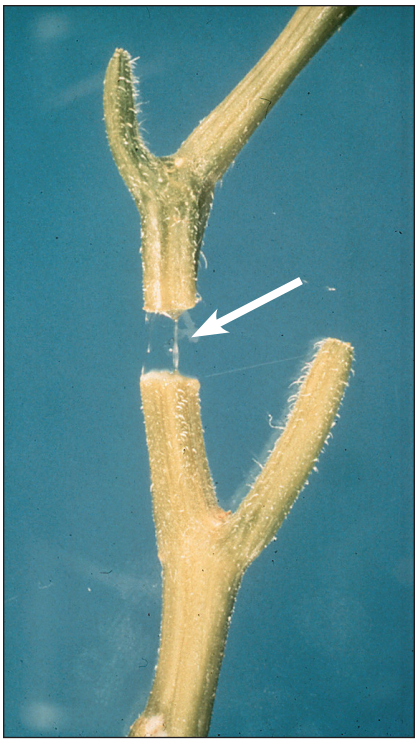
A3272

Vine crops disorder: Bacterial wilt

KAREN DELAHAUT and WALT STEVENSON

Bacterial wilt, caused by *Erwinia tracheiphila*, is a destructive vascular disorder that primarily affects cucumbers and muskmelon. Pumpkins and squash may also be affected, but the damage is not as severe. Watermelon appears not to be affected.



To definitively identify bacterial wilt, look for strands of sticky white sap.

The pathogen is spread by cucumber beetles. They ingest bacteria when feeding on infected plants and spread it to new plants through their feces and contaminated mouthparts.

Symptoms and effects

Because leaf infection occurs where insects feed, symptoms first appear at those sites. On cucumbers and muskmelon, infected leaves turn dark green and wilt during the day, but recover at night or on cloudy days. Later, the infected leaves wilt and die. As bacteria move through vascular tissue and disrupt water flow, the leaves wilt. The disease progresses down the vine causing it to eventually shrivel and die. Wilting can occur at any time in the season, but rapidly growing succulent plants will die more quickly. On infected pumpkin and squash plants, only the margins of leaves die.

To distinguish wilting caused by *Erwinia* from that caused by the squash vine borer or *Fusarium*, cut the stems of symptomatic plants. Hold the cut edges together for 10 seconds, and then slowly pull them apart. If you find a strand of sticky white sap, the plant is likely infected with the bacterium. Plants of any age are susceptible.

Disease cycle

The bacterium that causes cucumber wilt overwinters in the digestive system of the cucumber beetles. Beginning in early May, adult beetles emerge from hibernation in search of food. (In decreasing order of preference, cucumber beetles feed

Bacterial wilt causes entire vines to wilt and die.

on cucumber, muskmelon, winter squash, summer squash, and watermelon.) The bacterium is deposited in the feces near feeding sites where it moves into the plants through the wounds.

Once the bacterium is in the plant, it travels through the vascular system and multiplies, blocking the food- and water-conducting vessels. Seven to ten days after infection occurs, leaves begin to flag or wilt.

Control

There are no direct chemical controls of the bacterial pathogen, so controlling the beetles is essential. In spring, even a few adult beetles carrying the bacteria can lead to serious wilt problems. A single infected plant in a garden can be a source of inoculum for beetles to spread to other plants. The disease can spread quickly throughout all susceptible plants by midsummer. Prompt removal of infected symptomatic plants is essential.

Early season control is by far the most important. Remove weeds and other debris to eliminate shelter for beetle hibernation. Adult cucumber beetles become active as soon as cucurbit seedlings emerge. Beetles are attracted to cucurbit plants. Covering plants with floating row covers can protect developing seedlings, but be careful to leave no openings as the beetles readily crawl through open spaces. Make sure you uncover flowering plants to allow pollination. Consider growing extra transplants to replace those plants lost early in the season to bacterial wilt.

A few cucumber cultivars such as Calypso, County Fair and H19 Little Leaf are advertised as having a useful level of resistance to bacterial wilt infection. In the future, additional cucumber cultivars may become available.

For details on identifying, scouting for, and controlling cucumber beetles, see Extension publication *Cucumber Beetles* (A3751).

Authors: Karen Delahaut is senior outreach specialist with the fresh market vegetable program, Walt Stevenson is professor of plant pathology, College of Agricultural and Life Sciences, University of Wisconsin-Madison and University of Wisconsin-Extension, Cooperative Extension. Produced by Cooperative Extension Publications, University of Wisconsin-Extension.

This publication is available from your Wisconsin county Extension office or from Cooperative Extension Publishing. To order, call toll-free: 1-877-947-7827 (WIS-PUBS) or visit our web site: cecommerce.uwex.edu.

A3272 Vine Crops Disorder: Bacterial Wilt R-05-04