

# Pest Alert

Vol. 16 No. 10

July 2, 1999

**JUNE 28 VEGNET REPORT  
IN THE LAWN IT'S NOT THE BLOB---YOU'VE BEEN SLIMED  
CORN WATCH  
FAIRY RING AND OTHER MUSHROOM QUERIES CONTINUE  
IT'S ALFALFA STEM NEMATODE TIME AGAIN**

## **JUNE 28 VEGNET REPORT**

During the last week, temperatures averaged in the mid 80s to lower 90s at most sites in the region. During the last week, rainfall was less than 0.25 inches on the average in western Kansas, Colorado and Nebraska. A few sites received more rain last week; Sterling – 1.21, Scottsbluff – 0.59, Torrington – 0.66, Garden City – 1.91 inches. The upcoming week is forecasted at average to above average moisture and average temperature at most sites for this time of the year.

Crops should be scouted at least once a week for early evidence of pests. Check with your local consultants and other experts on crop status and the initiation of disease protection strategies when either disease is confirmed in the region and/or a disease threat does exist.

### DRY BEAN Pests:

As of June 28, the dry bean crop continues with the rapid vegetative to early flowering phases in the region and there are no reports of foliar problems. Some fields have been hit by localized storm damage from hail, wind, and wind-blown soil. Generally, it is best to wait a few days to allow damaged plants and structures to recover and initiate new growth from surviving nodes/buds before applying any responsive treatments such as foliar nitrogen and/or copper-based bactericides to reduce bacterial disease development. Research in the region has not shown any consistent response of storm-damaged plants to foliar feed.

A survey throughout eastern and southern Colorado in mid June found ample evidence of volunteer beans in old bean ground planted to wheat or corn, but no evidence of overwintered rust infection. The lack of rust on volunteers may be attributed to a number of factors including low disease pressure in 1998 at harvest and increasing acreage planted to rust-resistant varieties of pintos.

At this point, consider application of copper-based bactericides to the dry bean crop at 30 to 40 days post-emergence; continue on a 7 – 10 day interval through early pod set. Research by Colorado State University in grower fields has consistently shown that 2 – 4 early-season sprays help reduce losses from bacterial diseases (halo blight, bacterial brown spot, common bacterial blight), and

Colorado State University, U.S. Department of Agriculture and Colorado counties cooperating.  
Cooperative Extension programs are available to all without discrimination.

improve net economic return of \$ 15/cwt pintos by \$ 25 to 50/Acre. Ground-rig applications are preferable until row closure; then rely upon aerial sprays (4 – 5 gal of water/A) or chemigation (less than ¼ in of water/A) until the risk of infection is low due to absence of disease and/or persistent hot, dry conditions.

### ONION Pests:

As of June 28, most transplanted fields continue to progress nicely. The earlier cool, wet spell may bring on a flush of downy mildew, so aggressively scout fields at least twice a week to detect and/or confirm presence of the disease in your fields or in the area. Once confirmed, fungicides like the EBDCs (Maneb, Mancozeb, Dithane, Penncozeb) or Ridomil tank-mixes have been extremely effective, especially when a non-ionic surfactant is added in sufficient gallonage. Rotate fungicide chemistry every other application.

The disease models suggest that purple blotch may occur in some regions in transplanted fields, and now possibly in some seeded fields as well. Continue to scout fields at least once, and preferably twice, a week for early signs of disease in the field or region. Consider application of protectant fungicides including the EBDCs, coppers, Bravo and Rovral in high gallonage plus adjuvant for good coverage on a 7 to 10 day interval. Rotate fungicide chemistry every other application.

Bacterial diseases may become more of a threat to transplanted and now seeded plants as they approach bulbing and/or sustain storm damage. Application of copper-based bactericides tank mixed with an EBDC and adjuvant is recommended on a 7 to 10 day interval to reduce background populations of bacterial pathogens which may be moved into fields by wind-blown rain droplets, aerosols, runoff water, implements, etc.

