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2004

Crop Watch No. 2004-19, August 27, 2004

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Brown Jasa, Lisa, "*Crop Watch* No. 2004-19, August 27, 2004" (2004). *Crop Watch*. 277.
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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

University of Nebraska Lincoln

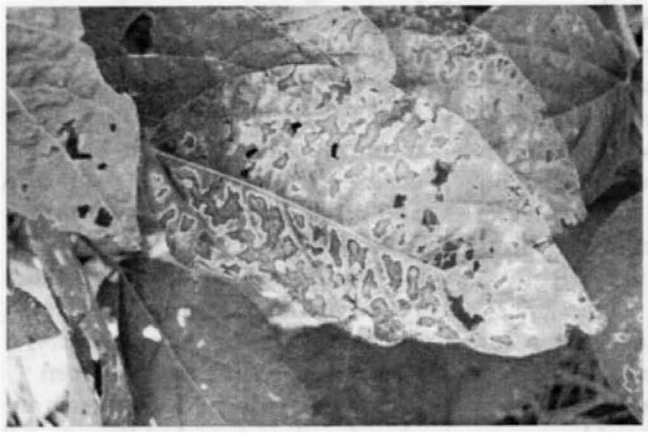
No. 2004-19, August 27, 2004

Sudden Death Syndrome found in Nebraska

Last week at a field day near Nemaha a local soybean grower brought a plant with symptoms of Sudden Death Syndrome (SDS). After visiting the field and making more observations, SDS was confirmed. This is the first report of SDS in Nebraska; however, its arrival is not a surprise as our bordering states – Missouri and Iowa -- both have it.

Sudden Death Syndrome (SDS) of soybean is caused by the fungus Fusarium solani *f. sp.* glycines. This is a different fungus than the one that causes early season damping off problems associated with soybean stand. This year's weather pattern, with both early season moisture and moisture at the early reproductive stages, is conducive to the development of SDS. Now is the time that you should see the full symptom expression of this disease.

SDS is favored by high yield environments. Soil compaction and high fertility levels have also been associated with increased levels of SDS. The foliar symptoms start with interveinal necrosis and the spots coalesce to form brown streaks between the leaf veins with yellow margins. Leaves eventually drop with the petiole (leaf stem) remaining attached. The root system will have a deteriorated tap-root and lateral roots will only be evident in the upper soil profile. The root cortex is light-gray to brown and may extend up the stem. Typically, plants can be easily pulled from the ground and a dark blue fungal growth will be visible on the roots. The blue color will not be evident in dry soil conditions.



Foliar symptoms of sudden death syndrome on a soybean leaf in eastern Nebraska.

At this time SDS does not appear to be a widespread problem in Nebraska and is most likely only going to be found in river bottom areas. It you have a field which is exhibiting symptoms of SDS, please contact us (402-472-8723; email lgiesler1@unl.edu) so we can confirm it and get a better idea of how prevalent this disease is.

Loren J. Giesler
Extension Plant Pathologist

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cropwatch.unl.edu

Seeding wheat on time pays yield rewards at harvest

Seeding date can have a major effect on winter wheat yields (*Table 1*). The recommended seeding dates for Nebraska's winter wheat vary substantially from one end of the state to the other -- from Sept. 1 in the extreme northwest area to Oct. 1 in the southeast tip -- and have been proven and verified through years of research and farmer experience. Some years an earlier seeding may have an advantage and some years a later date may have an advantage, but in the long term, the suggested seeding dates will give the highest average yield.

Table 1. Winter wheat seeding data and yield at North Platte.

Seeding date	Yield (bu/A)
September 2	2
September 15	27
September 25	42

(Continued on page 175)

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Ag briefs

Gary Zoubek, Extension Educator based in York County: We've received less than an inch of moisture the past month and the dry conditions have really begun to take a toll on dryland crops. The irrigators got a late start, but have been busier than normal. Now they can start focusing on scheduling their last irrigation (see *cropwatch .unl.edu* for a worksheet on this). Hopefully we'll get some of the rain that the crops need so badly. Several fields have been treated for soybean aphid, but conditions vary greatly from field to field.

