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Post hail: Assessing the current and future potential for wheat diseases

The recent hail in western Nebraska caused considerable damage to crops, particularly wheat, dry beans and irrigated corn. Hail at this time could be a prime catalyst for local outbreaks of wheat streak mosaic and High Plains virus in next year’s crop.

Volunteer wheat that grows from the hailed areas should be destroyed (see story, page 154) to prevent it from serving as a summer bridge for wheat curl mites between the 1999 and 2000 crops. The mites and viruses multiply rapidly through the summer on growing volunteer wheat and spread to the fall-planted crop in September and October. Be a good neighbor and get your volunteer wheat destroyed well before fall planting. Remember that one hail storm can cost you or your neighbor two wheat crops - this year’s due to hail and next year’s due to High Plains virus or wheat streak mosaic virus.

One hail storm can cost two wheat crops – this year’s due to hail and next year’s due to disease.

With harvest underway, we’ve received questions about white heads in the wheat. White heads could be due to a couple of diseases — take-all and Cephalosporium stripe.

Take-all is a root disease that causes premature death. Plants become stunted and bleached, and produce sterile heads or greatly shriveled grain. Suspect take-all where circular patches of short, off-color plants are visible. The most characteristic sign of take-all is the development of a superficial, shiny

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Check corn roots for rootworm injury, insecticide efficacy

Western corn rootworm beetles are expected to began emerging in south central Nebraska soon after the Fourth of July. Beetle emergence will be somewhat later in northeastern and western Nebraska. The beginning of beetle emergence will indicate that rootworm larval feeding is ending. Beetles emerging before silk emergence may begin feeding on leaves, but this damage is not economically important. Mid to late July would be a good time to dig roots to evaluate the efficacy of your rootworm management program.

The presence of adult beetles or rootworms in a field is not necessarily an indication of insecticide failure. Soil insecticides are applied in a narrow band to the soil and corn roots grow beyond the treated zone where rootworm larvae may survive. Also, plant lodging may occur without significant rootworm feeding. Dig and wash some roots to check for rootworm injury before assuming that rootworm damage is responsible for lodging.

Rootworm insecticide efficacy can only be reliably evaluated if replicated, untreated check strips are left in the same field as the treatment. Without check strips, you won’t know whether the absence of injury is due to insecticide efficacy or the absence of rootworms.

(Continued on page 151)
Several Extension offices across the state feature telephone hotlines with GDD and crop water use estimates for their county. Check with your local Extension Office for how to access this information locally or on the Web. (See July 2 Crop Watch for more on Web access.)

Karen DeBoer, Extension educator in Cheyenne County: Reports keep coming in about the June 26 storm here. Baseball size hail and winds up to 85 miles an hour as well as tornadoes and 3-5 inches of rain hit the area about 8 p.m. About 300,000 acres of land was affected, including about 90,000 acres of wheat, much of which was lost completely. This storm was unusual because it affected so many producers who lost all their crops.

Property damages are estimated in the millions. Evergreen trees in windbreaks are stripped of their needles and bark on the trunk on the north facing side. Houses and cars in Sidney and neighboring small towns lost windows and suffered damage, with many cars totaled.

As the rains have let up, farmers are replanting crops as quickly as they can. Many of the corn fields destroyed by the storm are being replanted to very short season corn. In these cases, the corn will probably be used for silage.

Some wheat producers are planting proso millet in their fallow ground. Many are replanting their hailed out millet fields back to millet. One of the big concerns is cover for the fields that were so badly hailed. The fields are blowing and producers are trying to either replant or rough up the soil to stop it from blowing.

Alfalfa fields appear to be recovering. Pastures are very slowly greening up. Cattle also suffered cuts and bruises from the hail.

Gary Zoubek, Extension educator in York County: Crops continue to make progress with rains continuing and variable from location to location. The rain has complicated alfalfa harvest.

It’s not often that we aren’t irrigating by the Fourth of July, but this year is an exception. In fact, the hilltops are looking better than some low areas. Many of the lowest areas have had excessive moisture and are yellow with poor stands.

