

2005

Crop Watch No. 2005-18, July 29, 2005

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Brown Jasa, Lisa, "Crop Watch No. 2005-18, July 29, 2005" (2005). *Crop Watch*. 297.
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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

UNIVERSITY OF
Nebraska
Lincoln

No. 2005-18, July 29, 2005

European corn borer moths flying

The second European corn borer flight is occurring in much of Nebraska and just beginning in northeast Nebraska. If you have not begun yet, start scouting non-Bt cornfields for European corn borer egg masses. Current information on light trap catches near your area can be found through the UNL Entomology Department Web site at entomology.unl.edu/ or directly at entomology.unl.edu/fldcrops/index.htm.

Timely and accurate scouting is the key to managing European corn borer in (non-Bt) corn hybrids. Remember that conditions are localized and each field must be scouted to make accurate decisions. We have had it easy the last few years — flights have been relatively low; however, this cannot last forever.

Fields with green silks during the peak moth flight period are most susceptible to second-generation egg laying. The white, flat eggs overlap each other like fish scales

and are laid in masses of five to 40 eggs. Eggs are most likely found on the underside of leaves, near the mid-rib, on the ear leaf and the three leaves above or below the ear leaf. Approximately 90% of the egg masses will be found on these middle seven leaves. A black spot is visible on the eggs for about 24 hours before they hatch. The spot is the head of the developing corn borer; this stage is often referred to as the black head stage.

To determine whether control would be profitable, examine 25

plants at four sites per field (100 plants total). Record the number of egg masses and the number of plants sampled. If you sampled only the middle seven leaves, multiply the number of egg masses by 1.1 to estimate the total present over the whole plant. Use this adjusted mean in the worksheet. Go through the calculations outlined in the worksheet (also available in NebFact 98-365, *Second Generation European Corn Borer Scouting and Treatment*

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Hot, dry conditions their favorite

Watch for spider mites in corn

We are reaching the time of year when spider mites may start damaging corn and soybeans. I have seen low numbers of spider mites in corn and soybeans in southeastern and south central Nebraska. While we haven't received reports of any economically damaging infestations, hot, dry conditions will favor an increase in populations. Producers should be scouting fields and keeping a close eye out for spider mites.

Identifying the species

Two species of spider mites, the Banks grass mite and twospotted spider mite, commonly feed on Nebraska corn. Banks grass mites feed almost exclusively on grasses, including corn and sorghum.

Twospotted spider mites not only feed on many species of grasses, but also on soybeans, fruit trees and a variety of vegetables and ornamental plants. Although these two species are somewhat similar in appearance, they differ in several biological characteristics and in their susceptibility to pesticides.

Banks grass mites usually appear earlier in the season, feed mostly on the lower leaves of the corn plant, and in Nebraska are moderately susceptible to many of the commonly used miticides. On the other hand, twospotted spider mites tend to appear in mid to late season, increase rapidly, feed over the entire plant, and often are not consistently

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Ag briefs

Editor: What a difference some rain and a drop in temperature can make. Most of the following reports indicate the level of stress and loss which occurred before Monday night's front swept through. Unfortunately, in some cases, educators report that it may be too little too late.

Terry Gompert, Extension

Educator in Knox County: Feed lot cattle losses approached 300 in Knox County on Friday because of the heat. There will not be a third cutting of alfalfa without rain. Corn and soybeans are being stressed on light soils.

Doug Anderson, Extension

Educator in Nuckolls and Thayer counties: Hot, hot hot. Dry, dry dry. Dryland corn is probably gone. Even if we get adequate rain now there is no potential left in the plant. There is a chance for dryland soybeans if rains start to come and keep coming. Dryland milo is starting to put on a head. It looks to be spotty and short. There isn't any regrowth on dryland alfalfa and I wouldn't expect another cutting until late in September or October.

Karen DeBoer, Extension

Educator in Cheyenne County: Our main concern is moisture for summer crops. Tilling and fertilizing summer fallow and finishing wheat harvest are the main field activities. Proso millet looks good, however, summer crops could use some rain.

Paul Hay, Extension Educator in Gage County: The last week has taken a toll on the dryland corn in much of southeast Nebraska. There will be losses even if we get the general rain predicted for early this week. Beans and milo are also impacted, but perhaps not as much as the corn.

Del Hemsath, Extension

Educator in Dakota, Dixon and Thurston counties: Hot temperatures were a common theme over the past couple of weeks. The high temperatures came right during the critical corn tasseling and silking stage. The effect of the high tempera-

tures on the success of pollination will be known later. Recent rains have really helped the dryland crops as they were showing moisture stress. There have not been any serious pest problems in the area even though there are a few soybean aphids in the area. Hot temperatures were a problem for the livestock producers, especially the feedlot owners.

