



Food and Agriculture  
Organization of the  
United Nations



International  
Plant Protection  
Convention



**Survey Guidance for**  
***Thaumatotibia leucotreta***



## Survey Guidance for *Thaumatotibia leucotreta*

### Scientific Name

*Thaumatotibia leucotreta* (Meyrick, 1913)

### Common Name

False codling moth, citrus codling moth, orange moth, and orange codling moth

### Type of Pest

Moth, borer

### Taxonomic Position

**Class:** Insecta, **Order:** Lepidoptera,

**Family:** Tortricidae



**Figure 1. *Thaumatotibia leucotreta* adult male** (T. M. Gilligan and M.E. Epstein, TortAI: Tortricids of Agricultural Importance, USDA APHIS PPQ, Bugwood.org).

### Notes on Taxonomy and nomenclature:

This species was previously known as *Cryptophlebia leucotreta* Meyrick.

### Known Hosts

*Thaumatotibia leucotreta* is a generalist feeder and has been recorded feeding on over 50 different plant species, which allows the moth to survive in marginal conditions.

### Preferred hosts

*Capsicum* spp. (peppers), *Citrus* spp. (citrus), *Gossypium* spp. (cotton), *Litchi chinensis* (litchi), *Macadamia* spp. (macadamia), *Persea americana* (avocado), *Prunus persica* (peach), *Punica granatum* (pomegranate), *Ricinus communis* (castor bean), and *Zea mays* (corn).

### Other hosts

*Abutilon* spp. (Indian mallow), *Albuca* sp., *Annona cherimola* (cherimoya), *Annona glabra* (pond apple), *Annona muricata* (soursop), *Annona reticulata* (Bullock's heart, custard apple), *Annona squamosa* (sugar apple), *Asparagus crassifolius*, *Averrhoa carambola* (carambola), *Bauhinia galpinii* (red bauhinia), *Caesalpinia pulcherrima* (pride-of-Barbados), *Caesalpinia* spp. (nicker), *Calotropis procera* (sodom apple), *Capparis tomentosa* (African caper), *Carya illinoensis* (pecan), *Catha edulis* (khat), *Chrysophyllum cainito* (star apple), *Cola nitida* (bitter cola), *Crassula ovata*, *Diospyros mespiliformis* (jackalberry), *Diospyros pallens* (= *Royena pallens*) (pale-branched Royena), *Diospyros* spp. (persimmon), *Englerophytum magalismsontanum* (= *Bequaertiodendron magalismsontanum*) (stamvrug), *Eriobotrya japonica* (loquat), *Eugenia uniflora* (Surinam cherry), *Ficus sur* (= *F. capensis*) (wild fig), *Flacourtia indica* (governor's-plum), *Garcinia mangostana* (mangosteen), *Harpephyllum caffrum* (wild plum), *Hibiscus cannabinus* (kenaf), *Hibiscus* spp. (hibiscus), *Juglans regia* (English walnut), *Juglans* spp. (walnut), *Mimosa zeyheri* (Transvaal red milkwood), *Musa x paradisiaca* (banana), *Olea* spp. (olive), *Opuntia ficus-indica*, *Passiflora* spp., *Pennisetum purpureum* (elephant grass), *Phaseolus lunatus* (lima bean), *Phaseolus*

spp. (bean), *Physalis philadelphica* (= *P. ixocarpa*) (tomatillo), *Physalis* spp. (groundcherry), *Piper* spp. (pepper plant/ peppercorns), *Psidium guajava* (guava), *Podocarpus* spp. (plum pine), *Prunus armeniaca* (apricot), *Prunus domestica* (plum), *Pseudolachnostylis maprouneifolia* (kudu berry), *Quercus* spp. (oak, acorns), *Rosa* spp. (rose), *Saccharum officinarum* (sugarcane), *Schotia* spp. (boer-bean), *Sechium edule* (chayote), *Senna petersiana* (= *Cassia petersiana*) (monkey pod), *Sida* spp. (fanpetals), *Solanum betaceum* (= *Cyphomandra betacea*) (tree tomato), *Solanum melongena* (eggplant), *Synsepalum dulcificum* (miraculous berry), *Syzygium cordatum* (water berry), *Syzygium jambos* (roseapple), *Theobroma cacao* (cacao), *Thespesia garckeana* (= *Azanza garckeana*) (snot apple), *Triumfetta* spp. (bur weed), *Vachellia nilotica* (= *Acacia nilotica*) (acacia), *Vachellia tortilis* (= *Acacia tortilis*) (umbrella thorn), *Vigna* spp. (cowpea), *Vitellaria paradoxa* (= *Butyrospermum parkii*) (shea butter tree), *Vitis* spp. (grape), *Xeroderris stuhlmannii* (wing bean), *Ximenia caffra* (sourplum), *Yucca* spp. (yucca), and *Ziziphus* spp. (jujube).

