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Insects devastate some eastern fields

Last week’s cool wet weather delayed plant growth in corn and soybeans and rang the dinner bell for a variety of insect pests who made a feast of the vulnerable seedlings. While often corn might quickly outgrow the threat of significant pest damage, when plant growth stalled, armyworms, cutworms, wireworms, and white grubs found opportunity. Most of the reported problems seemed to be in east central and southeast Nebraska. Other factors such as soil crust ing and planting problems also contributed to poor stands.

These developments reinforce the need for ongoing field scouting for pests in all crops. (See the June 8 Crop Watch for treatment thresholds for several corn pests.)

"This is one of the worst years I’ve seen for insect damage," said Keith Glewen, NU Extension educator. "Whole hillsides of corn just disappeared.”

This week some farmers chose to fill in these holes in their fields by replanting corn. Based on research at Iowa State University, corn replanted June 10 would have a 67% yield potential compared to that planted between April 20 and May 5.

While the window for replanting corn is just about closed, producers pursuing this option should use a medium maturity hybrid and carefully consider potential yield, costs and the likelihood of an early fall frost. (Early frost probabilities are examined in an NU Cooperative Extension NebGuide, Autumn Freeze Probabilities, available on the web at http://www.ianr.unl.edu/pubs/fieldcrops/g1312.htm.)

Research has shown that as planting dates are delayed, hybrids will start compensating. For every day from late May through early June, a given hybrid requires 5 GDD less to mature. So if planting was delayed from May 1 to June 10, delaying maturity by 40 days, a hybrid may require 200 less GDD, said Roger Elmore, Extension Crops Specialist at the South Central REC.

In this case a 113-day hybrid may develop more like a 105-day hybrid.

(Continued on page 117)

Question custom combiners to avoid introducing karnal bunt

Karnal bunt, a wheat disease caused by the fungus Tilletia, was recently found in Throckmorton and Young counties in Texas. This doesn’t pose a serious threat to Nebraska, but growers using custom combiners should take precautions.

Since bunt spores can be moved on equipment, Nebraska growers using custom combiners should be careful about the equipment they let into their fields. Inquire as to where your custom combiner has been. If they have been in the areas in Texas where karnal bunt was detected, ask if their equipment has been properly cleaned and if the operators have a USDA certificate to prove it. Also, take the same precautions if you use portable seed cleaners.

Each year the Nebraska Department of Agriculture surveys wheat for karnal bunt. Steve Johnson of the NDA said 40 samples will be pulled from wheat being brought into elevators in 20 Nebraska counties. The samples will then be submitted to the Kansas Department of Agriculture, the regional lab conducting karnal bunt testing. The Nebraska survey is part of a national USDA survey, he said, conducted to:

1. Provide for early detection and eradication of the disease; and
2. To prove pest-free zones to maintain export markets.

Karnal bunt has never been found in Nebraska, Kansas or Oklahoma. We want to ensure that it is not accidently introduced into Nebraska via contaminated harvesting equipment or seed cleaners.

John E. Watkins
Extension Plant Pathologist
Keith Jarvi, Extension Integrated Pest Management Program, Northeast REC: We are receiving many calls about alfalfa failing to green up after the first cutting. Tom Hunt, Extension entomologist, NEREC, and I looked at a field near Winside Tuesday morning and found it loaded with variegated cutworm. I believe these were already mentioned as a possible threat in previous newsletters. The thresholds are similar to that of army cutworm: two or more per square foot on newly seeded alfalfa and four or more on established stands. This field had a minimum of five per square foot and the cutworms were clearly holding back the regrowth. Much of the field was affected, but other fields could just have patches affected. Pounce, Warrior, Baythroid, and Lorsban at the lowest labeled rates should control these cutworms if moisture conditions are normal to moist. The cutworms will hide in the ground near the plants or under windrows during the day. The best time to scout and/or treat would be late day-evening or very early morning.

Keith Glewen, Extension Educator in Saunders County: We have had above normal damage from early season insects in corn. It is not uncommon to see large areas on side slopes where insects have reduced the stands to less than 10% of the original population. The extended period of damage was probably brought on by the cool/wet growing conditions. The lack of uniformity in the corn crop is a problem that will haunt us the remainder of the growing season. In some cases insects, disease and weather conditions have also placed some soybean fields in the replanting category.

Tom Dom, Extension Educator in Lancaster County: I have had a few reports of insect activity on corn, mostly cutworms of various types. I have seen yellow-striped armyworm and some common stalk borer in corn. I have found damage consistent with cutworms and flea beetles as well.

