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Alfalfa Stem Nematode

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The alfalfa stem nematode (*Ditylenchus dipsaci*), one of the plant-parasitic nematodes, causes economic losses in alfalfa under certain growing conditions. It occurs in many alfalfa-producing areas in Idaho, particularly in older fields and where waste water or tail water is used for irrigation.



Fig. 1. Alfalfa fields infested with stem nematode show poor growth. Heavy weed infestations occur in bare patches left by dead alfalfa plants.



Fig. 2. Infected alfalfa stems have swollen, rotting buds at their crowns.

Severe damage by this nematode is usually confined to the first cutting of alfalfa during cool, humid weather. Nematodes in alfalfa stems may be removed with the first cutting, reducing the danger of infection of later cuttings. In wet soil, later cuttings also may be infected. The nematode is an aquatic animal and needs soil water to migrate to infection sites.

Damage and symptoms

The stem nematode is one of a few nematode species that feed on above-ground plant parts as well as on roots. Field infestation usually occurs in patches (Fig. 1). Nematodes feeding on plants in winter cause most



Fig. 3. White leaves or "white flagging" is a symptom of alfalfa stem nematode infection.

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of the damage, which becomes evident the following spring. Infested areas show poor growth in spring, and severely infected plants may die. If wet weather persists in spring, entire stands may be lost.

Infected plants are stunted, with excessive crown bud proliferation. They may show rotting of crown buds and young stems. Infected buds become swollen and distorted and fail to elongate into normal stems, resulting in short internodes (Fig. 2). Depending on the severity of infestation, losses in hay or seed yield may be significant.

Under cold, wet conditions, nematodes may migrate into leaf tissue causing yellow, curled and distorted leaves. Leaves of infected plants sometimes are white due to destruction of their chloroplasts. This symptom usually is called "white flagging" (Fig. 3).

Alfalfa seed may become contaminated if flower buds are infected. Up to 17,000 nematodes have been recovered from 1 pound of uncleaned seed. Occasionally, roots also are infected, causing internal cavities or gall-like outgrowths that may girdle the crown. Stem nematode has been reported to play an important role in the development of bacterial wilt of alfalfa (caused by *Corynebacterium michiganense* subsp. *insidiosum*) and to cause loss of wilt resistance in certain varieties.

Overwintering and spread

Stem nematode adults and eggs overwinter in succulent alfalfa tissue in the plant crown and in soil. It can

persist in soil without a susceptible host for at least 2 years. It also can survive in crop debris, seed, hay and possibly in association with certain weeds. It can be introduced into clean fields through uncleaned infested seed, contaminated manure, irrigation water or harvesting equipment.

Control

1. Plant resistant varieties (e.g., Archer, Lahontan, Washoe), especially when growing alfalfa on irrigated land.
2. Plant clean, nematode-free seed.
3. Avoid moving contaminated farm machinery or grazing livestock from an infested field to a clean field.
4. Do not use waste water or tail water from infested alfalfa fields for irrigation.
5. Do not apply manure from feedlots where cattle have been fed infected hay.
6. Infested fields should be rotated out of alfalfa for at least 3 to 4 years. Plant nonhost crops such as potato, corn, sorghum or small grain. Eliminate old and volunteer alfalfa plants through a weed control program.
7. Cut infested alfalfa fields only when the top 2 to 3 inches of soil are dry.
8. No nematicides are registered for control of alfalfa stem nematode.

About the Authors

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