## Survey Protocol

### Target Life Stage:

The approved survey method is pheromone trapping for adult males.

### Survey Site Selection

Surveys should focus on areas that have abundant host material. This can be in agricultural settings, nursery settings, or around ports of entry.

### Time of year to survey:

Surveys should occur when fruiting of host plants begins. Surveys are best conducted during warm, wet weather when the population of the pest increases.

## Visual Survey

### **Signs and Symptoms:**

*Thaumatotibia leucotreta* larvae feed inside fruits (**Fig. 2**). Larval feeding and development can affect fruit or cotton boll development and can cause rotting.

## Trapping

### **Recommended Traps**

Use either wing traps, diamond traps, or large plastic delta traps, baited with *Thaumatotibia leucotreta* lure, dispensed from a rubber septum. It is preferable to use wing or large plastic delta traps to standardize data.



**Figure 2.** *Thaumatotibia leucotreta* larva (Kenneth R. Law, USDA APHIS PPQ, Bugwood.org).

## Recommended Lures

The lure is composed of E8-12Ac and Z8-12Ac.

## Trap Placement and Spacing

Traps should be placed at least 1.5 m high. When trapping for more than one species of moth, separate traps for different moth species by at least 20 meters.

**IMPORTANT:** Do not include lures for other target species in the trap when trapping for *Thaumatotibia leucotreta*.

## Trap Servicing

The lure is effective for 56 days.

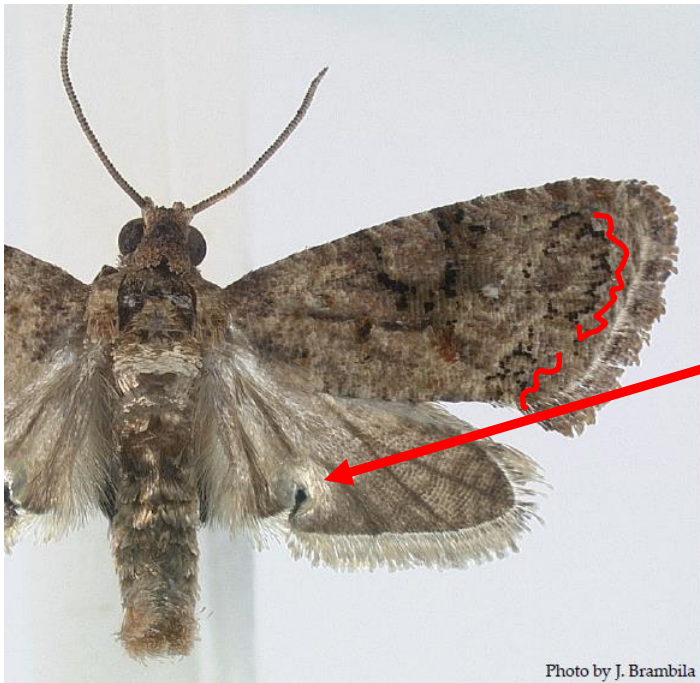
## Pest Identification and Diagnostics

The approved diagnostic method is morphological identification. The nearly circular pocket of scales in the hind wing of males is not found in any other tortricid species known to occur in Africa, Europe, or North America (**Fig. 3**).

## Pest Description

Adult moths are grayish brown to dark brown with a 6–8 mm body and forewing length of 7-8 mm in males and 9-10 mm in females; females have a wingspan of 15-20 mm and males have a wingspan of 15-18 mm. Male *Thaumatotibia leucotreta* moths can be distinguished from other tortricid species by the pocket of multicolored scales near the bottom edge of the hindwing (hindwing scale pocket) (**Fig. 3**). The hindwing scale pocket can be seen on moths in sticky traps by moving the forewings out of the way with forceps or an insect pin. Additionally, the forewings have a scalloped line of black scales near the distal edge of the wing that has a break approximately 2/3 of the distance from the forward edge. Just beyond the midpoint of the wing near the middle there is distinct white/cream colored spot (**Fig. 3**). Suspect *T. leucotreta* in traps that need to be forwarded to another facility for identification should be packed following the steps outlined in **Fig. 4**.