Jennifer (Fleer) Rees, Extension Educator based in Clay and Webster counties: Several fields near Ayr showed blighted leaves up to the ear leaves. This condition existed in three different hybrids regardless of gravity or pivot irrigation. Heavy infestations of leaf miners up through ear leaves of plants throughout the fields caused the majority of damage. Symptoms were wavy, transparent streaks occurring from the outer margins in. Some gray leaf spot and common rust were also seen, primarily under pivot irrigation. Soybean aphids have been sprayed in Clay County for the past few weeks with a few fields still being sprayed this week at R5-R6. Duane Lienemann (Webster County extension) also found soybean aphids this week in Webster County.

Ralph Kulm, Extension Educator based in Holt and Boyd counties: Dryland crops are damaged beyond the help of rainfall. Much of the corn has either been cut for silage or baled. Many producers are grazing the small amount of third cutting alfalfa that has regrown as pastures are totally dried up and providing little in the way of nutrients. Irrigated crops continue to look very good. Corn is in the milk to dough stage and beans are well into the R5 stage. More of our recent warm weather will help ensure that the majority of our corn and beans will be safe from frost in 25 to 30 days.

Paul Hay, Extension educator based in Gage County: Much of the area is ending the season dry, which may reduce dryland corn yield potentials 2-3% Soybeans are also showing signs, but there is still hope if the area can get a general rain in the next week to 10 days. Cool nights have stalled out many milo fields and concern is mounting about whether the crop will be ready in time. We are certainly not ready for an early frost.

Karen L DeBoer, Extension Educator based in Cheyenne County: Soil conditions are dry and crops need warm weather to continue growing. The crops just aren't maturing as fast as they should be.

Delroy Hemsath, Extension Educator based in Dakota, Dixon, and Thurston counties: Soybeans are in the R5 stage in general. Dryness, warm temperatures and windy conditions have caused stress in the last week. Soybean aphids have most likely reached their peak and are on the downswing in numbers.

Most corn is in the dough stage and there are no serious stress problems except on the sandy soils. Yield potential in dryland corn still looks good. Potential for spider mites is set with the windy conditions and dryness. Alfalfa third cutting is being harvested and the quality should be good. Pastures are brown from lack of moisture and the grass has been grazed down.

Farm Mediation: The Nebraska Department of Agriculture Farm Mediation Program conducts clinics on farm finances; the laws, regulations and policies governing FSA; debt restructuring and other legal options; and related topics. Contact the Farm Hotline (800-464-0258) for more information.

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See the online version of *CropWatch* for even more stories for ag producers and rural residents.

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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 subcription 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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Wheat seeding dates *(Continued from page 173)*

The recommended seeding date represents a goal for seeding completion. As farm size and the number of acres increases for individual farmers, so does the length of time needed to complete seeding. The goal should be to have all the wheat planted by the ideal date. Plan your field order for planting accordingly; for example, plant higher elevation fields and those containing sandy soil first and leave lower fields and those with higher clay content until last.

If the seeding date is delayed or growing conditions prevent or delay root growth to the dual placement fertilizer band, seed fertilizer placement is the preferred application method (*Figure 1*). Poor root growth for whatever reason limits root-fertilizer contact and tillering, which affects yield.

Much of the grain yield of winter wheat occurs on tillers that develop from buds in the axils of lower leaves. Under normal conditions, as much as 70% of the grain yield comes from tillers. Tillering also enables the plant to adapt to different conditions. Few tillers develop when moisture, nutrition, and other conditions are poor, whereas numerous tillers that increase the yield potential form when conditions are favorable.

Date of seeding greatly affects development of tillers in winter wheat. Seeding during the optimum period enables wheat to form sufficient but not excessive tillers. Early seeding results in too many fall tillers, which may compete with each other, become diseased, and deplete soil moisture so that grain yields are low. Late seeding gives plants little time to develop tillers, resulting in inadequate numbers of spikes (heads) for high yields the following spring.

Senescence and death might eliminate excessive tillers that form during the fall. Conversely, if too few tillers develop during fall, additional tillers may form during spring. However the yield potential may differ between tillers that develop during fall and those that develop during spring.

