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Alfalfa Diseases I

Michigan State University

Cooperative Extension Service

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June 1980

2 pages

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# ALFALFA DISEASES I



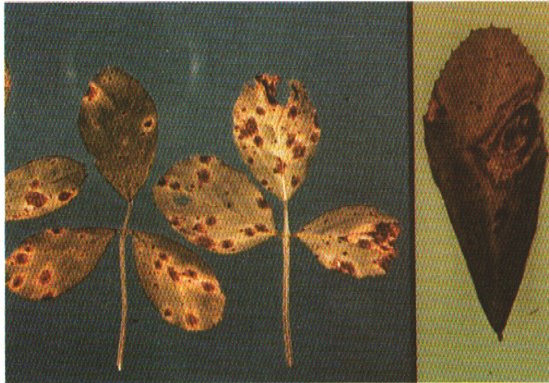
1. Common leaf spot



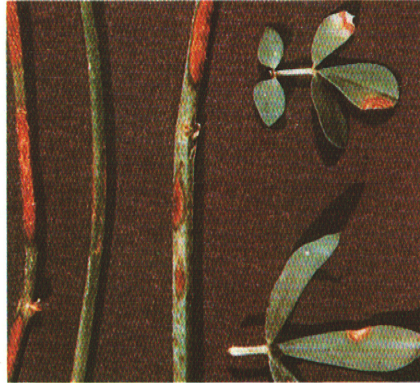
2. Yellow leaf blotch



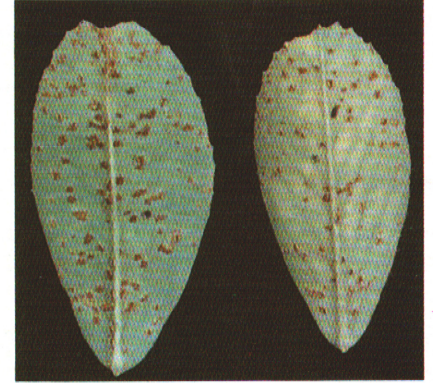
3. *Leptosphaerulina* leaf spot



4. *Stemphylium* leaf spot; R, close up of lesion



5. Summer (*Cercospora*) black stem and leaf spot



6. Rust



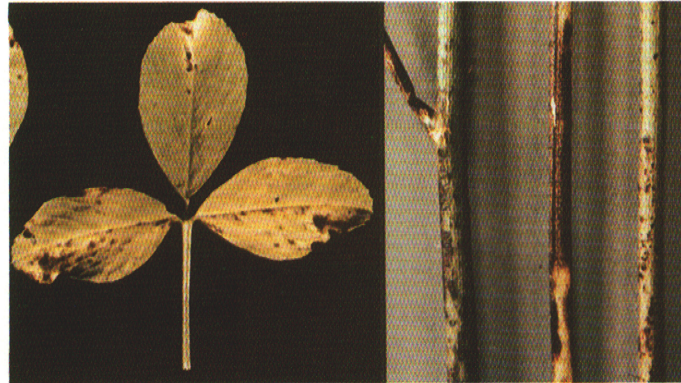
7. Downy mildew. L, upper and lower leaf surfaces; R, infected shoot tip



