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HORTICULTURE EDUCATION

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Growing Tomatoes Challenge the Gardener

Ready for ripe tomatoes from the garden? But wait, what is that on the bottom of the tomato as it ripens? Why are the flowers falling off and fruits not setting? What are the brown spots on the tomato leaves? What can I do to grow good tomatoes? Some tips to manage these situations to the extent possible are provided below.

While waiting with anticipation for the first ripe tomato, it is disappointing to find a water-soaked spot on its blossom end, which is the bottom. This is called blossom end rot. The spot shrinks and becomes flattened or sunken. Later, secondary fungi invade the affected area, resulting in further fruit decay.

Blossom end rot occurs when environmental conditions prevent the distribution of calcium to the fruits. Environmental conditions such as low soil moisture, hot and dry wind, heavy applications of nitrogen fertilizer, and fluctuations in soil moisture contribute to the development of blossom end rot. Under environmental stress conditions, calcium moves to the leaves with the water inside the plant and bypasses the fruit. The tissue at the blossom end of the tomato breaks down without the calcium.

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To manage blossom end rot, maintain an even moisture supply by watering plants as needed and mulching the plants with straw to conserve soil moisture. At this time, applications of calcium to the soil or foliage do not prevent or cure the disorder. Blossom end rot is not caused by a lack of calcium in many cases, but by poor distribution of calcium in the plant. To know if the soils needs calcium, conduct a soil test through the Daviess County Cooperative Extension Service. Soil tests are free for Daviess County citizens. Call or email our office to find out more information about collecting soil to test.

Several environmental conditions cause the blossoms to drop leading to the lack of fruit set. This occurs when low or high night temperatures take place. Unless the night temperature is between 55 and 75 degrees F for at least part of the night, most tomato varieties will not set fruit. Other factors interfering with fruit set include: hot and drying winds, sudden periods of cool weather, or beating rains. Excessive applications of nitrogen fertilizer result in a beautiful plant but no fruit.

As the plant becomes older and spots begin to appear on the leaves, early blight usually comes to mind. This common disease on tomato plant leaves is caused by the fungus *Alternaria solani*. The fungus generally causes small, irregular, brown, dead spots on the lower, older leaves first. As the spots enlarge, they usually show ridged, concentric rings in a target pattern. These spots are typically surrounded by a yellowed area. During periods of high temperatures and humidity, the fungus can spread.

Septoria leaf spot occurs on tomatoes too. Septoria leaf spot is caused by the fungus *Septoria lycopersici*. Infections usually start on the older leaves of the plants near the ground. At first, spots appear water-soaked and are often scattered thickly over the leaf. These spots

become roughly circular with gray centers surrounded by dark margins. The spots are smaller and more numerous than those of early blight. Numerous spots on the leaves cause the entire leaf to turn yellow, then brown, and wither. This disease is favored by moderate temperature and rainfall.

Both early blight and septoria leaf spot spread by spores produced by the fungi. They often occur on the same leaves. Spores are carried by the wind or by raindrops splashing the spores onto the leaves. The spores germinate on the leaf surface and infect the tissue if the temperature and moisture conditions are just right for the fungi.

Use cultural practices first to manage early blight and septoria leaf spot. Good air circulation around the plants helps leaves dry off quickly, which discourages disease development. Caging or staking plants increases air movement around the plants. Also, rotate the growing location of tomatoes in the garden each year to prevent a buildup of diseases against tomatoes in one location. Picking off the leaves when you see the spots of early blight as they first appear may reduce its spread early in the season.

Fungicides can be used to help manage these diseases. It is best to apply them before infection. A fungicide containing the active ingredient mancozeb can be used before fruit harvest starts, and chlorothalonil can be used while picking fruit. Good coverage on both sides of the leaves with the fungicide is important to protect the plant from more infections by early blight and septoria leaf spot. Apply the fungicide according to the label directions, making sure the product is labeled for use on tomato plants. Follow label directions on how often to apply the fungicide and the number of days to wait after spraying before you can harvest the fruit. The

fungicide needs to be applied every seven to ten days to protect the new growing foliage as long as the fungicide label allows this plan.

For more information about growing tomatoes, contact the Daviess County Cooperative Extension Service at 270-685-8480, or email annette.heisdorffer@uky.edu.

Annette's Tips:

Poor pollination of summer squash flowers, such as yellow squash or zucchini, may result in fruit shriveling. The plant must produce both female and male flowers. The female flower has a miniature squash fruit right behind the flower. Male flowers have a straight stem before the blossom. Insects pollinate the flower, so pollinators need to be present. In addition, as the weather becomes consistent, the fruit should set.