### POTATO Pests:

The early blight and late blight disease models have exceeded the threshold for some sites in northeastern Colorado, assuming a May 1 up to May 21 emergence date with hours greater than 80 % relative humidity. Crop development is still quite variable throughout the region as a result of planting dates and earlier delays in emergence due to weather events.

At this point, protectant sprays should be maintained on a 5 to 7 day interval for early blight in most fields and regions of the state; again as affected by your specific emergence date. Early blight was reported within the last 7 to 10 days in northeastern and Front Range counties of Colorado by cooperators Bill Gilbert – Agland and Larry Duell – Centennial Ag Supply. There are no reports of late blight in Colorado or neighboring states, but an aggressive early blight fungicide program has been shown to be beneficial against early season infection by late blight as well. (Schwartz)

### **IN THE LAWN IT'S NOT THE BLOB---YOU'VE BEEN SLIMED**

Seeing little yellow bodies on your turf, in the mulch, where it is wet and warm? Is it growing very fast over everything....the grass, the leaf litter in the flower bed, even the wood mulch...it is not from outer space, it is not the blob. It is a slime mold. Many people do not recognize these primitive fungi when they see them on the lawn and in the garden during wet warm periods. Slime molds do not cause disease, but they're sudden and their rapid growth can cause alarm.

Back in the 50s when Sputnik went up and the movie "The Blob" came out, there was a rash of slime mold sightings in Texas. Panic ensued and people were so upset and did not know what they were that chaos rained and they believed them to be from outer space. The rapid growth of slime molds under favorable conditions is really amazing and this caused people to panic--there was even talk of calling out the Texas National Guard! Fortunately calmer heads prevailed and the scientific explanation was finally accepted.

## Symptoms

Slime molds begin as a large number of pinhead-sized fruiting bodies (sporangia) that suddenly appear on grass blades and stems in circular to irregular patches up to 60 cm in diameter. The bodies are generally white, gray, or purplish brown (the ones I looked at on Tuesday were almost yellow). There can be other colors because there are over a 100 species. The grass is usually unaffected, although if the slime molds last long enough some yellowing will come about because of the blocking of photosynthesis. They seldom last more than 1-2 weeks.

Warm, wet weather favors the development of the vegetative body (called a plasmodium) that actually moves up and onto the leaves and stems. A lot of thatch can favor slime mold development by providing food (organic litter) and microbes that the slime mold uses as a food base.

## Control

There is no need to control slime molds. Many think the slime molds unsightly, but they are not harmful to either pets or humans. If they are a problem, rake, brush or wash them (use a heavy stream of water). Also if they are growing rapidly, mow them. But the bottom line is that they are a unique life form and really very interesting. You are really lucky to have a slime mold in your lawn! (Brown)

## **CORN WATCH**

There is a lot of concern about what is going to happen to our corn this season, especially the late planted corn. With the continuing wet weather, we might have serious problems: with some dry, hot weather, we may catch up on heat units but there is a considerable possibility that we will encounter more diseases this season than we normally see. The long wet, cool soil temperature will have given various soilborne fungi an opportunity to infect the seedlings.

We are also seeing some herbicide damage associated with isoxaflutole (Balance and Epic). While we were in Lincoln, Nebraska at plant pathology meetings earlier this week, I had an opportunity to visit with others looking at corn problems. The Nebraska newsletter also just put a rather comprehensive article out. While we are seeing damage fairly wide spread on the high plains, the Nebraska pathologists are noticing it most in the central, southwest and northeastern part of the state. While there may be some other herbicide problems out there, the isoxaflutole is the most notable.

## Symptoms and conditions for damage

Isoxaflutole is a pigment inhibitor and therefore can cause a "bleached" yellowish or white symptom in the leaves. Herbicide activity is reported to increase with higher soil pH, low organic matter, and high soil moisture and as a post applied material at higher rates. Sounds like us! The article in the Crop Watch (No. 99-15, June 25, 1999) also goes on to point out that damage increases with shallow planting (less than 1.5 in) and cool soil among other things.

