

## Plant Pathology Fact Sheet

# Common Alfalfa Seedling Diseases and Disorders

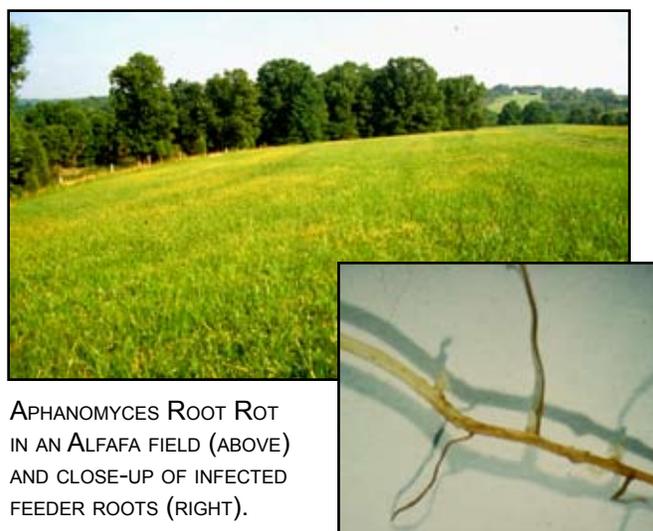
by Paul Vincelli and S. Ray Smith

Alfalfa seedlings are subject to a number of biotic and abiotic problems which can affect establishment. Several of the more common seedling diseases and disorders are described below. This information is being provided as a diagnostic aid; publications which provide specific management and production information can be found in the resource list.

If you are unable to establish the cause of the problem with a field visit, we recommend submitting samples to one of the University of Kentucky Plant Disease Diagnostic Laboratories via your local Cooperative Extension Service. Samples should include both plants and soil. Collect plants showing various stages of the problem. Do not just submit seedlings that have died because a postmortem on dead plants is generally impossible.

## Seedling Diseases

Seedling diseases sometimes occur during periods of high rainfall in fields with



APHANOMYCES ROOT ROT IN AN ALFAFA FIELD (ABOVE) AND CLOSE-UP OF INFECTED FEEDER ROOTS (RIGHT).

soil compaction or other causes of poor drainage. Alfalfa seedling diseases in Kentucky are usually caused by one or more of the following fungi and fungus-like organisms: *Pythium*, *Phytophthora*, *Aphanomyces*, or *Rhizoctonia*. Aboveground symptoms include stunting, yellowing, and possibly wilting. In the case of *Phytophthora* infections, leaves may also exhibit reddening. Belowground symptoms consist of decayed roots and nodules.

It is important to know which of these organisms is present in the field in order to make sound disease management decisions. For example, the Apron fungicide (metalaxyl) seed treatment only provides protection against *Pythium* and *Phytophthora*, but is not effective against *Aphanomyces* or *Rhizoctonia*. Additionally, the best way to reduce failed or thinning stands caused by *Phytophthora* and *Aphanomyces* is to plant varieties that show high levels of resistance to these two pathogens (most companies use HR to designate “high resistance”). For an accurate determination of the organism(s) involved, samples of affected seedlings should be sent to one of the UK Diagnostic Laboratories.

### **Loose Seedbed**

A properly prepared seedbed should be fine, but firm. If the seedbed soil is too loose, the soil around the seed can fail to provide a uniform supply of moisture to the developing seedling. If seedling emergence is better in wheel tracks compared to other areas of the field, a loose seedbed should be suspected as the cause.

### **Seeding Too Deeply**

Seed placed lower than a half inch often emerges poorly and grows slowly. Check the depth of seed placement while on field visits.

### **Failure to Close Furrow**

If a no-till drill was used on a wet soil with high clay content, the press wheel may not close the furrow completely. This open seed furrow allows seedlings to dry out very quickly during a dry spell, leading to poor stands.

### **Poor Nodulation**

Poor root nodulation may result from poor viability of inoculant or poor inoculation technique. Usually sufficient *Rhizobium*

inoculant is present in the soil if the field has a recent history of alfalfa production. Carefully dig roots and examine whether healthy nodules (plump, with a reddish color inside) are present. If healthy nodules are lacking, “emergency” inoculation of the field should be considered.

### **Additional Resources**

Disease management and crop production advice related to the above problems can be found in the following University of Kentucky publications available at County Extension offices, as well as on the Internet.

- Alfalfa—The Queen of Forage Crops, ID-76  
<http://www.ca.uky.edu/agc/pubs/agr/agr76/agr76.pdf>
- “Emergency” Inoculation for Poorly Nodulated Legumes, PPFS-AG-F-04 (2009)  
[http://www.ca.uky.edu/agcollege/plantpathology/ext\\_files/PPFShtml/PPFS-AG-F-4.pdf](http://www.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-AG-F-4.pdf)
- Inoculation of Forage Legumes, AGR-90 (2002)  
<http://www.ca.uky.edu/agc/pubs/agr/agr90/agr90.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>

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*Photos by Paul Vincelli, University of Kentucky*

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