

From the Ground Up

Volume 107 Issue 4 • Editor: Karin Woltjer, Master Gardener • July 2007

Squash Vine Borers: At the “Root” of a Wilting Plant

By Michelle Harvey Erpenbach, Master Gardener



Squash vine borers are one of those pests we see more commonly in areas where gardening has been going on for several years. In the Sioux Falls Community Gardens, we see them fairly regularly because there are so many different gardeners working in close proximity year after year. (*editor’s note: This is similar to the situation of farmers’ rotating corn and soybeans crops in a field; if corn is planted repeatedly in a field, the corn rootworm is more likely to appear and insecticide will have to be applied.*)

As with most pests, cultural prevention is the best medicine for squash vine borers. Be sure to destroy vines soon after harvest to kill any larvae still inside stems. At the community gardens, we also plow the soil in fall or spring (very often both) to destroy overwintering cocoons.

Extension experts suggest covering vines at leaf joints with moist soil. This promotes the formation of secondary roots that will support the plant if the main root and stem are injured. You might consider planting a “trap crop” of very early-planted Hubbard squash to reduce pressure from the pest in other cucurbits. It seems Hubbard squash is the favored plant for this unsightly pest.

So, how does one know if the borer has attacked? Generally, you will see a sudden wilt of the plant. The borer is the larva of a moth that looks like a wasp. Eggs are laid at the base of your plant stem and the larvae bore within the lower stems. The larva’s entrance point is usually pretty clear: you’ll see the yellow granular sawdust-like powder which points you to the hole in the stem. If a plant wilts but there is no evidence of borers, other possible causes are root feeding by larval cucumber beetles, or a bacterial wilt infection.

Squash vine borers will attach squash, zucchini, pumpkins, and gourds. Butternut squash seems to be less susceptible than other squashes. Cucumbers and melons are usually not attacked.

Eggs are oval, flattened, dull-red in color, and 1/25 inch in diameter. The larva is a fat grub-like caterpillar with a white wrinkled body and a brown head.

You might see the adult moths flying slowly in zig-zags around plants. They lay eggs singly on stems. Usually, eggs are on the main stem near the base, but you might find them on leafstalks or the undersides of leaves. Eggs hatch in 9 to 14 days. Larvae enter the stem at the plant base within a few hours after hatching. Larvae feed inside the stem for 4 to 6 weeks. Fully grown larvae leave the stems and crawl into the soil to pupate. Moths are active for about a month in early summer.

If you have just a few squash plants, you might be able to get the grubs by physically removing them. Try these options:

- Borers can be removed from vines if you get them before much damage is done. I have been successful with this method. Check stems in early summer. When you see holes, slit the stem the long way with a small sharp knife, remove the borer and cover the wounded stem with moist soil above the point of injury to promote additional root formation.
- Some gardeners have seen success by covering the stems with a barrier, like strips of nylon stockings, to prevent egg laying.
- Another trick is a fun activity for younger gardeners. Look for the adult moths resting on the upper sides of leaf bases at twilight and early morning. Catch and destroy.
- Find and remove the eggs before they hatch.

You can also go after this pest with chemicals. The trick is in the timing of the application: start when vines begin to run, and re-apply every 7 to 10 days for 3 to 5 weeks. The application should be directed to the base of plants, at crowns and runners.

Chemicals used for borer control in gardens are methoxychlor, rotenone, pyrethrum, malathion, or carbaryl (Sevin), applied as sprays or dusts. As always, with any chemical treatment, please carefully read and follow the labeling instructions.

~ Material adapted from Ohio State University Extension Fact Sheet HYG-2153-92.

Pie Plant Extraordinaire

When people think of plant disease management it ain’t pretty. We all work hard to keep the garden healthy with sweat equity.

Well, the good news is that there are two diseases that you can manage by rhubarb pie. You heard right -- going out and harvesting your rhubarb can actually reduce certain diseases. The trick is to identify the disease and remove the stems containing the infection.

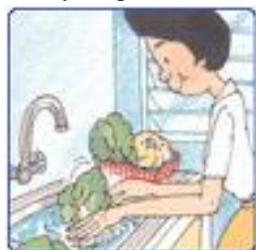
Rhubarb is attacked by several different leaf spot diseases. Two common diseases are caused by the fungi *Ascochyta rhei* and *Ramularia rhei*. Ascochyta leaf spots start as light green or yellow spots that eventually grow into white spots with a thick red margin. Frequently, the dead leaf tissue at the center of these spots falls out which results in shot-hole leaves.



