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# Squash vine borer as a pest of cucurbits in Michigan

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Cucurbits including summer squash, pumpkin, cucumber and watermelon are vulnerable to attack by the squash vine borer. While only the larvae of squash vine borers damage plants, tracking adults can help prevent damage.

**Appearance***:* Squash vine borer adults are reddish-orange with a dark thorax, narrow dark wings, and a line of black spots running down the back. If captured in a pheromone trap, close examination shows fuzzy orange hind legs and clear wings (Fig 1A). Adults are about the size and shape of a wasp or yellow jacket (Fig1B), and can be difficult to observe closely in the field because they take flight readily when disturbed and fly very quickly. Eggs are flattened brown ovals approximately 1 mm wide (Fig 1C). They are laid singly or in loose clusters on cucurbit stems or petioles. Larvae are white with a small dark head (Fig 1D), but may not be readily visible because they feed inside the stem.

**Figure 1. Squash vine borer (A-B) adult, (C) eggs, and (D) larva.** Photo credits: W.R Morrison III, M.N. Regalado, B. Werling

**Life cycle***:* Squash vine borers overwinter in the soil as larvae or pupae. Adults emerge in June and begin to lay eggs, which will hatch in 7-10 days. Upon hatching, larvae burrow into the stem near the base of the plant, and feed internally for 2-4 weeks. Larvae drop into the soil to pupate and emerge as adults. Squash vine borers go through 1-2 generations per year in Michigan.

**Damage***:* Adult squash vine borers are not damaging to cucurbits, only larvae damage plants. Upon hatching, larvae burrow into plant stems where they feed, destroying tissue and weakening the plant. Signs of a squash vine borer larva are most evident at the feeding site, at the base of the stem. These include a dry cracked stem (Fig 2), clumps of yellowish paste on the outside of the stem (Fig 3), and a hole leading to the feeding tunnel (Figs 3 and 4). Cucurbits with squash vine borer damage may wilt and die (Fig 5).

**Figure 2. Cracked, dry stem of a cucurbit with squash vine borer larva damage.** Photo credit: A.L. Buchanan

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**Figure 3. Yellowish paste left by squash vine borer feeding. The hole left by the larva is barely visible (indicated by the arrow).** Photo credit: A.L. Buchanan

**Figure 4. Cucurbit stem cut open to show feeding damage. Visible are three squash vine borers.** Photo credit: A.L. Buchanan

**Figure 5. Wilt caused by squash vine borer.** Photo credit: W.R. Morrison III

**Management**: Scouting for squash vine borer should occur June-July. Early detection is essential, as after larvae begin to feed they are protected within the plant, and plants have already sustained damage. Insecticides are most effective against very young larvae before they enter the stem.

Traps with pheromone lures attract adult males and provide the earliest detection. The threshold for applying chemical insecticides is 3 moths in a single pheromone trap. Scouting for eggs or early damage can also prevent further damage. The threshold for insecticide application is the presence of any eggs or early damage. Pryeothroids, pyrethrin, or *Bt* products can control squash vine borer.

**Cultural and biological controls:** Because squash vine borers overwinter in the soil, rotating crops away from cucurbits for 2-3 years is essential for controlling populations and reducing damage. Disking fields in the fall exposes the overwintering population and may aid in control.

Low tunnels can prevent adult moths from laying eggs, but need to be removed during flowering for pollination. Natural enemies that feed on or parasitize eggs may reduce squash vine borer damage, including spiders and lacewings. Soil nematodes may feed on overwintering larvae or pupae in the soil.

## Other resources

Enviroweather – up-to-date squash vine borer activity: http://www.enviroweather.msu.edu/run.php?stn=hrt&mod=v_svb&da1=30&mo1=7&da2=30&mo2=7&yr=2015&mc=478&ds=cd

MSU vegetable entomology website: http://vegetable.ent.msu.edu/

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