

Alfalfa pests growers love to hate

Dan Wiersma for *Progressive Dairyman*

Join the club. You are not alone in your disdain for alfalfa diseases and insects. Invisible disease organisms sit in waiting until the perfect environment exists to indiscriminately infect your alfalfa plants. Insects seem to appear out of nowhere and then reproduce faster than the speed of light to aggressively feed on your crop. Both disease and insect damage can lead to significant loss of production, reduced forage quality and early stand loss.

Taking the pest challenge head on

Tackling alfalfa disease and insect challenges is best accomplished using three tactics: genetic resistance, chemical control products and crop management practices. These can be used as single line-of-defense solutions or in a combination strategy.

Winning against alfalfa pests starts by knowing several key things:

- ◆ What alfalfa disease and insect pests are most likely found on your soils and in your region?
- ◆ What conditions are ideal for developing alfalfa diseases or for attracting insects?
- ◆ What are the symptoms of disease or insect feeding?
- ◆ How quickly can a disease or insects spread and inflict economic damage?
- ◆ When do you need to take action and what strategies most effectively prevent or control alfalfa disease and insect pests?

Table 1 on page 68 provides this information for key insect pests and diseases of alfalfa.

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Your first line of defense is genetics

Genetic resistance can help you avoid an uphill battle when disease or insect pressure strikes. Since the 1980s, breeders have developed alfalfa varieties with resistance to several major diseases and insect pests. This has given alfalfa producers a new level of control and reduced the risk of alfalfa damage or failure.

Several key diseases include bacterial wilt, verticillium wilt, fusarium wilt and anthracnose, along with phytophthora and aphanomyces (race 1 and 2) root rots. Each disease is evaluated using standardized tests and then characterized for five levels of disease resistance: susceptible, low resistance, moderate resistance, resistant and highly resistant. The disease resistance index helps identify overall risk for the most common alfalfa diseases. While no alfalfa variety can exhibit 100 percent resistance to a disease, the best alfalfa varieties offer levels of resistance of more than 50 percent (highly resistant) for the seven diseases tested. Several varieties also have been bred with high levels of tolerance to potato leafhoppers and nematodes.

The first picture shows seedlings grown from two alfalfa varieties with different levels of resistance to aphanomyces and phytophthora root rots. In this screening test, the highly resistant variety has more plants that survive and thrive under root rot pressure than the low-resistance variety.

In the second picture, five alfalfa varieties with different levels of resistance to phytophthora and aphanomyces are grown in soils exhibiting a high level of root rot disease activity versus no root rot disease activity.

Chemistry is your friend to help fight alfalfa pests

Sometimes genetic disease or insect resistance is not a viable choice. Genetic resistance may be unavailable, incomplete or enhanced by another management strategy. Chemical fungicides and insecticides provide another tool for managing loss due to alfalfa pests.

The most susceptible time for alfalfa injury or death is during seedling germination, emergence and early development. Young, immature plants are easily infected or damaged, leading to stunted growth and death. Along with genetic resistance, seed treatments containing fungicides protect seedlings during this early growth stage. One of the key seedling diseases for which there is no

Figure 1



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Table 1

Key alfalfa disease and insect pests with descriptions of conditions for development, symptomology and control strategies