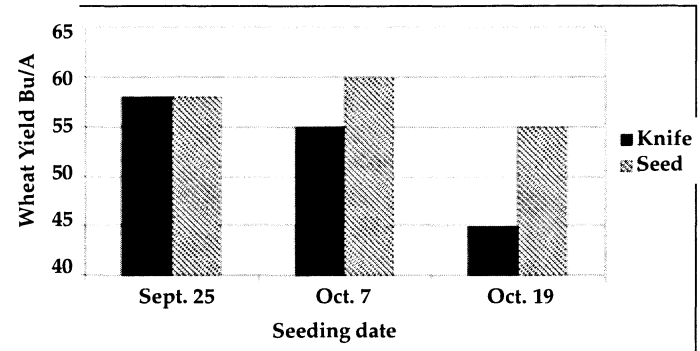

Figure 1. Effect of seeding date on performance of seed and dual placement methods of phosphorus application at three locations and seeding dates.

A study by Kansas State University to determine the seeding date effects on tiller development and productivity of winter wheat was conducted in a corn/soybean rotation at Hutchinson, Kansas. Two hard red winter wheat varieties, Jagger and 2137, were planted on four dates in the fall of 1995 (*Table 2*). The first date, September 28, was during the early part of the recommended period, September 26 to October 20. The second date, October 11, was one day after the Hessian fly-free date, and the last two dates, October 28 and November 11, were after the recommended period. Wheat varieties were planted at 60 lbs/A of seed in plots. Plots received 70 lbs N/A and 25 lbs P/A before planting and 50 lbs N/A in late February 1996.

Data for Jagger and 2137 were pooled, since results for the two varieties were similar. Nearly equal numbers of seedlings emerged after all planting dates except October 11, when considerably more plants occurred (*Table 2*). Plants from the first two dates tillered profusely, developing most of their tillers before they became dormant in late fall. Plants from the latter two seedings did not form any tillers before they became dormant, but those from the October 28 seeding developed a few tillers over winter. Only 46% and 65% of the fall tillers on plants from the first two dates, respectively, survived the winter, whereas 100% of the fall tillers on plants from the last two dates

(Continued on page 178)

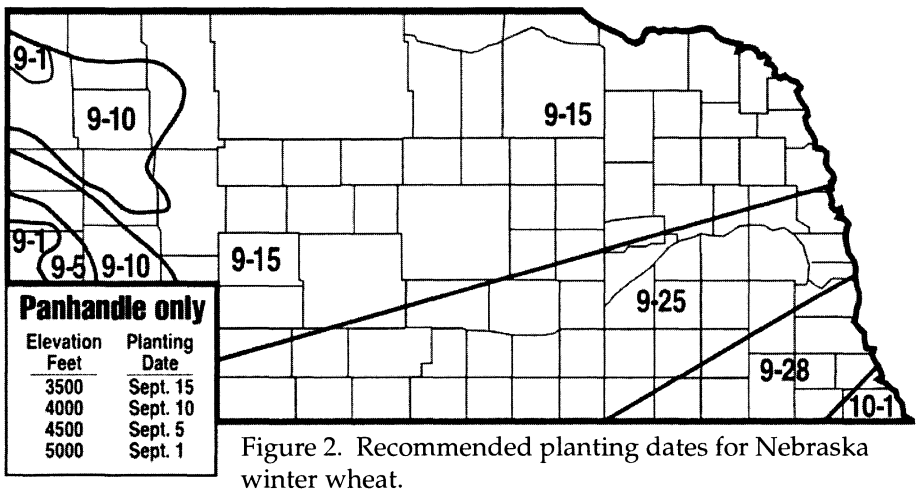

Figure 2. Recommended planting dates for Nebraska winter wheat.

Crystal ball still hazy but early frost in the picture

Cool temperatures slow crop progress

As we enter the last full week of August, concerns are being raised about an early freeze potential and crop moisture shortfalls. Temperatures across northern Montana and North Dakota fell below 32°F during the last week. In addition, cooler than normal temperatures across the central Plains during the last 45 days has helped mask precipitation shortfalls and subsequent crop stress problems.

As of Sunday (August 22), Nebraska Agricultural Statistics Service indicated that 54% of the state's topsoil is short to very short of moisture, while 70% of the subsoil falls into this category. There have been periodic heavy rains across eastern Nebraska during the last 30 days, but they haven't been widespread.

As we entered the 2004 summer crop season, corn and soybean emergence were a full 10-14 days ahead of the five-year average. By August 15, these two crops had fallen behind the five-year average and last year's ratings. During the last 60 days average temperatures have been 3-5°F below normal and the early emergence advantage has been eliminated.

