, female puncturing itself can reduce the aesthetic and commercial value of fruits, even before larvae begin feeding.



*Maggots feeding inside the fruit*

**Every fruit fly you trap is a step closer to a bountiful, protected harvest – deploy Bactro-Enemy™ to protect your orchard**



## Signs & symptoms of *Bactrocera dorsalis* Infestation

When *B. dorsalis* attacks your orchard, the damage often manifests in both visible external signs and internal decay. Early detection is key to preventing widespread loss.

### Watch for:

**Egg-laying Punctures:** Tiny, brownish pinpricks on the fruit surface—often in clusters—mark where females have inserted their ovipositor.

**Sunken, Chlorotic Lesions:** Around each puncture, the skin may collapse into a small, pale, discolored crater.

**Sticky Exudate & Fermentation:** Oozing sap or fermented juice may seep from wounds, attracting secondary pests (ants, wasps) and signaling internal rot.

**Premature Fruit Drop:** Heavily infested fruits turn soft from the inside and often abscise before ripening, littering the ground.

**Internal Tunneling & “Jelly-Like” Pulp:** When cut open, fruits reveal winding feeding galleries filled with fine, granular frass and pulpy, water-soaked tissue.

**Distinct Sour or Fermenting Odor:** Infested fruit gives off a vinegary aroma even before external spoilage is obvious.

**Visible Maggots:** Splitting open affected fruit exposes 6–8 mm creamy-white larvae wriggling in the pulp.

**Pro Tip:** Regular orchard scouting.

inspecting 20 random fruits per block—and use of **Bactro-Enemy™** traps will alert you to early infestations so you can act before losses escalate.

## Bactro-Enemy™

**Bactro-Enemy™** uses a precision Attract-and-Kill strategy to suppress *Bactrocera dorsalis* male populations. Each unit consists of a porous wooden block impregnated with Methyl Eugenol A 931, a powerful long-distance male attractant, and deltamethrin, a fast-acting contact insecticide.

The wooden matrix slowly releases the methyl eugenol, drawing males toward the source. Upon contact with the block’s surface, they absorb a lethal dose of deltamethrin and die. This disrupts mating cycles, collapses the breeding population, and prevents the next generation of larvae from damaging fruit.

## Why Bactro-Enemy™?

**High Selectivity:** **Bactro-Enemy™** is species specific, and targets *Bactrocera spp.* only.

**Organic-Certified & Eco-Friendly:** 100% natural pheromone blend, certified for organic agriculture.

**Long-Lasting:** Effective lure activity for up to 8 weeks per dispenser.

**Easy Deployment:** Pre-charged dispensers fit standard delta traps—no extra tools.

**Proven ROI:** Achieve higher marketable yields by cutting infestation rates,

**Labor & Cost Savings:** Pre-baited, ready-to-use traps eliminate the need to mix or apply baits on-site.



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## Recommended Traps



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.

**Don't wait for the damage to show—deploy Bactro-Enemy™ today and secure your harvest against the relentless *Bactrocera dorsalis*!**

**Contact us!**



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