Producers have asked about Growing Degree Day (GDD) units this year compared to normal. We’re really not far off average. As of July 5 early planted corn was about 22 units behind normal — 1,039 compared to 1,061. I was watching for tassels over the holiday, but didn’t see any, but they will be appearing soon.

In fields where weeds have been controlled, soybeans are beginning to make progress.

Gary Hall, Extension educator in Phelps and Gosper counties: Believe it or not ... A soybean field near Atlanta was infested with tomato hornworms, something I’ve never seen before. Irrigation began here Tuesday for the first time this season amid hot dry winds. Producers in sandy soils have been irrigating for about two weeks already. Corn is enjoying the weather and is growing quickly.

(Continued on page 153)
Rootworm damage (Continued from page 149)

Root damage from rootworm feeding can be rated using a 1-6 injury rating system (see Figure 1 and NebGuide G92-1108, Evaluating Corn Rootworm Soil Insecticide Performance). Before corn plants can be rated for injury they need to be at a growth stage where at least three root nodes are clearly visible. Dig at least 10 randomly selected plants from several areas of a field. Leave a 9-inch cube of soil surrounding the root system, wash the roots to remove soil and rate each plant for injury using the rating scale.

The relationship between root injury rating and yield loss is complex, but usually a root injury rating of 3 or more is needed to cause economic yield loss. The corn plant has the capacity to regrow roots and compensate for some early season injury, especially if soil moisture and fertility are adequate during the regrowth period. If several weeks have passed between the end of rootworm injury and the time of root rating, new root growth may hide the injury. Examine roots carefully to accurately rate them.

Information on scouting for rootworm beetles and thresholds are available in NebGuide G774, Western Corn Rootworm Soil Insecticide Treatment Decisions Based on Beetle Numbers, and will also be the discussed in next week's newsletter.

Bob Wright
Extension Entomologist
South Central REC, Clay Center

Fig. 1 Rating corn rootworm damage

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description of root system</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No noticeable feeding damage.</td>
</tr>
<tr>
<td>2</td>
<td>Feeding scars present but no root pruning.</td>
</tr>
<tr>
<td>3</td>
<td>At least one root pruned, but less than an entire node of roots pruned.</td>
</tr>
<tr>
<td>4</td>
<td>At least one full node of roots pruned but less than two full nodes.</td>
</tr>
<tr>
<td>5</td>
<td>At least two full nodes pruned, but less than three full nodes.</td>
</tr>
<tr>
<td>6</td>
<td>Three or more full nodes of roots pruned.</td>
</tr>
</tbody>
</table>

To qualify as a pruned root, the root must have been pruned to within 1 1/2 inches of the plant. It is not necessary for all of the pruned roots to originate from the same node to qualify as a root system with a full node pruned. It is only necessary that the number of roots pruned is equivalent to that in a full node.

Wheat harvest lags

Winter wheat harvest continues to lag behind normal both nationally and in Nebraska, according to a USDA update released Wednesday. By July 4, 1% of Nebraska's wheat had been harvested this year, compared to 23% last year and an average of 16%. Nationally 45% of the nation's wheat was harvested by July 4, compared to 66% usually and an average of 53%.

Kansas has just 44% of its wheat harvested, compared to 93% last year and an average of 66%. Illinois and Indiana are ahead of normal and Oklahoma and Missouri are close to an average year. For more information on how Nebraska's cropping situation compares with other states and national averages, check out the report at http://www.usda.gov/nass/PUBS/TODAYRPT/prog2899.txt.
Scout soon for western bean cutworms

Western bean cutworm moths have recently begun to emerge in western Nebraska. These moths will soon lay eggs in field corn and dry edible beans where the resulting larvae can cause significant yield loss. Western bean cutworm moths are a large miller type of moth. Their front wings are brown with a white stripe on the leading edge. Female moths lay their eggs on the upper leaves of corn plants or on leaves in the upper canopy of beans. The eggs, when first deposited, are white and dome shaped. They are usually laid in groups or masses of five to 200. As the eggs develop, they change to a tan color and then to purple immediately before they hatch.

