



An Alfalfa Disease Calendar

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The following calendar may help producers and agricultural professionals improve alfalfa production in several ways:

First, knowing when to expect certain diseases improves ability to diagnose disease problems, which is fundamental to disease management. A number of publications are useful for diagnosis, such as UK Cooperative Extension Service publications on alfalfa, the *Alfalfa Analyst* (published by the Certified Alfalfa Seed Council), and the *Compendium of Alfalfa Diseases* (published by APS Press and available for inspection at county Extension offices). However, none of these publications includes a precise calendar indicating when to expect alfalfa disease activity in Kentucky.

Second, an alfalfa disease calendar can help with timely management. For example, being able to recognize when leaf spots are attacking a crop can help in making a decision to harvest promptly and avoid losses in yield and quality. Recognizing when *Aphanomyces* root rot has been active on a farm can help in future selection of a resistant variety.

Finally, having a better understanding of the dynamics of alfalfa diseases helps both the producer and agricultural professional develop improved, customized alfalfa production systems.

The calendar is based on 17 years of records from the UK Plant Disease Diagnostic Laboratories and the author's 10 years of field experience with alfalfa diseases. It does not include all diseases diagnosed in Kentucky alfalfa fields, but it does include all the commonwealth's common alfalfa diseases and others generally considered to be important.

Infectious diseases do not follow a calendar *per se* because they are influenced by environmental conditions that favor activity of the *pathogen* (the disease-causing microorganism) and the host plant's susceptibility. While environmental conditions favoring a particular disease may be more common at one time of year than another, the prevailing weather conditions ultimately are more important than the calendar date. Thus, this calendar provides useful guidelines, but these guidelines are not absolute, foolproof predictions of which diseases to expect at a given time of year.

For more information on disease management in alfalfa, see the following Cooperative Extension Service publications, available at county Extension offices:

- *Managing Diseases of Alfalfa* (ID-104).
- *Kentucky Plant Disease Management Guide for Forage Legumes* (PPA-10d).

In the calendar below, each month is represented by two sections: early to mid-month and mid- to late month. Each of these sections can be read and used without reference to other sections of the calendar.

December through February

Little obvious disease activity takes place. However, infections of *Sclerotinia* crown and stem rot can kill crowns during this period as well as spread from plant to plant. Plants affected by either crown rot complex or *Phytophthora* root rot may die for lack of sufficient root reserves.

March

Early to Mid-March: As alfalfa breaks dormancy, winter stand loss will be visible. Winter stand loss in a field seeded the previous autumn is due most commonly to *Sclerotinia* crown and stem rot. Survival bodies called *sclerotia* will be present on dead plants. In established stands, plants killed during the winter from crown rot complex or *Phytophthora* root rot will not regrow at this time.

Mid- to Late March: Winter-kill induced by *Sclerotinia* crown and stem rot is still evident. Plants surviving the winter with *Sclerotinia* infections wilt, yellow, and die.

April

Early to Mid-April: Early cases of Lepto leaf spot are found in established alfalfa, which can be especially active on plants regrowing after a late freeze. Bacterial stem blight also may occur when frost injury is followed by wet weather. Early cases of spring black stem and leaf spot also can be found. Plants infected with *Sclerotinia* crown and stem rot continue to die. Due to infection by *Pythium* and *Phytophthora*, early seedlings may exhibit damping-off symptoms in cool, wet soils. If re-seeding these fields, be sure to use metalaxyl-treated seed of *Phytophthora*-resistant varieties.

Mid- to Late April: Lepto leaf spot can be active now, especially on plants that are regrowing after a late freeze. When frost injury is followed by wet weather, bacterial stem blight also may occur. Spring black stem and leaf spot can be found during wet weather periods. Plants infected with *Sclerotinia*

crown and stem rot continue to die. Because *Sclerotinia* goes dormant when the plants are killed, fields with severe outbreaks of *Sclerotinia* crown and stem rot can be resown to alfalfa if the entire stand has been dead for several weeks. If plants continue to die throughout April, indicating that *Sclerotinia* still may be active, reseeding is risky, however—the seedlings are susceptible to attack. Seedlings in cool, wet soils may exhibit damping-off; if reseeding these fields, be sure to use metalaxyl-treated seed of *Phytophthora*-resistant varieties.

May

Early to Mid-May: Lepto leaf spot may be active, especially in cool, wet weather. Spring black stem and leaf spot can be common. Late cases of bacterial stem blight develop during extended periods of cool, wet weather. For plants with any of the foliar diseases, take the first cutting of alfalfa as soon as it is agronomically acceptable. *Sclerotinia* crown and stem rot activity tapers off. It is, however, risky to reseed fields with severe stand loss from mid-May on because of the risk of water stress on the young alfalfa seedlings, so a reseeding window may be narrow. Early cases of *Aphanomyces* root rot appear, especially in early plantings in Western Kentucky. Seedling damping-off may occur.