Keith Jarvi, Integrated Pest Management Extension Assistant, Haskell Ag Lab, NEREC: We have received beneficial rains over the last week in many places. Monday I looked at a corn field in a corn-soybean rotation with corn rootworm damage. The emerging adult rootworms were all northern corn rootworms, which points to extended diapause, a situation where a certain percentage of eggs laid overwinter for more than one year, causing problems in a two-crop rotation. While it has been known for some time that we have occasional problems with extended diapause in northeast Nebraska, this is the most extensively damaged field that I have seen. We also checked a field about two weeks ago where transgenic rootworm corn had some significant damage to the roots. Transgenic

rootworm corn is not as effective as transgenic corn borer control corn, and growers should be aware that there may be visible and possibly significant damage to transgenic rootworm corn.

Gary Lesoing, Extension

Educator in Nemaha County: Much of the area received a good rain on July 17 with some areas receiving over 2 inches. Still some parts of southeast Nebraska were short of moisture. Crops were really showing the stress of the extremely hot temperatures and dry conditions all of last week. The dryland corn in fields that have received less rain and with less productive soils really showed the stress. Heavy dews each morning and cloudy conditions some days did benefit the crops. Soybeans are flowering and making pods and are not showing as much stress as the corn. Pastures were drying up under the hot, dry conditions, with alfalfa waiting for a rain.

On July 25-26 we received an excellent soaking rain with some areas receiving more than 4 inches. This will really help recharge the soil profile. While most dryland corn was probably hurt by the hot, dry weather, these rains will help it develop and improve yields. Soy-

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CROP WATCH

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Crop Watch is published from March to November by Cooperative Extension and Communications and Information Technology in the University of Nebraska Institute of Agriculture and Natural Resources, PO Box 830918, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order a print subscription or to change your address, write to *Crop Watch* at the above address or call (402) 472-7981. The newsletter also is available on the Web at cropwatch.unl.edu

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Use it or lose it

When pastures dry up, graze or chop corn

If your pastures and your dryland corn and pivot corners are drying up, make the best of a bad situation. To salvage your corn crop, provide feed for your livestock, and reduce damage to your pasture, try green chopping or grazing the corn.

If you green chop, do watch out for high nitrates. Cut high to leave lower stalks in the field and never allow green chop to heat in the wagon or the feed bunk. That makes the nitrates even more toxic. Chop just what your animals will eat in one meal.

Grazing probably is the cheapest and safest way to use this corn. With little or no grain, corn is similar to other summer annual grasses like sudangrass and millet. In fact, corn leaves and stalks often contain more TDN and protein than these more commonly used grasses.

If you decide to graze your corn, don't just turn animals in and let them graze. Use an electric fence to

strip graze the field. Otherwise, cattle trample so much of it that it's hardly worth grazing. Generally, a highly visible electric wire that's moved every couple days works well for stock cows. Dairy cows or stockers do even better if you move the fence daily. Be sure to first train cattle to your fence, though, or they

might run right through it.

While this year's hot, dry weather may have ruined plans for your corn crop, chopping and grazing can be surprisingly good ways to salvage what's left if you need the feed.

Bruce Anderson
Extension Forage Specialist

Managing dryland pastures

When dryland pastures become heat- or drought-stressed, adjusting the stocking rate is one of your first options. Don't keep animals that aren't paying their way with good production. Then, divide pastures into smaller paddocks and make animals graze small areas for short times, like just a day or two, to reduce the amount of grass lost due to trampling. This also will encourage animals to eat some of the forage they normally would waste.

Eventually, feeding hay or other supplements becomes one of your options. Confine animals in a small area to reduce damage to already stressed plants. Another good strategy is to start feeding hay before your pasture is depleted. By feeding hay, you can extend the recovery period, improving the health and vigor of existing plants and giving them a chance to produce as much as possible for later grazing.

Bruce Anderson
Extension Forage Specialist

Field updates *(Continued from page 160)*

beans should continue to develop normally with good yields expected unless pests emerge. Up to this time there has not been any major insect infestations or disease infections in soybean fields in the area. We are continually monitoring for diseases and insects. Regrowth of pasture grasses should occur and there should be another cutting of alfalfa.

Tom Dorn, Extension Educator in Lancaster County: Monday's storms dumped 1.5 to 4.5 inches of much needed rain on Lancaster County. A field survey Wednesday morning showed that rain had penetrated 16 to 24 inches into the soil in most corn and bean fields.

Corn is in the milk stage so fields retaining at least 2 inches of moisture from Monday's rain should be okay to early dent to full dent without moisture stress. We are not out of the woods yet. We will need

another 5 inches of rain beyond the amount of soil moisture currently present to carry the corn crop through to maturity without moisture stress. There has been some tipping back but considering the hot, dry conditions the past couple of weeks, there is less tipping back than I would have anticipated. Corn in the area that received hail damage on June 29 has tipped back about 25 - 30%.

