

## **Phytophthora Blight and Bacterial Spot of Pepper**

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### **Phytophthora blight**

*Phytophthora capsici* causes Phytophthora blight of cucurbits, peppers, tomato and eggplant. The disease is well known to farmers in the northeast. *Phytophthora* is a “water-mold” and requires a susceptible host, abundant soil moisture, and moderately high temperatures to cause disease. It requires two different mating types (akin to male and female) to produce long-lasting resting spores (oospores), and in most instances both mating types are present in the field. When a susceptible host is present and environmental conditions are favorable, the oospore germinates and either infects directly or produces swimming zoospores which infect. Zoospores move by splashing water (randomly), or swim to roots following a concentration gradient of chemicals that exude from the root system. The pathogen is soil-borne, meaning that soil is its natural habitat where it can survive indefinitely. It is “locally distributed” as opposed to widely distributed, and does not move through the air for significant distances (hundreds of yards) except in unusual weather conditions. It can be moved from field to field with soil adhering to plows and other farm equipment, and can be present in irrigation water from ponds and rivers.

The best way to avoid Phytophthora blight is to avoid growing peppers on contaminated soil. Cucurbits, tomato and eggplant should also not be planted. Fungicides have not proven to be effective for this disease. If you must grow susceptible crops on contaminated land: improve drainage by chisel plowing and removing soil dams at the end of rows that prevent surface movement of water, grow peppers on domed beds and pray for a relatively dry year. Plow contaminated fields last and hose down farm machinery before returning to clean fields. If you will be renting fields for growing susceptible crops, be sure to ask if there has been a history of this disease in the field. Tolerant pepper cultivars include ‘Paladin’, ‘Aristotle’, ‘Revolution’ and ‘Reliance’. Under heavy disease pressure, these cultivars may not hold up. These cultivars have received mixed reviews for commercial production.

### Bacterial spot

Bacterial spot of pepper is caused by *Xanthomonas campestris*. *Xanthomonas* causes spotting on the leaves and fruit and during favorable conditions for disease (long periods of leaf wetness and high humidity), defoliation can occur. Some strains of *X. campestris* can infect tomato as well. The bacterium is easily seed-borne but can also overwinter on infected plant debris for at least one year.

Seed can be hot-water treated but this is risky and can result in loss of germination. Always run a trial on a small batch of seed (50 to 100 seeds) before committing the whole lot to the treatment. Use an accurate laboratory thermometer and a relatively large volume of water so that temperature remains stable. A sock or cheesecloth can be used to hold the seed but it should be loose so that water can penetrate easily. Heat the water to 122 and keep the seed submerged while checking the temperature occasionally and treat for 25 minutes. After treatment, plunge into tap water to halt the heating and spread the seed out to dry at room temperature. Plant the seed to check for germination, and plant an equal amount of untreated seed for comparison. If

loss of germination is negligible treat the whole lot. A fungicide treatment (Captan) to the seed after drying will help reduce seed rot in the soil.

Avoid planting peppers for at least one year in a field following bacterial leaf spot. Check with your seed supplier regarding resistant cultivars.