



Pepper Weevil: *Anthonomus eugenii*

Biology & Lifecycle: Adults feed on vegetative buds, flower buds and fruit by boring small holes. Females bore holes in flower buds and small, immature fruit, insert an egg and seal the hole with a liquid that darkens and hardens. Larvae develop and pupate inside the buds or fruit. Larvae feed in the pod wall of fruit and migrate to the seed core. Larvae pupate in cells formed with anal secretions. Adults chew their way out through a circular hole, mate and begin laying eggs within a few days. The egg to adult period takes about 2 weeks at temperatures above 80°F and adults can survive 3-4 months if food is available.

Environmental Factors: Present year round, but most abundant March-June. Insects over summer on volunteer or abandoned pepper plants and on nightshade.

Adult: Small (1/8 inch), black oval shaped beetles with a long snout and elbowed antennae. They appear 'dusted' due to the presence of small scales (**Figure 1**). Adults are found on vegetative and flower buds and on fruit.

Larvae: Small, white legless grubs with yellowish brown heads (**Figure 2**). The 3 larval stages range in size from about 1/16 to 1/5 inch in length and all occur inside buds and fruit.

Host range: Pepper weevils attack all species of pepper (*Capsicum* spp.) as well as nightshades (*Solanum* spp.).

American black nightshade (*S. americanum*) is an important alternative host plant. If the weed is left unmanaged, pepper weevil populations can be maintained during the summer and migrate to fall pepper plantings.

Damage: Feeding destroys flower buds and immature fruit. Larvae feed on the developing seeds inside fruit and cause the core to brown and sometimes become moldy (**Figure 3**). Infested fruit have yellow calyxes and stems, turn yellow or red at the base prematurely and fall from the plant. Fruit drop is the most common and noticeable sign of infestation (**Figure 4**). Feeding punctures by adults can provide an entry point for fungal disease (**Figure 5**).

Monitoring

Traps: Commercially available pheromone-baited, yellow sticky traps should be placed on the perimeters of fields prior to bloom. The bottoms of the traps should be just at or slightly above the top of the plant canopy and trap height should be adjusted as the plants grow. Traps should be monitored at least twice a week and treatments initiated when the first adult is captured.

Scouting: Inspect two terminal, vegetative buds per plant in the morning at least twice weekly. Sampling should be concentrated on field perimeters.

Action Thresholds: 1 adult per 400 terminal buds
1 adult per trap

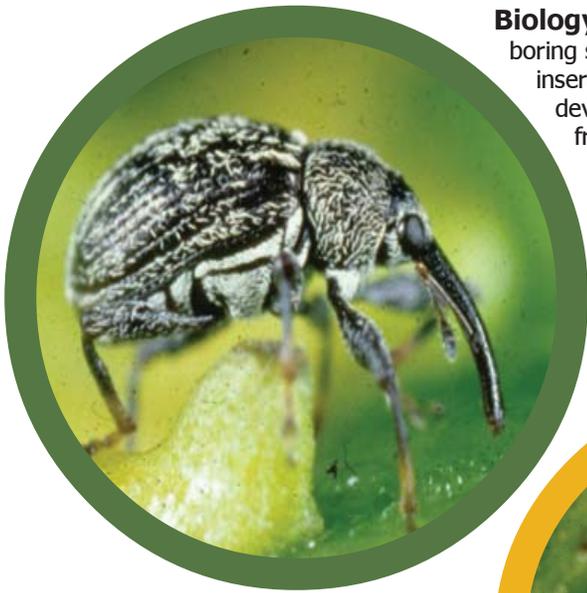


Figure 1. Adult Pepper Weevil. Photograph by: Jeff Brushwein.

Figure 2. Pepper weevil larva developing inside a Bell pepper. Photograph by: David Schuster.

Figure 3. Pepper sliced open to show damage and frass from pepper weevil feeding. Photograph by: E. Rodriguez.

Actual Size:


Adult
About 1/8 inch


Larvae
1/16-1/8 inch

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CULTURAL CONTROLS:

Start Clean: Inspect transplants for adults.

Field Sanitation: All cull, damaged and fallen fruit should be removed from the field and destroyed. Examine some of the dropped fruit for larvae (**Figure 4**).

Field Manipulations: Abandoned fields provide food and shelter for pepper weevils to reproduce. Therefore, pepper fields should be deep plowed (at least 10 inches) block by block immediately after harvest.

Sequential plantings in nearby fields should be avoided.

Volunteer pepper and nightshade plants should be destroyed year round, but especially during the summer off season.

CHEMICAL CONTROLS:

- Insecticides should be applied when the action threshold is met.
- Insecticide treatments target adults because all other stages are protected within the fruit.

RESISTANCE MANAGEMENT:

- Pyrethroid insecticides (many products, IRAC Group 3) are no longer effective.
- Following cultural controls to delay and reduce infestations and using action thresholds to initiate sprays may reduce the number of sprays and slow the development of resistance.
- Chemicals of different classes should be rotated (**see Appendix 5**).

NATURAL ENEMIES:

- Parasitic wasps have been observed attacking weevil larvae in Florida, with *Catolaccus hunteri* being the most abundant. Releases of this parasitoid on field perimeters and in young pepper crops have reduced pepper weevil damage.
- Avoidance of broad spectrum insecticides will help conserve natural enemies and may enhance biological control.

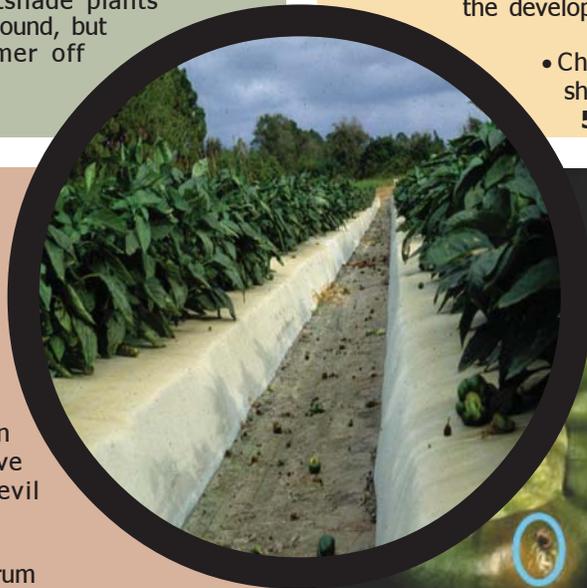


Figure 4. Fruit drop is a common sign of infestation by the pepper weevil. Photograph by: David Schuster.

Figure 5. Newly emerged adults chew holes through fruit wall rendering them unmarketable. Photograph by: David Schuster.

CONTACT INFORMATION:

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