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Lisa Brown Jasa

University of Nebraska-Lincoln, ljasa@unlnotes.unl.edu

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White mold on soybean stems may indicate sclerotinia stem rot

Observant soybean growers, Extension educators, and crop consultants are seeing a relatively new disease in soybean fields this year — sclerotinia stem rot. In addition to several east central counties, samples of infected plants have been received from one or more fields in Cedar, Antelope and Merrick counties. Although its geographic distribution is still spotty, I wouldn't be too surprised to find Sclerotinia stem rot in other soybean fields east of U.S. Highway 281.

Initial symptoms are first visible during pod development. In most instances, leaves on infected plants wilt and turn gray-green before turning brown, curling and dying. To scout for symptoms, lean the plants back and examine the stems and pods for the white, fluffy, moldy condition, along with developing sclerotia. Sclerotia are hard, dark-colored structures of various shapes that are produced by the fungus. They are 1/16 to 3/4 inch long, depending on whether they are produced within a stem or pod or on the plant surface. During harvest these structures are scattered back onto the soil. Thus inoculum for future disease infections has been distributed.

Sclerotinia can survive the winter in debris or soil, germinating in late spring or early summer by producing small mushroom-like structures bearing millions of airborne spores. These spores infect soybean stems primarily through colonized blossoms, but free moisture must be present on the plant surface for infection to occur. In a few days diseased stem areas are killed and become tan and eventually bleached. Such stems have a pithy texture and will shred easily.

Soybean plants are not the only host for Sclerotinia sclerotiorum, the causative fungus of Sclerotinia stem rot. This pathogen has an extremely wide host range, including oilseed, vegetables and forage legume crops. The fungus causes a disease known as white mold on dry edible beans and can occur on potatoes, sunflowers, alfalfa and pigweeds. Fortunately cereals such as corn, wheat and other monocots are not hosts for this fungus.

No single disease management strategy effectively prevents infection. However, a combination of measures can reduce disease severity and minimize yield losses:

1. Using a row spacing wider than 15 inches will increase air circulation and promote more rapid drying of the plant canopy. This spacing minimizes the humid conditions necessary for infection. If irrigated, avoid overwatering especially during flowering when spores are produced and infection occurs. Plant architecture can also influence intracanopy relative humidity. Shorter plants will tend to dry more quickly than taller, more rank soybean plants.
Conference to address biological control options

A conference on Biological Control in the Midwest will be held Oct. 15-16 at the Iowa State University Memorial Union. The objectives of this conference are to highlight recent accomplishments and discuss future directions for biological control of insect pests and weeds in the Midwest.

Sessions will provide an overview of the biological control industry, extension programs, and current research on biological control of weeds, corn insects, greenhouse and ornamental crops. A poster session will provide information on biological control projects in the Midwest. Speakers will include biological control specialists from Midwestern universities, USDA and industry.

The audience is expected to include farmers, extension personnel, crop consultants, students and biological control researchers. The conference will start at 1 p.m. on Oct. 15 and end at 3:30 p.m. on Oct. 16.

Registration fees (including conference banquet on Oct. 15) are $25 for Extension personnel, farmers, crop consultants or students and $90 for biological control professionals or researchers. For more information or a registration form, contact John Obrycki, Iowa State University, Dept. of Entomology, Ames IA 50011, 515-294-8622, or Email to: jobrycki@iastate.edu.

Bob Wright
Extension Entomologist

Crop update

Above normal temperatures last week continued to boost crop development toward maturity, however row crops remained one to two weeks behind average, according to the Nebraska Agricultural Statistics Service.

Potential evapotranspiration and precipitation data

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Lisa Brown Jasa, Editor

For more information about a particular subject, write the authors at the addresses below:

UNL Department of Entomology
202 Plant Industry Bldg.
Lincoln, NE 68583-0816

UNL Department of Plant Pathology
406 Plant Science Bldg.
Lincoln, NE 68583-0722

UNL Department of Agronomy
279 Plant Science Bldg.
Lincoln, NE 68583-0918

UNL Department of Agricultural Meteorology
236 L.W. Chase Hall
Lincoln, NE 68583-0728

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Fall chemical application okayed for CRP

The United States Department of Agriculture announced last month that Conservation Reserve Program (CRP) participants will be allowed to apply chemicals to prepare CRP acreage for spring-seeded crops before contract expiration. In Nebraska, herbicides can be applied after July 15 in the summer before contract expiration to kill grass vegetation. Destroying CRP cover by any other means is not permitted. If participants need to apply chemicals earlier than July 15 in Nebraska, they can choose to request early termination of the CRP acreage provided the acreage is otherwise eligible. Interested participants should meet with Natural Resources and Conservation Service (NRCS) to develop a conservation plan to include early land preparation activities. They are not required to submit requests with the Farm Service Agency (FSA) to commence with this activity and will not be assessed a payment reduction.