(continued on page 3)

July To Do List

- ✓ Check the soil moisture of potted grown vegetables and flowers daily. As the temperature rises, some plants may need water twice a day.
- ✓ Your garden and lawn need one inch of rain or water each week. Early morning is the best time to water. Evening watering is less desirable because plant leaves that remain wet through the night are more susceptible to fungus diseases. Mulch garden plants to reduce water loss and improve yields.
- ✓ Cutting flowers is best done with a sharp shears to avoid injury to the growing plant. A slanting cut exposes a larger absorbing surface to water and prevents the base of the stem from resting on the bottom of the vase. Carry a bucket of water to the garden for collecting flowers.
- ✓ Cut the leaves on iris back to six inches if you are moving them. Divide and transplant bearded iris using the vigorous ends of the rhizomes. Discard the old center portion.
- ✓ Tall flowers should be staked to prevent damage by wind. Use stakes which are large enough to support the plant, and use soft twine or twist ties to secure
- ✓ Flowers like petunias should be pinched back after blooming to promote a second flush of growth.
- ✓ Cut back and fertilize delphinium and phlox to encourage a second flowering.
- ✓ Some plants can be propagated by layering. Climbing roses is a plant that will root if the stems are fastened down and covered with soil.
- ✓ A brown or grayish cast over a lawn can be caused by dull or improperly adjusted mower blades that shred rather than cut grass. Sharpen the blades now.
- ✓ Store pesticides in a safe place in their original containers away from children and pets. Use pesticides carefully in your garden. Read the labels and follow the directions. The warnings and precautions are for your protection.
- ✓ Certain pesticides have a waiting period of several days between the time of the last spray and harvest. Read and follow directions on all labels before applying to your vegetable crops. Wash all produce thoroughly before use.
- ✓ For harvesting lettuce, radish, carrots, beets, turnips, kale and spinach, lay the groundwork. Sow seeds in late July to early August.
- ✓ Continue to make successive plantings of crops like beans and sweet corn to provide a continuous harvest until fall. A small garden will produce a big quantity of vegetables if replanting is done throughout the summer.
- ✓ Continue attracting insect eating birds to the garden area by providing them with fresh water.



Tips for Tasty Tomatoes



If you are starting to dream about tasting the salsa and tomato sauce that you will make from your garden tomatoes, you are not alone. If this July is the same as in the previous years, we can expect hot and dry growing conditions. This article will anticipate questions that you may have and provide answers:

Q: When and how much do I water tomatoes?

A: During this month, monitor the plants if conditions are dry. Water the equivalent of an inch of rain around the roots per week. Do not water the foliage. Mulch the soil around plants to retain soil moisture, suppress weeds and keep splashing rain from spreading fungal diseases,.



Q: What is with the big green worm on my tomato plants?

A: The worm is most likely the tomato hornworm. It will cause an enormous amount of damage in a few hours. Pick them off by hand and kill them.

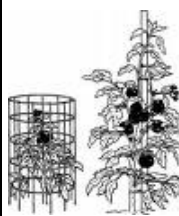
Q: Why do my tomatoes turn black on the blossom end and rot?

A: The affliction is called simply blossom end rot. It is prevalent in hot weather when the moisture supply has not been stable. Water consistently to help avoid the problem.

Q: Why aren't there fruits on my tomatoes?

A: Often it is directly attributable to the variety choice. Large-fruited types won't set in extreme heat or extreme cold when temperatures fall below 55-60 degrees F. Nematodes or other pests may be weakening the plants enough that they work on surviving and do not produce fruit. It may also be a lack of pollination. Feeding and watering may be the culprits. You have to keep tomatoes well nourished and moist. When you prepare your garden in the spring, work in lots of compost into the soil; spread an inch of compost on the soil and mulch around the plants two or three weeks after planting. If you fertilize, apply after the first cluster of flowers have set fruit; do not overdo the nitrogen or you will get all leaves and no flowers.

Q: Do I stake or cage tomato plants for support?
A: Staked and pruned tomatoes can produce fewer but larger fruit than caged or unsupported plants. Staked plants are usually pruned to a single or double stem and periodically tied loosely to the stake with soft twine. Pruning is accomplished by removing all the "suckers" or branches that grow from the leaf axils; leave only the main stem or the main stem and one additional branch near the base. Unsupported but caged tomatoes may be left to branch normally.



From the  Ground Up

is published monthly during the growing season by the Minnehaha County Extension, 220 West 6th Street, Sioux Falls, SD 57104
Phone 605-367-7877, Fax 605-367-4609



Words to the Water-Wise

Water, water anywhere?

I s there a drop to drink?

With apologies to Samuel Taylor Coleridge's 'The Rime of the Ancient Mariner'

Late last year in Sioux Falls at Augustana's Elmen Center, former Vice-President Al Gore informed us that global warming is not only accelerating the evaporation of entire bodies of water, but it is also removing water from land more quickly than ever. National Public Radio is running a year-long series on climate change with June topics featuring the struggle over rural and urban water rights as in "Las Vegas Water Battle: 'Crops vs Craps'".

