DEALING WITH DISEASES AND DISORDERS OF TOMATOES

Each year I receive numerous calls and emails from home owners regarding sick tomato plants. Most of the time it is Early Blight or Septoria Leaf Spot that is affecting the plants. With all the rain we have had the last four years, it’s no wonder these diseases are so prevalent. Here are some of the most common diseases and disorders I see on tomato plants and how to treat them.

**Early Blight** is caused by the fungus *Alternaria solani*. It survives in infected leaf or stem tissues on or in the soil. The first symptoms usually appear on the older, lower leaves of the plant and consist of small, irregular, dark brown to black, dead spots ranging in size from a pinpoint to 1/2 inch in diameter. As the spots enlarge, concentric rings may form as a result of irregular growth patterns by the organism in the leaf tissue. This gives the lesion a characteristic “target-spot” or “bull’s eye” appearance. There is often a narrow, yellow halo around each spot and lesions are usually bordered by veins. When spots are numerous, they may grow together, causing infected leaves to turn yellow and die. If not controlled, the leaves dry up and drop from the plant as the disease progresses up the main stem. Recommended practices include mulching plants with straw, rotation, removing lower leaves that touch or are near the ground, and the use of fungicides. Daconil, Maneb, and Mancozeb are recommended for control, or any product containing Chlorothalonil. Always read the label directions before applying any pesticide.

**Septoria Leaf Spot**: Numerous, small, watersoaked spots, which are the first noticeable characteristic of Septoria leaf spot, appear on the lower leaves after fruit set. Spots enlarge to a uniform size of approximately 1/16 to 1/4 inch in diameter. They have dark brown borders and tan or light colored centers. Yellow haloes often surround the spots. Severely infected leaves die and drop off. Septoria leaf spot is easily distinguished from early blight by the uniform, small size of the spots and the lack of concentric rings in the spots; however, Septoria leaf spot is sometimes confused with bacterial spot of tomato. The presence of fruiting bodies of the fungus, visible as tiny black specks in the centers of the spots, confirms Septoria leaf spot. Control weeds in and around the edge of the garden. Preventative practices include mulching plants with straw, rotation, removing lower leaves that touch or are near the ground. Fungicides containing chlorothalonil such as Daconil and Maneb are recommended for the homeowner.

**Bacterial Speck/Spot** are bacterial diseases of tomato that can cause localized epidemics during warm (spot) or cool (speck), moist conditions. Bacterial

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spot can cause moderate to severe defoliation, blossom blight, and lesions on developing fruit. Foliar symptoms of bacterial spot and speck are identical. Small, water-soaked, greasy spots about 1/8 inch in diameter appear on infected leaflets. After a few days, these lesions are often surrounded by yellow halos and the centers dry out and frequently tear. Lesions may coalesce to form large, irregular dead spots. In mature plants, leaflet infection is most concentrated on fully-expanded and older leaves and some defoliation may occur. Spots may also appear on seedling stems and fruit pedicels. Unlike Early Blight that occurs on the lower leaves, Bacterial spot and speck will occur all over the plant. Applications of mancozeb plus copper soon after transplanting may help retard development and spread of bacterial spot and speck. Rotate tomatoes with non-solanaceous crops with at least 2 to 3 years between tomato crops. Avoid rotation with peppers, which are also susceptible to bacterial spot. Plant only seed from disease-free plants or seed treated to reduce any bacterial populations.

**Cracking** is a physiological disorder caused by wide fluctuations in soil moisture. Tomatoes often start to crack during warm, rainy periods, especially if this weather comes after a dry spell. The tomatoes expand too fast and are most likely to crack when they have reached full size and are beginning to turn color. Some resistant varieties include Early Girl and Jet Star. Be sure to apply adequate moisture throughout the growing season to avoid the problem.

**Catfacing** is another physiological disorder of tomatoes. Tomatoes develop unusual swelling and streaks of scar tissue. It is caused by abnormal development of the tomato flower at blossom time. Cold weather at the time of blossom set intensifies the deformities. Catfacing is not a disease. It is most common in the large-fruited beefsteak type tomatoes.

**Blossom-end rot** is a disorder that occurs on the bottom or blossom end of the fruit. It appears as a sunken, water-soaked spot. The spot turns brown or black, and dry and leathery as it grows larger. It is not an infectious disease. It affects both green and ripe tomatoes and is caused by a calcium deficiency, which is usually the result of wide fluctuations in soil moisture. Keep tomato plants well-watered so they can take up the calcium from the soil.

