



Extension FactSheet

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Spring Black Stem of Alfalfa

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Spring black stem is the most common and serious foliar disease of alfalfa in Ohio. As the name indicates, spring black stem is found early in the season, with most damage occurring prior to the first cutting. Dry matter yield in the first harvest may be reduced by 40 to 60% with moderate to severe spring black stem infection. Second cutting yields are also decreased, but this appears to result primarily from decreased vigor caused by early season infection, rather than by persistence of the disease during the summer. The disease is also prevalent during the fall of the year although damage at this time is of less concern since it occurs after the final harvest.

Cause of the Disease

Spring black stem is caused by the fungus *Phoma medicaginis* var. *medicaginis*. This fungus produces small fruiting bodies (pycnidia) which overwinter (and oversummer) in alfalfa stubble. During periods of cool, wet weather, spores ooze from these tiny fruiting bodies and are splashed to young leaves and stems.

Symptoms

Leaf and stem lesions begin as small, irregular, dark brown to black spots (Figure 1). Leaf spots may be on upper or lower



Figure 1. Leaf spot symptoms of spring black stem.

leaf surfaces or on petioles. Chlorosis (yellowing) and eventual death of tissue frequently occur in areas of the leaflet where spotting is severe. When petioles are infected, leaflets wither or drop. On stems, lesions coalesce to form large blackened areas which may crack and split or cover the entire stem surface (Figure 2). Young heavily infected shoots may die rapidly. In older stems, growth is slowed but stems remain alive. Spring black stem damage is usually confined to the lower portion of the stem, but progresses up the stem during periods favorable for infection. Overall, plant growth is stunted. The distribution of affected plants within a field is extremely uniform, with virtually all plants showing some degree of symptoms after the seeding year. The fungus may also spread to the crown and cause a crown rot. Death of emerging seedlings (damping off) and root rot of mature plants have also been attributed to the fungus. However, less is known about these phases of the disease.

Disease Development and Spread

Spring black stem is rarely a serious problem in new seedlings, although some infection usually occurs during the seeding year. The pathogen overwinters in stubble of plants infected during



Figure 2. Blackened stems beneath the alfalfa canopy.

the previous growing season. The small fruiting bodies (pycnidia) are embedded in dead stem tissue and release spores (conidia) during periods of wet weather. Spores are splashed onto leaves and stems and infection occurs. Frequent rainfall and maximum daily temperatures between 60 and 70 degrees F favor development of the disease. After the first cutting, the disease is seldom of any significance on leaves and stems, although the crown rot phase of the disease may continue to develop during the growing season.

Control

There are no alfalfa varieties listed as resistant to spring black stem, and no fungicides are specifically labelled for control of this disease.

The effects of spring black stem can be minimized to some extent through the adoption of a sound alfalfa management program. Maintenance of proper soil pH and fertility levels, and harvesting at regular intervals, will provide for optimum plant vigor and help plants withstand some of the effects of the disease.

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