Blossom-end Rot

If you have tomatoes with a sunken, brown leathery patch on the bottom of the fruit, you probably have blossom-end rot. Though most common on tomatoes, blossom-end rot can also affect squash, peppers and watermelons. Not a disease, this condition is caused by a lack of calcium in the developing fruit. It is often assumed that this means there is a corresponding lack of calcium in the soil. This is not necessarily the case, especially in Kansas. Most Kansas soils are derived from limestone, which is partially made up of calcium.

So what causes blossom-end rot? Actually, there are a number of possible causes, especially on tomatoes. Let's look at some of them.

- Tomato tops often outgrow the root system during cooler spring weather. As long as it is cool, the root system can keep up. When it turns hot and dry, the plant has a problem, and water — with the calcium it carries — goes to the leaves and the fruit is bypassed. The plant responds with new root growth and the condition corrects itself after a couple of weeks.

- Heavy fertilization, especially with ammonium forms of nitrogen, can encourage this condition. Heavy fertilization encourages more top than root growth and the ammonium form of nitrogen competes with calcium for uptake.

- Anything that disturbs roots such as hoeing too deep can encourage blossom-end rot. Mulching helps because it keeps the soil surface cooler and therefore a better environment for root growth.

- Inconsistent watering can be a factor. Keep soil moist but not waterlogged. Mulching can help by moderating moisture levels over time. You should also avoid damaging roots and watch
fertilization. But there are some years you do everything right and the condition shows up due to the weather. In such cases, remember that blossom-end rot is a temporary condition, and plants should come out of it in a couple of weeks. You may want to pick off affected fruit to encourage new fruit formation.

Soils with adequate calcium will not benefit from adding additional calcium. If your soil is deficient in this nutrient, add 1 pound gypsum per 100 square feet. Gypsum is calcium sulfate and will not affect pH. Though calcium raises pH, sulfate lowers it and the two cancel each other out. Even if not needed, gypsum will not hurt anything.

We have also found that spraying plants with calcium doesn't work. The fruit's waxy surface doesn't allow absorption of the material and calcium does not move from the leaves to the fruit. (WU)

**Do Not Over-Fertilize Tomatoes**

Though tomatoes need to be fertilized to yield well, too much nitrogen can result in large plants with little to no fruit. Tomatoes should be fertilized before planting and sidedressed with a nitrogen fertilizer three times during the season.

The first sidedressing should go down one to two weeks before the first tomato ripens. The second should be applied two weeks after the first tomato ripens and the third one month after the second.

Common sources of nitrogen-only fertilizers include nitrate of soda, urea, and ammonium sulfate. Blood meal is an organic fertilizer that contains primarily, but not exclusively, nitrogen. Use only one of the listed fertilizers and apply at the rate given below.

Nitrate of soda (16-0-0): Apply 2/3 pound (1.5 cups) fertilizer per 30 feet of row.
Blood Meal (12-1.5-.6): Apply 14 ounces (1.75 cups) fertilizer per 30 feet of row.
Urea (46-0-0): Apply 4 ounces (½ cup) fertilizer per 30 feet of row.
Ammonium Sulfate (21-0-0): Apply 0.5 pounds (1 cup) fertilizer per 30 feet of row.

If you cannot find the above materials, you can use a lawn fertilizer that is about 30 percent nitrogen (nitrogen is the first number in the set of three) and apply it at the rate of 1/3 pound (3/4 cup) per 30 feet of row. Do not use a fertilizer that contains a weed killer or weed preventer. (WU)
Physiological Leaf Curl in Tomatoes

Every year we have calls from gardeners who have tomato plants with leaves that curl up. When tomato plants grow vigorously in mild, spring weather the top growth often exceeds the root development. When the first few days of warm, dry summer weather hit, the plant 'realizes' that it has a problem and needs to increase its root development. The plant tries to reduce its leaf area by rolling leaves. The leaves curl along the length of the leaf (leaflet) in an upward fashion. It is often accompanied by a thickening of the leaf giving it a leathery texture. Interestingly, leaf roll is worse on some varieties than others.