I was asked to look at a field of corn with an extremely poor stand, especially on the more highly eroded hilltop. The soil was quite wet, making it difficult to dig out the skips. Digging in the row, we found a few seeds that had sprouted but the shoot had either broken off or had been cut off about a half-inch below the soil surface. Brady Kappler, weed science educator, ruled out any direct herbicide injury. If this breakage were due to crust problems, subsequent moisture had softened any crust that may have existed. If it were due to insect damage such as cutworms, they could no longer be found. This field will need to be rotated to grain sorghum and replanted using safened seed when soil moisture conditions permit field operations.

Terry Gompert, Extension Educator in Knox County: Pasture growth has slowed to 1/4 inch per day. The warm season grass is growing at 1/2 inch per day. Both rates are half of normal. The effects of last year’s drought and cool weather and limited rain in May and June are beginning to show up. Range and pasture are projected to be short in 30 days.

Most of the hay is cut and ready to bale. Some cutworms and alfalfa weevils are slowing regrowth. First cutting yields have been heavy and above average, however quality is poorer than normal due to the delayed harvest. Some soybeans are in dry soil causing populations to be poor.
Extended weed control may be needed in soybeans this year

The cool, wet weather which developed during early soybean establishment has reduced growth, vigor and stands in some areas. Taken together these factors give weeds a competitive edge over the crop. Consider the following points:

1. Early weed control is important to give soybeans an opportunity to get ahead of the weeds. If a preemergence herbicide was not used, an early postemergence application will be needed. See the June 8 Crop Watch article on postemergence weed control in soybean for herbicide choices.
2. Reduced soybean stands give weeds more opportunity to emerge and grow so the critical period for weed control is extended. While later emerging weeds are less competitive, they can cause harvesting problems and can produce abundant seeds.

Since the majority of soybeans are Roundup Ready varieties, let’s review the Roundup Ultra Max label for maximum allowable application rates and timing considerations:

1. Combined total per year for all applications is 6.5 quarts per acre.
2. Total for preplant and preemergence applications is 4.0 quarts per acre.
3. Total in-crop applications from emergence through flowering is 2.4 quarts per acre.
4. Maximum rate for any single in-crop application is 1.6 quarts per acre.
5. Maximum total during flowering is 1.6 quarts per acre.
6. Maximum preharvest application rate is 0.8 quart per acre.
7. Allow at least 14 days between final application and soybean harvest.

Roundup Ultra Max is a 5.0 lb ai/gallon formulation of glyphosate (3.75 lb ae/gallon). Other glyphosate brands may have similar rate maximums (based on acid equivalents), but be sure to check labels for specific information. Apply glyphosate with 1% to 2% ammonium sulfate. Mix the ammonium sulfate with water in the spray tank before adding glyphosate. Some glyphosate brands require a surfactant. For more information, see “The many faces of glyphosate” in the May 18 CropWatch.

Fred Roeth, Extension Weeds Specialist, South Central REC

Insects/replanting
(Continued from page 115)

Poor soybean stands caused by soil crusting and poor seed quality were an issue with other producers throughout the state. The window for replanting soybean also is narrowing.

Beans sat in cool, wet soils for weeks and were slow to develop. In fields where soybean plant growth was delayed, interseeding was a wise option this year, Glewen said. New seedlings may not be far behind earlier planted seedlings once temperatures warm up and stabilize. In a more typical year, interseeding may be problematic because plants within a field and even within a row will develop at different rates, complicating weed control and harvest.

For those producers choosing to replant poor soybean stands at this time, Elmore recommended choosing an early to mid season adapted soybean variety.

“Consider planting a 10-20% thicker stand or plant in narrow rows to speed canopy closure,” he said.

Bob Nielsen, Extension agronomist at Purdue University, recommends considering the following factors before replanting: 1) original target plant population, 2) after-damage plant population, 3) after-damage stand uniformity, 4) after-damage plant defoliation (leaf loss), 5) original planting date, 6) likely replanting date, 7) likely replanting costs, 8) expected “normal” yield, and 9) expected market price for corn.

For further information on estimating yield and dollar returns from replanting corn or soybeans, check out the Crop Watch web site at cropwatch.unl.edu

As evidenced by the range of problems this year, NU agronomists noted that replanting decisions should be based on conditions in a particular field at that time. Also, contact your crop insurance agent before deciding about replanting if you had replanting coverage.
Spring ECB moth flight is weak

European corn borer (ECB) moth flight has been light this year. Light traps at Clay Center began to capture moths on May 15 and at Concord on June 6. Current information on black light trap catches can be found at the UNL Department of Entomology web site at http://www.ianr.unl.edu/ianr/entomol/crops/fieldcrops.htm

Even in years when European corn borer numbers are low, some fields, particularly popcorn or seed corn fields, can have economically damaging populations of borers. Popcorn fields often attract more egg-laying European corn borer moths than surrounding field corn does, and the high value of seed corn means that their European corn borer economic thresholds are low.

