

LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES

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Early Blight of Tomatoes

Alternaria tomatophila E.G. Simmons

Alternaria solani Sorauer

Early blight is one of the most common diseases of tomatoes in Louisiana. Although the cause of this disease traditionally has been attributed to the fungus *Alternaria solani*, which also causes early blight of potatoes, it recently was demonstrated that early blight caused by *Alternaria tomatophila*, which has long been mistaken for *A. solani*, is much more severe on tomatoes than that caused by *A. solani*. Both of these species probably are responsible for early blight in Louisiana.

Although the pathogen can cause disease on leaves, stems and fruit, the disease is more damaging on the foliage (where it causes lesions and premature defoliation) than on stems and fruit.

Disease first develops on the older foliage low in the plant canopy and then progresses up the plant, especially during the period of fruit production. Initial symptoms are small, dark-colored, circular lesions, often surrounded by chlorotic (yellow) tissue. As the lesions expand, concentric rings or ridges become evident within them (Fig. 1). Under conditions favorable for disease development, if the disease is left untreated, it causes defoliation, exposing the fruit to potential damage from the sun.

Lesions on stems are oval or elongated, brown and sunken with concentric rings within them. These lesions eventually may girdle and kill the affected stems. Fruit may be attacked at any stage of maturity, and lesions appear as sunken, dark-colored circular spots with concentric rings within them. The pathogen also can attack newly emerged seedlings, causing a collar rot.

Alternaria survives primarily in infested debris from the previous tomato crop, but it may also survive on contaminated seeds from infected fruit or on other solanaceous hosts. Conidia produced in the debris or alternate hosts spread to the new crop by means of wind or splashing water. Disease develops over a wide range of temperatures when conditions are wet and



Fig. 1. Early blight on tomato.

humid. Because the conidia are airborne, rainfall is not necessary for disease development as long as there is sufficient moisture on the leaves (from either fog or dew) for the conidia to germinate. Germination can occur within one to two hours, and symptoms develop two to three days later under favorable conditions.

Because very few early blight resistant tomato varieties are available, management of this disease relies primarily on cultural practices and the use of fungicides.

Cultural practices include the use of clean seed, crop rotation and the complete removal of the plants at the end of the growing season. In addition, increasing the spacing between plants to improve airflow and promote drying of the plants should help. Fertility also seems to play a role in disease management, since well-fertilized plants seem to be more resistant to the disease.

Fungicides should be applied as soon as symptoms are first observed and continued as long as conditions are suitable for disease development. A variety of fungicides are available for early blight control, but some are commercial fungicides and are not readily available for use by home gardeners. Fungicides containing chlorothalonil, copper hydroxide or mancozeb are readily available to home gardeners for early blight control. These fungicides will protect only the plant tissues that have been sprayed, however, and must be reapplied on a regular basis (every 7-10 days) to provide adequate protection.



Fig. 2. *Alternaria* conidia.

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