UNIVERSITY OF VERMONT EXTENSION

CULTIVATING HEALTHY COMMUNITIES

Tomato Problems in the Home Garden

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Tomatoes are the number one vegetable grown in gardens across Vermont. However, to keep the plants healthy and ensure a bountiful harvest some key diseases may need to be managed. The first step is to start with good healthy tomato transplants that you have grown, or that have been purchased from a local grower. Plant only after all danger of frost is past in a well-drained area of the garden with good soil and full sun that has not had tomatoes or other *Solanaceous* crops (potato, pepper, eggplant) in the last 2 years. If you have heavy clay soils, consider using raised beds that you can amend with compost. The pH of the soil should be about 6.5 to 6.8. If you don't know your soil's pH, you can have it tested at the UVM Soil Testing Lab (https://www.uvm.edu/pss/ag_testing/). Don't put out plants too early! Stake or cage tomatoes to keep foliage from coming in contact with the soil and allow enough space between plants for good air circulation and drying. This will help to minimize fungal disease problems later in the summer. You can give your plants some starter fertilizer at planting and again after the first cluster has begun to produce fruit. Too much nitrogen will cause the plants to grow too vigorously so don't overdo it! Once the soil has warmed up, you can apply a mulch such as straw, to keep weeds down, help hold soil moisture and serve as a barrier to prevent fungal spores from splashing up onto the lower leaves. The lower leaves of the plants may turn yellow and not look so great for the first few weeks when the temperatures are still cool. As long as the new growth looks healthy and green and vigorous, don't worry. Remove suckers (new growth between the branches and stem) up to the first flower cluster and drip irrigate only at the plant base to minimize leaf wetness.

Blossom end rot-This dry brown rot on the blossom end of the fruit can often occur on the first tomatoes of the season and is not caused by a pathogen but an imbalance of calcium caused by moisture fluctuations in the soil. Mulching the plants and providing even irrigation usually turns this disorder around on the next fruit.

Early blight and Septoria leaf spot-Early blight, caused by *Alternaria solani*, usually shows up around the first week of July on the lower leaves and causes a brown target shaped leaf spot. The fungus overwinters on diseased tomato foliage and the spores splash on to the lower leaves first. If the season is wet, the spores produced on the lower leaves will continue to move higher in the plant as the season progresses. Septoria leaf spot (*Septoria lycopersici*) can also occur with early blight and causes a small black leaf spot with a gray center. Management is the same for both diseases: rotate tomato growing areas, keep up fertility of the plants, stake tomatoes, use only drip irrigation and mulch to prevent splash from the soil. Fungicides will also help protect the tomato leaves from both of these diseases. Start applications when the first symptoms are seen on the lower leaves around the first week in July. Conventional fungicides should be applied according to label directions on a 7-14 day schedule depending on rainfall. Organic fungicides (copper products) usually need to be applied more often. Sprays need to be repeated since both types of fungicides break down in sunlight and rain, plus new tomato tissue is always be produced that needs to be protected.

Septoria leaf spot

Early blight

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Late blight-The aggressive fungus-like pathogen does not overwinter in Vermont but can blow in on storm fronts or be introduced on infected transplants shipped in to the state. Symptoms include nickel-sized brown or water-soaked spots that typically appear on the **upper leaves** since the spores "rain" out during rainfall events. Under humid conditions, the undersides show white sporulation. The sporangia of the organism are easily moved on air currents. The pathogen can attack both potato and tomato plants and can wipe out a garden in just a few days if the weather is conducive for the disease. Stems and fruit also can also be infected with the disease. Infected tomato fruit develop large brown areas. If plants are infected, the unaffected fruit on plants can be safely eaten but should not be canned. In small plantings, cut infected plants, put in trash bags or cover with a tarp to "cook" the infected foliage or send to the landfill. Since the spores of the pathogen do not live on dead tissue, they will die as soon as the plants are cut. For larger plantings, cut the plant and till under so they can completely decompose. Once the plant tissue is dead (i.e. cut off), it poses no late blight threat to future plantings. If potato vines become infected, cut the tops (vines) before the stems become heavily infected. In small plantings, bagging and putting vines in the landfill will reduce the chance of spread to other plantings. Wait at least two or three weeks before digging the tubers to insure that the potato foliage has died since that will limit the number of spores on the soil surface when the tubers are dug. It also allows time for the tuber skins to toughen up underground, minimizing the number of cuts and bruises created at harvest and reducing places for spores to infect tubers. For larger plantings when it is not practical to remove vines, cut vines on a hot dry day. This allows them to dry and die quickly to reduce the chance of spread to other plantings. Hot, dry weather will slow the spread of the disease, but it will become a problem again with rainy weather or heavy dews. To protect your plants from the disease, fungicides are necessary. However, these products will only be effective if used before the disease appears. They should be reapplied every five to seven days depending on weather throughout the rest of the summer. For home gardens, apply a garden fungicide labeled for tomato or potato that contains the active ingredient chlorothalonil. Organic growers should use a copper fungicide labeled for these crops. Fungicides will only protect healthy tissue, so infected leaves cannot be saved. Good coverage of all the foliage is critical, and repeat applications are needed to protect new growth from infection. Be sure to always read the pesticide label and follow the instructions carefully. To monitor blight and track where the disease is in the country you can go to http://usablight.org/map. Fungicide treatments should begin once the disease is found in surrounding states.

Tomato hornworm- An occasional pest in tomatoes. This is usually the culprit when you see naked stems and frass (excrement) on leaves. Just pick and destroy or use *Bacillus thuringiensis* (Dipel). If the large caterpillar has white appendages coming out of its body, these are parasitic wasps and the hornworm should not be destroyed so the wasps can complete their lifecycle and go on to attack other hornworms.

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Leaf mold-More of a high tunnel fungal disease, but can be found outdoors. Choose resistant varieties and reduce humidity. Look for yellow spots on upper leaves and brown/purplish velvety spores on leaf undersides.