Timely and accurate scouting is the key to managing European corn borer in standard (non-Bt) corn hybrids. Remember that conditions are localized and fields must be scouted individually to make accurate decisions. Information on first generation European corn borer management is available in First Generation European Corn Borer Scouting and Treatment Decisions, NebFact 98-364. This publication is available from your local cooperative Extension office or on the Web at http://www.ianr.unl.edu/pubs/insects/nf364.htm. It includes a worksheet that allows you to calculate if treatment is justified for first generation ECB in field corn. This worksheet also can be used for European corn borer in popcorn. If using the table for popcorn, yield terms (e.g. yield loss) can be expressed in pounds per acre and crop value in dollars per pound.

Many insecticides are registered for control of first generation European corn borers and most will do a good job if applied properly at the right time. The Bt-based insecticides Dipel, Condor, M-Peril and others are effective and do not reduce populations of corn borer natural enemies. Refer to http://www.ianr.unl.edu/ianr/entomol/insects/ecn364.htm for a list of suggested insecticides.

If you are growing Bt corn this year, remember to manage your refuge fields or acres the same as the Bt cornfield they are associated with. In this way you will have Bt susceptible moths present to mate with any possible Bt resistant moths that may come from your Bt cornfields. Matings between Bt susceptible and resistant moths will help dilute the pool of resistant genes in the European corn borer population and preserve Bt corn as an effective management tool for the future. The exception to this is if European corn borer populations in your refuge corn reach economically damaging levels. You are then allowed to treat your refuge with non-Bt insecticides.

Finally, if you don't have problems with first generation European corn borer, you should still be prepared to scout for second generation borers later this season. If the conditions are good for larval survival, it won't take many first generation moths to produce economically damaging populations of second generation borers. Additional information on European corn borer management is available at http://www.ianr.unl.edu/ianr/entomol/ecb/ecb1.htm

Yellow alfalfa may indicate lack of nitrogen; inability to form nodules in acid soils

Yellowish alfalfa has been showing up at Extension offices across Nebraska. As we discussed growing conditions and cultural practices, these fields had several factors in common.

First, the alfalfa was planted last year. If it was a spring planting, it usually did not grow especially vigorously.

In most cases, alfalfa had not been present in the field for many years. And just about as often, no soil test was taken.

Usually, the yellowing is variable across the field. Sometimes it's associated with topography, but not always.

So what is the problem? Well, if the alfalfa is yellow only in low areas, the problem can be phytophthora root rot. But what I see more often is a nitrogen deficiency.

This may seem odd since alfalfa can make its own nitrogen -- given the right conditions.

In these cases, the alfalfa is not forming nodules to make nitrogen because the soil is acid or the seed wasn't inoculated. Alfalfa needs a soil pH above 6.2 and adequate inoculum to form nodules. Our surface soils are becoming more and more acid because both tillage and nitrogen fertilizer increase soil acidity. Lime is needed to neutralize soil acidity. And even if soil pH is acceptable, the correct type of Rhizobium bacteria also are needed. Fields that have not grown alfalfa in the past two or three years often need more bacteria added with the seed.

Soil testing, lime, and inoculants pay when needed.

Bruce Anderson
Extension Forage Specialist

See Crop Watch on the web for threshold worksheet

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Tom Hunt
Extension Entomologist
Keith Jarvi
IPM Extension Assistant
Both at the Northeast REC
Add these to your management tools

**Plant Disease Central: pdc.unl.edu**

Disease is a natural part of every crop production system. This is true for every crop species and for each type of production system: irrigated versus rain-fed, conventional versus reduced tillage, and continuous versus rotational cropping. In any given year, the question is not whether diseases will occur in Nebraska’s field crops, but which diseases will occur and at what incidence and severity.

Many factors influence disease development in plants including hybrid/variety genetics, age of the plant at the time of infection, environment (e.g., soil, climate), weather (e.g., temperature, rain, wind, hail, etc.), single versus mixed infections, and genetics of the pathogen populations. Due to variation inherent in these factors, diagnosis of plant diseases can be difficult at the early disease stages; however, many diseases begin to cause more easily recognizable symptoms as the disease develops, providing a reasonable level of confidence in diagnosis.

To help producers, consultants, and other agricultural professionals in the diagnosis and management of field crop diseases in Nebraska, the Plant Disease Central (PDC) web site was developed by faculty in the UNL Department of Plant Pathology. The site is located at http://pdc.unl.edu/.

The site offers a variety of features, including a “hot topics” section, county and scouting reports, a disease forecast, glossary of terms, and perhaps most importantly, it provides an online, detailed reference to specific field crop diseases of Nebraska, including photos and treatment recommendations. While information is not yet available on the site for all diseases, many are represented. Detailed information describes the disease, its pathogen and development.

