Cooperative Extension: Colorado State University, Fort Collins, Colorado 80523

Pest Alert

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NOTE: BEGINNING JANUARY, 2001, PEST ALERT WILL ONLY BE AVAILABLE ON THE WEB.
FOR ELECTRONIC NOTIFICATION, PLEASE EMAIL YOUR ADDRESS TO bspm@lamar.colostate.edu. (Check out our complete web site!)

POTATO UPDATE

Potato Late Blight Models have exceeded the threshold level of 18 Severity values at many locations across northeastern Colorado. See Pest Summary at http://www.csuag.com
Early spring conditions in eastern Colorado during May have provided adequate moisture and cool to moderate temperatures which favor the emergence of volunteer plants from last season's fields where pathogens may have been present. Scout these areas for evidence of overwintering and infection by pathogens such as rust of bean, purple blotch of onion, and early blight of potato. Destroy these sources of inoculum, which can be spread by wind, water and implements to new crop fields during June.

ONION UPDATE

The recent moisture and relatively cool conditions could be favorable for early-season outbreaks of diseases like Downy Mildew in northern and southern Colorado. There are NO reports of the disease on onion transplants yet, but a fungicide program may be beneficial if the threat and weather conditions persist during mid June.

Effective fungicides include Bravo, EBDC (maneb, mancozeb, ManKocide, penncozeb, Dithane), and Ridomil package mixes (with EBDC, copper, Bravo). Bravo, ManKocide and

EBDCs are protectants that may have to be applied every 7 - 10 days, while the Ridomil provides protection against Downy Mildew for 14 days or longer in the threat persists.

If there is a history of bacterial soft rot in your fields or area, you may want to include a copper-based bactericide (Champ, NuCop, Kocide, ManKocide, etc) as older transplants near bulbing.

DRY BEAN UPDATE

The May and June weather data from COAGMET illustrate that 2001 has been cooler and wetter than experienced in northern and southern Colorado production regions during the 2000 season. The west slope averages are similar to 2000 - warm and dry. Bean rust was confirmed on volunteer beans northeast of Haxtun, CO last week.

The moist May and early June could favor pest development from the 2000 crop debris and volunteers. Scout last year's fields for evidence of overwintering of key pests of bean (rust, Mexican bean beetle), onion (downy mildew, purple blotch, Botrytis, maggots), and potato (early blight, late blight, Colorado Potato beetle).

Use sanitation (cultivation, plowing) and selective herbicides to remove these overwintered plant sources of pests before they can be moved into new crop fields located downwind or downstream from these infested sites. Aggressively scout new crop fields for evidence of early development by these pests before implementation of pesticide programs. Monitor COAGMET weather patterns and pest forecast models, and share pest sightings with VEGNET personnel. (Schwartz)

STRIPE RUST UPDATE

Along with last fall’s dry season and the potential drought in the southeast of the state, wheat stripe rust has been the major problem in Colorado wheat this season. As I noted in last week’s Pest Alert it is very different from the other 2 rust diseases of wheat, stem and leaf rust. See that issue for a comparison of the 3 diseases. The main thing to note is that stripe rust develops best under cool (55-60 F) and humid conditions. Anything over 65 F will dry up the rust pustules almost overnight.

Stripe rust is rare in Colorado. On occasion we will see some in the Front Range in the wetter areas and on rare occasions out east along the Kansas border. This year it was developing in Kansas and pretty well stopped in mid May with the warmer, dryer weather. We did our tri-state wheat survey in mid May and did not detect any diseases, much less stripe rust. On June 2, Ron Meyer (Extension, Burlington) and Scott Haley, CSU wheat breeder, reported it in the Burlington area. It was primarily found on irrigated white wheats. I looked at fields in the Akron area on June 5 and found traces of it in the variety Akron but not at levels requiring spray applications.