Alfalfa pest	Optimal conditions for growth	Symptoms and damage	Primary control strategies
Diseases			
Seedling or Damping-off disease (<i>phytophthora</i> , <i>pythium</i> , <i>rhizoctonia</i>)	Favored by poor growing conditions like high soil moisture, slow growth, low temperatures, poor soil fertility; occurs in cool soils with poor drainage	Seeds killed before germination or seedlings wilt and die; lesions girdle young roots and stunt or kill seedlings	Use seed-applied fungicide; use variety resistance; improve drainage; plant when warm soil temps occur
Crown root rot complex (<i>pythium</i> , <i>rhizoctonia</i> , <i>fusarium</i> wilt, <i>bacterial wilt</i> , <i>phoma</i>)	Happens when crown or root damage occurs due to physical injury or nematode feeding; common in warm climates but found in all growing environments	Stunts plants, discolors roots red to reddish brown, becomes more severe with age	Use disease-resistant varieties; employ nematode resistance; minimize grazing and wheel traffic damage; rotate out of older or infected stands
Root rots (<i>phytophthora</i> , <i>aphanomyces</i>)	Occurs in soils with slow drainage or when water stands for a period of time; can occur at all stages of growth	Stunts or kills plants (especially seedlings); causes root girdling or pruning of fibrous roots; roots turn brown/black; creates wilted yellow to purplish color top growth	Use disease resistance; improve soil drainage; consider fungicide seed treatment for aphanomyces
Verticillium wilt	Typically occurs in cooler northern climates; pathogens spread by dry or fresh hay and manure	Stunts plant; causes yellow V-shape at leaf tip; leaf curls at midrib and turn pinkish; stems remain green after leaves die	Use resistant varieties; clean harvest equipment between fields with bleach solution
Anthracnose	Reaches maximum severity in late summer and fall; spreads rapidly under warm and humid conditions; common in older stands	Look for individual straw-colored stems with a crook at the top (shepherd's crook), diamond-shaped lesions on stems, bluish-black V-shaped rot in crown tissue	Use resistant varieties; clean equipment between fields with bleach solution; rotate out of alfalfa for at least two years
Spring black stem and leaf spot (<i>common</i> , <i>lepto</i>)	Most common in spring or fall; favored by cool wet weather and dense stands	Found in lower part of canopy; leaves yellow, wilt and drop off	Use fungicide; harvest early
Insects			
Potato leafhopper	Mid to late summer pest; migrates north aloft spring winds; new seedlings are particularly susceptible	Look for light green wedge-shaped insects, causing a distinctive V-shaped yellow discoloration of leaf tips	Use variety resistance; employ insecticide when thresholds are reached
Aphids	Occasional pest found during mid-season, especially during hot and dry periods	Aphids congregate on stems and leaves, sucking plant juices; plants wilt and become yellow and stunted	Employ insecticide when thresholds are reached
Alfalfa weevil	Most frequent damage is in first crop of season, but high populations can defoliate regrowth	Larvae chew and skeletonize leaves; larvae are green with a white stripe and grow to 3/8"	Employ insecticide when thresholds are reached
Nematodes			
Root knot nematode	Found in all soil types, but prefer sandy soils; can feed year-round	Stunts plants with profusely branching roots and with small galls on roots similar to rhizobium nodules	Resistant varieties; crop rotation with grass crops

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genetic resistance is pythium. In this case, only a fungicide will provide protection from this organism. If planting an alfalfa variety with minimal resistance to a disease, there may be a fungicide seed treatment

available to aid in the protection of the plants. Foliar leaf and stem diseases have been around for many years, and little to no genetic resistance is available in modern alfalfa varieties. Recent

introduction of foliar fungicides help growers protect alfalfa leaves and stems from excessive damage. While these fungicides prevent leaf defoliation due to leaf and stem disease, the yield benefits remain

variable at best. Some growers have reported as much as a 20 percent yield response from the application of a foliar fungicide. University trials in Wisconsin and Minnesota during 2012 showed five of 14 (35 percent)





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“ The most susceptible time for alfalfa injury or death is during seedling germination, emergence and early development. Young, immature plants are easily infected or damaged, leading to stunted growth and death. ”

positive yield responses for fungicide application. Similar responses were shown in an Iowa State University study.

Growers looking to maximize alfalfa yield and quality should consider various tools to protect this valuable crop. Foliar fungicides may be part of your management program. In growing environments conducive to high incidence and severity of leaf disease, fungicides may help to protect yield and offer an economic advantage.

Managing to reduce stress

Growing a disease-free and insect-free alfalfa crop starts with good genetics and proper chemical control. However, it is aided by great crop management and harvest techniques. Several key management factors help to prevent or minimize alfalfa pests. These include management practices like the following:

- ◆ *Harvest timing* – Relieve high insect pressure by harvesting several days early, avoiding the use of an insecticide, then monitoring regrowth for insect activity.
- ◆ *Minimal delay between cutting and harvesting* – It helps prevent wheel traffic damage to re-growth or delayed regrowth under windrows.
- ◆ *High fertility and proper soil pH* – Nutritionally healthy plants fight disease better.
- ◆ *Early and complete weed control* – Even a nurse crop can be a stress to alfalfa seedlings, causing long-term damage.



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Will drones and satellites scout your fields?

Technology continues to change our lives. This is true in the world of agriculture as well. In the near future, remote monitoring with drones or satellites will likely be available to scout your fields. These exciting technologies will be able to monitor plant growth, giving real-time data on plant health, nutrition and stress status as well as tracking insect

movement into your region.

In the meantime, finding out about disease and insect problems requires boots on the ground. In-field scouting helps you identify problems before they become serious or untreatable. It also helps you make key decisions to protect your farm's forage inventory and quality. If you don't have time to scout, the small investment in a trained scout who can regularly monitor your fields is easily paid for with the timely control

of a single insect outbreak.

Every pound of alfalfa on every acre of your farm is grown to drive high milk production and animal performance. Maximizing production of this high-protein crop helps keep feed costs in check and offers a highly digestible fiber source for the dairy animal. Knowing the disease and insect issues you might encounter and how to manage them is key to growing this valuable crop on your farm. **PD**

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