Larvae that hatch on corn plants will move to the tassel where they feed on the soft yellow tissue. After the tassel emerges, the larvae move to the green silk where they feed and follow the silk channel until they reach the developing ear tip. The larvae will continue to feed on the ear until they complete their development in late summer. Larvae that hatch on beans initially feed on the blossoms and young leaves and then on the developing pods. As the pods continue to develop and the larvae increase in size, they chew through the pod wall and feed on the developing bean seed. The larvae will continue to feed on the beans until they complete their development in late summer. Cutworm larvae that infest beans are fairly mobile and may continue to attack new pods even after the crop has been cut.

Detect western bean cutworm infestations in field corn by scouting for egg masses. Check several locations in each corn field for plants with eggs on the upper leaves. Twenty-five plants should be checked for every 10-25 acres of a field. Pay special attention to fields planted to hybrids with a more upright leaf structure because they are preferred for egg laying. If 8% or more of the plants have egg masses, consider an insecticide application. Timing of the application is important. If an insecticide is required, apply after the field is 95% tasseled and most of the eggs have hatched or are in the purple color stage. The application should be before the larvae reach the ear silks because it is difficult to get adequate control once the larvae reach the protection provided by the husks around the silks and ear.

Milk jug pheromone or scent traps are recommended to monitor potential western bean cutworm infestations in dry edible beans. Traps should be mounted on a post, about 4 feet above the ground, on the northwest and southeast edges of each field. Place traps in areas with at least some vegetation around them. The pheromone source should be pinned to the underside of the milk jug lid. A mixture of four parts water and one part antifreeze with a few drops of liquid soap should be placed in each cut out milk jug. Instructions (Continued on page 153)
Field updates  (Continued from page 150)

Soybeans have some bean leaf beetles, but not to the point of treatment in most cases. Wheat harvest is beginning in earnest. Test weight is reported to be very good with less yield than last year.

Jim Schild, Extension educator in Scottsbluff County: Plants damaged from last week’s hail storms are starting to recover. Corn with slight to moderate damage is starting to grow new leaves and the fields are starting to look better. Corn that suffered severe damage is showing the “buggywhip” symptom and many plants have soft rot in the whorl. Sugarbeets are starting to regenerate leaves and the fields are looking better. Many of the most heavily damaged dry bean fields have been replanted mostly to a short-season dry bean. Other bean fields are starting to make a comeback. Many growers are saving fields with stands between 35,000 and 40,000 plants per acre rather than replanting. Crops not damaged during recent storms are looking extremely good, however some fields are starting to show moisture stress due to the recent heat spell. Most growers are working hard to get fields ditched and irrigation started.

Dick Ronnenkamp, Extension educator in Boone and Nance counties: The hot weather has helped the growth of corn and soybeans. There is a range of heights, but the early planted corn is well on schedule for the season. Weed control in soybeans is a main concern, but the weather is favoring field work. The dry weather is a window of opportunity for high quality, cash alfalfa. Producers with fields at the right stage can take advantage of it.

Ray Weed, Extension educator in Kimball and Banner counties: Some hail-damaged corn fields are in surprisingly good condition, all things considered. Some fields on the very edge of the most severe part of the storm will recover; however many fields will be replanted, either to a summer annual forage such as sudan grass or to short-season corn for silage. Proso millet is being planted this week as fields dry out. Proso planted into fallow strips previously meant for winter wheat planting this fall have an excellent chance to yield well with the abundant moisture and high heat units we are receiving. Even though proso prices are relatively low, input costs are also low and the economic return may be the best replant option available for a cash crop. Replanted sunflowers will germinate and emerge quickly with the current field and weather conditions.

A no-till wheat and corn tour in Banner County last week showed some excellent Liberty Link and Roundup Ready no-till corn. Alliance is a dryland wheat that no-till farmers here are pleased with regarding overall vigor and winter hardiness. The Colorado release “Akron” is a dryland wheat doing well in Kimball County no-till as well.

Western bean cutworm  (Continued from page 152)

for constructing a milk jug trap and buying moth pheromone are in the University of Nebraska NebGuide Western Bean Cutworm in Corn and Dry Beans (G98-1359) and on the UNL Department of Entomology Web site at http://www.ianr.unl.edu/ianr/entomol/entdept.htm.