The USDA announcement is truly beneficial to those landowners and growers wishing to convert their CRP back to crop production using conservation tillage or no-till. Research has clearly shown that late summer and fall applications of herbicide are superior to spring applications in controlling warm-season grasses in CRP. Although cool-season grass species such as smooth brome can be adequately controlled with herbicide applied in October (after contract expiration), applications should be made in August or early September for control of warm-season species such as switchgrass. Before this announcement, participants with warm-season grass species could not legally make chemical applications before the contract expiration date of Sept. 30. Because warm-season grasses do not emerge and put on enough growth in the spring for adequate chemical control until after optimal planting date for most crops, the grower is faced with choosing between incomplete control under a no-till system or using deep tillage to kill the grass vegetation. Of course, the latter would lead to increased soil erosion and soil quality degradation on land which is already environmentally sensitive and of relatively low productivity. On the other hand, I have seen few successes with controlling switchgrass in the spring with herbicides.

Before this announcement the only risk-free method available to producers was to deep till to kill the vegetation and then converting back to crops. With the exemption described above, the grower can convert back to crops, control soil erosion, and preserve the soil quality enhancements that have occurred over the last ten years. I prefer controlling switchgrass in August or early September. By this time, switchgrass that has not been previously managed with fire, mowing, or shredding may have already become dormant. If the grass is no longer green or has stopped growing, control will be reduced.

Regarding herbicides, I would suggest applying Roundup Ultra (or another herbicide containing glyphosate as the active ingredient) at 2 qt/A + Ammonium Sulfate (AMS) at 17 lb/100 gal of water for either warm-season or cool-season grasses. If the old formulation of Roundup or another herbicide containing glyphosate is used, add a non-ionic surfactant at 2 qt/100 gal of water. Remember, herbicide applications should be made to warm-season grasses now and to cool-season grasses in October.

The only other management practice that the USDA notice does not address is residue management needed before herbicide application to insure good kill of the vegetation. In our research with smooth brome at the Northeast Research and Extension Center, removing the old vegetative growth and allowing at least 6 inches of new regrowth before herbicide application gives better control than doing nothing before the herbicide application. Furthermore, shredding smooth brome vegetation in early September allowed much more regrowth that haying in early October. This in turn allowed better herbicide control. The grazing or haying option offered this summer should have set up the field for optimal control.

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CRP management
(Continued from page 145)

other hand, the above provision does not authorize mowing or shredding, therefore I would suggest contacting your local NRCS or FSA to see if this would be allowed.

David L. Holshouser
Integrated Weed Management
Northeast Research and Extension Center

Assessing soil fertility for post CRP cropland

Bringing CRP land back into production should be similar to cropping previously hayed or pastured ground. Haying or grazing land will remove nutrients and, without fertilizatoin, reduce nutrient levels. The duration of CRP and whether it was hayed influences soil fertility status.

The first recommendation for developing CRP land is to test the soil. University of Nebraska NebGuide G91-1000 Guidelines for Soil Sampling addresses sampling patterns, core numbers, and sampling depths. For most CRP land, sampling the top 8 inches should be sufficient. It is important to sample separately areas with different cropping histories, erosion histories, soil types, and management practices so that specific recommendations can be made for each area in the field. Knowledge of fertility status will be helpful when making cropping and tillage decisions.

If the soil tests indicate the need for lime, apply lime before the land is taken out of CRP (see NebGuide G74-153, Understand Your Soil Test: pH — Excess Lime—Lime Needs). On no-till fields, reduce lime rates and make several applications over many years. Schedule lime applications so that they coincide with tillage used as part of a conservation plan or necessary for a specific crop in a long-term rotation.

For more information on this topic, see the Extension NebFact NF96-281, Soil Fertility Considerations for Land Coming out of CRP, available from your local Extension Office.

Charles Shapiro
Extension Soils Specialist

Sclerotinia (Continued from page 143)

2. While no soybean varieties show complete resistance, some varieties are less susceptible to Sclerotinia stem rot than are others. For a given production region, earlier-maturing varieties tend to be less susceptible than later-maturing varieties.

3. The pathogen can be transported within infected seeds or as sclerotia in contaminated seedlots. Therefore, it is important to plant only cleaned seed that has had sclerotia and poor quality seeds removed.

4. Since the sclerotia survive for many years in the soil, crop rotation is not an effective control method; however, it is not advisable to continue cropping to soybeans in a field with a history of stem rot. Crop rotation is a beneficial strategy to reduce the incidence of other diseases. Monocots such as corn, sorghum or wheat are good choices for rotation crops.

5. Although no chemicals are labeled to control Sclerotinia stem rot, benomyl (Benlate®) and thiophanate-methyl (several formulations of Topsin®) are registered as foliar fungicides on soybeans and are somewhat effective against the disease on similar crops such as dry edible beans. Timing and penetration of the fungicide through the soybean canopy are critical for disease control. Both labels restrict livestock grazing in treated areas or feeding livestock treated vines or hay.