Growing Degree Day (GDD) base 50°F accumulations since April 15 are running an average of 12-15% behind normal. The Panhandle and Sandhills region have accumulated 1800-1950 units (location dependent) since April 15 and are 200-300 units behind normal. GDD accumulations since April 15 for the rest of the state are: northeast (1950-2050), southwest and central (1950-2150), south central (2000-2250), east central and southeast (2150-2400).

Many locations in the western third of the state were forced to replant corn due to the May freeze. In these replanted areas, accumulations are 200-400 units behind the April 15-to-date totals. Based on average corn emergence dates, GDDs are 100-150 units less than the April 15 totals.

In terms of crop progress, the Nebraska Agricultural Statistics Service reported that 83% of the state's corn had reached the dough stage, compared to a five-year average of 86%. Approximately 31% of the corn had reached the dent stage compared to 53% for the five-year average. None of the crop had been reported as mature, compared to the five-year average of 4%. Only 4% of the soybeans were turning color, compared to the five-year average of 10%.

Crop condition ratings for corn and soybeans for this point in the season continued to exceed last year's ratings. Irrigated corn was rated 83% good to excellent compared to 71% last year. Dryland corn was rated at 71% good to excellent, compared to 14% last year. Soybeans were rated 67% good to excellent, while sorghum was rated at 62%.

Moisture stress has been reported in some corn and soybean fields in eastern Nebraska. Scattered heavy rainfall this week in eastern and north central Nebraska should help alleviate short-term moisture concerns for pod filling soybeans. Corn tippage was being reported, while soybean reports indicated moderate to severe wilting and premature leaf drop in moisture-starved fields.

Weather models have been inconsistent the entire summer concerning the strength and timing of cold air intrusions across the central United States. What does appear to be consistent is that cold air days are beating out warm air days by a two to one ratio. When below normal temperatures move into the Plains, they hold on for 5-10 days, followed by two to five days of above normal conditions.

During three days of weather model runs (August 22-24), three different forecasts appeared for the next two weeks. A significant trough was expected to move through the central United States from the Pacific Northwest by the end of this week. This will usher in below normal temperatures and drier weather through early next week. It is at this point where the models diverge on their solutions.

The first solution indicates a quick warm-up followed by another strong cool down. The second indicates a sustained period of above normal temperatures, while the third indicates normal temperature conditions. Based on the persistent 45-day pattern, the first solution appears to be safest, but also the one that carries the greatest likelihood for an early freeze.

If the first forecast solution verifies, anticipate that temperatures will take a nose dive by the first weekend of September, then moderate through the middle of the following week. Another shot of cold air should be expected September 10-15. Freezing temperatures for this model solution are indicated to reach southwestern and south central Canada by September 8. If the models are correct, freezing temperatures will occur across North Dakota, Montana, and northern South Dakota September 9-11.

For Nebraska, there is a greater risk of an earlier than normal freeze this year based on the current weather pattern. The most likely scenario would be for the event to occur September 20-28. This would be one to two weeks ahead of normal; however, we can't rule out that the cold air expected to drop into the Northern Plains September 9-11 may result in freezing temperatures across the Panhandle and Sandhills region.

Al Dutcher
Extension State Climatologist

Effect of glyphosate on chlorophyll content in glyphosate resistant soybean

This is the second CropWatch article addressing the impact of glyphosate herbicide on glyphosate resistant soybeans. The first article, "Glyphosate use and soybean nodulation – is there a link?", was in the July 30 CropWatch.

This article reports on research to study how glyphosate influences the amount of chlorophyll in soybean leaves. Chlorophyll content can be thought of as the "greenness" of the leaf. This "greenness" is used as a reference for the nitrogen contained within the plant. A plant experiencing nitrogen stress will become yellowed and this is seen as a reduction in chlorophyll.

Once atmospheric nitrogen is converted by *Bradyrhizobia japonicum* (nitrogen-fixing bacteria) to nitrogen compounds useable by the plant; they are transported to the above-ground portion of the soybean. When glyphosate is applied to the soybean it is moved downward and can possibly interfere with this nitrogen-fixing process. If an inhibition does occur within the nodules, we would expect to see less nitrogen moved above to the leaves. Nitrogen moves in a cyclical pattern within the plant, and nodules will respond to nitrogen stress by converting more nitrogen to meet the demands of the growing plant. Once the plant has enough nitrogen, the bacteria conversion process will slow down. Thus, we can see that nitrogen fixation is a unique process in which the soybean plant and bacteria work closely together throughout the season.

