



Extension FactSheet

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Phytophthora Blight of Pepper and Cucurbits

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Phytophthora blight, a highly destructive disease of peppers and cucurbits, has increased in importance in recent years in Ohio and eastern states. It can become a serious problem during periods of heavy rainfall; the pathogen can spread rapidly through the crop, resulting in severe losses within a short time.

Symptoms

Peppers

Phytophthora blight affects both seedlings and mature plants. Infected seedlings show typical damping-off symptoms. Infection of older plants usually begins at or below the soil line. Water-soaked, dark brown lesions on the lower stems (collar rot phase) usually extend upward for an inch or more above the soil line and may expand to girdle the stems, preventing upward movement of water and nutrients (Figure 1). This often results in a sudden wilting of foliage. Root infections may also occur which kill roots and cause wilting of the plant without the appearance of stem cankers. The foliar phase of this disease commonly occurs at forks in the branches, resulting in dark, girdling cankers and wilting of leaves and fruits. Infected leaves develop circular or irregular, dark green, water-soaked lesions which dry and appear light tan. Fruit lesions may also appear as enlarging, water-soaked areas, which then shrivel and darken. A mass of white fungal growth may develop inside the fruit, and seeds usually turn dark brown or black. A fine, grayish-white to tan mold may also become evident over the lesion on the fruit surface. Under humid conditions, fungal growth develops extensively over the entire fruit.

Cucurbits

Seedlings show typical symptoms of damping-off. Mature plants may wilt suddenly as a result of root infection, in the absence of obvious stem or vine lesions (Figure 2). Stem and leaf petiole lesions are light to dark brown, water-soaked and irregular, eventually becoming dried and papery. Fruit symptoms begin as small, water-soaked circular lesions, which expand to become large, soft, sunken areas covered with white fungal growth (Figure 3). Infected fruit often collapse or “melt down” in the field or in storage.

Causal Organisms

Phytophthora blight is caused principally by the soil-borne fungus, *Phytophthora capsici*, although a similar fungus, *Phytophthora parasitica*, has also been reported to cause fruit rot on peppers and cucurbits. Both of these fungi are dependent



Figure 1. Dark brown stem lesion typical of *Phytophthora* blight of pepper.



Figure 2. Sudden wilting of yellow crook-necked squash caused by *Phytophthora* blight.



Figure 3. *Phytophthora* blight lesions on immature pumpkin fruit.

on free water in soil for infection. Because of this, initial infection by *Phytophthora* usually occurs on plants growing in poorly drained areas of fields.

The fungi that cause *Phytophthora* blight survive as thick-walled, resistant spores (oospores) in the soil and as mycelium in infected plant tissues. Once introduced, these fungi can survive up to 15 months in moist soil in the absence of host plants. They can also be carried on seed or transplants. Once stem infection occurs, the fungi produce spores on infected stem tissues, which are then carried by splashed rain onto nearby plants. Lower branches of adjacent plants can also be infected by rain-splashed soil contaminated by run-off water. Fruits in contact with the soil are especially prone to infection. Spores are produced on newly infected fruit and stems, and new infections can develop quickly in a short time. Warm (75 to 90 degrees F), wet weather is most favorable for disease development and spread of the pathogen. Disease progress declines when dry weather returns.

Management

1. Use only certified disease-free seed or transplants.
2. Produce pepper plants on raised beds to retard initial stem infection. Arrange beds to prevent puddle formation between rows. Avoid depressions on the surface of the beds where water can accumulate, especially around the base of plants. Avoid planting peppers or cucurbits in poorly drained fields.
3. Practice crop rotation so that peppers or cucurbits are grown only every 3 to 4 years to reduce the amount of *Phytophthora* present in the soil. Use non-susceptible crops such as corn, small grains, beans, crucifers, or potatoes in the rotation.
4. Application of fungicides may reduce disease development and spread if used in combination with cultural practices such as crop rotation and raised beds. Application at planting and two or more (depending on the fungicide used) applications after planting are required. For current fungicide recommendations consult the Ohio Vegetable Production Guide (OSU Extension Bulletin 672).

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