Soybeans are mostly in the R4 to R5 growth stage (full pod to beginning seed fill). Drilled beans have closed canopies, beans planted in 30-inch rows have about 90% closure. Bean leaf beetles are active and feeding on the upper leaves with less than 5% leaf area lost so far. I found two soybean aphids today. The surprising thing was the field was quite far from any buckthorn where aphids might have over-wintered.

Like the corn, soybeans will take about 5 inches of additional moisture to carry them through to maturity without moisture stress.

USDA Nebraska Agricultural Statistics Service: Corn conditions rated 1% very poor, 6% poor, 18% fair, 51% good, and 24% excellent, as of July 24. Irrigated fields rated 88% good or excellent while dryland fields continued declining to 48% good to excellent.

Eighty-eight percent of the soybean crop had bloomed, ahead of the average at 72%. Conditions continued to decline and rated 3% percent very poor, 12% poor, 29% fair, 46% good, and 10% excellent.

Sorghum conditions rated 5% very poor, 11% poor, 35% fair, 45% good, and 4% excellent, lower than last year but better than average. Thirteen percent of the crop had headed.

European corn borers *(Continued from page 159)*

Decisions, available online at www.ianr.unl.edu/pubs/insects/nf365.htm) to determine if an economic infestation is present. You also will need to know the crop stage, expected yield, expected market price for corn, percent control with insecticide, and cost of control (insecticide plus application costs). An interactive version of this worksheet is available online at www.ianr.unl.edu/forms/forms.skp/ecb_2nd.html

Worksheet adjustments

This worksheet will help you better evaluate the factors influencing the cost/benefit relationship for second generation European corn borer treatments. Average values are suggested in the worksheet but may be modified for local conditions. Consider the following factors:

1. Borer survival is suggested to be 15%. Larval survival varies with weather conditions and irrigation. In irrigated corn, larval survival may be 20% or more, while in dryland corn with no significant rainfall, it may be 10% or less. Survival of eggs and small

larvae decreases greatly in hot, dry weather or with extended periods of heavy rain.

2. Yield loss will be about 4% per borer for infestations occurring before silks turn brown and 3% per borer after silks turn brown but before blister stage. These averages are based on published research but only account for physiological yield losses (reduced grain production) and do not consider yield loss from stalk breakage or ear drop. These factors are difficult to predict and vary with hybrid, cultural practices and weather.

3. Percent control with insecticides is suggested to be 70%; change this value if you think that control will be different in your situation.

Infestations are most damaging when corn borers enter the stalk early in corn's reproductive cycle. There is a short time between first egg hatch and significant stalk tunneling when corn borers are best controlled. Concentrate scouting efforts in this early egg laying period and repeat every three to five days. Often, second generation egg laying may

extend to 21 days or more. Although later hatching corn borers do not directly reduce grain yield as much, they may still cause stalk breakage or ear drop. Early harvest of fields damaged by corn borers and selecting varieties with good stalk strength and resistance to stalk rot can reduce this loss.

If treatment is needed, time insecticide applications to coincide with the beginning of egg hatch to achieve acceptable control. Generally, liquid and granular formulations of the same insecticide are equally effective against corn borer larvae. However, in considering other pests that may need to be controlled at this time of year (western bean cutworms, rootworm beetles, grasshoppers, spider mites), liquids may be preferred. Rates and restrictions of registered insecticides for European corn borer control can be found on the label or at the UNL Entomology home page at entomology.unl.edu/instabs/ecb2nd.htm.

Tom Hunt
Extension Entomologist

Management worksheet for second generation European corn borers

_____ Number of egg masses per plant x 3 borers per egg mass* = _____ borers per plant
 _____ Borers per plant x 4% yield loss per borer** = _____ percent yield loss
 _____ Percent yield loss x _____ expected yield (bu per acre) = _____ bu per acre loss
 _____ Bushels per acre loss x \$ _____ sale price per bu = \$ _____ loss per acre
 \$ _____ loss per acre x 70% control*** = \$ _____ preventable loss per acre
 \$ _____ preventable loss per acre
 - \$ _____ cost of control (product + application costs)
 = \$ _____ profit (+) or loss (-) per acre if treatment is applied

If preventable loss exceeds cost of control, insecticide treatment is likely to result in economic benefit.

* Assumes survival rate of three borers per egg mass; may vary with weather and egg mass size.

** Use 3% loss per borer per plant if infestation occurs after silks are brown. The potential economic benefits of treatments decline rapidly if infestations occur after the corn reaches the blister stage.

*** 70% is an average, you may use another value if desired.

Spider mites (Continued from page 159)

controlled by available pesticides. The most useful characteristics for identification are the overall shape of the body and the pattern of pigmentation spots on the back (see figure). The dark green spots on both species are caused by food particles that accumulate in their gut. Because of differences in gut structure, these pigment spots accumulate in slightly different patterns. In Banks grass mites the pigments accumulate along both edges of the body near the rear and along the sides of the body. In twospotted spider mites, the pigments accumulate along the sides of the body in two distinct spots and do not extend back more than halfway on the body. The Banks grass mite is also slightly less robust than the twospotted spider mite and is slightly flatter from top to bottom.