*(Continued on page 120)*

**Nutrient Management for Agronomic Crops in Nebraska**

A thorough understanding of nutrient management for field crops can help producers manage input costs while ensuring the crop gets the nutrients it needs when it needs them.

A new book from the University of Nebraska Cooperative Extension is designed to provide in-depth information targeted to Nebraska’s crops, soils and major nutrient management issues. The 176-page “Nutrient Management for Agronomic Crops in Nebraska” provides nutrient recommendations for all of Nebraska’s major agronomic crops in a single resource.

The manual contains two components – a section outlining nutrient management principles and key information on macro and micro nutrients and a section containing fertilizer needs, strategies and recommendations for specific crops.

The Extension resource was written by soil fertility faculty in the University of Nebraska Department of Agronomy and Horticulture and is a valuable resource for producers, crop consultants, fertilizer dealers and others involved with crop production in Nebraska. With color photographs, illustrations and 90 tables, information is well-organized, indexed and easily accessible as a learning tool for indepth study or a companion reference for field application.

Two of the chapters are available for viewing on the Web on the Crop Watch Focus Nitrogen web page at cropwatch.unl.edu/focusnitrogen.htm. The list of book chapters shows the range of information. The price of the manual is $25. Copies of EC01-155, Nutrient Management for Agronomic Crops in Nebraska, may be ordered through your local Cooperative Extension office or from the Institute of Agriculture and Natural Resources at:

- Extension Publications
- IANR CIT
- Box 830918
- Lincoln, NE 68583-0918
- FAX: (402) 472-0542
- Phone: (402) 472-3023

**Book Chapters**

**Section I -- Principles of Fertility.** This section focuses on basic principles of soil fertility for the primary, secondary, and micro nutrients, as well as chemical and physical properties of soil and soil management. Typical divisions within a chapter include: availability, forms and sources of the nutrient, deficiency symptoms, and recommendations. Chapters include: Nitrogen, Phosphorus, Potassium, Calcium and Magnesium, Sulfur, Micronutrients, pH and Liming, Manure and Organic Residual Management, Soil Testing and Nutrient Recommendations.

**Section II -- Agronomic Crops.** This section devotes a chapter to nutrient management for each of the state’s major agronomic crops, with information on current fertilizer recommendations for each. Chapters include: Corn; Winter Wheat; Grain and Silage Sorghum; Oats and Spring Grains; Alfalfa; Dry Edible Beans; Soybean; Sugar Beets; Sunflower; Millet; Grass Pastures and Hayland; Popcorn; and Potatoes.

Richard Ferguson
Extension Soils Specialist
South Central REC
Local sites open to recycle pesticide containers

Pesticide applicators can turn in their used containers at one of 62 collection sites statewide. In 2000, the program’s ninth year, the program collected nearly 71 tons of recyclable plastic containers.

“Based upon last year’s totals and this year’s record number of recycling sites, we are expecting to receive an even larger quantity of containers,” said University of Nebraska Cooperative Extension pesticide coordinator Larry Schulze, who developed the program and administers it, with the help of extension educators through NU’s Institute of Agriculture and Natural Resources.

As in past years, the program will accept pressure or triple-rinsed 1- and 2.5-gallon plastic pesticide containers. They need to be dry and clean, inside and out. Caps, labels and slip-cover plastic labels must be removed since they cannot be recycled as part of the program.

Twenty-six of the 62 collection sites accept 15 and 30-gallon plastic crop protection chemical, crop oil and adjuvant drums in addition to the 1- and 2.5-gallon plastic pesticide containers.

Mini-bulk, saddle tanks and nurse tanks, which sometimes are made of fiberglass or different types of plastic not compatible with the recycling program, will not be accepted. The drums must be thoroughly rinsed before being delivered to collection sites and should not be cut or opened in any way.

Before delivering containers to a collection site:
— Clean, rinse and drain containers and drums (and put the rinsate back in the spray tank).
— Remove plastic shrink-wraps from containers and properly dispose of them (glued-on paper labels can stay on the container).
— Remove booklets and caps from containers.

Containers brought to collection sites are immediately inspected and cannot have any pesticide residue that can be rubbed off by a chemical-resistant gloved hand. Stained, but clean, containers are acceptable.

Year-round inspection and collection sites (by county):
Antelope: Antelope County Recycling Center, Neligh, Tuesdays and Thursdays noon to 6 p.m., Saturdays 9 a.m. to noon. Phone (402) 887-4944 in advance. Will accept drums.
Buffalo: Kearney Recycling Center, Kearney, 7 a.m. to noon and 1 p.m. to 3 p.m. Monday through Friday. Will accept drums.
Burt: Tekamah City Compactor, Tekamah, Tuesdays 2 to 5 p.m. and Thursdays 2 to 6 p.m.
Cuming: West Point Transfer Station, West Point, refer to landfill hours. Will accept drums.

