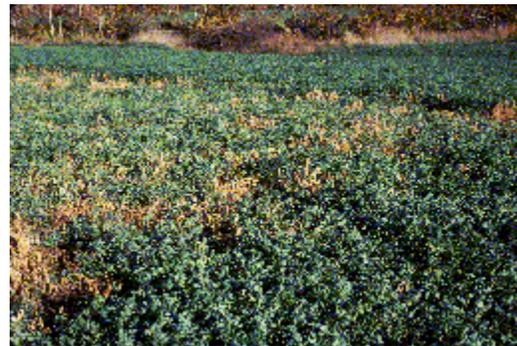




ALFALFA ROOT AND CROWN ROT COMPLEX

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Sooner or later, all alfalfa stands experience losses due to root and crown rot. It is a major factor limiting the persistence of alfalfa fields. Root and crown rot is a complex disease with multiple causes. Fungal pathogens such as *Phytophthora* and *Fusarium* are the major biological components. Physical stresses such as improper cutting schedules, excessive drought, flooding, insect attack, or winter injury are very important for predisposing alfalfa to root and crown rot. Anything that depletes root carbohydrate reserves can be a predisposing factor.

SYMPTOMS

Root rot and crown rot are fairly easy to diagnose by the discoloration and death of crown or root tissue. Use a knife to split open the crowns and roots. Healthy tissue should be white, moist, and firm. Rotted tissue usually has a black or brownish-red color, but the color may vary from yellowish to pinkish or gray. Often the rot begins at the crown, then extends down the center of the taproot.

Phytophthora root rot, which is common in poorly drained soils, often causes

brown to black discrete lesions on the roots several inches below the crowns. When affected roots are dug, roots may break at the lesions. Such roots are pointed with black tips and look like pencils. Phytophthora root rot often attacks young stands.

Top growth of affected plants is reduced and may show symptoms of drought or nutrient deficiency. Leaves usually turn yellow, but plants infected with Phytophthora root rot often turn pink or purple. The field pattern is often complex. Root rot may be worst in low spots, areas with heavy traffic, areas with thin topsoil, areas with herbicide overlap, etc. Any factor which increases plant stress may increase root and crown rot.

CONTROL

Control of alfalfa root and crown rot is based on prevention. There are no curative treatments. Pick a well-adapted variety with good winter hardiness and good disease resistance. In eastern Kansas, it's important to pick a variety with resistance to Phytophthora root rot. Resistance to bacterial wilt, Fusarium wilt, and anthracnose is also important. Information on variety reactions to disease is available at County Extension offices.

Alfalfa does not like constantly wet soil. Choose a field with good surface and internal drainage for your alfalfa production. Do a soil test and make sure fertility is adequate, especially potash. Also check your pH if you live in an area with acid soils.

Avoid replanting alfalfa directly into old alfalfa stubble. This practice allows diseases to move directly to the new seedlings. Alfalfa apparently also produces chemicals which inhibit seedlings (allelopathy). If the field is poorly drained or has a history of poor stand establishment, use a seed treatment containing metalaxyl (Apron). If available, apply timely irrigation to avoid excessive moisture stress. However, also avoid flooding for extended periods. Avoid cultivating established stands. Mechanical injuries provide a pathway for fungal pathogens to invade roots. If the stand must be cultivated, some plants will be lost immediately, but others will become infected and begin a slow decline. Avoid excessive traffic on the field, especially when the soil is wet. Wheeled or hooved traffic can split crowns and open them to invasion. Control insect (weevils, leafhoppers, aphids, cutworms) infestations to avoid depletion of root carbohydrate reserves. Cut at approximately 1/10 bloom to obtain the best compromise between hay quality, quantity, and preservation of root carbohydrate reserves. Allow 4-6 weeks after the last cutting for 8-10 inches of regrowth before the first killing frost. This allows recharging of the carbohydrate

reserve and also traps snow. If necessary, the frost-killed forage can be removed after winter dormancy begins.

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