Closer to home we see states struggle as they battle over Missouri River water allocation with South Dakota's looking at the water in terms of recreation in the lake reservoirs versus the state of Missouri's looking out for adequate water to float its barge traffic. In Minnehaha County and surrounding areas, the Lewis and Clark water system is a partnership of 15 cities and five rural water districts in South Dakota, Iowa and southwestern Minnesota that would get treated water from wells near the Missouri River through 337 miles of underground pipe with Sioux Falls as the biggest customer

What can we do in our own backyards to reduce the need for water AND keep our water bills in check? Apart from planting a yard of cactus, we can plan for simple changes that reduce the amount of water a garden needs. The amount of rainfall our region receives will dictate which changes can add up to the biggest savings. In dry regions, the types of plants gardeners choose make all the difference. In areas with more rainfall, preventing runoff and adding protective covering are key items.

Plant Choice

An easy way to find drought resistant plants is to look for leaves that have a gray or silver color such as dusty miller. Look for plants that have deep roots or tuberous roots that store water and nutrients.

The Basics

Lawns need more water per square foot than any other common planting; shrubs and trees require less. Therefore, consider replacing a portion of your lawn with trees and shrubs. After you have selected your plants, create a **hydrozone**—a group of plants with similar watering needs. Adjust your sprinklers accordingly so you do not overwater.

Savvy Sprinkler

If you have a traditional sprinkler system, **small** changes can amount to **big** water conservation. Set your timer to start at least one hour before sunrise for maximum water absorption. If the forecast is rain, adjust the timer so that your sprinkler is not going while it is raining. Changing sprinkler heads to eliminate watering sidewalks and paths can save an average of five hundred gallons a year. Better yet—if you are starting from scratch, consider alternative systems—soil soaker hoses and drip irrigation systems are great water-saving alternatives to traditional sprinkler systems.

Help for Hillsides

Hillsides can be big water wasters. Terracing a garden provides more flat surface area to absorb water and eliminate runoff. Another option for a hillside garden is to create a basin around each plant to collect water. The best way to water hillsides is in short intervals, so the water has time to be absorbed by the soil.

Bare or Covered

Bare soil loses water quickly. Mulch can prevent needless evaporation. Using soil compost (decaying matter used to improve soil structure and provide nutrients) improves drainage and helps retain moisture. Other decorative choices include gravel with smaller the gravel, the less evaporation.

Using Recycled Water

Water your plants with dishwasher. As long as the water does not contain grease, it is a safe and eco-friendly way to keep your garden watered and help repel those pesky bugs. Probably, bugs do not care for detergent water. Avoid using dishwasher in veggie gardens.

For more information, log on to the United States Department of Agriculture Natural Resources Conservation Service (see [Backyard Conservation](#)).

(Continued from page 1)



Ramularia leaf spots start as small red spots that eventually develop a white or tan center and a purple margin. *Ramularia rhei* can cause infections on rhubarb stems, too. These infections start as small spots and grow into sunken white or tan ovals.

Spores from both pathogens are spread from existing spots to new leaves by wind or water spray. Removing those spots from the garden will reduce the amount of fungal spores available to start new infections. Selective harvesting can reduce the amount of disease in the rhubarb patch. As you choose healthy stems for your next pie, first select any stems that show leaf spots. The fungi can survive and produce spores on dead leaves; the leaves must be removed from the garden in addition to the stems and discarded. This will reduce the number of new infections that develop on the plant.

In addition to selective harvesting this spring, use good garden hygiene by removing all leaves from the garden in the fall after they have been killed by a frost. The leaf spot fungi survive the winter on old leaf tissue. Encourage plant growth by planting rhubarb in full sun and providing proper fertilization as growth begins in the spring and after last harvest.



Odds and Ends

By Crystal Stewart/ Extension Educator/Horticulture



Check Out The Xeriscaping Gardens at the Great Plains Zoo!

The hot, dry summer months can often be a stressful time for gardeners as they try to keep gardens from drying out. Often much of this water goes to plants that aren't well adapted to our environment. "Xeric" plants, which require significantly less water than more traditional selections, can be beautiful alternatives. If you are looking for some ideas to get you started, stop by the Great Plains Zoo and see the three Xeriscaping gardens installed by the Master Gardeners. There is a grass garden, a perennial garden, and a rock garden. If you can't make it there, be on the lookout for brochures with the planting diagrams later this month.

Sincerely,

Crystal Stewart
Extension Educator/Horticulture



South Dakota State University, South Dakota Counties and U.S. Department of Agriculture Cooperating South Dakota State University is an Affirmative Action/ Equal Opportunity Employer (Male/Female) and offers all benefits, services, education, and employment opportunities without regard for ancestry, age, race, citizenship, color, creed, religion, gender, disability, national origin, sexual preference, or Vietnam Era veteran status.

**MINNEHAHA COUNTY EXTENSION OFFICE
220 WEST 6TH STREET
SIOUX FALLS SD 57104-6001**

**NON PROFIT ORGRANIZATION
US POSTAGE PAID
PERMIT NO. 7804
SIOUX FALLS SD**