

(Continued from Page 29)

Resistant varieties are the first line of defense against forage diseases. The "Forage Trials Report," issued annually by the Pennsylvania Agricultural Experiment Station, should be your guide to choosing varieties, as the type and level of disease resistance of all varieties is given in this report. A grower should be aware that even the most resistant variety will contain plants that become infected and die from the disease to which the variety, as a whole, is resistant. Over time the frequency of diseased plants will diminish, the healthy plants will fill in the stand, and performance will be satisfactory.

Diseases Of Alfalfa

• **Bacterial wilt, Fusarium wilt, and Verticillium wilt** are serious diseases in Pennsylvania, although losses are kept to a minimum through the use of resistant varieties. These wilts occur statewide; however, Fusarium wilt is worse in southeastern areas, and Verticillium wilt is more prevalent in the northern counties. It is recommended to grow varieties resistant to all three wilt diseases throughout the state.

• **Anthracnose** is widespread through the state but is more severe in the southeastern portion. Nearly all varieties for sale in Pennsylvania have moderately high to high levels of resistance, and only such varieties should be grown. Sanitation practices also help to reduce losses from this disease. The fungus that causes anthracnose does not overwinter well in the field, therefore cleaning equipment of all plant debris before winter storage can prevent early introduction of the pathogen into clean fields the following spring.

• **Phytophthora root rot** can be extremely damaging when it occurs in a young stand because it kills plants very rapidly. Its development, however, is limited to poorly drained sites or to periods following heavy prolonged rainfall. Most newer varieties have resistance to this disease, and only such varieties should be

planned where the disease is known to be a problem, or, perhaps another forage species, more tolerant to wet soils should be used. Seed treated with the fungicide, metalaxyl (Apron formulation), is available and should be used in problem areas. The fungicide treatment will likely be beneficial even when a resistant variety is used, because very young plants may not have developed a high level of resistance. Another formulation (Ridomil) of this fungicide is labeled for soil application at planting.

• **Aphanomyces root rot** is a relatively new disease, and although both strains of the pathogen have been identified in Pennsylvania soils, the importance of the disease in this state has not been established. The disease is caused by a fungus that thrives in wet soils. It is most severe on seedlings, causing stunting and death. However, it can also cause a chronic root disease of established plants. It is possible that some disease losses attributed in the past to Phytophthora root rot were actually caused by Aphanomyces root rot. The fungicide treatments useful in controlling Phytophthora root rot are *not effective against Aphanomyces root rot*. Some newer varieties are resistant to one strain of the pathogen and may provide improved establishment under wet soil conditions.

• **Foliar diseases** are caused mainly by fungi, and the diseases most common and most severe in this state are lepto, common, phoma (spring black stem), and stemphylium leaf spots. Most of the newer varieties have some resistance to one or more of these leaf spots, but none is highly resistant. All foliar

diseases can become severe and cause losses in yield and quality. The recommended management strategy is to harvest early. Yield will be reduced, but quality will be higher, because leaf loss will be minimized. Not only are more leaves harvested, but less inoculum remains in the field to infect subsequent regrowth.

• **Root and crown rot complex** is the name used to describe the chronic deterioration of roots and crowns, which is caused by fungi and bacteria, and aggravated by insect activity. Usually, initial symptoms can be found in crowns during the year after seeding, and the disease develops slowly over the following years, destroying additional tissue and eventually killing the plant. Recommended harvest schedules should be followed and adequate levels of P and K fertilizer should be maintained to reduce plant stress and slow the progress of this disease.

• **Sclerotinia crown and stem rot** develops rapidly, but only when its particular environmental requirements are met. Cool, wet conditions are needed by this pathogen in order for serious disease levels to be reached. Prolonged snow cover in the spring provides a suitable environment. Recently, this disease has become more common and more severe in alfalfa seeded with conservative tillage practices in late summer or early fall.

Diseases Of Red Clover

Red clover is afflicted by some of the same diseases that occur on alfalfa. The root and crown rot complex and Sclerotinia stem and crown rot are diseases common to both crops, and the comments that were made relevant to these diseases on alfalfa apply generally to red clover.

• **Northern and Southern Anthracnose** are caused by two different fungi, but the symptoms are quite similar. The same fungus that attacks alfalfa causes southern anthracnose of red clover. Both diseases can cause severe losses and stand thinning in red clover, and occur, at least briefly, during most growing seasons.

Usually, northern anthracnose occurs in early spring with southern anthracnose following later in the summer. Newer varieties have resistance to one or both of these diseases, and the improved performance of these varieties is due mainly to this resistance. Varieties with moderate or higher resistance levels to both disease are recommended for planting throughout the state. Resistance levels for specific varieties are given in the "Forage Trials Report."

Diseases Of Forage Grasses

For the most part, diseases on forage grasses are simply tolerated, since most of them do not pose a major threat to production or stand longevity. Diseases do, however, reduce yield and quality of grass forage and reduce profits to producers. Crop rotation can reduce disease losses in forage grasses, because without rotation, nematode populations can increase to a level that severely limits production in second and third harvest. Often nematode injury is hard to diagnose, and the lack of productivity or response to nitrogen is attributed to other factors.

Some of the same management practices that are recommended to reduce diseases in alfalfa also apply to forage grasses. In general, development of excessive or underutilized top growth should be avoided by timely cutting or grazing, to reduce the buildup of inoculum in infested thatch. Excessive nitrogen fertilization should be avoided, as this may promote production of succulent leaves and stems that are more susceptible to infection.

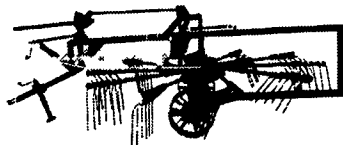


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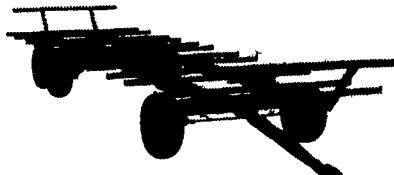
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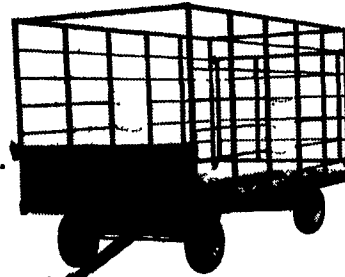
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