



## Beet Armyworm: *Spodoptera exigua*

**Biology & Lifecycle:** Female adults lay clusters of greenish-white eggs on the undersides of leaves, often near the tips of branches or near flowers, and cover them with hair like scales from their bodies. Hatching larvae feed gregariously but soon become mobile and solitary, often feeding in the vegetative buds, especially in pepper, and covering the feeding site with webbing. Mature larvae drop to the soil, often on the edge of the plastic mulch covering the production beds, and form a cell about ½ inch deep and pupate inside. The egg to adult period lasts about 3 weeks.

**Environmental Factors:** The beet armyworm is active year round, but is usually more abundant in tomato and pepper during warmer months in both the spring and fall. The insect may over summer on volunteer plants and numerous weed species, including lambsquarters (*Chenopodium* spp.), purslane (*Portulaca* spp.) and pigweed (*Amaranthus* spp.).

**Adult:** Adults are medium sized moths with a wing span of about 1 to 1¼ inch and are nocturnal. The front wings are mottled gray and brown, with an irregular banding pattern and a bean shaped white spot. The hind wings are whitish gray with a dark band on the edge.

**Larvae:** Usually pale green and appear smooth with fine, white lines on the dorsal surface (**Figure 2**); however, older larvae have dark stripes on the sides of the bodies and may have triangular shaped black spots on the dorsal surfaces (**Figure 1**). There may be a small black spot above the middle pair of true legs.

**Host range:** The beet armyworm has a very wide host range and can be a serious pest of vegetable, field and ornamental crops. Both tomato and pepper are attacked, but pepper appears to be preferred in Florida. Many common weeds also can serve as larval hosts.

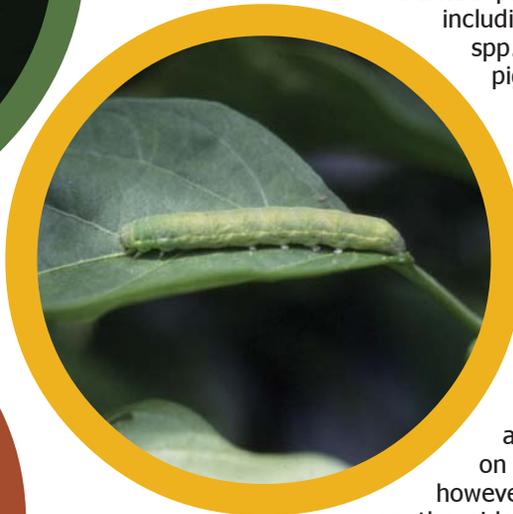
**Damage:** Larvae may complete development on foliage but inflict most damage when they feed on fruit, causing shallow holes or gouges (**Figure 4**). Larvae often bore inside pepper fruit, where they complete their development. It is not uncommon to cut an infested pepper fruit and discover a beet armyworm moth inside (**Figure 5**). Damaged fruit are rendered unmarketable and may rot due to invasion of secondary microorganisms.

### Monitoring:

**Traps:** Sticky, pheromone baited traps placed on field perimeters can be used to indicate when adults are migrating into fields.

**Scouting:** The whole plant (when small) or the terminal three leaflets of the 3<sup>rd</sup> or 7<sup>th</sup> leaf can be examined for the presence of eggs. Newly damaged foliage or vegetative terminals, especially in pepper, can be examined for the presence of larvae. A sample of 10 fruit is examined for the presence of recent damage.

**Action Thresholds:** one larva per 6 plants pre-bloom  
presence of one egg or larva post-bloom



**Figure 1.** Darker phase of beet armyworm larva. Photograph by: Dave Schuster.

**Figure 2.** Lighter phase of beet armyworm larva. Photograph by: Dave Schuster.

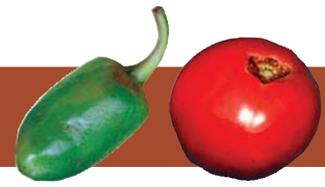
**Figure 3.** Armyworm eggs on pepper. Photograph by: Dave Schuster.

### Actual Size:



Late instar larva

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### CULTURAL CONTROLS:

**Start Clean:** Tomato and pepper fields should not be planted near or adjacent to old, infested fields.

**Field Manipulations:** Fields should be destroyed immediately after final harvest by deep disking to destroy infested fruit and pupating larvae.

Volunteer plants and weed hosts should be destroyed during the summer off season by frequent disking.

### NATURAL ENEMIES:

- Although the beet armyworm is attacked by numerous natural enemies, they usually do not cause mortality soon enough to prevent crop injury. The most important species of parasitic wasps observed attacking larvae include *Meteorus autographae*, *Cotesia marginiventris* and *Chelonus insularis*.
- Eggs and young larvae are attacked by generalist predators, including big-eyed bugs (*Geocoris* spp.), damsel bugs (*Nabis* spp.) and minute pirate bugs (*Orius* spp.).
- A commercially available nuclear polyhedrosis virus is specific and may be effective.
- Natural enemies can be conserved by avoiding broad spectrum pyrethroid, organophosphate and carbamate insecticides. Fewer insecticide applications and applications of new, reduced risk insecticides can also enhance biological control.



**Figure 4.** Feeding damage on pepper calyx covered with silk. Photograph by: Dave Schuster.

**Figure 5.** Below: (left) External Feeding damage on pepper; (right) Pupa developing inside fruit. Photograph by: Dave Schuster.



### References:

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