Balance was tested extensively in Nebraska over the last 4 years and was not associated with injury even after rains. In at least one trial where damage (yellowing) was observed, the corn recovered. The main problem would appear to be the cool, wet soil and the continuing rains. With these kinds of conditions, corn emerged very slowly and the seed and seedlings were in contact with the herbicide for a much longer period of time. This could produce a problem for most any seed or herbicide treatment.

There is little that can be done at this point. As fields dry out, getting tillage equipment in to open up the soil a little should help. Getting the soil to dry and getting some oxygen in is the best thing that can happen for many of the conditions that may be encountered this season. I plan to follow up and see what else I can learn about this material and will pass it on as available and relevant.

**Stalk rot** diseases are a major threat. Research done by our group has shown that the fungi that cause stalk rots are always present and frequently infect the plants. But if little or no stress develops from other sources, i.e., compaction, water logging, high plant populations, mite damage etc., the crop can usually tolerate these fungi and not experience significant losses. As noted above, with the cool and wet soils there is a need to till and open up the soil for aeration and promotion of root growth.

**High Plains Disease (HPD)** may show up more than the two prior years. The delayed planting exposes the developing corn seedlings to the vector of the virus-like causal agent that carry over in the wheat. In several of the wheat samples sent in to virus labs this spring HPV has been detected. Corn plants were not as well developed as they normally are when the wheat started to mature and the wheat curl mites begin to leave them. This will be most important where corn (especially dry land corn) is planted next to wheat, CRP or grasslands.

**Head Smut** is another stress disease associated with cool wet soil. Also this soilborne smut disease frequently develops where there is compaction (turn rows) and low spots in the field that do not drain well. Good tillage and water management is all that can be done at this stage.

**Rust** may develop more this year due to the delayed maturity and the longer exposure of susceptible leaf tissue to the inoculum being blown into the state from other areas. Most hybrids have pretty good resistance and this should not be a significant problem.

We are fortunate that we do not have the various leaf blight diseases that cause so much damage farther east. In a couple of the states to the east of us they are expecting a bacterial Stewart's Wilt disease year. There appear to be record populations of the vector, the corn flea beetle, that survived the winter. Note that Stewart's Wilt has never been found and confirmed in Colorado. We do not consider this to be a problem here. But I seem to remember me saying that about other things that are now well established in Colorado. We will just keep looking. Hopefully the weather will begin to cooperate and we will get a reasonable corn crop. (Brown)

### **FAIRY RING AND OTHER MUSHROOM QUERIES CONTINUE**

We are still getting questions on how to control fairy rings and other mushrooms in turf. Fairy rings are caused by soil-inhabiting mushroom forming fungi that may live in the turf for years. They live on the thatch and other residue and do not attack the turf itself. The damage they do is due to the fungus preventing water movement through the thatch, which results in stress developing. With all the rain we are having there are also many other fungi that survive on the thatch that are forming mushrooms but are not necessarily fairy ring fungi.

#### Symptoms

Early symptoms of infection consist of complete or partial ring-bands of dark green grass varying from less than a foot (30.5 cm) to many feet (meters) in diameter. There are 3 types of fairy rings:

- 1) a ring of dead grass surrounded by 1 or 2 rings of tall, dark green stimulated grass.
- 2) only a ring of stimulated grass.
- 3) no visible effect on the grass, but mushrooms are occasionally produced in rings..

Rings continue to extend a little farther each year. As the fungus grows through the turf, a dense, felt-like mat of white mold is concentrated in the upper three or four inches (7.6-10.2 cm) of turf where the fungus obtains its food from decaying organic matter. Eventually the fungus forms such a dense mat

that it prevents adequate amounts of water, nutrients and air from being available to support healthy turf growth.

