

Extension Connection

May/June 2011

MILLARD COUNTY

Extension Update

As spring is eventually getting here we continue to have significant issues with Alfalfa Stem Nematode. We have had numerous instances where farmers have had complete losses on one to two year old alfalfa stands. Although identification of Alfalfa Stem Nematode is a fairly easy process, there are very few, if any, short-term solutions to the problem. Due to the political climate, there is very little research being done on chemical solutions to this problem. At this point, the only recommendation the university provides for infested fields is to rotate out of alfalfa for two or more years— the longer the better. If there is a silver lining, it is that crop prices are up making rotational crops a little more profitable than in past years— if prices hold. A fact sheet on Alfalfa Stem Nematode is included in this newsletter.

Due to the many requests we have for horticulture information in the county, the Extension Horticulture Agent from Cache County will be in Millard County May 11th and 12th to present workshops on home gardens and orchards. Taun Beddes is a very knowledgeable horticulturist who brings years of experience with him from working in commercial nurseries on the Wasatch Front. He will be in Delta May 11th and in Fillmore May 12th. For more information about these events refer to the announcement in this newsletter.

We are excited to announce the addition of Debbie Willoughby to the Millard County Extension staff. Debbie is from Oasis and has been hired to work with the 4-H horse and livestock programs. Debbie has been a volunteer with 4-H for several years. Her and her husband Rick operate a small farm in Oasis. Her experience with animals will be a plus for her as she works with the horse and livestock programs. For more information about Debbie, check out the 4-H newsletter available on our website at www.extension.usu.edu/millard

Upcoming Events

Home Orchard and Garden Workshop

*May 11, 2011
6:00 pm
Millard County Fair
Building Delta, UT*

Home Orchard and Garden Workshop

*May 12, 2011
6:00 pm
Millard County
Commission Chambers
Millard County Courthouse
Fillmore, UT*

Millard County Jr. Livestock Show

May 30-Jun 2, 2011

MILLARD COUNTY EX- TENSION WEB SITE

Keep connected and updated on activities, events, and information through the Millard County Extension web site: extension.usu.edu/millard

Home Orchard and Garden Workshop

6:00 pm

May 11, 2011

Millard County Fair Building
Delta, UT

6:00 pm

May 12, 2011

Millard County Commission Chambers
Millard County Courthouse
Fillmore, UT

Come join Utah State University Extension's Cache County Horticulture Agent, Taun Beddes, for a presentation on home orchards and gardens. Taun worked for several years in the commercial nursery business on the Wasatch Front before he was hired by Extension. He has extensive knowledge on all things horticultural. He will give a two hour presentation on home orchards and gardening. If you have questions about home orchards and gardening, join us for one of these workshops. This is a great opportunity for the residents of Millard County to interact with a knowledgeable horticultural professional.



Foods & Nutrition

Mary Anna Henke—Nutrition Educator

May/June 2011

Food \$ense Nutrition Education is a **Free** program to help individuals and families eat better on a tight budget. If you would like to attend classes contact us to sign up. If you are unable to attend classes in person but would like information, **Food \$ense has a DVD that contains many off the lessons that you could do at home on your own time. Anyone completing four or more lessons will receive a free cookbook.** For more information call us at 864-1480 or 743-5412 or please check out our web page at www.extension.usu.edu/millard.

FREE Classes:

- Delta Sands Apartment Complex - Thursday, May 5th - 4:00 PM: Food \$ense Cooks: Kitchen Basics—Create an Omelet.
- Delta Sands Apartment Complex - Thursday, June 2nd - 4:00 PM: Food \$ense Cooks: Using a Slow Cooker.
- Fillmore's Mt. Catherine Manor Complex - Thursday, May 12th - 4:30 PM: Food \$ense Cooks: Kitchen Basics—Create an Omelet..
- Fillmore's Mt. Catherine Manor Complex - Thursday, June 9th - 4:30 PM: Food \$ense Cooks: Using a Slow Cooker.
- Kanosh Paiute Band Building - Wednesday, May 11th - 5:00 PM: Food \$ense Cooks: Kitchen Basics—Create an Omelet..
- Kanosh Paiute Band Building - Wednesday, June 8th - 5:00 PM: Food \$ense Cooks: Using a Slow Cooker.

Broiling—Not Just for Meats

Lately, I have enjoyed the cooking method of broiling. It is a quick easy way to get dinner on the table using a fast method, but allows the food to stay moist and tender. I have loved broiling steak, pork ribs, and marinated chicken, but using the broiler is just as tasty on vegetables and fruits. Broiling uses intense, direct heat to cook food. The food should be placed on a pre-heated pan or baking sheet to sear the surface of the food and placed two to six inches under the heat source. This is a method of cooking that you don't want to walk away from as food can quickly burn if you don't keep a watchful eye on it. This can be a healthy way of cooking if you use a boiling pan so that the fats fall away from the food.