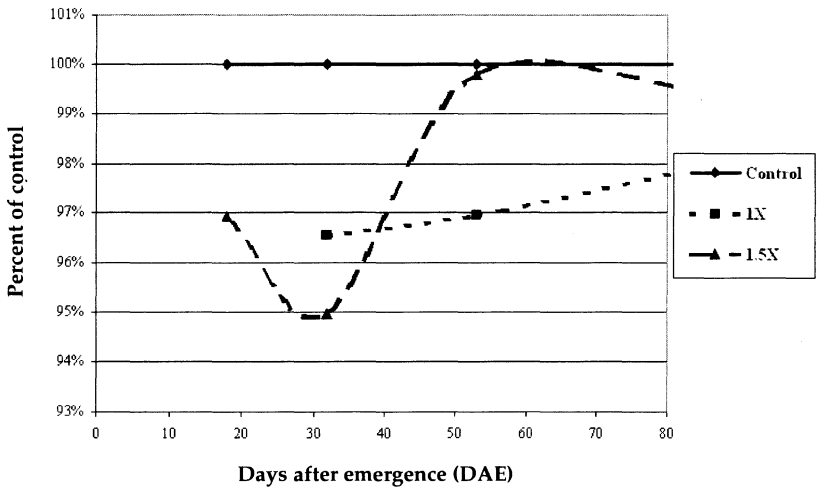

Figure 1. Chlorophyll content in tested soybean leaves in 2003, graphed as a percentage of the control treatment (no glyphosate). The 1X glyphosate rate was applied to the soybeans early in the season at 7 (V1) and 21 (V4) DAE. The 1.5X glyphosate rate was applied to the soybeans at 21 (V4) and 42 (V9) DAE. Measurements of leaf chlorophyll were collected approximately 10 days after the applications.

The treatments we applied are the same as those listed in the previous article and as such will not be repeated here, except to note that glyphosate was applied at three soybean growth stages (V1, V4, and V9). (See *Figure 1* for more information on specific glyphosate applications.) Overall, chlorophyll content was reduced 2-12% at each growth stage following a glyphosate application. Sample data that is representative of this response is shown in *Figure 1*. The chlorophyll content was measured with an instrument called a SPAD meter which is sensitive to slight chlorophyll differences. Without the use of this instrument we would not have been able to see any difference between glyphosate treated and untreated soybeans. The chlorophyll response was more variable early in the season, following the V1 and V4 applications. After these early applications, the chlorophyll content was typically reduced but in a few instances it was unaffected. The late season application (V9) consistently caused a reduction. These reductions in chlorophyll content appeared to be due to two factors:

1) The presence of glyphosate or a product of glyphosate within the plant's system

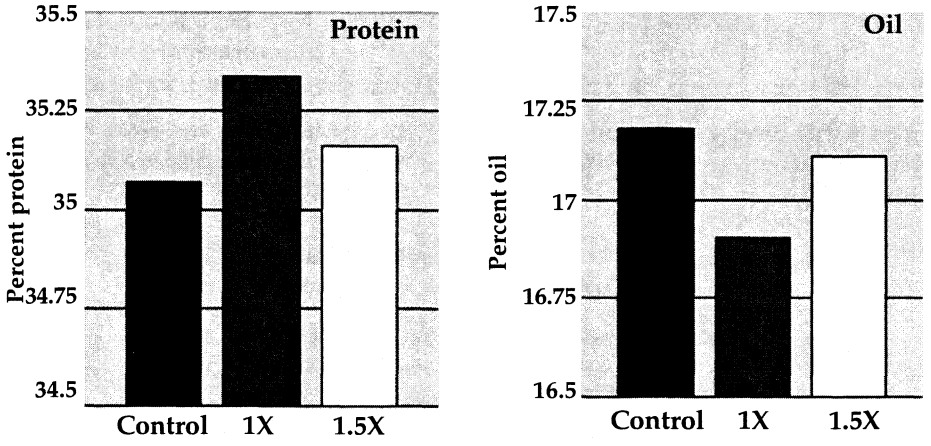

Figure 2. Percentage of protein (left) and oil (right) in soybean seed in 2002.