### Control

Proper site preparation is vital for avoiding fairy rings. The usual practice of scraping and leveling the building site is not conducive to good turf establishment. Landscaping and turf areas of new building sites should be first sub-soiled and then appropriate top soil mixtures incorporated to a depth of 6 inches (15.2 cm) or more according to the needs of the specific location. Use good quality top soil. Avoid burying any rubbish from construction projects, large amounts of manure or roots because these can serve as the food source for the fairy ring fungi.

In established lawns, the entire area occupied by the fairy ring, plus an additional two feet (6.10 cm) beyond its visible limits, should be aerated. Aeration aids in penetration of air and water. While there is no proof of mechanical spread, it is a good policy to clean equipment used for aeration after use to prevent the accidental spread of fairy ring or other organisms to healthy grass.

Following aeration, the affected area should be soaked with water containing a wetting agent, such as Triton-B 1956, every three weeks during the growing season. Also applying light (1/4 level) nitrogen applications will help to mask the symptoms in most instances.

Whereas fumigation of the soil has been successful in some instances, the cost and inconvenience is prohibitive and success is not guaranteed. There are no commercially available fungicides for fairy rings common in Colorado. Both Curt Swift (Tri River Coop. Extension) and I have tested some new material that are used on fairy rings in the southeastern U.S. but we were not able to get control.

In the mean time, if you can not beat it, join it. It will eventually grow into your neighbors yard so name it and make it a pet! (Brown)

### **IT'S ALFALFA STEM NEMATODE TIME AGAIN**

We are seeing quite a lot of alfalfa stem nematode, *Ditylenchus dipsaci*, damage to the crop throughout Colorado. The last couple of weeks we have had reports of damage in the Front Range, the Arkansas Valley and a severe outbreak on the Western Slope. Symptoms of stem nematode can be very prevalent along with considerable stand decline and other disease-like problems.

In looking at alfalfa fields, the white-flagging symptoms of stem nematode are readily visible and wide spread later as the weather warms, the white flagging is being reported elsewhere as well. But there are other symptoms, such as the stunting that show when the white flagging is not apparent.

### Background

Much damage to alfalfa in the past has been attributed to a wide variety of different causes. It is now apparent that the single most severe disease problem in alfalfa is the stem nematode, *Ditylenchus dipsaci*.

I first reported stem nematode in June of 1982 from experimental plantings at the Fruita Experiment Station in Western Colorado. The plantings, which were composed of varieties of varying tolerance to Phytophthora wilt, were showing symptoms that growers had been attributing to Phytophthora wilt. As a result we initiated nematode surveys in 1983 and subsequent years. Fields throughout the state were sampled over the years for stem nematode.

Laboratory analysis for nematodes and other disease-causing organisms were also conducted. Alfalfa stem nematode was found in 33 of the 34 West Slope fields first examined in 1983. Subsequent sampling throughout the state over the years has shown alfalfa stem nematode present

in numerous fields in the Arkansas Valley, the Front Range, the High Plains and most recently in the San Luis Valley.

### Importance

There are three significant impacts caused by the presence of stem nematode in alfalfa.

- In high populations there is a direct effect on yield and stand longevity.
- An indirect effect of alfalfa stem nematode is found in that within the same species, races that are known to attack onions and garlic exist. Because of this, New Zealand and some other countries have quarantine laws that "prohibit importation of onions from any area" where this nematode is known to occur. The generalization that any *Ditylenchus dipsaci* is parasitic to onions is not supported by research. The opposite is true; in most reported instances to date the alfalfa race was specific to alfalfa.
- Research conducted in Canada showed that the stem nematode can break down the resistance of alfalfa varieties selected for their resistance to bacterial wilt. We have observed an increase in bacterial wilt and other disease causing organisms in association with stem nematode but do not know why.

In all but two fields sampled in our early surveys in 1983, plants found with stem nematode infestations had one or more fungi associated with the infestation. In a 1985 survey, *Fusarium* spp. were frequently recovered from stressed appearing plants. But in many instances the stem nematode was not recovered.

Laura Pottorff (Jefferson County) found in her research that many of these fungi did not cause disease symptoms unless plants were stressed. We believe that the nematode is a stress agent that then allows some fungi to enter through the wounds and subsequently develop to the extent that the plant exhibits disease symptoms.