**Sunscald** develops when high temperatures retard the development of good color. Tomato fruits exposed directly to the hot sun may scald. Sunscald is localized damage to the tissue often accompanied by discoloration. Good foliage cover is helpful in preventing scalding.

**Heat Stress:** Yellow Shoulder is caused from high temperatures and causes the shoulder or top of the tomato to turn yellow. Hard white cores in tomatoes are also a heat stress disorder. Keep plants well-watered and consider erecting a shade cloth over your plants.

Many of the disorders are quite common. They are not caused by insects or disease and are not infectious. Little can be done for most of them, but the fruit may be eaten if the affected portions are removed.

**ENJOY A FRESH PEACH THIS SUMMER**

July is national peach month and usually signals the beginning of peaches ripening in Missouri. Our fascination with peach is not surprising. Not only is its taste unique, it also is one of our most versatile fruit. It can be eaten fresh, dried, sliced with cream, pickled, spiced, made into jam, baked into a delectable pie, distilled into an elegant liqueur or frozen with ice cream.

The peach was probably carried from China to Persia along the silk trade routes in the pre-Christian era. The Spaniards are credited with introducing peach to the new world in the sixteenth century and by 1571 three types of peach were being produced in Mexico. Evidently, Native Americans were fond of peaches and William Penn wrote there was "not an Indian plantation without them."

Oddly enough, the peach did not make it into England or France until the seventeenth century but became a popular (although rare) treat when it did.

The peach is not the hardiest of fruits. It requires a lot of care such as annual pruning, fertilization, and monitoring and spraying for insects and diseases. Flower buds are endangered at temperatures around -10 degrees while -20 degrees will frequently kill wood. Additionally, peaches suffer the tendency to be coaxed out of dormancy by late winter or early spring warm weather. This causes the flower buds to lose their hardiness and makes them quite susceptible to spring frosts.

Peaches can be separated
into two distinct types: clingstone and freestone. As the name implies the flesh of the peach clings to the seed (pit) of the former but can be loosened from the latter with relative ease. Most of the peaches available for fresh consumption are of the freestone type. Additionally, peaches can be separated into those with yellow flesh versus those with white flesh. Many consider white-fleshed peaches to be a bit less acidic in nature than yellow-fleshed ones, giving them a milder, more delicate flavor with honey-like or vanilla overtones.

Whatever their color, peaches are rather delicate and need to be handled carefully to prevent bruising. Ripeness can be judged both by color, firmness and aroma of the peach. Select those that are fully colored (lacking green on the underside) and just beginning to soften. A creamy or golden undertone (ground color) probably is a better indicator of maturity than the rosy blush most peaches develop. Peaches also should emit a strong "peachy" fragrance and be free from bruises. Ripe peaches can be stored in a refrigerator for up to a week, depending on their degree of maturity, but should be allowed to come to room temperature before consumption for ultimate eating pleasure.

I (Jennifer) don’t have a peach tree and don’t plan to grow one due to the various issues that come with growing them, but I am looking forward to some fresh peaches this summer, whether they are from Georgia, Missouri or Illinois.

**Source of information:**
Dr. David Trinklein, State Floriculture Specialist, University of Missouri Extension

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**LOCAL FOOD UPDATE**

I had the opportunity to go home to Mtn. Grove over Memorial Day weekend. While there my son Justin and I picked sour cherries off the old cherry trees on the farm in which my great grandparents settled on during the 1930’s. They were living in Clay Center, Kansas during the Dust Bowl, and had enough of it, and left and settled in south-central Missouri on the farm my parents now own. My grandma made a cherry pie for us while we were there, and I decided I would pick cherries to bring back with me to make a pie or cookies.

My gooseberry bush was very productive this year. I picked five quarts of berries off of it and made my first gooseberry pie. I couldn’t believe how easy it is to make a gooseberry pie. I don’t make very many pies, one reason being I always think they take a lot of time. But, it didn’t take much time at all and it was easy.

My broccoli wasn’t as productive as I hoped it would be. I planted it in early April, and they never did form much of a head. I like to have broccoli during the winter months, so on a recent trip to the wholesale auction in Drakesville, Iowa, I purchased a box with 18 heads of broccoli in it from a local grower. Now I will have broccoli throughout the winter.