The hindwing scale pocket is only present in *T. leucotreta* males. Other members of the genus have similar structures, but none look like this.

Photo by J. Brambila

Figure 3. Important diagnostic features for male *T. leucotreta*: wing pattern (red outline), and hindwing scale pocket (red arrow) (Left Image by J. Brambila; Right image by T. Gilligan,).

### Identification and Diagnostic Resources

1. *Thaumatotibia leucotreta* - False Codling Moth  
<http://download.ceris.purdue.edu/file/2543>
2. *Thaumatotibia leucotreta* - False Codling Moth, Adult  
<http://download.ceris.purdue.edu/file/1575>
3. *Thaumatotibia leucotreta* - False Codling Moth, Larval ID  
<http://download.ceris.purdue.edu/file/544>
4. *Thaumatotibia leucotreta* - False Codling Moth, "FCM" Identification Aid  
<http://download.ceris.purdue.edu/file/4426>
5. Dissection and slide-making techniques  
<https://idtools.org/id/leps/tortai/dissections.html>

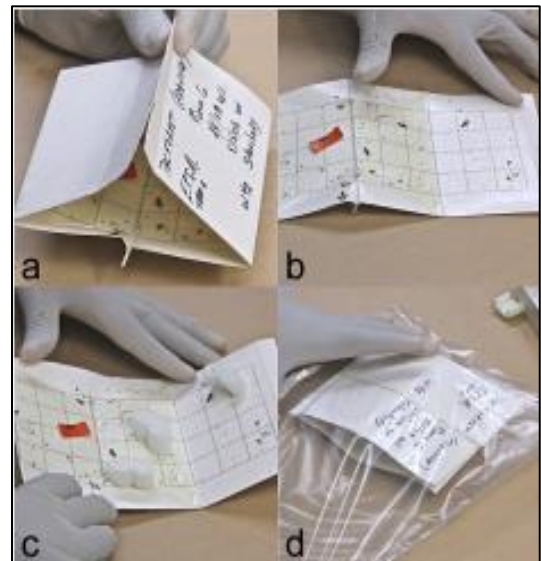


Figure 4. Recommended packing method for sticky traps: a) and b) open and unfold trap; c) place 2 to 3 packing peanuts (or something similar) in areas of trap with no moths; d) fold trap, secure with rubber band, and place in plastic bag if samples are dry, otherwise store/ship in a paper bag so specimens can dry and do not rot (Image courtesy of Photos by E. LaGasa, WSDA).

## Easily Mistaken Species

*Thaumatotibia leucotreta* could be mistaken for *Cryptophlebia peltastica* (Meyrick, 1921) (Fig. 5), *Mussidia nigrivenella* (Ragonot, 1888) (Fig. 6), and *Thaumatotibia batrachopa* (Meyrick, 1908) (Fig. 7) which occur in Africa. However, these moths lack the characteristic hindwing scale pocket found in male *Thaumatotibia leucotreta*.



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Figure 5. *Cryptophlebia peltastica* adult (T.M. Gilligan and M.E. Epstein, TortAI: Tortricids of Agricultural Importance, USDA APHIS PPQ, Bugwood.org).

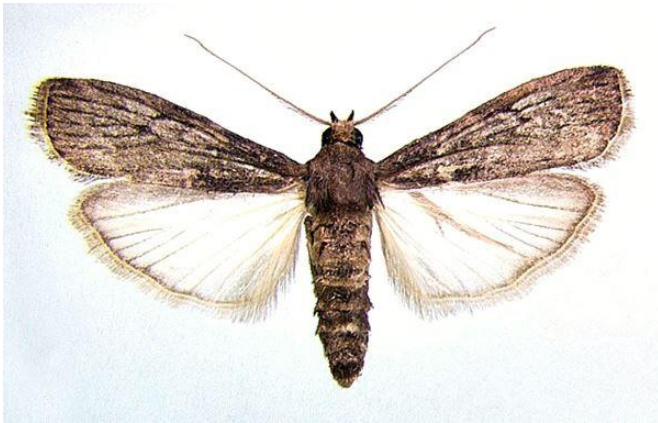


Figure 6. *Mussidia nigrivenella* (CABI <https://doi.org/10.1079/pwkb.species.35213>)



Figure 7. *Thaumatotibia batrachopa* (Carlos Lopez Vaamonde, Institut National de la Recherche Agronomique, Zoologie Forestiere)

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