

IPM Fact Sheet Series**UMass Extension Fruit Team**  
Fact Sheet #AI-002**Apple – Codling Moth** (*Cydia pomonella*)**Overview**

Larvae cause two types of fruit damage: deep entry, where larvae burrow down into the core of fruit, pushing frass out as they go; and shallow entry where feeding occurs, but no tunneling is present. Both forms of damage render fruit unmarketable. Second generation larvae cause the most damage.

**ID/Life Cycle:**

Adults are approximately 15mm long (0.6 inches) and are striped gray with a distinctive coppery brown marking on the hind wings. Larvae's head capsules are dark brown and their bodies are white, usually tinged pink. Codling moth overwinters as a late instar larvae, spun in a cocoon. These larvae begin to pupate in the spring at pink. This phase of development can continue over a period of a month. Adults begin to emerge around the end of petal fall although cooler temperatures may delay emergence. Egg laying begins within three days of emergence, given sufficient evening temperatures. Egg laying rates increase when temperatures reach 70°F. Eggs hatch in six to 14 days. Warmer temperatures encourage quicker hatching rates. Once hatched, larvae seek entry to fruit. Once inside, they feed for about three weeks. Some of these larvae will enter into pupal phase at this time, while others will remain in larval form until the following spring. Those that do pupate at this time do so over a period of 14 to 21 days. Adult moths begin to emerge at 1904 DD<sub>43°F</sub> (accumulations begin Jan. 1), with peak flight occurring at 2321 DD<sub>43°F</sub>.



**Figure 1)** Codling moth adult in wing trap (left) and codling moth larvae in developing fruit (right). **Photo credit:** E. Garofalo.

**Damage:**

Codling moth is a key pest of apple and pear but may also attack other deciduous tree fruit. The larvae feed directly inside the fruit, tunneling in the flesh to the core. Larval feeding produces reddish brown frass at the point of entry into the fruit – usually the calyx end.



Apple fruit infested with codling moth. Note the brown material (frass) being pushed out by the larva. Photo credit: J. Pinero, UMass Extension.

### Management Strategies

**Monitoring:** Monitor the adults with pheromone traps and use a degree-day developmental model to time insecticide sprays. Trap catches do not predict damage level, but catching more than 6-14 moths per week indicates a high population.

### Cultural/Biological

- Preserve natural enemies, which can reduce the population of this pest.
- Remove abandoned apple and pear trees, where practicable.
- Trunk banding can be a useful method of reducing codling moth pressure. Cardboard wrapped around trunks before larvae move to cocooning sites will cause them to pupate on the cardboard, which is subsequently removed and destroyed prior to adult emergence.

- Hot water treatment of storage bins can destroy a number of overwintering larvae.

### Mating disruption

- Mating disruption, set up before bloom, can be an effective way to reduce codling moth populations. Mating disruption is also needed in July for the second generation. Plan on supplementing mating disruption with insecticides. Using mating disruption in conjunction with insecticides is especially important for orchards with recent history of CM fruit injury or in the first year of a disruption program.
- Place pheromone dispensers before the predicted start of the first flight.
- Place dispensers within 2 feet of the top of the tree canopy and near foliage to protect them from UV radiation and high temperatures.

### Chemical

- Refer to the [New England Tree Fruit Management Guide](#) for specific materials and rates recommended for managing codling moth.
- Apply recommended insecticides when trap catches reach threshold levels starting at petal-fall.
- Repeat insecticide applications at recommended intervals in cover sprays as needed according to scouting results.
- Rotate insecticides from different IRAC groups to reduce the chance of resistance development in the pest.

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