(Continued on page 178)

Chlorophyll *(Continued from page 177)*

2) Interference of glyphosate with *B. japonicum*, affecting its ability to convert nitrogen

Chlorophyll content within leaf tissue was reduced following nearly every glyphosate treatment, and the timing of application appears more important in the reduction of chlorophyll than the actual rate of glyphosate.

We also looked at the long-term effect of these chlorophyll fluctuations within the plant by measuring the protein and oil content in the soybean seed. Protein and oil content will vary across environments, years, and varieties, yet nitrogen is important in determining the amount of protein within the seed. Interestingly, seed protein content was increased in two of our locations after the late season glyphosate treatments (*Figure 2*). We are conducting more research to determine if this is due solely to the glyphosate or to the combination of glyphosate and ammonium sulfate.

Our research identifies glyphosate as possibly causing fluctuations in the plant's nitrogen status. This is based on the fact that chlorophyll content was reduced after nearly every glyphosate application, which probably created periods of decreased nitrogen levels. Through this research, we can see that although glyphosate resistant soybean is able to tolerate glyphosate it is incorrect to think that the plant is completely unaffected by this herbicide.

Reference: Parsons et al., 1993

Lori Abendroth, Research and Extension Associate, Department of Agronomy and Horticulture
Roger Elmore
Extension Crop Specialist
Fred Roeth
Extension Weed Specialist

Seeding wheat *(Continued from page 175)*

survived. About 50% to 60% of the surviving fall tillers from the first two dates formed spikes, while approximately 80% of the surviving tillers from the last two dates produced grain.

Plants from the first three seeding dates developed nearly 600 spring tillers/yd^2, but plants from the last date formed only 213 spring tillers/yd^2 (*Table 2*). About 30% of the spring tillers from the first two dates, 45% of the spring tillers from the third date, and 68% of the spring tillers from the fourth date produced grain. The total number of productive spikes ranged from 260 to 552/yd^2 or 1.8 tillers per plant from the last seeding to 3.4 tillers per plant from the first seeding.

Table 2 also lists the yield from the four seeding dates. These dates need to be adjusted for the area in Nebraska to be seeded.

Several factors were considered when developing the recommended seeding dates (*Figure 2*). In the Panhandle, the dates depend on elevation. Producers can determine the ideal date for each field by knowing the elevation. Using a starting point of September 15 for 3500 feet, add one day for each 100 feet lower and subtract one day for each 100 feet higher in elevation. For the rest of the state, September 25 or later seeding dates are recommended to avoid Hessian fly infestation.

Delayed planting dates also may be due to a need to avoid wheat streak mosaic virus, Russian Wheat Aphid, crown and root rot, and too much fall growth. Excessive fall growth causes excessive moisture use and stress. There are several other reasons for planting early. One is to get adequate ground cover to avoid erosion from wind and water. Another is to get adequate plant growth to assure winter hardiness. A third reason is to quicken maturity the following summer and avoid excessive heat stress.

The map is a guide rather than an absolute deadline. Each producer should make changes to ensure the planting dates fit the conditions of his or her farm.

Robert N. Klein, Extension Cropping Systems Specialist

Table 2. Mean date and number of plants that emerged; maximum, surviving, and productive fall tillers; maximum and productive spring tillers; and total productive spikes by Jagger and 2137 wheat varieties planted on four dates. (Kansas State University at Hutchinson, Kansas).

Date (1995)		Plants	Fall tillers (no/yd2)			Spring tillers (no/yd2)		Total spikes	Yield
Planting	Emergence	(no/yd)	Max	Surviving	Productive	Max	Productive	(no/yd2)	bu/A
Sept. 28	Oct. 12	141	1266	578	281	584	195	476	39.0
Oct. 11	Oct. 18	207	916	594	360	659	192	552	57.7
Oct. 28	Nov. 15	141	183	183	152	600	272	424	54.8
Nov. 13	Nov. 30	143	147	147	117	213	144	260	30.2
LSD (0.05)		38	136	191	92	147	53	106	4.9

Bean leaf beetle -- late season management

As soybean aphid frenzy subsides, growers should be on the alert for another soybean insect pest which must be managed for the remainder of the season. We've had one generation of bean leaf beetles and are now experiencing renewed feeding as the true second generation of beetles emerges and feeds on leaves and developing pods. Following is a review of the beetle's biology and suggestions for managing it.