(Continued on page 122)

Plant Disease Central (Continued from page 119)

cycle, symptoms, and favorable weather conditions contributing to its development. NU’s Plant Disease Central also links to NebGuides, NebFacts, other Cooperative Extension sites and publications from other universities or relevant government sites.

The site is still under development so comments on the usefulness of the information and images for specific diseases as well as for the site itself are encouraged and would be appreciated. Email links are provided on the site for providing feedback.

Following is a description of many of the site’s features:

Hot Topics: This section addresses outbreaks of disease, crop response to severe weather conditions (e.g., scorch symptoms, hail damage), or other phenomena that impact disease incidence and severity.

Crop Disease List: For each major crop, the common diseases found in Nebraska are listed and linked to further information. Not all diseases occur in every Nebraska county so, when possible, the known or projected geographic distribution of the disease is given. Diseases will be added to each list as they become important and as resources allow.

Individual Crop Disease: Each page includes images of symptoms to aid in making a preliminary diagnosis and links to further information.

Crop Disease Commentary: This page provides both bulleted and detailed information to provide a basic understanding of the pathogen, the symptoms most often associated with disease development, conditions favorable for disease development, and disease management recommendations. It is not a comprehensive treatment of these topics. It also links to images of the pathogen, key symptoms, key symptoms, and signs of the pathogen.

Disease Forecast Page: The disease forecast page, which will be updated weekly to biweekly, includes information on disease occurrence and severity observed during surveys in selected counties. It will indicate which diseases to watch for based on weather the previous 7-10 days. Links to five county pages and the South Central Research and Extension Center farm provide updates on weather, crop development, and Gray Leaf Spot (GLS) development throughout the crop production season.

Jim Stack
Extension Plant Pathologist
South Central REC
Numerous and varied insects reported in Panhandle fields

After a relatively slow start, insect activity is picking up fast out west. Over the last couple weeks we have seen a long list of insect problems in various crops that have begun to concern us.

In sugarbeets, variegated and clover cutworms have caused significant defoliation along with alfalfa loopers and beet armyworms. It’s unusual to see these insects in these numbers this early in the year.

To evaluate the need for control, growers should consider the amount of defoliation that has occurred, the number of insects present, and the size of the larvae or potential for further damage. Because of the value of sugarbeets, thresholds for defoliation are lower than for other crops like corn. It is probably important to keep defoliation below about 20% of the leaf area. If beets begin to show 10-15% defoliation and insects are large enough to cause considerable additional defoliation, treatment should be considered.

We have seen a considerable delay in activity of sugarbeet root maggot flies. Peak fly activity is at least two weeks behind normal due to the cool spring. Insect development, like plant growth, is driven by the accumulation of temperature. The cool spring has delayed emergence and adult activity; however, in the last few days, we have seen increased female activity in the fields. This indicates that emergence is progressing and peak egg laying will not be far off.

Western corn rootworm first instar larvae were first observed this week in the Panhandle. This may be about a week later than normal, also likely due to the delayed season.

We have received several reports of Say’s stink bug in wheat. This insect can be a problem in small grains, particularly during milk stage. One stink bug in ten spikes is considered significant enough to impact yield and quality. Infestations before or after milk stage are much less damaging.

The larvae of the painted lady butterfly -- the thistle caterpillar -- have been drawing a large amount of attention from anyone who has observed Canada thistle patches this spring. This migratory insect moves up from Mexico in the spring and is now present in very high numbers. Its presence could be a concern to sunflower growers. These insects will feed extensively on sunflowers, which should be carefully monitored for this insect. They will be found defoliating the leaves of sunflowers and the larvae will be found in a silken tunnel made from the edges of rolled up leaves.

Gary Hein
Extension Entomologist
Panhandle REC

High Plains Ag Lab Field Day June 21

The NU High Plains Ag Lab Field Day will feature presentations and a tour of current field research beginning at 9 a.m. Thursday, June 21. The Lab, located north of Sidney and south of Gurley, focuses on research and demonstration of dryland crop production.

Registration, coffee and rolls will begin at 8:30 a.m. Tours will begin from the Lab at 9:10 a.m. Host speakers will be Margaret West and Karen DeBoer, Extension educators, and Charles Hibberd, director of the Panhandle REC at Scottsbluff.

Topics and speakers for the first section of the tour are: Pulse Crops with David Baltensperger, alternative crops specialist at the Panhandle REC; Control of Rye and Jointed Goatgrass in Clearfield Wheat with Drew Lyon, Extension dryland cropping systems specialist; and Wheat Streak Mosaic Virus Resistance and Sunflower Head Moth Trapping with Gary Hein, Extension entomologist.