Another problem contributing to stand decline is found where secondary fungi invade crowns damaged during "reconditioning" with a disc or other cultivation tool that splits the crowns. These fungi then become established and cause further damage.

### Stem Nematode Detection

While positive identification of stem nematode is dependent upon laboratory analysis by trained nematologists, there are symptoms that can be good indicators of nematode presence.

- The most common symptom is overall stunting of plants.
- Crown buds may be swollen and distorted.
- Stems from base of plant up to 2-4 inches may be dark brown and hollow.
- A few plants or stems that are completely white (referred to as "white flagging") can be observed on the regrowth after the first cutting.

The last symptom above, "**white flagging**," is a very dramatic and diagnostic characteristic and when observed is a reliable indicator of stem nematode presence. But absence of "white flagging" does not mean there is no nematode present. White flagging is not encountered in warmer climates and even in our surveys was not always apparent.

## Control

Although chemical control with systemic insecticide/nematicides has been shown to control the nematode, no pesticides at the rates and the manner of application necessary to control stem nematode are labeled. Therefore, control must concentrate on the following management components.

•**Rotation** is the best tool presently available to Colorado growers. Rotation 2-3 years out of alfalfa (with good control of weed hosts) is sufficient to reduce stem nematode populations to insignificant levels.

•**Resistant varieties** are an additional excellent management tool. Much of the resistance available in alfalfa for stem nematode is traceable to Turkistan-derived varieties such as Lahontan and Washoe. But even varieties that are resistant can be infected by the nematode. Most other stem nematode-resistant varieties such as Talen, Apalachee and Nematol II are susceptible to bacterial wilt and, therefore, of value only in breeding programs or bacterial wilt-free areas. Other lines have also been extensively tested.

•**Field management** can affect spread and severity of stem nematode. The nematode is more severe on heavy, poorly drained soils and is easily spread by irrigation, tail water, and equipment movement. Additionally, spread within the field can be decreased by harvesting only when the top 2-3 inches of soil has been allowed to dry.

•**Clean seed** is extremely important when establishing or reestablishing alfalfa. Stem nematodes are easily spread in the trash that accompanies poorly cleaned seed.

## Summary

Alfalfa stem nematode is potentially the most serious alfalfa disease problem to be encountered in Colorado alfalfa to date. It has now been found in all of the state's growing areas with last year's was confirmation in the San Luis Valley.

Stem nematode has a significant impact on yield and stand longevity. (Brown)

## CONTRIBUTORS

**K. George Beck**, Extension Weed Specialist, Perennial and Range (970) 491-7568;  
gbeck@lamar.colostate.edu

**William M. Brown**, Extension Plant Pathologist, IPM and General (970) 491-6470 ;  
wbrown@ceres.agsci.colostate.edu

**Whitney S. Cranshaw**, Extension Entomologist, Urban and Horticulture (970) 491-6781;  
wcransha@ceres.agsci.colostate.edu

**Sandra McDonald**, Extension Specialist, Environmental and Pesticide Education (970) 491-6027;  
smcdonal@lamar.colostate.edu

**Scott J. Nissen**, Extension Weed Specialist, Row Crops (970) 491-3489;  
snissen@lamar.colostate.edu

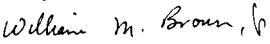
**Frank B. Peairs**, Extension Entomologist, Field Crops (970) 491-5945;  
fbpeairs@lamar.colostate.edu

**Howard F. Schwartz**, Extension Plant Pathologist, Row and Vegetable Crops (970) 491-6987;  
hfspp@lamar.colostate.edu

**Philip H. Westra**, Extension Weed Specialist, Row Crops (970) 491-5219;  
pwestra@ceres.agsci.colostate.edu

Where trade names are used, no discrimination is intended, and no endorsement by the Cooperative Extension Service is implied.

Sincerely,

  
William M. Brown, Jr.  
Extension Plant Pathologist