Mites damage crops by piercing plant cells with their mouthparts and sucking the plant juices. The first evidence of mite feeding, which can usually be seen on the top of the leaf, is a yellow or whitish spotting of the leaf tissues in areas where the mites are feeding on the lower leaf surface. Because many other things can cause similar discoloration, it is important to check leaves closely to make sure mites are actually causing the damage. Leaf discoloration caused by mite feeding can be easily

identified by checking the undersurface of leaves for the presence of mites, eggs and webbing. Both Banks grass mites and twospotted spider mites produce webbing, and a fine network of silken webs will likely be associated with mite colonies. A magnifying glass or 10X hand lens is helpful in examining plants for mites.

Management

The economic injury level indicated in the table provides a method for deciding when to treat, taking into account the value of corn. This table works for both twospotted spider mites and Banks grass mites. The first row refers to the expected value of the crop (\$/acre), determined by multiplying the expected yield (bu/acre), by the expected crop price (\$/bu). For example, if the expected yield is 200 bu/acre and the expected price is \$1.50/bu, then the value per acre is \$300.

Deciding whether to treat involves two steps. First, determine the percentage of leaves infested with mites (an infested leaf has one or more live mites). Compare that number with the first number in the table. If the field average is less than the table value, you don't need to treat, but do continue to monitor the field. If the field average exceeds the

table value, then estimate the percentage of total leaf area damaged by mites. If the field average exceeds the table value, it is likely that treating for spider mites will increase yield above the cost of treatment.

Also, note that control costs are a factor in this table. Depending on the product chosen, the critical values may change greatly. For example, under the column \$300 market value, the critical value for percent infested leaves varies from 20%, if control costs are \$10, to 49% if control costs are \$25.

Products labeled for spider mite control on corn include dimethoate (several formulations), Comite 6.55EC and Capture 2EC. Dimethoate has performed reasonably well in Nebraska against Banks grass mites, but not twospotted spider mites. If twospotted spider mites are present, either Comite or Capture would provide better control. See the UNL Department of Entomology Web site on spider mite control or product labels for specific rates and restrictions. With the exception of Comite, pesticides do not kill mite eggs, and there is a possibility of re-infestation of the fields as eggs hatch out. Since many of their natural enemies were probably killed by the initial pesti-

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Table I. Economic injury level for the Banks grass mite or twospotted spider mite on corn, based on the percentage of infested leaves per plant and percentage of total leaf area damaged.

Control cost/acre	Market value per acre (\$)										
	200	250	300	350	400	450	500	550	600	650	700
	<i>Percent infested leaves per plant/Percent of total leaf area damaged</i>										
\$5	15/8	12/6	10/5	8/5	7/4	7/3	6/3	5/6	5/3	5/2	4/2
\$10	29/16	24/13	20/10	17/9	15/8	13/7	12/6	11/6	10/5	9/5	8/4
\$15	44/23	35/19	29/16	25/13	22/12	20/10	18/9	16/9	15/8	14/7	13/7
\$20	59/31	47/25	39/21	34/18	29/16	26/14	24/13	21/11	20/10	18/10	17/9
\$25	74/39	59/31	49/26	42/22	37/20	33/17	29/16	27/14	25/13	23/12	21/11

Greenbugs present in many sorghum fields

Greenbugs are present in many sorghum fields and should be monitored closely for the next couple of weeks in case economically damaging populations develop. Predator populations, particularly lady beetles, are high and greenbug parasites have been found in many fields. The greenbug parasite is highly effective in controlling greenbugs if it gets started early.

The adult parasite is a small wasp that lays eggs inside greenbugs. The immature stage (larva) of the parasite develops internally and ultimately kills the greenbug. Just before completing development, the larva causes the greenbug exoskeleton to swell and change to a tan color. This is the parasite pupal stage, called a **mummy**. The wasp will emerge from the mummy in 1-2 days.

Because parasites and predators can be highly effective in controlling greenbugs, delay use of

insecticides as long as possible.

For more information on greenbug management refer to University of Nebraska NebGuide G87-838, *Management of Greenbugs in Sorghum*. Most insecticides registered for greenbug control usually provide excellent control. Insecticide resistant greenbugs have occasionally been present in Nebraska but there have not been

any recent reports of insecticide failure in either Nebraska or Kansas. Information on recommended insecticides and management is available on the UNL Department of Entomology Web site at entomology.unl.edu/fldcrops/pestipm.htm.

Bob Wright
Extension Entomologist

Table 1. Treatment thresholds for greenbugs.

Plants 6 inches tall to boot stage

Greenbug colonies beginning to cause red or yellow leaf spotting on leaves of most plants; before any entire leaves are killed, and if parasite numbers are low (less than 20% of greenbugs are mummies).