(Continued on page 122)

Common stalk borer

Common stalk borers could be present throughout the corn production area of Nebraska, according to the accumulated growing degree days as of June 11. Scouting should begin when 1,300-1,400 growing degree days have accumulated. (IANR map by Al Dutcher, NU state climatologist)
Recycle (Continued from page 120)

**Dodge:** Dodge County Extension Office, Fremont, by appointment only, phone (402) 727-2775.

**Lancaster:** Lancaster County Extension Office, Lincoln, normal business hours, Monday through Friday.

**Lincoln:** North Platte Transfer Station, North Platte, 7 a.m. to 4 p.m., Monday through Saturday.

**Scotts Bluff:** Gering Landfill, Gering, 7 a.m. to noon and 1 to 2:30 p.m. Monday through Friday. Will accept drums.

**Washington:** Blair Recycling Site, Blair, 8 a.m. to noon Saturday only. Will accept drums.

**June-August inspection and collection sites (by county):**
- **Boone:** Cedar Valley Ag Services, Cedar Rapids. Will accept drums.
- **Butler:** Frontier Coop (Yanka), David City.
- **Cass:** Wiles Bros. Fertilizer Inc., Plattsmouth.
- **Dawson:** All Points Cooperative, Lexington.
- **Johnson:** Farmers Co-op Elevator Co., Cook.
- **Nemaha:** Clark Grain Co., Johnson.
- **Platte:** Farmers Co-op, Lindsay. Will accept drums.
- **Richardson:** Stateline Ag Service Inc., Dawson; Sur-Gro Plant Food, Inc., Falls City; Humboldt Farm Service, Humboldt; Sur-Gro Plant Food Inc., Stella; and Ag Partners Cooperative, Rulo.
- **Sarpy:** Farmers Union Coop, Gretna.
- **Saunders:** Cedar Ridge Spraying, Ashland; Frontier Cooperative, Mead; Otte Oil and Propane, Wahoo.

Sites collecting and inspecting pesticide containers only on specific dates (by county):
- **Adams:** Heartland Cooperative, Juniata, Aug. 17, 9 a.m. to 4 p.m. Will accept drums.
- **Antelope:** Central Farmers Cooperative, Brunwick, June 2 and Aug. 18, 10 a.m. to 1 p.m.; Central Farmers Cooperative, Clearwater, June 23 and July 28, 1-3 p.m.; Central Farmers Cooperative, Elgin, June 23 and July 28, 10 a.m. to noon; Central Farmers Cooperative, Neligh, July 28; Central Farmers Cooperative, Tilden, June 9, July 14 and Aug. 11, 10 a.m. to noon.
- **Boone:** Helena Chemical Co., Albion, July 7, Aug. 7, 8 a.m. to noon. Will accept drums.
- **Clay:** Fairfield Non-Stock Co-op, Fairfield, Saturdays, June to August, 8 a.m. to noon.
- **Colfax:** Husker Coop Fertilizer, Schuyler, July 14 and Aug. 11, 8 a.m. to noon; Schuyler Cooperative, Richland, July 14 and Aug. 11, 8 a.m. to noon. Both sites will accept drums.
- **Dakota:** Farmers Cooperative Association, Emerson, Wednesdays 9:30 to 10:30 a.m. June and July (except July 4); Farmers Cooperative Association, South Sioux City, Wednesdays 11 a.m. to noon, June and July (except July 4). Both sites will accept drums.
- **Dixon:** Farmers Co-op, Allen, June 26, July 11 and 25, 8 to 9 a.m.; Precision Agronomy, Newcastle, June 26, July 11 and 25, 8:30 to 10:30 a.m.; Farmers Co-op, Ponca, June 26, July 11 and 25, 11 a.m. to noon. All sites will accept drums.
- **Gage:** Southeast Nebraska Cooperative, Filley, July 27, 9 a.m. to 3 p.m.; Plymouth Cooperative, Odell, Aug. 10, 9 a.m. to 3 p.m.
- **Gospere:** Cargill, Elwood, first and third Fridays, June to August. Will accept drums.
- **Hamilton:** Aurora Cooperative Elevator, Aurora, Fridays only July through Aug. 15, 8 a.m. to 5 p.m. Will accept drums; Heartland Cooperative, Gillette, Aug. 16, 8 a.m. to 4 p.m. Both sites will accept drums.
- **Holt:** Central Farmers Cooperative, O’Neill, July 21, 10 a.m. to noon.
- **Jefferson:** Farmers Co-op Elevator Co., Fairbury, Aug. 3, 9 a.m. to 3 p.m.
- **Kearney:** Heartland Co-op, Minden, Aug. 14.
- **Lancaster:** Farmers Cooperative Co., Bennet, July 13, 9 a.m. to 3 p.m.; Firth Cooperative, Princeton, July 20, 9 a.m. to 3 p.m.; Farmers Cooperative, Waverly, June 29, 9 a.m. to 3 p.m.
- **Phelps:** Agri Co-op, Holdrege, weekdays, July 6-27. Will accept drums.
- **Saline:** Plymouth Cooperative, Wilber, Aug. 17, 9 a.m. to 3 p.m.
- **Saunders:** Otte Oil and Propane, Wahoo, Sept. 14, 9 a.m. to 3 p.m.
- **Thurston:** Mother Earth Recycling Center, Macy, Wednesdays 10 a.m. to noon, June and July (except July 4); Pender Grain, Pender, Wednesdays, 10 to 11 a.m. in June and July (except July 4). Both sites will accept drums.
- **Wayne:** Precision Agronomy, Wayne, July 10, 8 a.m. to 9:30 a.m.; Fletcher Farm Service, Wayne, July 10, 10 a.m. to 11:30 a.m. Both sites will accept drums.

