

# SQUASH VINE BORER MANAGEMENT IN HOME GARDENS

M1209 2007

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The squash vine borer, *Melitta curcurbitae*, is a common clearwing moth in home gardens in Minnesota. It is a serious pest of vine crops, commonly attacking summer squash, winter squash, and pumpkins. Cucumbers and melons are less frequently affected. In home gardens, entire crops may be lost in a year of high borer populations.

## Identification

The adult borer resembles a wasp. It is about 1/2 inch long with an orange abdomen with black dots (fig. 1). The first pair of wings is metallic green while the back pair of wings is clear, although that may be hard to see as the wings are folded behind them when they at rest. Eggs are flat, brown, and about 1/25 inch long. The larvae are white or cream-colored with brown heads, growing to almost an inch in length (fig. 2).

## Life Cycle

Beginning in late June or early July, squash vine borer adults emerge from cocoons in the ground. Squash vine borer adults are good fliers for moths and resemble wasps in flight. These moths are unusual because they fly during the day while nearly all other moths fly at night.

Soon after emerging, squash vine borers lay eggs singly at the base of susceptible plants. Approximately one week after they are laid, the eggs hatch and the resulting larvae bore into stems to feed. The larvae feed through the center of the stems, blocking the flow of water to the rest of the plant. The larvae feed for four to six weeks, then exit the stems and burrow about one to two inches into the soil to pupate. They remain there until the following summer. There is one generation per year.

## Damage

Often the first symptom of a borer attack is wilting of affected plants. Wilting may occur only in strong sun at first (fig. 3), but if the problem is left unchecked, the plants eventually collapse and die. Closer observation of a wilting plant often reveals holes near the base of the plant filled with moist greenish or orange sawdust-like material called frass (fig. 4). Over time, the base may become mushy or rot



Figure 1. Squash vine borer adults



Figure 2. Squash vine borer larva

away altogether. Several borer larvae may attack a single plant.

## Management

Squash vine borers are challenging to prevent or manage. Use integrated pest management (IPM) methods for the best results. Most management options are limited to control the hatching larvae before they enter the plant. Once the larvae invade the stem, it is difficult to treat squash vine borers. Home gardeners can take a proactive stance against squash vine borers by monitoring your squash for the presence of adult borers starting the last week of June.



Figure 3. Wilting leaves due to squash vine borer damage

Monitoring tells you if and when squash vine borers are present. This information helps you determine what further management measures may be necessary. There are two methods for detecting squash vine borer adults. The first is actual observation of adult activity in the garden. These moths are conspicuous insects when flying and easy to detect; watch for them when you're in your garden. In addition, the adults make a very noticeable buzzing sound when flying that is easy to detect while in the garden.

You can also use yellow trap pans to detect squash vine borer adults. This can be any container (e.g. pan, pail, bowl) colored yellow and filled with water. Because squash vine borer adults are attracted to yellow, they will fly to the container and be trapped when they fall into the water. Place traps by late June, checking your traps at least once a day. When you notice squash vine borer adults in your traps you know they are active and it is time to take further action.

### Cultural

- Plant vine crops that are usually not attacked by squash vine borers, such as butternut squash, cucumbers, melons, and watermelons.
- A second planting of summer squash made in early July will mature after adult borers have finished laying eggs.
- Promptly pull and destroy any plants killed by squash vine borers.

### Physical

You can physically exclude adult borers by placing floating row covers over your vine crops when they start to vine (or for non-vining varieties, starting late June or early July) or when you first detect squash vine borer adults. Keep the barriers in place for about two weeks after the first adult borer has been seen. Be sure the row covers are securely anchored to prevent adults from moving underneath it.

Caution: Generally do not use floating row covers anytime crops are flowering. This prevents bees from pollinating your vegetables which will have a negative impact on plants. An exception to this would be if you pollinate your crops by hand while the floating row cover is erected.

### Insecticides

If insecticides are needed, spray or dust the stems at their base. Start treatments when vines begin to run (or the last week of June or early July for non-vining varieties) or when the first adult borers are detected. Repeat in 7-10 days. Two applications help manage most squash vine borer adults. For more thorough coverage, continue treatments at 7-10 day intervals until the end of July. Below is a list of common names of active ingredients that are effective against squash vine borers.

Common name	Residual*	Notes
carbaryl	medium	contact
permethrin	medium - long	contact
bifenthrin	medium-long	contact
esfenvalerate	long	contact

\* Long residual can persist as long as four weeks. Medium residual can persist as long as 10 - 14 days.

**CAUTION:** Read all insecticide labels very carefully before buying and again before using to ensure proper application. It is especially important that the label specify recommended use on squash, pumpkins, or the specific cucurbits you wish to treat. Also be sure to observe the number of days between pesticide application and when you can harvest squash, pumpkins, or other cucurbits. The label is the final authority on how you may legally use any pesticide.

If, despite your efforts, your crop is successfully attacked by borers, you can try to kill the borer inside the vine. Although the chance of saving the plant is not good, you do not have much to lose. As soon as wilting is noticed, use a sharp knife to cut a slit in the affected stem. Slice carefully up the vine until you locate the borer (or borers). Once you have killed any borers with the tip of the knife, mound moist soil over the cut area and keep this spot well watered. New roots may grow along the cut stem, allowing the plant to survive.



*Figure 4. Squash vine borer frass*

Figures 1 and 2 by Jeff Hahn, figures 3 and 4 by Department of Entomology, University of Minnesota.

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