



LEAF SPOT OR BLIGHT OF HAWTHORN

Leaf spot, or blight of hawthorn, is a serious disease that occurs throughout the world. It is caused by the fungus *Diplocarpon maculatum*, or *Fabraea maculata* (conidial and parasitic stage, *Entomosporium maculatum*). Although only a few hawthorns are highly susceptible, they include the valuable ornamental English hawthorn (*Crataegus oxyacantha*) and Paul's scarlet thorn (*C. Oxyacantha* var. *pauli*). Most other ornamental species of hawthorns are resistant and are not seriously affected.

Severely infected hawthorns may lose nearly all their leaves by midsummer. Leaf spotting and leaf fall can occur in early summer, starting with the leaves on the lower branches and in the center of the tree (Figure 1). Trees defoliated for several consecutive years are considerably weakened. They become more susceptible to other diseases and insect pests and may occasionally die. Infected nursery trees produce little or no new growth and commonly lose all their leaves.

Races of this fungus may also infect apple, chokeberry (*Aronia*), cotoneaster, crabapple, firethorn (*Pyracantha*), India-hawthorn (*Raphiolepis*), loquat (*Eriobotrya*), medlar (*Mespilus*), mountain-ash, pear, quince, and serviceberry (*Amelanchier*).

SYMPTOMS

The first symptoms are small spots that form on the upper surface of the leaves (Figures 2); the spots soon become visible on the lower surface as well.

They may be angular to irregular, reddish brown or dark brown, and may have angular or radiating margins. The centers of older spots develop small, raised and rounded dark brown to black fruiting bodies called acervuli, which become grayish white when the spores (conidia) accumulate beneath the cuticle. The lesions on dead or fallen leaves may appear uniformly brown or black.



Figure 1. Paul's Scarlet Thorn infected by Leaf spot.



Figure 2. Hawthorn leaf spot. The lesions are reddish brown to dark brown in color (courtesy Dr. R.E. Partyka).

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The spots are 1/32 to 1/12 of an inch (about 0.8 to 2 mm) in diameter but commonly enlarge and may merge to form large, irregular dead areas (Figure 3). There are usually many spots per leaf. The noninfected parts of diseased leaves turn yellow, and the leaves fall prematurely from middle to late summer.

Greatly elongated lesions develop on the petioles and on the large veins on the undersides of the leaves. Small, inconspicuous lesions (cankers) sometimes form on succulent hawthorn stems.

DISEASE CYCLE

The fungus overwinters as dormant mycelium in old, fallen leaves, possibly in the stem lesions. The mycelium resumes growth in late April or early May and produces two kinds of spores: 1) ascospores, which form in minute (1/50 inch or about 0.5 mm in diameter), pale yellow, cup-shaped apothecia that break through the leaf surface, and 2) conidia, which are produced by apothecium-like structures. The ascospores and conidia are dispersed to expanding young leaves and shoots primarily by rain-splash and air currents. They then germinate and invade susceptible hawthorn tissue. As the leaf spots develop, conidia form in large numbers in the rounded, black fruiting bodies (acervuli) in the centers of the leaf lesions. The spores from these fruiting bodies are in turn disseminated by rain-splash, germinate, and infect other developing hawthorn leaves and stems. This cycle is repeated as long as the weather remains moist. Optimum growth of the leaf spot fungus occurs at 68°F (20°C). Conidial production occurs over a temperature range of 58° to 87°F (14° to 30°C).

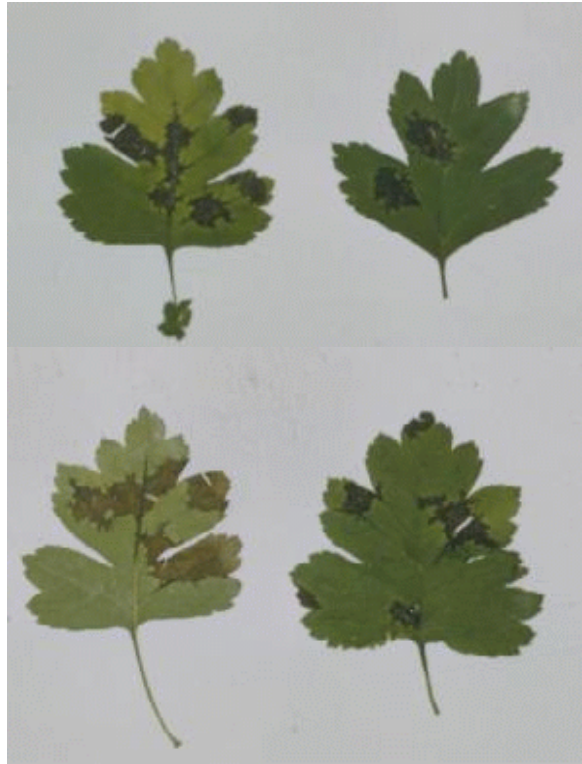


Figure 3. Leaf blight of hawthorn resulting from the enlarging and merging of smaller spots (IL Natural History Survey photo).

CONTROL

1. Since dead hawthorn leaves are the primary source of infection in the spring, they should be collected in autumn and burned, composted, or hauled away with the trash.
2. Only resistant hawthorns should be planted. The Washington (*Crataegus phaenopyrum*) and Cockspur (*C. crus-galli*) types usually do not become infected, but English types are very susceptible and commonly defoliate.
3. Leaf spot or blight can be prevented by thorough spraying of the foliage with a suitable fungicide at the proper concentration and at the proper times.

The first application should be made in early to mid June, after the first leaves are fully expanded. Two or three additional sprays are required at 7- to 10-day intervals. This schedule will have to be extended during rainy seasons and whenever early applications are ineffective. If possible, sprays should be applied before it rains to protect the foliage from the spores, which are distributed primarily by splashing water. The fungicides suggested for controlling leaf spot or blight are listed in Commercial Landscape and Turfgrass Pest Management Handbook. This circular is revised annually.