

Controlling Codling Moth
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The codling moth is a pest which does most of its damage in its larval stage. On apples and pears, larvae leave holes in the fruit filled with reddish brown crumbly droppings called frass.

Identification and life cycle

The first codling moths that you see or trap in spring are ones that emerged from over-wintering larvae protected by thick, silken cocoons hidden in the loose scales of tree bark or debris in the orchard like a woodpile, or even in the soil at the base of the tree. Male codling moths begin to appear when temperatures are at least 55 degrees F at dusk and mating occurs when temperatures at sunset are at least 62 degrees F or higher, usually mid-March to early April. Moths are active during the few hours before and after twilight. They measure ½ to ¾ inches long and have tent-like wings of mottled gray with coppery brown bands at the tips. The female codling moths will start the first generation of the season by depositing thirty to seventy flat and light pink or whitish colored eggs on leaves, spurs or developing fruit and nuts. The eggs hatch into larvae which look for fruit to bore into. As they grow, they leave the fruit and search for sites to pupate into moths and thus start the cycle over again.

Controls

Codling moths are particularly challenging to control because they can produce between two and three generations each year, depending on the weather. A successful control strategy is one that interrupts the codling moth's life cycle at the point that the female codling moth lays her eggs or the eggs start to hatch. Because daily temperatures determine the rate of development, just counting the calendar days from when you start seeing moths in traps may not give you an accurate fix on when egg laying will start. Commercial growers use a method to forecast the development of the moth based on calculations applied to the daily high and low temperatures. This method provides a way to calculate the physiological lapse of time (called "degree-days") to predict the optimum time to apply chemical controls. If you are interested in more information about this method, please consult the University of California Integrated Pest Management Site section on Degree-Days at www.ipm.ucdavis.edu, or the University of California Publication 3340, Integrated Pest Management for Apples & Pears, available at the UC Cooperative Extension Office in the Bethell-Delfino Agriculture Building at 311 Fair Lane in Placerville or online at <http://anrcatalog.ucdavis.edu>.

While birds, woodpeckers, bats, toads and lizards eat 40% of the codling moth pests in your yard, it is wise for you to take action over several seasons against the remaining 60%. If not controlled, the number of moths and larvae will increase. At the very least, you should control the pest until its population drops to a level that is lower than can cause damage. The following are ways to control the codling moth.

Destroy infested fruit - Six to 8 weeks after bloom, check the fruit. If there is evidence of boring larvae, remove the fruit from your tree and destroy it before the larvae crawl out. Do not put the fruit in your compost pile. Pick up any and all dropped fruit especially in May and June and destroy them also.

Traps - Lure the male moths with pheromone (a sex attractant) baits and traps to interrupt the mating cycle. Bait and trap from April through September. Change the sticky bottom of the trap every 4 weeks or sooner, if necessary.

Bag fruit – Put un-infested fruit in lunch bags and tie the bags along the stem tightly enough to keep out the larvae and loosely enough to allow for development. In order for this method of control to be effective, you must be able to reach and bag all the fruit.

Tree banding – Wrap the tree trunk 18 inches above the ground with a four inch wide piece of corrugated cardboard, some burlap bags or a sticky barrier, to keep the larvae from reaching developing fruit. Be sure the band is tight enough to trap the traveling larvae while sufficiently loose enough not to damage your tree. If you are using corrugated cardboard, place the corrugations vertical to the ground in order to best trap the larvae. Leave the band there for about a month, remove it and crush and kill the larvae. Band again for a second time in mid-August and remove between November and January to kill the overwintering larvae.

Plant early maturing fruit tree varieties - Control of the codling moth may include planting codling moth-resistant trees. Early maturing apple trees like Jonagolds, Gravensteins, Galas, Macintoshes, and Red Delicious are less susceptible to codling moth than late-maturing varieties. Prune your trees to keep them semi-dwarfed. This will make it easier to spray and reach the trees. Some orchardists plant *Tropaeolum* (nasturtiums) at the base of their trees and *Asclepias tuberosa* (butterfly weed), nearby, to attract host parasites of codling moths.

Chemical Controls – Few pesticides for controlling codling moth are available to the home gardener. If used, their application must be timed to occur just before or after the eggs hatch. Thus, it is imperative to track degree-days to ensure timing is correct. Once the larvae bore into the fruit, they are protected from any pesticide. Applying summer oil is another option, which works by suffocating the eggs. However, it too must be applied before each egg hatches and has the risk of burning young leaves if applied when the weather is hot. For a more in depth discussion on Codling Moth, please see Pest Note # 7412. This publication and others like it can be downloaded at no charge from the University of California Agriculture and Natural Resources Integrated Pest Management (IPM) website – www.ipm.ucdavis.edu.

UCCE Master Gardeners will present a class on "Backyard Chickens" tomorrow, March 27, starting at 9 a.m. It will be held in the Veterans' Memorial Building at 130 Placerville Drive in Placerville. For answers to home gardening questions, call the Master Gardener hotline Tuesday through Friday 9 a.m. to noon, at (530) 621-5512. The office is located at 311 Fair Lane in Placerville.