

## Corn, sweet—Corn earworm

*Heliothis helicoverpa*

**Pest description and crop damage** Corn earworm moths are about 0.75 inch long, robust, with a wingspan of 1 to 1.5 inches, and range from olive green to tan to dark reddish brown. Eggs are pale green at first, turning yellowish and finally gray. Young larvae are greenish with black heads and conspicuous black hairs on the body. Fully developed worms are about 1.5 inches long and range in color from pale green or pinkish to brown. Pupae are about 0.75 inch long and mahogany brown. They usually are 2 to 4 inches deep in the soil.

The corn earworm may be present throughout the year but is most abundant during August and September. Larvae feed on leaves, tassels, the whorl, and within ears, but the ears are the preferred sites for corn earworm attack. Ear damage is characterized by extensive excrement at the ear tip.

Young larvae feed on corn silks, clipping them off. Shortly thereafter, they feed their way into the ear where they remain, feeding in the tip area until they exit to pupate in the soil. First generation larvae may feed as "budworms," damaging leaf whorls and newly forming ears (in Columbia Basin area).

**Biology and life history** The corn earworm overwinters as a pupa in the soil except in some areas in the north, where it is unable to survive the winter. Adults emerge in late May and June and begin laying eggs on suitable hosts. Egg laying occurs throughout the sweet corn growing year. Corn earworm moths are most active during evening and night.

Although eggs are deposited on the foliage, fresh corn silk is the favorite site for egg deposition. Female moths lay their eggs singly. Eggs are white at first but develop a dark red or brown ring within 24 hr. Eggs hatch in 5 to 7 days. Larvae feed for 2 to 3 weeks before pupating in the soil. Adults emerge in about 2 weeks and lay eggs on corn silk or developing fruits. Moths move northward and establish infestations in areas where they cannot overwinter.

The summer generations overlap, resulting in a regular and gradual build-up of the corn earworm population from the beginning to the end of the year. There are two to three generations each year.

**Scouting and thresholds** Moths can be sampled with pheromones placed in inverted cone-type traps. A first application of insecticide is made at first silk regardless of moth counts. The presence of five to ten moths per night per trap may be considered a tentative action threshold for additional sprays.

Fresh-market corn has very little tolerance of earworms. Sweet corn for processing rarely is sprayed unless outbreaks are early and intense (20 to 30 moths per trap per day) at first silk.

Once larvae enter the corn ears, control with insecticides is very difficult. It depends on proper timing and thorough coverage. Begin sampling at first visible silk. The presence of large numbers of eggs on fresh corn silks indicates the potential for damaging populations. Begin treatments during silking stage, at the start of egg hatch. Direct insecticidal control towards young larvae that are feeding on the exposed ear tips.

### Management—biological control

Many predators and parasites attack corn earworm eggs, including several species of *Trichogramma*. Most parasitized eggs turn black, but there may be a lag period before they do so. Commercial releases of *Trichogramma* wasps have been

used with mixed results. Generalist predators such as lacewings, minute pirate bugs, and damsel bugs feed on corn earworm eggs and small larvae.

### Management—cultural control

In sweet corn, very early plantings require fewer treatments than late-year corn, because earworm population densities increase as the year progresses.

### Management—chemical control

1. bifenthrin (Capture) at 0.002 to 0.006 lb ai/1000 ft of row. See label for in-furrow application rates. PHI 1 day. REI 18 days. Do not exceed 0.2 lb ai/a per season. Toxic to bees and fish. Do not apply if rainfall is imminent. Prohibited in coastal counties. See label for other restrictions.
2. carbaryl (Sevin) at 1 to 2 lb ai/a. PHI 2 days for harvest of ears, 14 days for forage, 48 days for fodder. REI 12 hr. Do not exceed 16 lb ai/a per crop. There are time restrictions in eastern Washington for using carbaryl on corn. Check the Washington Department of Agriculture regulations for your area.  
**Warning:** Never apply carbaryl (Sevin) dust to pollen-shedding corn because of severe hazard to pollinating bees. Toxic in aquatic habitats. Latex-based formulations, such as Sevin XLR Plus, are less hazardous to bees.
3. chlorpyrifos (Lorsban) at 0.75 to 1 lb ai/a. PHI 35 days for ears, 14 days for grazing or silage, and 35 days for fodder. REI 24 hr. Postemergence broadcast or sprinkler application. Do not exceed 3 lb ai/a per season. Consult label for application details. Toxic to fish.
4. cyfluthrin (Baythroid) at 0.025 to 0.044 lb ai/a. PHI zero days. REI 12 hr. Do not exceed 0.44 lb ai/a per season. Toxic to fish.
5. deltamethrin (Decis) at 0.018 to 0.028 lb ai/a. PHI 1 day for ears, grazing, or feed, and 21 days for stover. REI 12 hr. Do not exceed 0.45 lb ai/a per season. Toxic to bees.
6. endosulfan (Thiodan) at 1.5 lb ai/a. PHI 1 day. REI 48 hr. Fresh market only. Do not exceed 1.5 lbs ai/a per year.. For fresh-market only. Do not graze or harvest for feed. Do not apply within 300 ft of aquatic habitat.
7. esfenvalerate (Asana) at 0.03 to 0.05 lb ai/a. PHI 21 days. REI 12 hr. Do not exceed 0.5 lb ai/a per year. Do not apply within 25 ft of an aquatic habitat, 150 ft if applied by air. Toxic to fish.
8. HZNPV (Gemstar LC) at 300 ml/a (formulated product). REI 4 hr. Biological control agent. Use non-chlorinated water at a pH near 7.0 in the spray tank mix.
9. lambda-cyhalothrin (Warrior) at 0.015 to 0.025 lb ai/a. Harvest, feed and application restrictions; See label. PHI 1 day. REI 24 hr. Do not exceed 0.48 lb ai/a per year. Do not apply within 25 ft of an aquatic habitat, 150 ft if applied by air. Toxic to fish.
10. methomyl (Lannate) at 0.23 to 0.45 lb ai/a. PHI zero days for ears, 3 days for forage, and 21 days for stover. REI 48 hr. Do not exceed 6.3 lb ai/a per season.
11. methyl parathion (Pencap-M) at 0.75 lb ai/a. PHI 4 to 5 days for sweet corn, or 12 days for grazing and forage. REI 4 days, or 5 days if annual rainfall is less than 25 inches. See label. Do not exceed 3 lb ai/a per season.  
**Warning:** Never spray microencapsulated methyl parathion on pollen-shedding corn, adjacent fields, or on blooming weeds at field edges and in adjacent fields. If misused,