David S. Wysong
Extension Plant Pathologist
Returning CRP land to crops:
Managing vegetation

Warm and cool season grasses

- Plan ahead.
- Scout entire CRP acreage. Assess percent vegetative cover, vegetation composition (percent grass, forbes, weeds), wildlife (gopher mounds, badger holes, etc.), topography, erosion (ditches, gullies, etc.), soil type, drainage.
- Develop a conservation plan with NRCS staff.
- Take advantage of established grass vegetation for grass waterways, turn around areas, sediment filter strips along intermittent streams, wildlife strips, and tree plantings for windbreaks.
- Level rough areas of the field with light tillage, being careful not to disturb grass vegetation.
- Implement rodent control measures.
- Let grass vegetation grow until regrowth reaches at least 8 inches.
- Apply herbicide containing glyphosate (Roundup™, etc.) for grass control. Add herbicide containing 2,4-D and/or dicamba (Banvel™) to control perennial broadleaf weeds.
- If needed, lightly disk in late fall to level rough areas due to small mammal burrows or uneven grass stands. Wait at least three weeks after herbicide application.
- Scout fields for small mammals one month before planting. If more than five vole colonies are found, implement necessary control measures.

Warm season grasses

- Use emergency haying or grazing options to manage residue at the appropriate time of the year.
- In the spring/summer before the first cropping season, implement steps to make the grass vegetation stand more productive by one of the following methods:
  — Grazing heavily with livestock (30 to 100 cows/acre) for a brief period of time (7 to 10 days) to help remove and trample dead plant material.
  — Shredding with a rotary or flail-type mower.
  — Burning when and where appropriate.
- If possible, implement shredding or burning before May 1 or after July 1 to minimize impacts on pheasants and other ground-nesting birds.
- Continue to graze until mid-July or early August or harvest one crop of high quality hay.
- Kill grass vegetation and perennial broadleaf weeds with an August to early September application of herbicide. Application must be made prior to dormancy of grass and some perennial broadleaf weeds.
- No-till alfalfa as a “biological” renovation if soil moisture is not limiting. Alfalfa will eventually replace warm-season grasses in three to five years. After this renovation, revert back to other crops. Or no-till soybean. Be sure to inoculate alfalfa or soybean seed with proper inoculum.

Cool season grasses

- If allowed, shred vegetation in August or early September to remove old regrowth and stimulate regrowth.
- Mow with rotary or flail-type shredder at a height of 6 to 12 inches to avoid creating a mat of residue on the soil surface.
- If permission cannot be obtained to shred in August or September, shred immediately after contract expiration.
- Implement necessary perennial broadleaf weed control with the appropriate herbicide(s) before weed dormancy.
- Apply herbicide(s) containing 2,4-D and/or dicamba (Banvel™) at appropriate rate for weed spectrum.
- Certain perennial weeds such as common milkweed, hemp dogbane, and alfalfa become dormant after a frost or a freeze; others such as Canada thistle, field bindweed, and dandelion will tolerate much colder temperatures and application can be delayed. Control must be achieved before weeds become dormant.
- Kill grass vegetation and perennial broadleaf weeds with fall application of herbicide.
- No-till soybean. Alfalfa would be another logical crop choice, however smooth brome escaping fall herbicide application can become a competitive weed in alfalfa. Rotating to soybean would allow control of smooth brome escapes. Be sure to inoculate soybean or alfalfa seed with proper inoculum.
Apply manure to control wind erosion

Wind erosion can be a problem in areas where soil surface is exposed and the likelihood of high wind is great. These conditions exist in most parts of Nebraska, but are more severe in western Nebraska. Applying manure to soil has been shown to reduce wind erosion.

About 28 million tons of manure are generated in cattle feedlots and other animal feeding operations in Nebraska each year. This manure can be an excellent source of organic matter to apply to soil to provide adequate protection from wind erosion. Natural Resource Conservation Service (NRCS) considers manure application in terms its equivalent to flat small grain straw for wind erosion protection.

The amount of manure or composted manure to apply to a soil depends on how much residue is present on the soil surface and the additional manure needed to increase the surface cover to an adequate level. For example, a highly erodible sandy soil in NRCS wind erodibility group 1 requires 0.5, 14, and 23 tons per acre of anchored straw, surface-applied wet manure or tilled-in wet manure, respectively, to keep erosion within the acceptable tolerance level of five tons per acre per year. Based on average weight and shape of each straw, percent cover for each straw application rate can be calculated. Assuming each wheat straw weighs 0.05 ounce and is 22 inches tall and 0.15 inch wide, the percent soil cover can be calculated based on the number of straws in each application rate. This calculation assumes no overlap of straws. The percent cover needed for the sandy soil mentioned above is about 17%. Table 1 indicates percent cover associated with each straw application rate and its equivalent in terms of surface-applied dry or wet manure.

The values in Figure 1 are for cattle feedlot manure, but manure from any other source should provide similar protection if applied according to the values given in Fig. 1. Based on the values given in Fig. 1 and Table 1, about 1,800 lb of flat straw, 17.5 tons of dry manure or 24.5 tons of wet manure should be applied to the soil surface to provide a 30% cover.

Bahman Eghball, Department of Agronomy and USDA-ARS

Table 1. Soil cover associated with various rates of straw and their equivalent manure application.

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