

Insect/Disease Information

VEGETABLES

Blossom-end Rot



Blossom-end rot can show up at any stage of a tomato but is most commonly seen near harvest. Initially, a small water-soaked lesion will show up at the blossom end of the fruit, and will enlarge and darken as the fruit develops. The lesion eventually becomes flattened, black, and leathery.

Blossom-end rot is an abiotic disease associated with a decrease in water and low concentration of calcium in the fruit. Calcium is required for normal cell growth, and if a plant is growing rapidly due to optimal conditions and then suddenly deprived of water, the demand for calcium exceeds the supply, so the tissues of the fruit at the blossom end break down. Calcium availability can also be affected by excessive soil moisture fluctuations, rapid vegetative growth due to excessive nitrogen fertilization, high soil salinity, or destruction of roots by cultivating the soil too close to the root zone.

Treatment: If you suspect blossom-end rot, be diligent about maintaining adequate and even soil moisture, and mulch soil if necessary. Be careful when cultivating soil, and use a fertilizer low in nitrogen and high in phosphorus (4-12-4 or 5-20-5) to alleviate the problem; foliage can also be sprayed with a calcium chloride solution, until a balanced soil moisture is established. Note that calcium chloride can be phytotoxic if applied too frequently or in excessive amounts.

Wilting caused by Squash Bug



Squash bugs have been active for several weeks on squashes, pumpkin, and melons. In areas of heavy feeding, wilting and death of leaves or plants is occurring. This is sometimes referred to as "sudden wilt." Adult squash bugs can feed on the vines and stems, puncturing through the xylem cells, and

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preventing water transport up to the leaves. Eventually, leaves become dry and turn black. Sudden wilting can occur on individual leaves, a section of a plant, or an entire plant.

In the eastern US, squash bugs can introduce a bacteria that also causes wilt, but bacterial wilt is not known to occur in Utah.

Treatment:

commercial: acetamiprid (Assail), esfenvalerate (Asana), permethrin (Ambush, Pounce), bifenthrin (Tundra), carbaryl, lambda-cyhalothrin (Warrior), piperonyl butoxide+pyrethrin (Pyrenone)

residential: neem oil (Concern, Ferti-Lome), permethrin (Ace Dust, Bayer Advanced Dust, Bonide Eight), kaolin clay (Surround), carbaryl.

NOTE: carbaryl can cause phytotoxicity (plant damage) when applied in hot weather.

Tarnished Plant Bug (lygus bug)



Tarnished plant bugs have been spotted on several vegetables and herbs in northern Utah. As nearby alfalfa fields are cut, or weeds dry, these plant bugs move to alternative food sources. They mostly feed on flowers and fruit, but sometimes move to foliage.

They feed with sucking mouthparts and their saliva is toxic to plants, killing the tissue at which it feeds. Examples of some damage:

- broccoli: dry, shriveled flower buds scattered across the head
- lettuce/cabbage: necrotic lesions along midrib that causes distorted leaves
- eggplant/pepper: feeding is limited to flowers, killing them
- tomato: feeding on fruit causes similar damage to stink

bug injury; feeding on green fruit causes cat-facing (severe dimpling and distortion)

- potato: usually feed on leaves and flowers only, resulting in wilting, distorted, yellow leaflets and aborted flowers

Adults are very mobile and can move in and out of fields and between gardens rapidly, making monitoring and control difficult. As such, no chemical will give 100% control in vegetable gardens or fields. To suppress populations, remove overwintering sites such as thick weeds along field edges, and debris/brush piles.

Treatment:

commercial: permethrin (Pounce, Ambush), acetamiprid (Assail), bifenthrin (Capture, Brigade), carbaryl (Sevin), esfenvalerate (Asana), Lannate, Endosulfan,

residential: permethrin (Ace Multi-Purpose, Bayer Advanced, Bonide Eight, Spectracide Bug Stop), carbaryl (Sevin), Malathion, kaolin clay (Surround), pyrethrin (Pyganic)

Verticillium Wilt



Verticillium wilt is caused by a variety of *Verticillium* fungi that live in the soil. It can persist for many years, and affects tomatoes, potatoes (causing "early dying"), eggplants, peppers, and sometimes cucurbits.

Leaves turn yellow and dry, often without wilting. Symptoms appear on oldest leaves first, and later move to younger leaves. In other cases, shoot tips or the entire plant may wilt slightly during the day and recover at night. As leaves are lost, the remaining leaves will curl upward but remain alive.

If you suspect verticillium wilt, cut a few stems and look for darkened to black tissue at the crown. (Discoloration will not show up on the upper stems or petioles).

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Treatment: there are no fungicides for verticillium; the best option is to rotate to resistant crops for 4-5 years or use resistant cultivars.

Powdery Mildew

Powdery mildew is showing up on many vine crops, especially where plants are running together, or in low spots. This disease first appears as small circular, white lesions located randomly on the leaf surface or on petioles. As the infection continues, leaves turn yellow and become distorted. Fruit are usually not directly affected, but yield and flavor can be reduced. This disease thrives in humid and shady environments under moderate temperatures (up to 80 degrees F). Free water is not necessary and can actually inhibit germination, as can very hot temperatures.

Scout for the disease by looking on mature leaves in the middle of the field or garden for the white, powdery lesions. In general, if you find one lesion per 50 older leaves, begin a regular, weekly protectant fungicide program.

Treatment: potassium bicarbonate (Kaligreen, Armicarb), horticultural oil (JMS Stylet Oil), sulfur (Safer Garden Fungicide), *Bacillus subtilis* (Serenade)

NOTE: to prevent plant damage, do not use oil or sulfur within two weeks of each other, and do not spray when temperatures are over 90 F.

SMALL FRUIT**Raspberry Crown Borer**

Damage from larval feeding is now showing up on infested raspberries, even though larvae have been active in cane roots and crowns all summer. Canes will have wilted, dried leaves from top to bottom. Pull on the cane and it should come out of the soil fairly easily. You will be able to see boring damage (shown at right), and galleries.



Pull out as many infested canes/plants as possible, and look for larvae. The more larvae you remove, the more you will have reduced the population. In late summer and early fall, larvae will leave the crowns and move to the roots for the winter. This period of the season is recommended as the optimal timing for control (which is a root drench of bifenthrin). More information on control options and life cycle in a later issue.

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