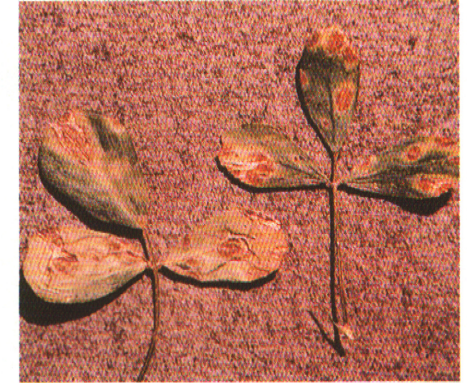
8. Alfalfa mosaic



9. Bacterial leaf spot



10. Spring (*Phoma* and *Ascochyta*) black stem (L) and leaf spot (R)



11. *Cercospora* leaf spot



## ALFALFA DISEASES I

1. **Common Leaf Spot**, caused by the fungus *Pseudopeziza medicaginis*, occurs world-wide reducing both yield and hay quality by early and heavy defoliation. Seedling stands under a thick cover crop can be severely infected following extended periods of cool, moist or very humid weather. Numerous small (1 to 3 mm), circular, dark brown to black spots form on the leaflets. These lesions remain distinct and develop a slight yellow halo. A tiny, light brown, cup-shaped structure (apothecium) appears in the center of older spots on the upper leaf surface. Plants are rarely killed outright by Common Leaf Spot, but defoliation can seriously reduce plant vigor and predispose a plant to winter injury. The fungus survives in undecomposed leaves and leaf fragments on the soil surface.
2. **Yellow Leaf Blotch**, caused by the fungus *Leptotrochila medicaginis* (synonym *Pseudopeziza jonesii*; imperfect stage, *Sporonema phacidiodes*), occurs world-wide where stands are rank and tall. Leaf symptoms start as chlorotic flecks that often enlarge to form yellow-to-orange streaks between the leaf veins. Older lesions turn an orange-yellow or brown. Numerous dark specks (pycnidia) form in the centers of older lesions on the upper leaf surface. The withered leaves may remain attached for some time. The fungus survives in undecomposed leaves on the soil surface.
3. **Leptosphaerulina Leaf Spot**, also called lepto leaf spot, halo spot, pepper spot and brown leaf spot, is most severe on young leaves, petiole and other above ground parts of recently cut stands. The disease is most prevalent in cool, moist weather. The causal fungus, *Leptosphaerulina briosiana* (synonyms *Pseudoplea* or *Pleosphaerulina briosiana*), produces small, reddish-brown to black spots ("pepper spots") that may enlarge to form oval-to-round tan spots with a darker brown border often surrounded by a yellowish area. Infected leaves and petioles die and often cling to the stem for some time. The fungus overwinters in leaves on the soil surface.
4. **Stemphylium Leaf Spot**, also called target spot, is caused by the fungus *Stemphylium botryosum* (perfect stage, *Pleospora herbarum*). The disease is often most severe in lush dense stands following warm wet weather when harvesting is delayed. Lesions on the leaflets are oval-to-elongate, dark brown spots with lighter centers that enlarge and form concentric light and dark brown zones. A single large lesion can cause a leaflet to turn yellow and drop prematurely. Older leaf and stem lesions are covered by a sootlike mold due to growth of the *Stemphylium* fungus. Black, girdling lesions may develop on the peduncles, petioles and stems causing the foliage beyond to wilt, wither and die. The fungus overwinters on old infected stems or on seed.
5. **Summer (Cercospora) Black Stem and Leaf Spot**, also called Cercospora leaf spot and Cercospora black stem, is caused by the fungus *Cercospora medicaginis*. The disease is common after the first cutting during warm, moist weather. Leaf lesions begin as small brown spots that enlarge to form roughly round, reddish- to smoky-brown lesions, 2 to 6 mm in diameter, with a yellow halo. If severe, leaflets are killed causing early defoliation. Stem and petiole lesions are elliptical to elongate and reddish- to chocolate-brown. These lesions may expand to girdle and kill the stems, petioles and peduncles resulting in further defoliation and loss of seed. The fungus overwinters in crop residue and may be seed-borne.
6. **Rust**, caused by the fungus *Uromyces striatus*, is a late-season disease that occurs world-wide. The uredial pustules are reddish-brown and dusty, forming on the lower leaf surface, petioles and stems. When severe, rusted leaves may turn yellow and fall prematurely. The near absence of the alternate hosts (*Euphorbia* spp.) in the USA makes the black telial stage, which forms at the season's end, nonfunctional in the disease cycle. The fungus survives in southern states in the uredial stage in living plants. The urediospores are wind-borne northward as the season progresses.
7. **Downy Mildew**, caused by the fungus *Peronospora trifoliorum*, appears mainly in the spring and fall during cool, moist or humid weather. Symptoms disappear during warm-to-hot, dry weather. Young leaflets, especially at the shoot tips of rapidly growing plants, are often dwarfed, twisted or curled downward with light green-to-yellow blotches. A pale violet, downy growth may be visible on the underleaf surface, especially during cool, moist or very humid weather. Systemically infected plants may be stunted and yellow. Fall-infected seedlings commonly winter-kill. The fungus overwinters as thick-walled spores (oospores) in crop residue and as mycelium in systemically infected crown buds and shoots.
8. **Alfalfa Mosaic** is caused by a virus of many strains transmitted to seed through pollen and ovules from infected plants and by aphids after feeding on infected plants. Typically, a yellow or light green interveinal mottling and yellow streaks parallel to the leaf veins appear in young developing leaves during cool weather. Infected leaves or entire plants often become distorted and stunted. Mosaic-infected plants may die within several weeks to several years. Symptom expression is often masked in hot weather; many infected plants may never show symptoms. The virus is seed-borne and also overseasons in living alfalfa and other plants (some 220 species in 73 genera).
9. **Bacterial Leaf Spot**, caused by the bacterium *Xanthomonas alfalfae*, may occur world-wide following warm-to-hot, moist weather. Small round-to-irregular, water-soaked leaf spots expand up to 3 mm in diameter, become irregular and brown or black, often with a lighter center that may glisten due to dried bacterial exudate on the surface. Infected leaves usually wither and drop prematurely. Stem lesions are "greasy" before enlarging and turning light-to-dark brown. Infected seedlings are often stunted or killed. The bacterium overseasons in crop residue and in soil.
10. **Spring Black Stem**, or Ascochyta leaf spot, is similar to Summer (Cercospora) Black Stem (5), but disease development is favored by cool, moist weather in spring and fall. Usually the first cutting is most damaged. The causal fungus, *Phoma medicaginis* var. *medicaginis* (synonym *Ascochyta imperfecta*), primarily infects the stems, but attacks all above ground plant parts. Dark green, water-soaked, girdling lesions develop in the stems and petioles, turning dark brown to black with age. The lesions may enlarge and merge until most of the lower parts of stems are blackened. Young shoots may be girdled, turn yellow-to-brown, and die. Numerous small, irregular, dark brown or black spots form on the lower leaves. The lesions enlarge and may merge to cover most of the leaflet. If severe, the leaves turn yellow, wither, and drop prematurely. A crown and root rot may also develop. The fungus overseasons in diseased plant tissue and may be seed-borne.
11. **Cercospora Leaf Spot** is a minor foliar disease in warm, moist weather caused by the fungus *Cercospora zebrina*. The fungus is closely related to the one that incites Summer Black Stem (5); however, *C. zebrina* also attacks various clovers. The brown leaf lesions are oval to irregular in shape, expanding into dark, target-shaped spots surrounded by a yellow halo. Older lesions may appear ash-gray due to sporulation of the fungus on the diseased tissue. The fungus overwinters in plant residue and may also be seed-borne.

For chemical control suggestions, a listing of resistant varieties, and other control measures, consult the Extension Plant Pathologist at your land-grant university or your county extension office.

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