By-appointment sites are:
- **Brown:** Ainsworth Transfer Station, Ainsworth, (402) 387-2213. Will accept drums.
- **Knox:** Precision Agronomy, Bloomfield, (402) 373-4755.
- **Nance:** Tri Valley Cooperative, Fullerton, (308) 536-2424.
- **Otoe:** Farmers Co-op Co., Talmage, (402) 264-3385.

**High Plains Field Day**
(Continued from page 121)

Following the 10:30 a.m. break, speakers and topics will include: 
- **Fertility** with Jürg Blumenthal, Extension soil fertility specialist; 
- **Wheat Breeding Update** with Stephen Baenziger, Robert Graybosch, David Baltensperger, members of the NU Wheat Breeding Team. 

Lunch will be at noon, followed by a panel discussion on hard white wheat issues. Speakers will include: 
- Drew Lyon, moderator; Stephen Baenziger, NU wheat breeder; Dave Cook, manager, Scoular Grain, Sidney; Robert Graybosch, USDA-ARS Wheat Breeder; Bob Kelly, General Manager for Crossroads Cooperative; Leon Kriesel, Kriesel Certified Seeds; and Ron Maas, executive director of the Nebraska Wheat Board. 

For more information call the Panhandle REC at (308) 632-1230.
Thin wheat stands may need harvest aid weed treatments

With many winter wheat stands being thin and less competitive with weeds, the need for a pre-harvest herbicide application may be appropriate for many winter wheat fields this year. This is especially true for fields not treated earlier.

The benefits from a pre-harvest (harvest aid) treatment include:
1. It helps with harvest if the treatments are applied early enough for the weeds to dry down.
2. It helps with post harvest treatments since many of the weeds will be cut off at harvest and this will limit the surface area of the weeds and reduce the amount of herbicide one can get on the plant for effective weed control.
3. Larger weeds will stress smaller weeds and make them more difficult to control.

Remember, the weeds will have already caused any yield loss from competing with the crop for space, light, moisture, and nutrients. To avoid this loss in the future, apply herbicides prior to wheat jointing. If thin stands are a concern, use a herbicide with residual soil activity.

For winter wheat fields with weed populations that may interfere with harvest, consider 2,4-D low volatile ester as a harvest aid treatment. Apply 2,4-D low volatile ester at a rate of 1 quart/acre (4 pounds active ingredient/gallon) to winter wheat in the hard dough stage. All green color should be gone from the stem. Earlier application of 2,4-D may cause serious injury to the wheat. The 2,4-D must be applied at least seven days before harvest. Not all brands of 2,4-D are labeled for use as a harvest aid treatment, so be sure to check the label.

Ally + 2,4-D is labeled for use as a pre-harvest aid treatment. Ally at 0.1 oz/acre + 2,4-D at 4-8 oz/acre (4 pounds active ingredient/gallon) + surfactant at 1 quart/100 gallons of spray solution provides more rapid burndown and control of large kochia and Russian thistle plants than 2,4-D alone.

Consider the following factors before applying Ally + 2,4-D as a harvest aid:
1. No more than 0.1 oz/acre of Ally may be applied to a single field in a 22-month period.
2. Some crops can not be planted for up to 22 months after applying Ally (sunflowers for example).
3. This treatment must be applied at least 10 days prior to wheat harvest, but after the wheat has entered the dough stage.

Roundup Ultra RT and Landmaster BW both have supplemental labels for pre-harvest application in wheat. These products must be applied to wheat after the hard-dough stage and at least seven days before harvest. Apply Roundup Ultra RT at 28-32 oz/acre and Landmaster at 54 oz/acre. Adding 8.5 to 17 pounds of spray grade dry ammonium sulfate by weight may increase the performance of Roundup Ultra RT and Landmaster BW on annual weeds.

To reduce breakage with treatments containing 2,4-D -- such as Landmaster BW-- all green color should be gone from the winter wheat stem joints before application.

Before spraying, check adjacent fields for susceptible crops.