I got about three weeks of harvest out of my peas before they slowed down. I’m ready to tear them out now and put in something else, or I may leave the bed empty and plant more peas this fall. My raspberries are doing pretty well. We’ve been picking quite a few lately. The boys love to pick them off the plant and eat them. They are in my backyard and receive part sun/part shade. Raspberries tolerate shade better than other plants. I don’t think they tolerate wet soil very well. If you have your raspberries in a wet location, you may need to move them.

I picked my first zucchini of the season. By the end of summer I will be so tired of them I won’t care to pick another one until next season. I have tomatoes setting on, and am hoping to have some to exhibit at the NEMO Fair. I want to encourage everyone to exhibit your produce and flowers at your county fair. Every one of you probably has a flower or a vegetable that you can exhibit. I exhibit as much produce and flowers as I can at the NEMO Fair so the public can learn about horticulture and see what can be grown around here.

In the last issue I told you I was raising meat chickens (Cornish Cross), well here we are only 2-3 weeks away from processing them. I didn’t think I would want to see them go, but I’ve been so busy this summer with work and T-Ball, that I haven’t had a lot of time to spend with them and I am actually looking forward to seeing them go. I’m not so sure I want to do this again. For what I spent in feed and supplies, I can buy a bag of chicken breasts (U.S. raised) at the grocery store, much cheaper. These chickens better taste good! I say this now, but when it comes time again next spring to hatch chicks, I’ll probably do it all again. My boys have had fun with them and they want to raise layers that we can keep around all the time. I’m just not so sure I want to deal with them and frozen water during the winter.

So, that’s my local food report this month. Keep producing and eating local food!
**JULY GARDENING TIPS**

**Ornamentals**
- Continue to pinch mums until mid-July. Pinching after this may delay flowering.
- Deadhead perennials (remove dead flowers) that have finished blooming.
- Prune climbing roses and rambler roses after bloom.
- Black Spot may be a problem on roses. Remove and pick up infected leaves and spray fungicides as needed.
- Spider mites may be a problem during hot, dry weather. Leaves will become speckled above and yellowed below. Evergreen needles appear dull gray-green to yellow or brown.
- Water newly planted trees and shrubs thoroughly at least once a week. Fertilize trees and shrubs by July 4. Late fertilizing may cause lush growth that is more prone to winter kill.
- Powdery mildew may be found on lilacs. It is rarely harmful and shrubs grown in full sun are less susceptible.
- Divide irises now.

**Vegetables**
- Blossom end rot of tomatoes and peppers may become a problem. Maintain soil moisture and do not let soils dry out. Place a layer of mulch 2-3 inches thick around plants.
- Keep weeding! Prevent weeds from going to seed.
- Dig potatoes when the tops die. Plant fall potatoes by July 15th.
- Harvest onion and garlic when the tops turn brown.
- Keep cucumbers well watered. Drought condition will cause bitter fruit.
- Sow seeds of carrots, beets, turnips, and winter radish for fall harvest the last week of July. Also set out broccoli, cabbage, and cauliflower transplants for the fall garden at this time.

**Fruit**
- Protect grapes from birds!
- Prune out old fruiting canes of raspberries after harvest is complete.
- Apply second spray to trunks of peach trees for peach borers.
- Early peach varieties ripen now.
- Blackberries will begin to ripen soon.

**Turf**
- Water lawn frequently enough to prevent wilting. Early morning irrigation allows turf to dry before nightfall and will reduce the chance of disease.
- Monitor lawns for newly hatched white grubs. If damage is occurring, apply appropriate controls, following product label directions.

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**UPCOMING EVENTS**

**July**:
- Salt River Master Gardeners, no meeting this month.
- Heartland Master Gardeners, no meeting this month.
- Kirksville Area Master Gardeners, no meeting this month.
- Magic City Master Gardener meeting, TBD.
- Fabius Master Gardener club meeting, 6:30 garden tour and picnic.
- Sullivan County Master Gardener meeting, garden tour in Unionville, 5:30.
- Macon-Shelby Master Gardeners, tour of member’s garden, time TBD.

**August-November**:
- Master Gardener Training in Kirksville, Thursdays from 1-4 pm. Call 660-665-9866 for more information.

**August**: A local fruit and vegetable tour is being planned, possibly in Putnam County this year.

**September 23-25**: State Master Gardener Conference, Quality Inn, Hannibal. Theme: Gardening in America’s Hometown. Contact your local MG coordinator for more information or for a registration form or go to [http://extension.missouri.edu/marion/mmgc.htm](http://extension.missouri.edu/marion/mmgc.htm)

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**-Missouri Botanical Garden-**