Boot to heading

Treat if greenbug colonies are present on most plants and have killed one lower leaf and if parasite numbers are low (less than 20% of greenbugs are mummies).

Heading to hard dough

Treat if greenbug colonies are present on most plants and have killed two normal-sized leaves and if parasite numbers are low (less than 20% of greenbugs are mummies).

Spider mites *(Continued from page 163)*

cide application, these populations may build up rather quickly and should be monitored carefully. Corn is unlikely to benefit from treatment for spider mites after the dent stage.

Twospotted spider mites also may develop on soybeans. No

research has been conducted that would allow calculation of an economic injury level for twospotted spider mites on soybeans. Iowa State University Extension specialists have suggested that control may be warranted when infested plants have substantial spotting or leaf yellowing and live mites, but before mites cause browning and leaf drop. Damage from mites may be confused with that caused by drought and several foliar diseases, so be sure to base treatment decisions on the presence of mites, rather than just apparent injury symptoms. Especially watch soybean fields treated for soybean aphids, as these insecticides reduce the population of natural enemies which help reduce spider mite numbers.

Fields may be spot treated if the infestation is localized, but check

other areas for mites (especially downwind of infestation) and extend treatments into these areas if large numbers of mites are found. Although late season infestations may accelerate soybean senescence and increase pod shattering, use caution when evaluating whether to treat with pesticides because many of the pesticides used for mite control have 21-28 day preharvest intervals

Products to use in soybeans include dimethoate (several formulations) and Lorsban 4E at 0.5 to 1 pint per acre. See the UNL Department of Entomology Web site or product labels for specific rates and restrictions. For more information see the UNL Extension publication, *Spider Mite Management in Corn and Soybeans*, G1167.

Bob Wright
Extension Entomologist

Insect photos

For help in identifying insect pests, check these two online sources or your University of Nebraska—Lincoln Extension office.

- ◆ cropwatch.unl.edu which includes photos in individual issues as well as in a photo archive
- ◆ entomology.unl.edu, the UNL Entomology Department site which has a large library of photos and related I.D. information

With an eye on the export market

Getting started with hard white wheat

Hard white wheat has some significant advantages over hard red winter wheat. Millers, bakers and consumers prefer white wheat whenever they have a choice. This preference is particularly strong in some international markets that buy wheat from the United States. Despite strong overseas interest in buying hard white wheat to produce noodles, tortillas, breads and other product, the United States continues to produce much more hard red winter and other types of wheat than it does hard white wheat.

When it comes to hard white wheat production in the United States, the one key ingredient still missing is a consistent and reliable supply. It is hoped that this problem will be overcome within the next one to two cropping seasons so that the United States doesn't risk losing the hard white wheat export market to Canada and Australia. Australia produces only hard white wheat and Canada is rapidly increasing its production. Canada's production for the 2006 crop year is expected to be nearly twice that of the United States.

All production practices (seeding date, seeding rate, fertilization, and harvesting) are alike for hard white wheat and hard red winter wheat. Susceptibility to preharvest sprouting of hard white wheat is the major production concern. Rain, high humidity, and low temperatures after ripening may cause the grain to sprout in the spike. The Nebraska wheat breeding program is making good progress toward overcoming this problem and soon may release a variety where this is much less of a problem.

Growers considering hard white wheat for their farms should consider the following questions before committing to production:

When it comes to hard white wheat production in the United States, the one key ingredient still missing is a consistent and reliable supply.

Do I have a grain buyer identified? Most of the hard white wheat grown in Nebraska is produced within an identity preserved system, where the seed of a proprietary variety is sold to the grower and the grower is under contract to sell the grain back to the company supplying the seed. The release of public varieties of hard white wheat, such as Antelope, is a departure from this system. Although more local elevators are getting set up to handle and market hard white wheat, you'll need to visit with your local elevators. On-farm grain storage may be an indispensable aspect of white wheat production since elevators may not have sufficient demand to dedicate storage space for white wheat, especially during harvest.

How many years ago did I grow hard red winter wheat on that field? The Federal Grain Inspection Service considers hard red winter wheat and hard white wheat to be contrasting classes. Having more than 1% contamination by a contrasting class results in grade reduction. Therefore, it is important to minimize the amount of volunteer hard red winter wheat that may grow in a field of hard white wheat. Hard white wheat should only be grown on dryland ground that has not been planted to hard red winter wheat for at least three years, or on irrigated ground not planted to hard red winter wheat for at least two years.

Do I have the ability to segregate my hard white and hard red winter wheats? One of the benefits of growing hard white and hard red winter wheats is that the same equip-

ment is used for both crops. However, for reasons explained above, extra attention is needed to avoid mixing the grain of the two wheat classes. Drills, harvesting equipment (combines, trucks, augers, grain carts) and storage facilities must be cleaned to assure that the two classes aren't mixed.

