

Identification

Verticillium wilt (VW)

Symptoms: wilted, yellowed, stunted plants

Leaf tips often show a yellow “v”-shaped pattern, similar to symptoms of potato leafhopper burn.

Leaves later turn purple and become twisted.

Usually affects second and third cuttings of stands two or more years old.

Stems remain green long after leaves are bleached tan and dead. Cut taproots of severely infected plants in cross section to see a dark brown ring.

Can be transmitted to healthy fields from contaminated areas on farm equipment.

Fusarium wilt (FW)

Symptoms: wilted shoots on a portion of stem; stunted plants.

In early stages, leaves may wilt during the day and appear normal during the evening. Leaves may take on a reddish tinge; eventually leaves and stems become bleached.

Can affect stands two or more years old.

Cut roots in cross section to see partial or complete dark or reddish-brown streaking or ring.

Injury to the root exterior (as by clover root curculio feeding) favors FW.

Phytophthora root rot (PRR)

Symptoms: whole plant becomes stunted and yellow; lateral roots or taproots may turn rotten.

Infected roots are usually yellow or reddish where infection borders healthy tissue.

Favored by wet conditions and poorly drained soils.

Problem in new seedings, but can affect any alfalfa stand following prolonged wet conditions.

Anthracnose

Symptoms: stem tips wilt and bend over to form a “shepherd’s crook.” Look for diamond-shaped lesions on lower parts of stems.

A disease of warm, wet weather; attacks alfalfa stems and crowns. Usually more severe after first harvest.

May advance from infected stem into crown tissues. Infected crowns appear bluish-black near the stems and reddish-brown in their inner tissues.

Infected plants appear straw colored and are scattered throughout the field.

Sclerotinia crown and stem rot

Symptoms: infected stems are soft and water soaked. Infected plants appear yellow and weak. A characteristic white fluffy mass of mycelium (fungus body) grows over the plants or on the soil surface, infecting new plants as it grows.

Usually occurs during cool, moist weather of early spring and late summer.

Seedlings are most vulnerable.

As plants become weak and die, the fungus forms small (1/8” to a 1/4”), hard black “sclerotia” (pelletlike balls) on or in the stem or crown tissue.

Often associated with fall seedings, seedings into old pastures, or no-till seedings into previous legume sod.

Sampling

Scout your fields to stay on top of diseases. (Works well in conjunction with scouting for other pests.)

Correct identification is important—otherwise you may opt for the wrong management.

Analysis

There are no thresholds for alfalfa diseases. Leafspot diseases should be evaluated for their effects on leaf loss. Crown and wilt diseases should be evaluated for their severity and their impacts on total stand health and productivity.

Management Alternatives

There are no pesticide rescue treatments to manage diseases in forage alfalfa. Use cultural practices and resistant varieties to minimize disease problems.

Sound crop management limits the development and impact of diseases. Any practice that reduces crop stress (biotic or abiotic) and promotes vigor will help extend the productive life of the stand. This becomes even more critical in the presence of serious disease organisms.

Site selection:

Avoid poorly drained soils to reduce losses caused by Phytophthora root rot and other soilborne diseases.

Cropping sequence:

Avoid planting alfalfa in fields recently cropped to legumes. If you’ve had Verticillium wilt or Sclerotinia crown and stem rot in the past, wait three or more years before replanting to alfalfa.

Stand establishment

Good seedbed preparation, weed control, pH to 6.5 or above, and balanced fertilization are essential for vigorous stands.

Sanitation procedures

Harvesting young stands before older stands reduces potential spread of pathogens. In areas where Anthracnose, Verticillium wilt, or other infectious diseases occur, removing debris from harvest equipment before moving to other fields can reduce risk of spreading the disease.

Harvest schedules

Harvesting before full bloom—which allows for replenishment of root reserve carbohydrates—often reduces losses from leaf blights. Vigorous, nonstressed plants are better able to resist pest problems.

Selection of Disease-Resistant Varieties

Forage varieties are mixed populations that vary for many traits, including diseases resistance.

Forage crops can tolerate some damage without significant yield reduction.

Resistance to a given disease varies from susceptible (less than 6 percent of plants are resistant) to highly resistant (greater than 50 percent of plants are resistant).

The level of disease resistance you need depends on the nature of the disease, the site, and which diseases prevail in your locale.

For added protection, varieties resistant to potato leafhopper are now available.

To select resistant varieties, refer to the current *Cornell Guide for Integrated Field Crop Management*.

Implementation

Vascular wilts (*Fusarium* wilt, *Verticillium* wilt and bacterial wilt) pose the greatest threat in New York.

Minimize leaf and stem diseases with timely harvest.

Minimize root, crown, and stem rots with sound crop management.

Fungicide seed treatments may help minimize risk of *Pythium* damping-off and *Phytophthora* root rot disdurring stand establishment.

Reevaluation

Evaluate fields after alfalfa is planted and has started to emerge. Continue to monitor the field throughout each growing season for diseases.

Review your crop plans for previous and coming years to identify potential problem fields.

For additional help contact your local Cornell Cooperative Extension Educator.

For pesticide recommendations please consult the current issue of *Cornell Guide for Integrated Field Crop Management*.

Always remember to read and follow the pesticide label. For additional help contact your local Cornell Cooperative Extension Educator.

Cornell Cooperative Extension provides equal program and employment opportunities.

New York State Integrated Pest Management (IPM) Program

We encourage people to adopt a sustainable approach to managing pests, combining methods that minimize economic, health, and environmental risks.

The IPM strategy integrates the use of several pest-suppression technologies, including

- Biological control: beneficial organisms, such as insect predators
- Cultural techniques: practices such as crop rotation, sanitation
- Mechanical and physical methods: screens, traps, cultivation, and temperature modification
- Chemical control: judicious use of pesticides and other chemicals
- Genetic control: traditional selective breeding and new biotechnology practices that produce pest-resistant varieties
- Regulatory control: state and federal regulations that prevent the spread of pest organisms.

The New York State IPM Program funds projects to improve IPM strategies and offers educational programs and resources.

Many organizations and individuals assist in this effort. Cornell University, Cornell Cooperative Extension, the New York State Department of Agriculture and Markets, the New York State Department of Environmental Conservation, and USDA-CSREES jointly fund the NYS IPM Program.



**New York State
Agricultural Experiment Station**
Geneva, NY 14456
(800) 635-8356 FAX: (315) 787-2360
<http://www.nysipm.cornell.edu/>

diseases of alfalfa wilts and rots management guide

A detailed line drawing of an alfalfa plant, showing its characteristic trifoliate leaves and a terminal raceme of flowers.

Did you know...

Relative Risks of Diseases on Alfalfa		
Disease	New Seeding	Established Stand
Verticillium wilts	low	high
Phytophthora root rot	medium	high
Anthraco-nose	low	medium
Fusarium wilt	low	medium
Sclerotinia crown and root rot	medium	low
Pythium (dampening-off)	high	low