We had watched stripe rust develop in southern Texas at Uvalde from spore showers that would have originated in Mexico as is the case with barley stripe rust and the leaf rusts. It then moved into Oklahoma and eastern Kansas where it appeared to be held in check by warm weather from May 14-17. It was not expected to develop further. This pretty well matched my experience working with a similar stripe rust on barley. Note that wheat stripe rust can go to barley, but usually does little damage and barley stripe rust does not go to

wheat. The warm, dry weather stops development of the rust. But a subsequent a cool, wet period began and continued into early June kicking it off again. It then developed rapidly and swept through Kansas reaching into Nebraska, South Dakota and eastern Colorado. By the time it reached Colorado it was past the legal time to spray the preferred fungicide (Tilt at Feekes 8 or pre-boot) and certainly of questionable economic value with the majority of dryland wheat (cost of $12-14 acre). Our surveys and wheat field days this last week showed considerable stripe rust but the moisture level and the advanced growth of the wheat will carry the dryland wheat through to harvest. Our experience with leaf rust trials in eastern Colorado and my work with barley stripe rust point out that yield depression should not be enough to justify the applications of fungicide that would have to have been applied earlier.

On the other hand, some irrigated wheats will be seriously damaged. This is because of the 1) apparent high uniform susceptibility of the major variety, Platte to stripe rust: 2) high populations planted under irrigation: and 3) high nitrogen levels used in irrigated wheat. A fungicide application might have helped these, but would have had to be applied prior to the disease even being detected in Colorado. An application of Quadris would have been effective after the disease showed but can only be applied up to a Feekes 10.5 or flowering. Also Quadris costs from $20-25 depending on application method and has a pre-harvest-interval of 45 days.

Now our attention is on the irrigated wheats in the San Luis Valley and the possible need to apply fungicides there. Most of the wheat and barley in the valley is in the boot and while we are asking for an extended use period on Tilt, a lot of the barley growers will be using Quadris applied through the pivot ($20/acre) to manage black head molds and black point fungus. Also the stripe rust development on the plains was limited to wheat and no barley infections were confirmed. Currently barley in the Front Range is in the ripening stage and no stripe rust has been observed.

Wheat in the valley is almost in the boot and a Tilt application would have to go on soon. I cannot recommend such an application at this time with no rust showing and the current weather warm up. If rust does develop growers will have to consider the use of Quadris as the barley growers are doing. The present warm weather is stopping further development of the rust and the potential for the Front Range to be the source of spores blowing into the San Luis Valley is becoming less likely. Growers need to scout their fields very carefully to insure early detection of stripe rust if it shows.

Overall the wheat crop instead of being a disaster from lack of moisture will be pretty good thanks to the same moisture pattern that brought the rust. Wonderful thing about Colorado, there is no normal year. (Brown)

WATCH FOR LEAF BLIGHT CAUSING TURF DAMAGE

While there is an abundance of Helminthosporium leaf spot around and even some melting out symptoms starting to develop, Ascochyta leaf blight, caused by fungi in the genus Ascochyta (there are more than 20 species that attack turf grasses) is also causing damage in Front Range turf. While we have seen some Ascochyta leaf blight off and on over the years, it is generally more of a curiosity than a problem. In 1990 was the first time that it assumed any importance and even then was just in localized situations.

Symptoms

Large areas of turf may develop a straw colored blighted appearance. In some instances it may cover major parts of a bluegrass landscape or be localized and produce a patchy appearance. Close examination will show healthy leaves and infected leaves interspersed.

Common leafspot and dollar spot may also sometimes occur to some extent with the Ascochyta leaf blight. Infected leaves have a bleached appearance from the tip of the leaf blade extending toward the leaf base. The margin between the diseased leaf area (lesion) and apparently healthy tissue is somewhat diffuse in color but develops an abrupt pinched appearance. This symptom is very diagnostic because the infection usually begins at the tip and progresses toward the leaf blade. Other leaf spotting fungus diseases do not have this die back appearance. In some instances an infection may begin along the leaf blade and continue across the leaf blade. These can sometimes be confused with dollar spot or Septoria leaf spot. The former occurs at higher temperatures and the latter will have small black fungus structures (pycnidia) in the spot. Pycnidia of Ascochyta are smaller and usually at the base of the plant or on dead tissue in the thatch.

First symptoms are small individual purplish to brown leaf spots. These spots expand becoming tan and ultimately straw colored to bleached appearing. On older dead leaves, very small, dark, fly speck-sized fungus fruiting bodies (pycnidia) form. These can be confused with Septoria leaf spot, which has pycnidia that are twice as large, readily seen, and form on lesions that may or may not be on still living leaves. Refer to the following table to differentiate the common turf leaf spots.

