

LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES

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Phytophthora Blight of Peppers

Phytophthora capsici Leonian

Phytophthora blight of peppers is caused by the water mold *Phytophthora capsici*, which also attacks tomatoes, eggplants and most cucurbits. This disease is capable of rapidly decimating large areas of pepper fields (Fig. 1) during periods of heavy rainfall, and its management relies on the utilization of a combination of practices aimed at reducing the rate of disease development.

Symptoms may be observed on all parts of the plant. Because the disease is typically initiated by soil-borne inoculum, disease develops initially as a root and crown rot that is first evident by the wilting of the plants (Fig. 2) followed by defoliation. Examination of wilted plants usually reveals a characteristic brown lesion at the base (Fig. 3). As the disease develops further, inoculum reaches the foliage, stems and fruit. Infected leaves exhibit grayish-brown, water-soaked lesions. Stem lesions are brown to black, and lesions on fruit are grayish-brown and appear soft and water-soaked (Fig. 4). Under humid conditions, the white mycelium and sporangia of the pathogen are readily visible on infected tissues (Fig. 5).

Phytophthora capsici can survive in soil for several years in the form of thick-walled spores (oospores). Disease develops initially when oospore germination leads to the infection of plant roots. The pathogen then spreads rapidly by means of motile zoospores that move through the soil when it is overly wet or over the soil surface when it is flooded. During the crown-rot phase, the pathogen comes above ground and colonizes the lower portion of the stem, where it forms sporangia during prolonged periods of high humidity. These sporangia can then be dispersed to the foliage and fruit by air movement, splashing rain (or overhead irrigation) or on hands and equipment when workers move through wet fields. Infection of lower leaves and fruit can also result when soil-borne inoculum is splashed onto them.



Fig. 1. A pepper field affected with *Phytophthora* blight.



Fig. 2. Wilting of peppers due to the root and crown rot phase of *Phytophthora* blight.

Although it is best to avoid fields infested with *P. capsici*, at least for 3-4 years, when planting fields with a known history of Phytophthora blight, disease management relies on the use of a combination of practices since no single practice by itself is sufficient to stop this disease. The implementation of cultural practices that aid in the rapid drainage of excess water and minimize the potential for standing water is crucial. A second key to management of Phytophthora blight is the use of pre-plant and early-season soil applications of mefenoxam (Ridomil Gold, etc.) to prevent or delay the initial root- and crown-rot phases of the disease, which is crucial to its overall management. Resistant varieties such as Paladin, Aristotle, Revolution and others are available and should be considered, but these are best used in combination with the judicious use of foliar fungicides. As is true for most diseases, fungicides are most effective for controlling Phytophthora blight when they are applied prior to the onset of disease. Since most fungicides labeled for use against the foliar phase are listed as being effective only for disease suppression, they must be applied early when symptoms are first observed and repeatedly as long as environmental conditions are suitable for disease development. Because this pathogen can develop resistance to fungicides quite readily, it is important to alternate fungicides and follow their label instructions regarding their use. For current information on fungicides available for managing this disease, see the Louisiana Plant Disease Management Guide or visit our Web site www.lsuagcenter.com.



Fig. 3. Crown rot of pepper caused by *Phytophthora capsici*.



Fig. 4. Lesions on pepper stems and fruit caused by *Phytophthora capsici*.



Fig. 5. Sporulation of *Phytophthora capsici* on infected pepper tissues.

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