The traps should be checked every few days until the peak of the moth flight. When the traps are checked, the moths should be removed, counted, and liquid should be added. If the number of moths accumulated at the peak of the moth flight is less than 700, the risk of significant damage is minimal. The risk of seed damage is moderate if 700-1000 moths are accumulated in each trap. The risk of damage is significant if more than 1000 moths are collected from the start of trapping to the peak of moth flight. If the moth flight is moderate, the infestation in nearby corn fields should be used as a decision making guide. If the adjacent corn needs an insecticide treatment for western bean cutworm, also treat the beans. Bean fields that require an insecticide application should be treated 10-20 days after peak moth flight.

Crop update

Corn conditions rated 1% very poor, 3% poor, 14% fair, 53% good, 29% excellent. Dryland corn rated 86% and irrigated corn rated 79% in good and excellent conditions. Corn silking had not begun.

Soybean conditions were rated 2% poor, 17% fair, 64% good, 17% excellent. Sorghum condition rated 1% poor, 18% fair, 67% good, 14% excellent.

Winter wheat conditions were 3% very poor, 7% poor, 21% fair, 56% good, and 13% excellent.

Nebraska Agricultural Statistics Service

Regarding the Kimball County Outstate variety trial that was hailed, Akron, Jules, 2137, and Halt held up better than most other cultivars. These varieties survived best because of their relative maturity when the plots were hailed June 26. Under other circumstances, other varieties fare better — timing is everything when it comes to how well different varieties survive.
How does delayed weed control hurt yield?

With continued rains across the state, many producers haven’t been able to apply Roundup or other postemergence herbicides to control weeds. Now the question is:

How much soybean yield loss occurs if weeds are not controlled during the first month after emergence?

On a calendar basis we estimate that weeds and soybean can grow together for three to four weeks after emergence before yield loss occurs. After that, timely weed removal is critical. As always the degree of damage depends on the weed species, weed density, relative size (weed to soybean), treatment effectiveness, and weather.

WeedSOFT, a computer program developed by the University of Nebraska, estimates that a mixture of 12-inch foxtail, velvetleaf, and waterhemp at a total of two weeds per row foot will cause 53% yield loss if left untreated in prebloom soybean. Treatment with Roundup Ultra will reduce the loss to 34%. If the weeds are treated when 4 to 8 inches tall, the loss is 23%, and only 5% for 2- to 4-inch weeds.

While some of this loss is due to lower treatment effectiveness on taller weeds, much is due to delayed removal when the weed uses soil moisture, nutrients and sunlight which would otherwise be available to the plant. In working with shattercane control in soybean, we had an average of 19% yield loss over three years if shattercane was not removed until four weeks after shattercane height exceeded soybean height, but only 3% loss if removed within two weeks of that date, which occurred two to four weeks after emergence. Once the competition begins, yield loss picks up rapidly.

Fred Roeth
Extension Weeds Specialist
South Central REC, Clay Center

Insect update

Gary Hein, Extension Entomologist, Panhandle REC, Scottsbluff: Mexican bean beetles have been numerous in some Panhandle fields. Beetles are actively feeding and have just begun to lay eggs over the last week. Peak egg laying will occur over the next two weeks or so, and egg mass sampling should be done to evaluate the need to treat during the next two weeks.

We have also seen some potato leafhopper in bean fields. No leafhopper populations have exceeded the thresholds, but since this insect can cause serious injury to beans, fields should be checked for their presence.

Ron Seymour, Extension Assistant, IPM, Entomology, West Central REC, North Platte: European corn borer infestations in west central and southwest Nebraska are light to moderate. Only a few fields have required treatment. Western bean cutworm moth flight began over the Fourth of July weekend. Grasshopper nymphs are becoming noticeable on field borders. Spotted stem weevils are active in sunflowers. Mexican bean beetle adults were found feeding in dry edible beans.
Factors leading to greensnap identified

Following are some observations on greensnap in south central Nebraska:

Corn is most susceptible to greensnap during the rapid growth stages prior to tasseling. As mentioned in last week’s Crop Watch, strong winds early on the morning of June 27 did considerable damage (up to 80%) in some fields with north-south rows in south central Nebraska. Damage reports ranged from Holdrege to Shickley south of Highway 6.

