

THE UNIVERSITY OF ARIZONA • COOPERATIVE EXTENSION
Yuma County Farm Notes

Alfalfa Stem Nematode

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The alfalfa stem nematode, *Ditylenchus dipsaci*, is a soilborne plant-parasitic nematode that infects alfalfa. Different races infect other hosts such as onion, oats, and strawberries, but the alfalfa race reproduces only on alfalfa in Arizona. Severe infestations of alfalfa cause stand reductions and reduced yields. Distribution in the field is usually patchy. Localized areas of infected plants may first appear as poorly developing sites a few feet in diameter then enlarge and eventually overlap, resulting in large areas of infestation. Alfalfa stem nematode is found in alfalfa-growing regions throughout the world. They are most active in cool, moist conditions. In Arizona, stem nematode has been reported in mid to higher elevations, but generally is not an important problem in the low desert areas in the summer when warm soil temperatures are inhibitory to the nematode.

Signs and Symptoms

The nematode attacks the crown bud tissues causing the buds to swell, become brittle and distorted. Stem internodes are shortened and plants are stunted. Infected plants grow back slowly after harvest, and severely infected plants may die. Infected plants are also more susceptible to winter freeze damage. A small percentage of plants may exhibit white leaves and stem, known as "white flagging", a good diagnostic tool. However, because it is rare, "white flagging" does not indicate disease severity or distribution. The nematodes can be dissected from infected crown tissue and observed under low magnification with a stereo microscope. However, there are usually many free-living non-parasitic nematodes in infection sites as well, and *D. dipsaci* damage may be mistaken for that of the blue aphid. Therefore, the nematodes should be identified by a nematologist.

Disease Cycle

Initial infections of *D. dipsaci* occur in the newly forming buds during cool, moist condition when dormant juveniles become active and after eggs hatch. The life cycle consists of male and female adults, eggs and four juvenile stages, and all stages develop within the stem tissues. The nematodes feed on the parenchymatous cells and release enzymes that cause the cells to separate, resulting in the selling of host tissue. Under optimum conditions of high moisture and 65-75oF, it completes a life cycle in 19-25 days. Females lay up to 500 eggs. *D. dipsaci* survives in infested plant tissue or in the soil for years in a dormant stage. It is easily moved by irrigation water, in soil carried by animals or machinery from one field to another, and in infested dry hay. It also can be seed borne.

Management

Stem nematode is controlled by the use of resistant cultivars and cultural practices. Chemical control is not effective. Some winter-dormant varieties, such as Lahonton, are resistant. Tolerance is available in non-formant varieties such as Lew. Hot, dry weather reduces *D. dipsaci* activity. Although it is usually detectable only during January and February in Arizona, these winter infections may cause severe damage to new growth. Fields are most commonly infested by application of irrigation water that has been contaminated with run-off surface irrigation water. If possible, tail water from infested fields should not be put on other alfalfa fields. Likewise, sheep or other animals and machinery should not be moved from an infested field to a non-infested field. Rotations of at least two to three years to non-hosts such as barley, wheat, corn, cotton, and melons are needed to reduce populations in the soil.

Sampling and Identification

To ascertain that stem nematode is causing a problem on alfalfa, plants should be checked for *D. dipsaci*. Identification is free of charge by the Nematology Lab in the Department of Plant Pathology, The University of Arizona. Collect several affected whole plants and seal them in plastic bags. Be careful that samples are not exposed to excessive heat or cold.

Contact your county agent or send the samples to: Extension Plant Pathology, The Department of Plant Pathology, Forbes 204, The University of Arizona, Tucson, Arizona, 85721.

Instructions for sending plant samples and information on stem nematode and other alfalfa diseases are also available on the internet at the Extension Plant Pathology Web Site: <http://cals.arizona.edu/PLP/plpext/>

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