Broiled Potato Wedges

- 2 tablespoons butter, melted
- 1 teaspoon dried basil
- 1/4 teaspoon salt
- 2 large baking potatoes
- 1 large tablespoon vegetable oil

Preheat broiler, pan and double thick piece of foil on pan. Mix butter, basil, and salt. Set aside. Wash and pat potatoes dry. Cut each potato lengthwise into 8 wedges. Arrange potatoes on heated foil and pan; brush with oil and place baking pan in oven 4 inches from the heat. Cook 10 minutes. Brush with butter mixture. Turn potatoes. Brush again with butter mixture. Broil 5 minutes longer or until lightly browned and tender.
Serves 8

Broiled Pineapple

- 1 fresh Pineapple
- 1/2 cup brown sugar
- 1 tablespoon lime juice
- 1 tablespoon lemon juice
- 2 tablespoons honey
- 1-2 tablespoon cinnamon
- Optional - 3 cups orange or lime sorbet

Preheat broiler, pan and double thick piece of foil on pan. Peel, core, and cut pineapple into 1/2 inch slices. Make a glaze by mixing brown sugar, juices, honey, and cinnamon in a small bowl until smooth. Spread glaze on each side of pineapple slice. Broil 4-5 inches from the heat for 5-10 minutes, turning once, until sugar mixture melts and pineapple is heated and tender. Top each slice with a small scoop of sorbet if desired, and serve immediately.
Serves 8

If you prefer, you can broil the pineapple without the sauce. These recipes may also be grilled. They would be great for the summer.

Don't be afraid to try broiling or grilling all kinds of vegetables and fruits. If you can do one, you can do them all!

(Source: Utah State University Cooperative Extension: Nutrition, Dietetics, & Food Sciences Extension: Food Sense Cooks - Grilling and Broiling lesson.)

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Alfalfa Stem Nematode

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What You Should Know

Alfalfa Stem Nematode (ASN) is a nearly microscopic round worm that enters the alfalfa plant and lives in the stems and leaves, usually above ground. Under ideal conditions (wet weather in late winter or early spring, at 59-70°F), ASN can complete its life cycle from egg to reproducing adult in 19-23 days. A single ASN female, after mating with a male, can produce 200-500 eggs during its reproductive life. ASN can parasitize and persist on a number of host plant species, but can only reproduce in alfalfa and sainfoin. ASN can undergo anhydrobiosis, a state of drying to near death, and persist in plant debris, on seeds, or in dry soil for a very long time.

Introduction

Alfalfa stem nematode, *Ditylenchus dipsaci*, belongs to a diverse species of nematode often referred to as stem and bulb nematodes. Within this species are a number of races or strains of the nematode. Alfalfa Stem Nematode is one that attacks and reproduces only on alfalfa (*Medicago sativa*) and sainfoin (*Onobrychis viciifolia*) plants. The ASN occurs in all regions of alfalfa production worldwide and can dramatically reduce plant stand and forage yields. Several nematodes are known to parasitize alfalfa; however, ASN is the most serious nematode causing damage in alfalfa production.

ASN is increasingly a concern to alfalfa producers in all regions of Utah; however, noticeable losses have occurred in Millard, Cache, and Box Elder counties. Symptoms are easily recognized in the early spring during cool wet weather. Damage is most often seen in flood-irrigated fields with increased damage observed near the headwater ends of infected fields. Newly established alfalfa on ASN infested ground often declines rapidly with poor seedling stand, increased



Fig. 1. A one-year stand of alfalfa heavily infested with alfalfa stem nematode. Less than 50% of plants remain due to die-out from the infected seedlings.



Fig. 2. Normal internodes with no swelling of nodes on healthy stem (left) compared with shortened internodes and swollen nodes on ASN infected stem (right). Photo courtesy Dr. S.V. Thomson.

weed pressure, and poor forage yield. Alfalfa production with moderate to severe ASN pressure (Fig. 1) rapidly becomes unprofitable within a year or two after planting.

Symptoms

Infected plants tend to be stunted with very small "mouse eared" leaves. Infected stems have shortened internodes and swollen nodes (Fig. 2). Under the right climatic conditions, infected plants can appear yellow (Fig. 3) or even white in color (often called white flagging). This symptom is readily observed at green-up in the early spring or just after the first cutting. However, chlorotic flagging may be an indicator of other problems and alone does not indicate the presence of the ASN. Crinkled leaves are often observed on infected



Fig. 3. Yellowing and stunting of severely infected alfalfa stems.

plants, with crinkling occurring between veins, not crossing them. Infected stems are brittle and tend to break off from the crown. Crowns of infected plants are not firm and may even appear spongy in consistency. Infected areas of the field are about 2-3 weeks slower to

green-up in the spring compared to noninfected areas and appear to have winter killed. Although plants persist with moderate ASN pressure, eventually, with increasing ASN populations, they will die and plant stands will become patchy with blank spaces. Stand decline will increase weed pressure.

