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HORTICULTURE EDUCATION

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Seasonal Tomato Growing Challenges

Greatly anticipated and easy to grow, but there are a few things to keep in mind about growing tomatoes. The first tomato is coveted whether the plant grows in the ground, a raised bed, or a container. However, the common questions about growing them include: why are there no tomatoes on my nice green plant, what is the black on the bottom of the first fruits beginning to ripen, and what are the spots on the plant leaves?

Several environmental conditions are involved in the lack of fruit set. Blossom drop, which means the fruit does not set, occurs when low or high night temperatures occur. 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.

Once fruit begins to develop and ripen, a water-soaked spot on the blossom end of the fruit, which is the bottom of the fruit, usually appears. This is called blossom end rot. The spot shrinks and becomes flattened or sunken. Later, secondary fungi may invade the affected area, resulting in further decay of the fruit.

When environmental conditions prevent the distribution of calcium to the fruits, blossom end rot occurs. 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.

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. Currently, 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.

When spots occur on the leaves, usually early blight 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 of the plant 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 on the leaves appear water-soaked and are often scattered thickly over the leaf. These spots become roughly circular and have 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 are fungi. They spread by spores produced by the fungi and often occur on the same leaves even though they are two different disease organisms. 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, discouraging 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 help manage these diseases after cultural practices are used. It is best to apply them before the plant is infected. A fungicide containing the active ingredient mancozeb can be used before fruit harvest starts, and chlorothalonil can be used while picking fruit. Good coverage with the fungicide on both sides of the leaves 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 harvesting the fruit. The fungicide needs to be applied every seven to 10 days according to the label to protect the new growing foliage.

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 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. As the weather becomes consistent, the fruit should set. Cucumbers also have male and female flowers and follow the same characteristics as the squash.

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