Though rolling usually occurs during the spring to summer shift period, it may also occur after a heavy cultivating or hoeing, a hard rain, or any sudden change in weather. This year, it seems heavy rains have been the culprit in certain areas of the state. Too much rain can saturate the soil and suffocate the roots. A root system lacking in oxygen cannot move water to the upper parts of the plant resulting in the same symptoms that occur with too little soil moisture or a limited root system. This leaf roll is a temporary condition that goes away after a week or so when the plant has a chance to acclimate, recover from injury, or the soil has a chance to dry out. (WU)

Mulching Garden Crops

Now is a good time to mulch garden vegetables. Mulches provide several benefits including weed prevention, reduced watering due to less evaporation and cooler soils that enhance root growth. Straw and hay are popular mulches in Kansas due to their availability. However, both may contain weed seeds that will germinate if the thatch layer is not thick enough. Grass clippings can also be used if the lawn has not been treated with weed killers. Add only a thin layer of clippings at a time and allow to dry for 2 to 3 days before adding more. A thick layer will form a mold that is almost impervious to water.

A mulch layer one-half to three-quarters inch thick is about right for grass clippings but hay or straw should be at a depth of 2 to 4 inches. (WU)
FRUIT

Strawberry Bed Renewal

Next year's strawberry crop will be affected by what you do to this year's strawberry bed. The sooner after harvest the patch is cleaned up, fertilized and irrigated, if possible, the better the chance of getting a good crop next year. One of the main goals in renovation is to provide a high level of sunlight to plant leaves so they can manufacture the food the plant needs. If leaves have disease spots, remove all the leaves in the bed. Removing, these diseased leaves and weeds will cause new, non-diseased leaves to develop and remove competition from weedy plants. Hedge shears or even a mower can be used. Be sure the mower blade is high enough to avoid the strawberry crowns.

It is also important to reduce the number of strawberry plants so they do not compete for light, moisture and nutrients. If you have a small bed, you can hoe out or pull some plants so they are spaced about 4 to 6 inches apart. On large beds, adjust a rototiller so you can till between the rows, and cut each row back to about 10 inches wide.

The next step is to fertilize the plants with about 3/4 to 1 pound of a complete fertilizer such as 13-13-13 (nitrogen, phosphorus and potassium) or an equivalent on each 25 feet of row. If a soil test shows adequate levels of phosphorus and potassium, use 3/4 pound of a 16-0-0 (nitrate of soda) fertilizer per 25 feet of row instead.

The next step is to irrigate to wash the fertilizer into the soil and provide moisture for the rapid growth of the strawberry plants. When the soil is dry, apply about 1 inch of water. A garden sprinkler can do a good job applying the water.

Controlling weeds and watering throughout the summer are important so plants are vigorous when fruit buds begin to develop in September and October. (WU)

TURFGRASS

Controlling Wild Violets in Lawns

One of the most difficult weeds to control in lawns is the wild violet. Even combination products that contain 2,4-D, MCPP and Dicamba such as Trimec, Weed-Out and most formulations of Weed-B-Gon do not do a good job. Products with triclopyr give much better control. A couple of products that contain triclopyr on the
homeowner side are Turflon Ester and Weed-B-Gon Chickweed, Clover & Oxalis. Note there are several formulations of Weed-B-Gon but only Weed-B-Gon Chickweed, Clover & Oxalis contains triclopyr.

Both products listed above are labeled for tall fescue and Kentucky bluegrass. Do not use products containing triclopyr on bermudagrass as severe injury will occur. Weed-B-Gon Chickweed Clover & Oxalis is labeled for buffalograss and zoysia (Turflon Ester is not) but lawns will likely show some temporary browning after application.

Spray only on calm days and when temperatures are below 90 degrees to avoid damage to nearby plants. (WU)

**PESTS**

**Blister Beetles on Vegetables**

Bob Bauernfeind has reported increasing numbers of Ashgray Blister Beetles in three trap locations. These beetles are notorious for quickly stripping vegetables (especially tomatoes) of their foliage. There are several species of blister beetles other than Ashgray that could also cause problems. Blister beetles vary in size (often between 0.5-0.75 inch long) and color (such as black, gray or brown-striped), but most are recognized by their elongated, narrow, cylindrical, soft bodies with middle body part (thorax) narrower than the head or wingcovers.

Some home gardeners like to use hand picking as a nonchemical method for controlling these large insects. However, use caution because these beetles contain a substance called cantharidin. This chemical is an irritant capable of blistering internal and external body tissues exposed to the chemical. On tender human skin, body fluids of adult blister beetles may cause large, erect, watery blisters. Chemical control of blister beetles is also possible. Cyfluthrin (PowerForce Multi-Insect Killer) and gamma- or lambda-cyhalothrin (Spectracide Triazicide, Bonide Beetle Killer) can be used for control. Cyfluthrin has a 0 day waiting period and lambda-cyhalothrin has a 5-day waiting period. (WU)

**Contributors:** Ward Upham, Extension Associate

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