Do I have the ability to harvest wheat in a timely manner? Hard white wheat varieties are more susceptible to preharvest sprouting than most hard red winter wheat varieties. Rain, high humidity, and low temperatures after ripening may cause the grain to sprout in the spike. Hard white wheat fields should be harvested promptly when ripe to avoid exposure to wet, humid weather.

What variety of hard white wheat should I plant? Two new varieties of hard white wheat will be available to growers this fall. Antelope hard white winter wheat was jointly developed by the USDA-ARS Wheat Sorghum and Forages Unit and the University of Nebraska Department of Agronomy and Horticulture. Antelope was descended from the cross Pronghorn/Arlin. Pronghorn is a Nebraska developed hard red winter wheat, while Arlin is a hard white winter wheat developed by Kansas State University. Antelope seems especially well-adapted to western Nebraska irrigated production. It had the highest three-year average yield of any variety, red or white, in Panhandle irrigated trials from 2000 to 2002, and also performed well under irrigation in Colorado and Wyoming trials.

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Long-term effects of heat wave still to be seen

Intense heat invaded the central Plains during the critical corn pollination stage, with three to five days of 100+ temperatures recorded across Nebraska from July 20 to July 25. Although it's too early to gauge the impact of this heat wave on corn yields, Nebraska Agricultural Statistics Service (NASS) reported that only 48% of the dryland corn crop was rated good to excellent as of Sunday. This represents a 28% decrease from two weeks ago.

Late Monday, July 25, an unseasonable, strong cold front pushed through the state, resulting in intense

White wheat

(Continued from page 165)

Arrowsmith hard white winter wheat was jointly developed by the USDA-ARS Wheat Sorghum and Forages Unit and the University of Nebraska Department of Agronomy and Horticulture. Arrowsmith was descended from the cross KS87809-10/Arapahoe. KS87809-10 was a Kansas experimental hard winter wheat with the pedigree KS831374-141B/YE1110. KS8321374-141B was a reselection out of Karl, while YE1110 was descended from Gerek 79, a winter wheat from Turkey, and Aurora, a winter wheat from the former Soviet Union. Arapahoe is a well known Nebraska-bred hard red winter wheat. In Nebraska, Arrowsmith is best adapted to dryland sites in the Panhandle district. Arrowsmith is a tall wheat, similar in height to Pronghorn and Millennium. Coleoptile length is moderately long.

Visit the Virtual Wheat Tour at: www.panhandle.unl.edu/wheat for the most up-to-date information on variety performance and recommendations for Nebraska. To learn more about hard white wheat, visit www.hardwhitewheat.unl.edu.

Drew Lyon

**Extension Dryland Crops Specialist
Panhandle REC, Scottsbluff**

thunderstorms and heavy rainfall across portions of south central, east central, and southeastern Nebraska. Preliminary rainfall totals ranged from 1.5 to 4.5 inches over a 12-hour period ending at 7 a.m. on Tuesday. Unfortunately, many portions of central, north central, and northeast Nebraska received less than 0.50 inches of moisture.

It remains to be seen how much of an impact the extreme heat coupled with dry conditions during the past 30 days will have on corn yields. NASS will release its first estimate of 2005 corn yields in early August.

It does appear that the southwestern monsoon season is beginning to show signs of life and the western third of the state may begin to see some benefit from increased moisture over the central Rockies. Weather models indicate that scattered thunderstorm activity

should pick up in intensity by the first full weekend of August.

In the longer term, the 30-day forecast for August released by the Climate Prediction Center on July 20 fails to paint a clear picture as to the direction of weather events during the grain fill stage of corn, sorghum, and soybeans. There are equal chances of above normal, normal, and below normal temperatures and precipitation across the entire state.

The 90-day outlook for the August-October period does indicate a slight tendency for above normal temperatures across the western United States, as well as the central and southern Plains region, including Nebraska. No precipitation tendency was indicated for the state as there are equal chances for above normal, normal, or below normal precipitation.

Allen Dutcher

Extension State Climatologist

Roundup Ready® alfalfa approved

After years of testing, evaluating, and regulating, Roundup Ready® alfalfa finally has been approved. There is only enough seed for about 75,000 acres nationwide this fall, but greater availability is expected for next spring.

Roundup Ready alfalfa will only be in top-of-the-line varieties, which should limit yield drag. This was an issue for some when Roundup Ready soybeans were introduced.

Where will Roundup Ready alfalfa fit best? Well obviously, if you consistently have problems with weeds when establishing new stands, this will easily solve the problem. More often, though, I expect Roundup Ready alfalfa to help solve special problems like bluegrass in irrigated alfalfa or mustards and downy brome in spring growth. It also may help with

curly dock or late season waterhemp or summer grasses like foxtail, crabgrass, and sandburs.