Mid- to Late May: Lepto leaf spot may be active, especially in cool, wet weather. Spring black stem and leaf spot can be common. Seedling damping-off may occur in late plantings made in cool, wet weather, but it is too late to reseed. Symptoms of *Aphanomyces* root rot are pronounced. Seedling blight due to *Phytophthora* root rot may begin to show in early plantings. Early cases of stem canker can be found, especially in new seedlings; no rescue treatment is available. Early cases of bacterial wilt can be found in stands that are several years old.

June

Early to Mid-June: Lepto leaf spot activity typically tapers off, although it still can be active in cool, wet weather. Spring black stem tapers off. Seedlings affected by *Aphanomyces* root rot will be stunted and off-color. Seedling blight symptoms due to *Phytophthora* root rot still may be evident. Stem canker can be common in warm, wet weather, especially in new stands, and no rescue treatment is available. Plants in stands that are several years old may exhibit yellowing and wilting from bacterial wilt, especially in warm conditions. Although plants with crowns showing a general crown rot can be found at any time of the year, wilting and death from crown rot complex starts to become common.

Mid- to Late June: Early outbreaks of anthracnose may appear. Lepto leaf spot still may be active in cool, wet weather, and spring black stem and leaf spot occasionally can be found during extended periods of cool, wet weather. Early cases of *Stemphylium* leaf spot can be found in warm, humid weather. Symptoms of *Aphanomyces* root rot still are evident. Seedling blight due to *Phytophthora* root rot still may be evident. *Phytophthora* root rot can cause reduced plant growth and

reduced yield in established plants, although no other symptoms may be present. Stem canker can be common in warm, wet weather, especially in new stands. Although no rescue treatment is available, most of the stand loss that this disease will cause in new stands probably already has occurred, and the alfalfa may compensate nicely for missing plants. Plants in stands that are several years old may exhibit yellowing and wilting from bacterial wilt, especially in warm conditions. Death from crown rot complex becomes more common.

July

Early to Mid-July: Anthracnose and web blight may be active following extended periods of warm, humid weather. Lepto leaf spot can sometimes be active if weather is cool and wet. *Stemphylium* leaf spot begins to become common during extended periods of warm, humid weather. Early cases of summer black stem and leaf spot occur. *Phytophthora* root rot can cause reduced plant growth and yield, although no other symptoms may be present. Stem canker can be common in warm, wet weather. In established stands, plants exhibiting symptoms of bacterial wilt may appear. Death from crown rot complex is common.

Mid- to Late July: *Stemphylium* leaf spot is common in warm, humid weather, and anthracnose and web blight may be active following extended periods of warm, humid weather. Stem canker still can be found in warm, wet weather. Summer black stem and leaf spot increases in frequency. Lepto leaf spot can sometimes be active if weather is cool and wet. *Phytophthora* root rot can cause reduced plant growth and yield, although no other symptoms may be present. Plants with bacterial wilt may occur in established stands. Death from crown rot complex is common.

August

Early to Mid-August: *Stemphylium* leaf spot and summer black stem/leaf spot are common in warm, humid weather, and web blight may be active during extended periods of warm, humid weather. Stem canker can be found in warm, wet weather. Lepto leaf spot can sometimes be active if weather is cool and wet. *Phytophthora* root rot can cause reduced plant growth and yield, although no other symptoms may be present. Early cases of rust may occur. Plants with bacterial wilt may occur. Anthracnose activity is highest this month in susceptible varieties. Death from crown rot complex still may be found.

Mid- to Late August: Web blight may be active in extended periods of warm, humid weather, and *Stemphylium* leaf spot summer black stem/leaf spot are common in warm, humid weather. Rust may occur on leaves but usually not at damaging levels. *Phytophthora* root rot can cause reduced plant growth and yield, although no other symptoms may be present. Stem canker can be found in warm, wet weather. Plants with bacterial wilt may occur. Anthracnose may be active. Death from crown rot complex still may be found.

September

Early to Mid-September: Web blight still may be active during unusually long periods of warm, humid weather. Stemphylium leaf spot and summer black stem/leaf spot also still may be active in warm, humid weather, although both are tapering off. Stem canker can be found in warm, wet weather. Rust may occur on leaves but usually not at damaging levels. Bacterial wilt tapers off but still may occur. Anthracnose activity is tapering off, but damage still may be evident. Death from crown rot complex is tapering off.

Mid- to Late September: Summer black stem/leaf spot still may be found. Rust may occur on leaves. Although timely cutting can reduce the impact of foliar diseases, it is often wiser to let these diseases remain active in order to give alfalfa a chance to build root reserves before winter.

October

Early to Mid-October: Rust may occur on leaves, but cutting is not recommended because of the need to build root reserves for winter.

Mid- to Late October: Fruiting bodies (called apothecia) that lead to Sclerotinia crown and stem rot infections are produced if the top inch or two of the soil remains moist for several days. Rust may occur on leaves.

November

Early to Mid-November: Sclerotinia crown and stem rot is often active during this period. Apothecia will be evident when the soil is moist. The first infections on leaves and stems also are commonly present; the white mold of the fungus can be seen in humid conditions. Rust may occur on leaves.

Mid- to Late November: Apothecia still will be evident. Hard freezes will cause their number to decline drastically, but a smaller number of new ones will be produced in mild, wet conditions.

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