Crops & Livestock

Trent Wilde– USU Extension Agent

May/June 2011

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T: 435.797.2435 F: 435.797.8197

<http://utahpests.usu.edu>

Disease Cycle

All species of plant parasitic nematodes have a hollow stylet that is used to puncture the plant's cells so that they can feed on the plant cellular contents. ASN also has this trait (Fig. 4), but is among a small number of nematode species that can live and complete its life cycle, most often, above ground free of soil contact. ASN progresses through several life stages beginning with the egg. Within the egg, the nematode develops and goes through its first molt. After egg-hatch, the nematode goes through two additional molts to become a pre-adult or infective juvenile. At this stage the nematode can withstand extremes of freezing and drying for long periods by persisting in or on the surface of hay or plant debris and/or seed (Figs. 5 and 6), or in the crowns of plants when survival conditions are adverse. When there is sufficient moisture and

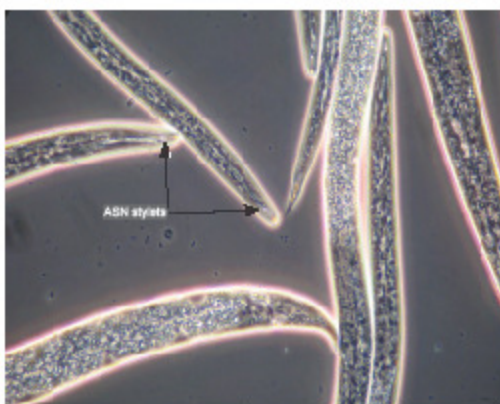


Fig. 4. Note the needle-like stylets in the heads of these alfalfa stem nematodes.

favorable temperatures, the infective juveniles become active, enter the plant by colonizing seedlings as they germinate or by swimming up on the surface and entering through the plant's stomates. The nematodes are small enough to move within the plant's internal open spaces between cells. The nematodes secrete enzymes and plant-affecting hormones as they feed that stunt and swell plant tissues. Within the host plant, the nematodes molt a fourth time to become male and female adults. After mating, females can lay 200-500 eggs during their life. A complete life cycle, from egg to egg-laying adult, is 19-23 days at 59-70°F air temperature. Nematodes escape to the soil when living conditions within the plant become adverse when heavily infected plants can no longer support the nematode's growing population, or when plants are dying. Pre-adult juveniles can survive in/on plant debris or seed under dry conditions for years (Figs. 5 and 6).

To verify that ASN is causing the symptoms in alfalfa, stems and leaves of symptomatic plants can

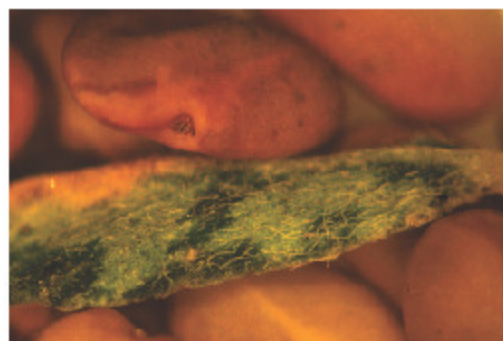


Fig. 5. Dried, but still living nematodes on the surface of leaf debris in a sample of "brown bag" alfalfa seed.

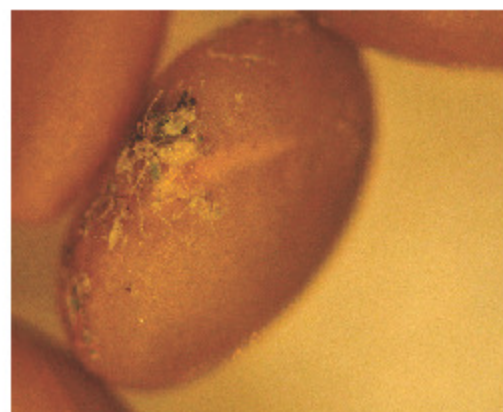


Fig. 6. Hair-like, dried nematodes (still living) on the surface of this alfalfa seed from a "brown bag" source of seed.

Diagnosis

be sampled and checked for the nematodes. Your local county Extension educator may be able to do this for you as they often can provide diagnoses quickly and accurately with the aid of a microscope. If confirmation is desired, then the sample may be sent to the diagnostic laboratory. To do this collect stems with leaves from several plants exhibiting symptoms of infection. Plant tissues should be sealed in a plastic bag and sent to the: Utah Plant Pest Diagnostic Lab, Department of Biology, 5305 Old Main Hill, Logan UT 84322-5349. Care should be taken not to expose the bag to excessive heat or cold so that the specimen and nematodes remain alive until the sample is received. General instructions for sample collection and shipment can be found at: <http://utahpests.usu.edu/uppd/html/forms> and directing your browser to the diagnostic laboratory sample submission information.



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