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UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

Plant Pathology Fact Sheet

Crown Rots of Alfalfa

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Introduction

Crown rots are chronic disease problems of alfalfa throughout the world. Crown rots cause loss of stand and forage yield in several ways. If the crowns are rotted severely enough, infected plants will die simply by being choked off. Carbohydrates for winter survival are stored in the crown and upper taproot. By rotting this area, crown rots also make alfalfa plants more sensitive to winter kill. Some crown rot fungi produce toxins, thus weakening or even killing the plant.

Mycoleptodiscus Crown Rot

Symptoms and Causes

As the name implies, crown rots appear as rotted or corky areas in the crown and upper taproot portions of the plant. Color of affected tissues varies depending on which fungi are attacking the plant. Sometimes, shoots of affected plants show yellowing and wilting, but plants must be dug and taproots cut open to diagnose the problem.

In contrast to most diseases of alfalfa, crown rots are not a single disease but a complex of diseases with somewhat similar symptoms. Crown rots are caused by a great variety of fungi in the soil. Some of these fungi, such as the anthracnose fungus (*Colletotrichum trifolii*), also cause other diseases of alfalfa. Other fungi, such as several *Fusarium* species, do not attack alfalfa except as crown invaders. *Rhizoctonia*, *Mycoleptodiscus*, *Phoma*, and *Pythium* have also been implicated in this disease complex.

Disease Management

Use adapted varieties. Alfalfa breeders have not made an effort to breed for resistance to crown rots, primarily because literally dozens of fungi can cause these diseases. However, selecting a variety well-suited for

local conditions will help in minimizing the impact of these diseases. Growers are encouraged to remain up-to-date on results of alfalfa variety trials conducted by the University of Kentucky Department of Plant and Soil Sciences.

Minimize crown injury. Injury to crowns creates wounds that allow infection by crown rot fungi living in the soil. Minimize traffic and grazing in alfalfa stands when the soil is wet, to minimize crown injury.

Rotate alfalfa land to crops other than forage legumes. Rotating to other crops can help starve out some of the soilborne fungi that cause crown rot, because it deprives them of a food source.

Maintain good soil fertility, paying particular attention to potassium. Maintaining good soil fertility can help plants resist infections as they occur.

Allow adequate regrowth between cuttings. Allowing stands to grow until first flower can help plants maintain adequate carbohydrate reserves to resist infections. Note that postponing cutting much past first flower causes a decline in hay quality without improving disease control.

Additional Resources

Disease management and crop production advice can be found in the following University of Kentucky resources. The publications are available at County Extension offices, as well as on the Internet.

- Alfalfa—The Queen of Forage Crops, ID-76 (1997)
http://www.ca.uky.edu/agc/pubs/agr/agr76/agr76.pdf

- Alfalfa Diseases Caused by *Rhizoctonia* Fungi, PPFS-AG-F-06 (2008)
http://www.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-AG-F-6.pdf

- Kentucky Integrated Crop Management Manual for Field Crops: Alfalfa, IPM-1 (2006)
http://www.uky.edu/Ag/IPM/manuals/ipm1alf.pdf

- Kentucky Plant Disease Management Guide for Forage Legumes, PPA-10d (1995)
http://www.ca.uky.edu/agc/pubs/ppa/ppa10d/ppa10d.pdf

- Managing Alfalfa Diseases, ID-104 (1991)
http://www.ca.uky.edu/agc/pubs/id/id104/id104.htm

- University of Kentucky Department of Plant and Soil Sciences Forage Variety Trials
http://www.uky.edu/Ag/Forage/ForageVarietyTrials2.htm

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Photo by Paul Vincelli, University of Kentucky

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