We’ve learned from previous events (1993-1994) that yield loss is directly related to amount of damage and that factors that increase early season growth tend to increase breakage susceptibility. More recently (1998) we’ve noticed that plant orientation and possibly plant populations are important to greensnap. Leaves of plants in high densities tend to orient perpendicular to the row rather than parallel to it (see photo). Plants whose leaves are oriented perpendicular to the row are more likely to break than plants with other orientations when strong winds are perpendicular to the rows. That seems to explain why we seldom have greensnap events (from straight-line winds) that affect both north-south and east rows;

Wheat diseases (Continued from page 149)

black mat of fungus mycelium beneath the lowest leaf sheath that extends to the crown and roots.

Cephalosporium stripe is the other disease that can cause white heads in wheat. It is a wilt disease in which the causal fungus enters the plant through the roots during winter. Diseased plants may occur in patches or may be randomly distributed in a field. Infected plants usually produce small heads, that contain either no seed or only a few shriveled, lightweight kernels. Severely affected fields appear to mature early. Plant height is not uniform and the field takes on an “up and down” appearance. There are frequently normal appearing heads on noninfected plants growing several inches above infected plants.

The only effective control for damage usually occurs in one row orientation or the other, not both. Distinct stalk breakage patterns that run parallel with wind are often visible. These ‘wind channels’ can run across just a few rows or many rows. Wind channel width can be as little as one or two plants broken per row to 20 to 30 feet wide or wider. The starting point of these areas appears to be either a gap in plant stands or canopy height differences (e.g. short plants next to tall plants). Once a plant breaks, it may fall and strike plants across the row (downwind) which, depending on that plant’s orientation, may result in breakage. This ‘domino effect’ extends to an end point where the damage ends in that wind channel. End points are more difficult to understand but are often associated with a uniform stand of healthy plants with varying leaf orientations. Perhaps the wind velocity is dissipated at that point. Research is needed to understand these phenomena better.

Roger Elmore
Extension Crops Specialist
South Central REC, Clay Center

Cephalosporium stripe

either take-all or Cephalosporium stripe is a two- to three-year rotation to a row crop or alfalfa.

Other nonpathogenic causes for white heads includes freeze injury, wheat stem maggot, standing water or herbicides.

John Watkins
Extension Plant Pathologist
Weed control
(Continued from page 154)

bined with Gramoxone Extra.

There will likely be considerable volunteer wheat this year due to the wind and hail and the possibility of delayed harvest due to wet ground. Control volunteer wheat at least 10 to 14 days before planting winter wheat. This will reduce the incidence of wheat streak mosaic. In no-till wheat failure to control the volunteer wheat in a timely fashion has reduced grain yields because the mites moved from the volunteer wheat to the newly emerged wheat, serving as disease carriers.

A 1999 Guide for Herbicide Use in Nebraska, Cooperative Extension publication EC99-130, describes the herbicide treatments to use as a single application or as split applications after wheat harvest.

Gail Wicks
Extension Weeds Specialist
West Central REC, North Platte

Sustainable ag tours July 10, 17

The Nebraska Sustainable Agriculture Society (NSAS) is hosting several farm tours this summer, including

July 10: Dave Vetter and Mike Herman, the Grain Place in Marquette at 9 a.m. Organic grain and beef production and organic food processing will be discussed.

July 17: Growing and using organic grain, tour hosted by Troy and Susan Kash-Brown and Open Harvest Food Cooperative, 3-6 p.m. at the couple’s farm, 8350 West Van Dorn St., Lincoln.

The Kash-Brown’s grow food grade soybeans, white corn, popcorn and UNL test plots of millet on an organic farm. Open Harvest will provide samples of recipes prepared from these grains.

Cris Carusi, Nebraska Sustainable Agriculture Society

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**Precipitation**

June 28 to July 5

April 1 to July 5

Percentage of normal precipitation, April 1 to July 5