Characteristics of some common turf leaf fungus diseases.

Disease	Lesion type	Fruiting body
Ascochyta leaf blight	**Straw colored from leaf tip toward base**	**Speck sized, dark pycnidia**
Septoria leaf spot	**Straw colored random along leaf blade**	**Pepper grain sized, dark pycnidia**
Anthracnose	**Yellow to brown spots scattered along leaf blade**	**Pepper grain sized, acervuli with spines**
Common leaf	**Lens shaped lesion with dark boarder**	**None**
Dollar spot	**Bleached constricted hour glass-shaped, scattered lesions, frequently with dark top/bottomedges**	**None**

Disease development
Little work has been done on the development of Ascochyta fungi on grasses. It is known that the fungus develops and carries over as mycelium and pycnidia on dead tissue. Pycnidia produce spores (conidia) which ooze out during wet periods. The conidia are splashed or float to newly cut leaf tips or are moved by mowers, other turf equipment and/or shoes. Although the fungi can occasionally enter the leaf blade elsewhere they usually enter freshly cut leaf ends and the disease symptoms progress from tip to leaf base. This symptom is the most useful in separating Ascochyta leaf blight from other leaf spotting diseases. Pycnidia form after the leaf dies.

Frequent irrigation, rain and extended wet periods favor development of the disease. As such the practices of not readjusting sprinkler timers during rain periods contributes significantly to disease development (How many times have you seen sprinklers going full blast during a rain!). Frequent mowing also favors disease development by making new sites for infection.

Control
"Ascochyta fungi seldom cause extensive damage." Problem here is the fungus didn't read the book. Under normal conditions, good cultural practices are considered sufficient to suppress significant Ascochyta leaf blight development. In reference to Ascochyta:

- Mow grass as necessary to maintain height, although mowing favors disease development other diseases could pose more serious problems if grass is not properly maintained.

- Collect cuttings where disease is severe (normally I do not recommend collecting cuttings) because the fungus only sporulates on dead leaf tissue.

- Water in early morning or up to mid day, deeply and as infrequently as possible without creating stress, i.e., turn the sprinklers off during the rain.

- Avoid excessive applications of nitrogen which cause more growth, thus more tender leaf tissue that needs to be cut more often, hence more fresh infection sites!

- When disease is severe, use fungicides. Use the broad spectrum fungicides such as mancozeb formulations (i.e. Fore, etc.), anilazine (Dyrene) and iprodione (Chipco 26019). Unfortunately chlorothalonil (Daconil 2787) is being taken off the market and may not be readily available. It is by far the best material for the cost.

The bottom line is--do a good job on cultural practices. (Brown)

MUSHROOMS IN LAWNS MOST LIKELY NOT FAIRY RING

With the abundance of rain we have experienced there are many mushrooms “popping” up in lawns. Most of these are not associated with fairy ring and are just part of the turf ecology. They appear to do and are not known to do any damage to the lawn and are not harmful to pets.

I recommend that people not eat them as much on general principal as to the diversity of the mushrooms and the people themselves. There is always a risk of getting a toxic one or

someone might be more sensitive than other individuals. I recommend against eating them unless you have had lost of experience in mushroom collecting of the same kinds over a long period.

If their appearance is detracting from the lawn just mow them as you regularly mow the grass. In time they will not be noticeable. (Brown)

IT'S ALFALFA STEM NEMATODE TIME AGAIN

We got our first samples of alfalfa stem nematode, *Ditylenchus dipsaci*, in the clinic this last week. This is a disease that can cause considerable damage to alfalfa in Colorado. With the first cutting of hay pretty well done, the symptoms of stem nematode will begin to show in the second cutting growth. So far the alfalfa looks really great. The same rain causing the stripe rust problem above helped move the alfalfa along.

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 generally most prevalent in second growth. 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 l982 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 l983 and subsequent years. Fields through out the state have been sampled over the years for stem nematode and the nematode found widely distributed.

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 could 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 l983, plants found with stem nematode infestations had one or more fungi associated with the infestation. In a l985 survey, *Fusarium* spp. were the most frequently fungi recovered from stressed appearing plants. But in many instances the stem nematode was not recovered.

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 effect 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 confirmation in the San Luis Valley.

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

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

Sincerely,

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