4. Phyllosticta Leaf Spots of Maple and Caragana

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Leaf spots are common diseases of maples and caragana (Siberian peashrub) throughout the Great Plains. Maples are important ornamentals, and caragana is commonly planted in windbreaks.

Hosts and Distribution

Phyllosticta minima commonly causes leaf spots on most native, as well as several introduced, maple species. The most commonly reported hosts include silver, sugar, red, and mountain maples. The disease occurs throughout the range of maple, including most portions of the Great Plains.

Phyllosticta gallarum causes similar leaf spots on caragana throughout the Great Plains and as far west as Alaska and east to Wisconsin.

Symptoms and Signs

Phyllosticta spp. produce either single distinct spots on leaves, or irregular necrotic patterns indicating coalescence of several spots (fig. 4–1). Host tissue, age, and several environmental factors are thought to influence differences in spotting characteristics. Individual spots are usually 3–4 mm in width and are irregularly circular. At first the spots appear entirely dark brown; later they develop a pale, somewhat bleached center and a dark margin which is often reddish or purple-brown (fig. 4–2). Usually, large numbers of tiny black dots (pycnidia) are seen, often in circular patterns, within the center of spots (fig. 4–3). Premature leaf abscission may occur if there is sufficient infection.

Disease Cycle

Little is known of the disease cycle of *Phyllosticta* spp. on maple and caragana. However, these pathogens probably act similarly to *Phyllosticta* species that have been studied more thoroughly on other hosts.

Initial infection of leaves in the spring is probably caused by windborne ascospores of perfect stages (mostly *Mycosphaerella* and *Guignardia*) arising from nearby previously infected, fallen leaves. The pathogen subsequently increases and spreads through infection by conidia, which are produced in black pycnidia within necrotic spots on leaves. Conidia are produced and released during periods of rain and high humidity, and are likely dispersed by rain splash. Initial spring infection occurs from late April to early May; subsequent secondary infections develop throughout the growing

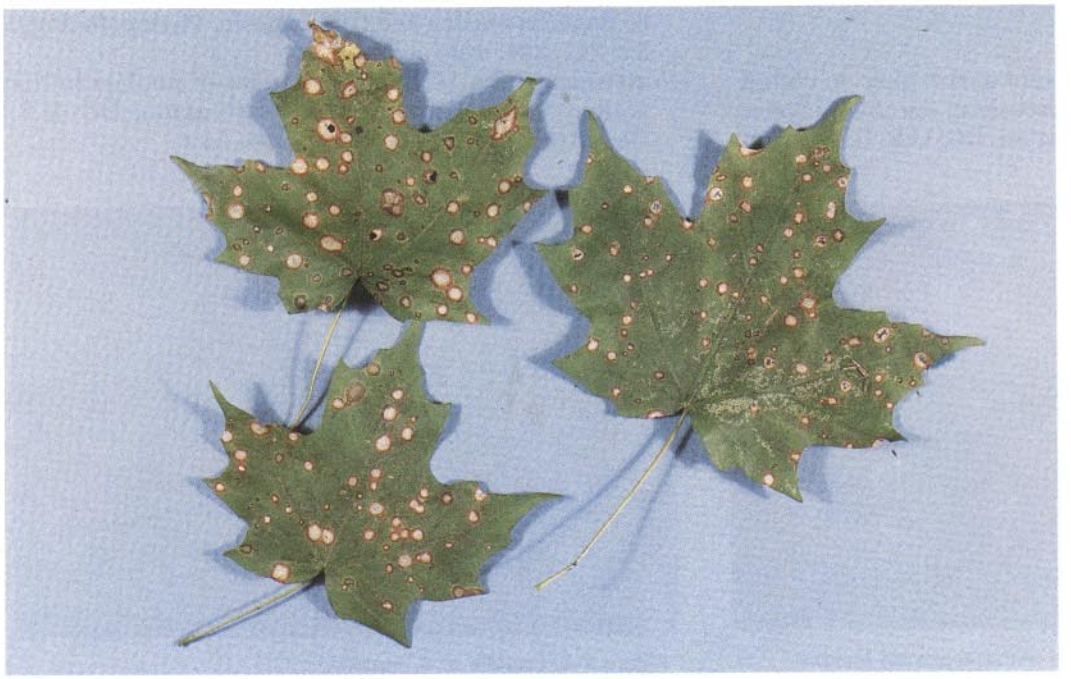

Figure 4-1. Phyllosticta leaf spots on sugar maple.

season. These pathogens may cause premature defoliation of heavily infected trees. Extensive defoliation by mid-June has been reported on red maple severely infected with *P. minima*.

Phyllosticta species may infect seed on other hosts and cause branch and stem cankers, which serve as sources of primary inoculum in the spring. However, this type of infection has not been demonstrated on maple or caragana.

Damage

Phyllosticta leaf spots usually cause little damage. Individual trees may have extensive leaf infections and some premature defoliation may occur; however, overall damage to the host is usually minimal.

There have been a few reports of relatively severe defoliation caused by these pathogens. However, the reported damage is usually associated with above normal rainfall in the spring, or is restricted to tree nurseries.

Control

Control of leaf spots is usually neither necessary nor economically feasible. However, if control is deemed necessary, damage can usually be reduced by proper application of fungicide. Bordeaux mixture has been effective against several leaf spot diseases, including those caused by *Phyllosticta*. Other effective chemicals include benomyl and captan. Three applications of fungicide at approximately 3–4 week intervals in the spring and early summer are generally sufficient to give adequate control.

Figure 4-3. Pycnidia (black dots) of *Phyllosticta* sp. in necrotic leaf spot.

Selected References

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Figure 4-2. Phyllosticta leaf spots on red maple.