ORIENTAL FRUIT MOTH (OFM)

Grapholita molesta

Description:

Adults:

Small, dark grayish in color with a wingspan of 0.4-0.6 in (10-16 mm). Wings are held in a roof-like position over the body when at rest. OFM are similar in appearance to codling moth (CM) as they are both greyish and hold their wings similarly at rest. CM are larger and have more of a silvery-bronze color at the end of their forewings. Peach Twig Borer (PTB) adults look very different; they are longer, have silvery fringed wings, and a snout like appearance of their head.

Left: OFM adult (source: WSU Extension). Right: CM adult; note coppery forewings (source: NC State Extension)

Eggs:

Disk-shaped, translucent white when first laid and later becoming yellow. Approximately 0.02 in (0.7 mm) across. Just before hatching, the black head of developing larvae become visible.

Larvae:

White with black head when first hatched, the maturing larvae gradually turn pink with a brown head and reach 0.5 in (12 mm) at maturity. Distinguished from codling moth by the presence of a black anal comb with five teeth on the bottom of the last body segment.

Pupae:

Pupation occurs in early spring within a cocoon in a sheltered place such as under bark or leaf litter at the base of a tree. As adult emergence nears, the pupal casing changes from yellowish brown to reddish brown.

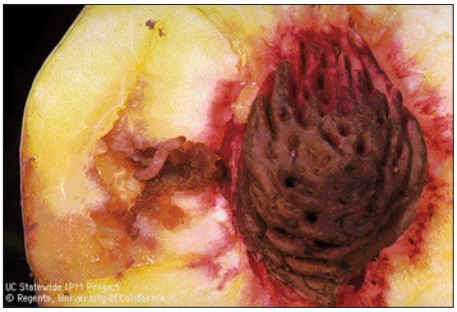
Left: Posterior ventral view of anal combs of OFM larva and Center: dorsal view of anal plate of CM larva (source: Todd Gilligan, LepIntercept, Bugwood.org). Right: OFM larva (source: NC State Extension).

Hosts:

Primary hosts are peach, nectarine, and quince; also a pest of apple, pear, apricot, plum, and cherry.

Damage:

- First- and second-generation larvae feeding causes typical shoot strikes or flagging.
- Most injury to fruit is caused by third and later generations.
- Small larvae enter the fruit typically at stem end and feed at the center around the pit.
- In apples, larvae may feed around, but not in, the core or on seeds.



Above left: peach twig shoot damage (source: NC State Extension). Above right: evidence of larval feeding on peach exterior (source: Jonas Hanner Hamann, bugwood.org). Left: peach internal larval feeding damage.

Phenology:

- The number of generations per year varies depending on location: –
  - Five to six generations per year in southern regions such as California.
  - Three to four generations in the Pacific Northwest.
  - Four to five generations in Northeast and Southeast regions such as Pennsylvania, New Jersey, and North Carolina.
- Overwinter as mature larvae in ground cover or tree crevices.
- In spring pupation occurs and adults emerge near bloom time.

TRÉ-1901

TRÉCÉ INCORPORATED
INSECT PHEROMONE & KAIROMONE SYSTEMS
Your Edge – And Ours – Is Knowledge.

© 2021, Trécé Inc., Adair, OK USA • ® is a registered trademark and TM is a trademark of Trécé Inc., Adair, OK 74330 USA

ORIENTAL FRUIT MOTH (OFM), *Grapholita molesta*

Lure Type and Maintenance:

Lure type	*Use*	*Attractant Type*	*Replacement*
PHEROCON® OFM Standard	Conventional or Mating Disrupted	Male Only	4 weeks
PHEROCON® OFM L²	Conventional or Mating Disrupted	Male Only	8 weeks
PHEROCON® OFM COMBO DUAL	Mating Disrupted Only	Multigender	8 weeks

Lure Storage:

- Store in unopened factory sealed packages in a cool place (< 74° F or 24° C maximum) for short periods or refrigerate longer term.
- Refrigerate or freeze unopened packages to carry over for annual storage.

Trap Design:

- PHEROCON® VI DELTA, PHEROCON® 1C, PHEROCON® IIB, or PHEROCON® IIC.

Placement Time:

- Before spring emergence or at bud break for stone fruit or pome fruit.

Placement Pattern:

Conventional orchards only:

- Place traps in a grid pattern throughout the orchard.
- Within tree in the SE quadrant, in the upper 1/3 of the canopy.
- Within outer canopy, on an open limb, not blocked by leaves or developing fruit.

Trap Density:

Number of traps	*Acres*	*Hectares*
Minimum of 3	< 10	≤ 4
1 per 5 acres (2 hectares)	20-40	8-16
1 per 10 acres (4 hectares)	40-100	16-40
1 per 15 acres (6 hectares)	> 100	> 40

Place 1 or 2 traps along the borders depending on size of the orchards.

Mating Disrupted orchards only:

- Place traps in a grid pattern throughout the orchard.
- Use a ccombination of one pheromone only lure trap (such as OFM Standard or OFM L²), and in a different tree 30-50 feet (10-15 meters) away, place another trap with OFM COMBO DUAL lure.
- Within tree in the SE quadrant, in the upper 1/3 of the canopy.
- Within outer canopy, on an open limb, not blocked by leaves or developing fruit.

Trap Maintenance:

- Check traps daily until biofix, then weekly thereafter.
- Record number of captured moths, date, and dates of important flight events including first captures, biofix-sustained capture, and flight peak.
- Replace trap liners monthly or when fouled with dust or insect debris.

OFM Treatment Schedule:

First Generation:

- Set first biofix.
- Treatment normally not recommended.

Second Generation:

- Set second biofix.
- 920-1010 D° F (511-561 D° C) from first biofix.
- Treatment 500-600 D° F (278-333 D° C) from second biofix.

Third and Fourth Generation:

- Monitor until harvest for peaks.
- If treatment is required, spray at 500 D° F (278 D° C) after biofix or start of flight.
  (Source: UC Pest Management Guidelines for OFM in Peaches; check regional recommendations and degree day models for treatment recommendations for your region)

Supplementary Monitoring Techniques and Recommendations:

- Monitor for shoot strikes early in the season.
- Monitor fruit for presence of worms with an emphasis on the final 4 weeks before harvest as fruit begins to color.
- Pick fruit samples from upper canopy of trees.
- Check regional recommendations and degree day models for treatment recommendations.

Source: Recommendations and certain other sections were sourced from UC IPM for OFM, WSU Extension Guidelines for OFM, NC State Extension, and Penn State Extension.

Note, always:

- Use only one lure per trap.
- Count and record captures as recommended.
- Change trap as needed.
- Discard lures in trash far from the area of use and remove trash afterwards.
- Follow recommendations.
- Contact local extension authorities and consultants for regional advice.

TRÉ-1901

TRÉCÉ® INCORPORATED
INSECT PHEROMONE & KAIROMONE SYSTEMS
Your Edge – And Ours – Is Knowledge.

© 2021, Trécé Inc., Adair, OK USA • ® is a registered trademark and TM is a trademark of Trécé Inc., Adair, OK 74330 USA