Because of the cost -- the tech fee is \$2.50 per pound or \$125 extra for a 50 lb bag of seed -- Roundup Ready alfalfa will be most suitable for use in higher value situations like dairy or horse hay. By eliminating weeds, it will be easier for growers to produce this hay and capitalize on these cash hay markets.

Roundup Ready also should help extend stand life by eliminating weeds, especially winter annual weeds, that hurt alfalfa stands the most. Roundup Ready alfalfa will not be right for everyone. Each grower will need to examine his or her situation and then decide if the investment is worth it.

Bruce Anderson

Extension Forage Specialist

Research on SDI, chemigation, cropping systems and more

South Central Ag Lab Field Day Aug. 4

The South Central Ag Lab near Clay Center will spotlight crop research at an August 4 field day. Tours will be conducted between 8 a.m. and 3 p.m. on 1) subsurface drip irrigation; 2) cropping systems; 3) soybean disease, insects, chemigation and hydrogeology; and 4) soybean fertilization, glyphosate chlorosis and the Quad Counties On-farm Research group.

Lunch will be provided and University of Nebraska Regent Jim McClurg will be the guest speaker. Educational displays from UNL, NRDs, commodity groups and health institutes will be presented. The Ag Lab is 7.5 miles west of the intersection of highways 14 and 6, 13 miles east of Hastings on Hwy 6.

Following are the tour topics:

Tour A – Subsurface Drip Irrigation with *Richard Ferguson, extension soils specialist, and Suat Irmak, extension irrigation specialist.*

Subsurface drip irrigation allows a lot of flexibility for nitrogen fertilizer management, raising the concept of “spoon-feeding” a crop to a new level. Nutrients can be supplied basically any time irrigation occurs. The nitrogen management research component of the first SDI system at the South Central Agricultural Laboratory is evaluating relative timings preplant vs. SDI-injected nitrogen, as well as the potential benefits for water quality using SDI systems.

Other projects are looking at how the movement of water and nutrients can be better controlled through SDI. Efficient use of water resources in Nebraska and the Central High Plains is crucial to the sustainability of agro-ecosystems and the economy of the region. By spoonfeeding nutrients to the crop, the SDI system can minimize or eliminate the movement of water and nutrients below the crop root-zone. The field day will feature further information on SDI and some of the most practi-

cal tools to monitor soil water status.

Tour B – Cropping Systems with *Fred Roeth, extension weeds specialist; Roger Selley, extension ag economist; Dean Eisenhauer, extension irrigation specialist; and Lenis Nelson, extension crop variety and seed production specialist.*

Research on skip row corn will be one topic featured on this tour. In severely dry conditions all available water is used to develop the plant and none may be left to produce grain. This research looks at the effect of lowering population or removing rows to shorten early season water use and provide more for grain production. This can help assure corn production under the worst conditions without reducing yields under better conditions.

Another stop looks at corn-corn-soybean rotations and long-term tillage and compares the relative profitability of continuous corn vs. corn-soybeans and the possibility of extending the rotation to corn-corn-beans.

Another stop looks at tillage and water infiltration. Two questions addressed by this research are: 1) How much does tillage practice influence the infiltration rate of the soil and 2) Does crop rotation affect infiltration? Participants can observe the irrigated corn and corn-soybean reduced tillage plots established in 1976 and learn how infiltration has been affected and how this can influence irrigation management. Another stop will look at ecofallow. This research compares the relative water use by weeds and crops and provides insight into this competition during the critical crop yield period.

Tour C – Soybean Disease, Insects & Hydrogeology with *Loren Giesler, extension plant pathologist; Tamra Jackson, extension plant pathologist; Bob Wright, extension plant pathologist; and Derrel Martin, extension agricultural engineer.*

One stop on this walking tour will focus on soybean rust, management recommendations for rust, how chemigation can be used to control soybean and corn diseases in Nebraska and differences in disease control levels among products. Please bring any suspect soybean rust samples for complimentary diagnosis.

Another stop will look at research on soybean aphids. Yield losses of over 20% have been documented in some northeast Nebraska fields. Attendees can see soybean aphids and hear recommendations for scouting, treatment thresholds, and control measures.

Tour D – Soybean Fertilization, Glyphosate Chlorosis & Quad County Research with *Richard Ferguson, extension soils specialist; Lori Abendroth, research and extension associate, and Jenny Rees, Andy Christiansen and Gary Zoubek, Quad County extension educators.*

One stop will look at research on soybean inoculants and growth hormone products through studies by the Quad County On-farm Research group, a collaboration of UNL extension educators, specialists and producers. This plot (replicated in five other locations) compares Vault inoculant, SoyExcel inoculant, and MegaGro/HappyGro growth regulator on soybeans. Another stop on this tour will look at plots exposed to different rates of glyphosate and the resulting impact on the “greenness” of leaves and whether this changes seed yield. Glyphosate has also been applied at differing growth stages in the plots and we will discuss whether there is an optimum application time to minimize negative effects from glyphosate. Another stop will look at foliar fertilization of soybean.

