



## CODLING MOTH, THE INFAMOUS "WORM" IN THE APPLE, IS DIFFICULT TO MANAGE IN THE HOME ORCHARD.

From Quick Tips for Codling Moths, UC IPM Web site at [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu)

Soon after hatching, caterpillars bore into apples, pears, or walnuts and feed, leaving reddish-brown droppings (frass). Early maturing fruit varieties are less likely to suffer damage. Use an integrated pest management (IPM) approach that combines several of the methods described below. Trees heavily infested every year require carefully timed sprays.



### Codling moth life cycle:

- Mature larvae overwinter in cocoons under bark and pupate in spring.
- Adult moths emerge in mid-March to April and mate after sunset temperatures exceed 62°F.
- Tiny, disc-shaped eggs are laid on fruit or leaves.
- Hatching larvae immediately bore into fruit.
- Larvae feed within fruit until mature then drop to the ground to pupate in soil or debris or under tree bark.
- There are two to four generations per year in California.

### Reduce codling moths with sanitation practices..

- Promptly remove infested fruit from trees. Look for worm entry points ("stings") marked by tiny mounds of red-brown frass.
- Rake up and destroy dropped fruit as soon as it falls, especially in May and June.
- Sanitation alone won't control the pest.

### Bagging protects fruit without chemical sprays, even with severe infestations.

- Bag when fruit is 1/2 to 1 inch in diameter, four to six weeks after bloom.
- Cut a 2-inch slit in the bottom of a standard lunch bag.
- Thin fruit to one per cluster and slip it through the slit; staple the bag shut.
- Remove bags just as fruit are ripening.

### Use insecticides where infestations are severe.

- Codling moth granulosis virus (sold as Cyd-X) is a safe, biological pesticide that won't harm beneficials or bees. Add 1% horticultural oil to increase effectiveness. Apply it every seven days after eggs hatch for at least three or four times per generation.
- Spinosad is a low-toxicity pesticide you can make more effective by adding 1% horticultural oil. Apply it every 10 days after eggs hatch, or about three times per generation.
- Carbaryl is effective when properly timed at 14- to 21-day intervals but is very toxic to natural enemies, honey bees, and other non-targets and can cause water quality problems.

- Combining low-toxicity insecticides with nonchemical methods is the most environmentally sound approach.

**Insecticides are effective only when sprays are precisely timed to kill caterpillars just as they hatch.**

- Hang a pheromone trap in your tree in March and check it every few days for moths.
- Once you find moths and sunset temperatures exceed 62°F, start calculating degree days using instructions in the online Pest Notes: *Codling Moth* to find out when eggs will hatch or start looking for "stings" on fruit indicating larvae have hatched and are entering fruit.
- Start applying insecticides as soon as degree-day calculations indicate eggs are hatching (250 to 300 degree-days after moths are caught in traps) or as soon as you see stings.
- Use new stings or degree-day calculations to initiate sprays for second and third generations.