Proso herbicide options limited

Although proso millet is an important dryland crop in the Nebraska Panhandle and northeast Colorado, nationally it garners little attention. In fact, only three herbicides are labeled for use in proso millet. These herbicides are: 2,4-D amine, Clarity and Peak.

The only 2,4-D product labeled for use in proso millet is Formula 40 by Riverdale Chemical Company. Clarity is the only dicamba product labeled for use in proso millet. All three herbicides provide selective postemergence broadleaf weed control in proso millet. Peak provides some residual control of later emerging broadleaf weeds, but cropping flexibility is somewhat limited, for example sunflowers and garbanzo beans cannot be planted for 22 months following a Peak application.

None of these products will control grass weeds. Because of the limited number of herbicide products labeled in proso millet, cultural practices are an important part of any weed control strategy. Proso seeding should be delayed until early June to allow time for warm-season grass weeds such as green and yellow foxtail to emerge and be controlled prior to seeding. June seeding also allows soil temperatures to rise sufficiently to encourage rapid emergence of proso millet plants. Higher seeding rates, in the range of 15 to 20 pounds of seed per acre, should be used to increase proso millet's competitive advantage with weeds.

Drew Lyon
Extension Dryland Cropping Systems Specialist
Panhandle REC

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Wheat leaf rust research keeps pace to provide resistance to new lines

Rust diseases are the most important wheat diseases worldwide. Stem rust, potentially the most serious of the three rusts, is effectively controlled through resistance. However, resistance to leaf rust, a serious disease in eastern and central Nebraska, is less common than it is for stem rust. Breeding programs must continually evaluate their material for reaction to the rust diseases so that protection through resistance is maintained in released varieties.

The history of breeding for leaf rust resistance in winter wheats in the Great Plains has proven to be a never-ending battle. Whenever new resistant genes have been used alone over significant areas, the corresponding virulence to these genes has appeared and increased in the leaf rust pathogen (*Puccinia triticina*) population within a few years. For example, since 1995 the rust virulence to host gene *Lr17* has increased nationwide from 2% in 1995 to 21% in 1998. This increase in rust virulence corresponds with a significant increase in acreage of the variety *Jagger* grown in Kansas and southern Nebraska. *Jagger* contains gene *Lr17*. This same trend occurred with the varieties *Siouxland* and *Karl 92*, both of which lost their leaf rust resistance within five years of their release. Knowing how often new rust races appear is an important part of breeding for rust resistance. This can only be accomplished through the annual monitoring of the Nebraska leaf rust population and by screening lines early in their development for resistance or susceptibility to the ever changing rust race population.

We have monitored the Nebraska leaf rust population since 1993 and have noted significant changes in the rust races and in the virulence frequency to individual leaf rust resistance genes. For example, the 2000 leaf rust field collection from Nebraska separated into 43 distinct races which illustrates the tremendous diversity of this pathogen. Some of these races were capable of attacking at least 10 different leaf rust resistant genes. The Nebraska wheat breeding program bases its leaf rust resistance on host gene *Lr16*. So far none of the leaf rust races collected in Nebraska have shown virulence to this gene; however, virulence to this gene has been increasing in other wheat growing areas of North America. If the resistance provided by *Lr16* begins to break down because of race shifts in the pathogen, our monitoring program will detect this change. The wheat breeding program in turn can use this information to use other leaf rust resistant genes in its breeding program. Through this process the release of highly rust susceptible varieties will be avoided, making Nebraska growers less prone to losses from this serious disease.

John E. Watkins  
Extension Plant Pathologist  
Julie Schimelfenig, Wheat Disease Research Technologist

Cutting wheat for hay may fit your operation

Many wheat growers are worried about poor grain yields due to thin stands, dry soils, uneven maturity, and various pests. With prices well below $3 a bushel, gross income looks discouraging.

In a year like this, wheat hay may be a viable alternative. Since wheat usually yields more than two tons of hay per acre, you might make as much or more money harvesting for hay as for grain. Plus, crops like sudangrass or millet or soybeans could be double-cropped into the stubble if insects and moisture aren’t a problem.

If you decide to harvest wheat hay, consider forage quality as well as yield. If you plan to feed wheat hay to young stock or lactating cows, late cutting will not provide the quality you’ll need. Protein and TDN will be too low. To provide for good yield with a relatively high protein and energy, cut your wheat as soon as possible after heading. Protein should be 8% -10% and TDN will be about 60%. This younger forage should be very palatable.

To winter beef cows, though, harvest can be delayed until milk to soft dough stage. Yield will be slightly higher, but protein will have dropped to 6% to 9% and TDN will be 50%-60%. Hay could be quite coarse, though, so intake will be less than with an earlier cutting. Grinding might be useful.

Bruce Anderson  
Extension Forage Specialist