For further information on this field day, please call the University of Nebraska—Lincoln South Central Ag Lab at (402) 762-4403.

Soybean Management Field Days Aug. 9-12

The seventh annual Soybean Management Field Days will offer producers unbiased, research-based information to improve their soybean profitability. Growing America's Future is the theme of this year's event that consists of four field stops across the state, each with demonstration plots, lunch and time for questions. Sites and dates are: Aug. 9, Holdrege; Aug. 10, Orchard; Aug. 11, Central City; and Aug. 12, Holland/Hickman.

Topics will include: conventional soybean weed control and glyphosate resistance management; growing soybeans for high yield and quality; soybean aphids and rust; and more soybean dollars in your pocket. Presenters include university specialists, educators and industry consultants.

"Success for Nebraska's soybean farmers depends on more than just a good harvest. It relies on increasing the market share and growing demand for soybeans. Soybean Management Field Days approaches these topics," said Greg Anderson, chairman of both the Nebraska Soybean Board and the United Soybean Board, and a soybean farmer from Newman Grove.

"The farmer-leaders of the Nebraska Soybean Board are committed to creating opportunities for Nebraska producers to be more competitive while maximizing profits," Anderson said. "The soybean board is proud to bring this quality program again this year which promises to be one of the best ever."

Keith Glewen, extension educator, said "By participating in the Soybean Management Field Days, producers will see their checkoff dollars at work bringing leading technology and ideas to producers." Last year's participants estimated that information from the field day was, on average, worth about \$6.65 an acre.

Field days begin at 9 a.m. and end at 2:30 p.m. Free registration is available the day of the event. Dates,

locations and directions are:

— **Aug. 9, Holdrege, Rick Bergman Farm**, from Interstate 80 take exit 257 and go 9.1 miles south of the I-80 and Highway 183 interchange and one-third mile east on County Road 740, or from Holdrege go 7 miles north on Highway 183 and one-third mile east on County Road 740.

— **Aug. 10, Orchard, Mike Beelaert Farm**, from Orchard go 5 miles west, or 6 miles north of Ewing. Field is located one-fourth mile north of the intersection of Highway 20 and 45B on 508th Avenue.

— **Aug. 11, Central City, Don and Jim Benner Farm**, from Central City go 6 miles west on Highway 30 and one-fourth mile south on 11th Road. Field site is on the east side of the road. From Chapman, go 4 miles east on Highway 30 and one-fourth mile south on 11th Road.

— **Aug. 12, Holland/Hickman, Steve DeBoer Farm**, from Lincoln at

the I-80 and South Highway 77 intersection (exit 397), go 15 miles south on Highway 77 then 6.25 miles east on Panama Road. From Hickman, go 1.5 miles south to the flashing yellow light then east 2.25 miles. From the Highway 43 and 158th Street junction with Highway 2, go 9 miles south (158th Street turns into 162nd Street), then 4.75 miles west on Panama Road. Field site is on the south side of Panama Road.

Continuing education credits for the Certified Crop Advisor program will be available. For more information about the field days, visit the 2005 Soybean Management Field Days Web site at ardc.unl.edu/soydays.htm or contact the Nebraska Soybean Board at (800) 852-BEAN or UNL Extension at 1-800-529-8030.

The field days are sponsored by the Nebraska Soybean Board in cooperation with UNL Extension in the university's Institute of Agriculture and Natural Resources.

High Plains Field Day Aug. 9

The Summer Crops Field Day is scheduled for August 9 at the University of Nebraska High Plains Ag Lab near Sidney. Registration begins at 11 a.m. and lunch follows at 11:30. After lunch, speakers from the University will cover the following topics:

- Wheat curl mites and wheat streak mosaic virus
- Flexible fallow: crop response to soil water at planting
- Heat canker in sunflower
- Supplementation and deworming of yearling steers
- Feeding field peas
- Summer annual forages
- Proso millet
- Cost of production for alternative crops
- Skip-row corn
- Crop rotation changes

The work of two graduate students will be featured at the field day. Benjawan Siriwetwivat of

Thailand is working on her Ph.D. degree under the direction of Dr. Gary Hein. Siriwetwivat is studying the genetic variability of the wheat curl mite. She will have a microscope and camera set up so visitors can see the wheat curl mite in action.

Doug Felter, from southeast Missouri, is working on his M.S. degree under the direction of Dr. Drew Lyon. Doug will discuss his work to correlate soil water at the time of planting to crop yield in four short-duration crops. This information will be used to develop a decision tool to help growers determine when they might want to grow a short-duration crop instead of using summer fallow prior to winter wheat seeding.

The field day will end by 3:30 p.m. To get to the High Plains Ag Lab, take U.S. 385 to the Huntsman Elevator (6 miles north of Sidney or 7 miles south of Gurley), then drive 2.5 miles west, then 2 mile north.