32. Leaf Spots and Blights

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Hosts

Numerous species of fungi cause leaf spots and tip blights; most hardwoods are susceptible to one or more of these fungi.

Distribution

Leaf spots and blights of some kind occur wherever the hosts are grown.

Damage

Leaf diseases are usually not serious unless they cause complete defoliation. When young seedlings are defoliated early in the growing season, they usually do not have enough food reserves in the roots to produce new leaves, and mortality occurs. During epidemic years, leaf diseases may kill the entire crop. In most years, however, they reduce the density of the seedbed and result in poor-quality, but still salable, seedlings.

Diagnosis

By definition, leaf spots are diseases characterized by well-defined, determinant necrotic lesions on the leaf. Depending on the host and pathogen involved, leaf spots can take on a variety of sizes, shapes, and colors. The most common type of leaf spot (fig 32-1) is more or less circular, 1-2 cm in diameter, and usually a uniformly light or dark brown in color Some leaf spots are delimited by veinlets of the leaf, which produce a characteristic angular shape. The spots may develop distinctive yellow or purplish borders.

Some fungi cause typical, well-defined spots on immature leaves, but when the leaves mature, they may continue to grow beyond the limits of the spots and produce large, irregular, necrotic blotches (fig. 32-2).

Figure 32-1—Leaf spot of poplar, caused by *Phyllosticta* sp.

Figure 32-2—Leaf spot on oaks, caused by *Tubakia dryina* (*Actinopelte dryina*), showing the irregular leaf blotches on an old leaf.

Figure 32-3—Tar spot caused by *Rhytisma*.

Figure 32-4—Leaf blister on oaks caused by *Taphrina coerulescens*.

Fungi in the genus *Rhytisma* produce a black structure, called a clypeus, in the epidermal cells of the upper leaf surface. Leaf spots caused by these fungi, which are common on maples and willows, are commonly called tar spots (fig. 32-3).

Another characteristic type of leaf spot, commonly called leaf blister, is caused by fungi in the genus *Taphrina*. The pathogen causes the affected leaf tissues to expand and become blister-like (fig. 32-4). On immature leaves the spots are chlorotic, but finally the affected tissue dies and turns brown.

When leafspot fungi attack very small, immature leaves and shoots, these structures may be killed. This type of damage is often termed blight or anthracnose (see chapter 29).

Leaf blisters and tar spots can usually be recognized by their distinctive symptoms. Most leaf spots, however, can be identified only from the fruiting bodies of the

causal organisms, which may be formed on or within the affected tissues. Specific control measures can be recommended only if the causal organism is identified.

Biology

Leaf-spot fungi belong to a wide variety of taxonomic groups. In general, however, most of these fungi overwinter as saprophytes in fallen leaves. In the spring, they usually form a sexual state, which produces spores that are carried by the wind to new leaves. Most leaf-spot fungi produce asexual spores on the leaf-spot, which are responsible for further buildup of the disease.

Control

Cultural—High humidity is necessary for most new leaf infections; use overhead sprinklers during the morning to facilitate rapid drying of the foliage.

After seedlings are lifted in the fall, disc and plow under all leaves and debris to reduce early spring inoculum sources.

Chemical—Tank mixes of benomyl and captan fungicides have provided broad spectrum control.

Selected References

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