Beetle biology

Two generations of bean leaf beetles develop each year in Nebraska. The second generation overwinter as adults and are the ones seen early in the year feeding on seedling soybeans. These beetles feed, mate, lay eggs and die in early-mid June. Usually there is a distinct period from mid June to early July when few if any beetles are present in the field, before the first generation emerges. Total developmental time from egg to adult can range from 25 to 40 days. Because of this range of development, it is common to see adults from the first generation and the second generation in the field at the same time. In other words, the generations overlap and beetles will be present at some level from mid-July until the end of the growing season. Because of this overlap, it is important to regularly monitor beetles to determine population shifts. This information can then be used to make more informed management decisions.

Bean leaf beetle

Bean leaf beetles will feed on soybean leaves throughout the season, but leaf feeding seldom causes yield loss. Most damage (economic yield loss) occurs when beetles feed on developing pods. This yield loss can occur in several ways. Pods may be clipped from the plants, but this is not the primary cause of yield loss. Many flowers and pods are aborted naturally and to blame pod loss on bean leaf beetle feeding may be a costly mistake. Beetles normally injure soybean pods by feeding on the outside layer, leaving a thin layer of tissue still covering the seed. Usually, except with very small pods, they won't eat into the developing seed. Fungal pathogens may enter the pod from the feeding sites, causing seeds to

(Continued on page 179)

Table 1. Economic thresholds in beetles per row foot for R5-R6 (beginning pod and full seed) soybeans in 30-inch rows.

SoybeanValue	Pest Management Costs Per Acre					
	$7.00	$8.00	$9.00	$10.00	$11.00	$12.00
$4.50	7.1	8.1	9.1	10.1	11.1	12.1
$5.00	6.4	7.3	8.2	9.1	10.0	10.9
$5.50	5.8	6.6	7.4	8.3	9.1	9.9
$6.00	5.3	6.1	6.8	7.6	8.3	9.1

Table 2. Economic thresholds in beetles per row foot for R5-R6 (beginning pod and full seed) soybeans in 7-inch rows.

Soybean	ValuePest Management Costs Per Acre					
	$7.00	$8.00	$9.00	$10.00	$11.00	$12.00
$4.50	1.7	1.9	2.1	2.4	2.6	2.8
$5.00	1.5	1.7	1.9	2.1	2.3	2.5
$5.50	1.4	1.5	1.7	1.9	2.1	2.3
$6.00	1.2	1.4	1.6	1.8	1.9	2.1

Table 3. R6 Economic Thresholds (beetles per sweep) for 30-inch rows. Numbers in parenthesis are for drilled, 7-inch row soybeans.

Soybean Value	Pest Management Costs Per Acre			
	$6.00	$8.00	$10.00	$12.00
$5.00	4 (3)	5 (4)	6 (5)	8 (5)
$6.00	3 (2)	4 (3)	5 (4)	6 (5)
$7.00	3 (2)	4 (3)	4 (3)	5 (4)

Bean leaf beetles *(Continued from page 179)*

appear shrunken, discolored, and moldy, which can result in dockage. After full pods are formed and seeds begin developing, soybeans are most susceptible to yield loss from pod feeding.

The best time to sample is before significant pod feeding occurs, but after second generation beetles have emerged. Second generation bean leaf beetles are emerging and beetle numbers will be approaching their highest levels for the summer. Beetle numbers will slowly decline as beans mature and beetles move to overwintering sites.

Economic thresholds have been developed for both drop cloth (beetles per foot of row) or sweep net (beetles per sweep) sampling (*Tables 1-3*). Perhaps the most accurate way to sample beetles is with a drop (or shake) cloth. A drop cloth is a 3 x 3 ft piece of muslin or plastic attached on each side to dowel rods. Hold one rod against the base of the plant and lay the cloth between the rows. Shake the plants against the cloth to knock off the insects, and count the beetles. Remember to estimate the number per row foot, so if you use a three-foot cloth divide your total by three. Sample several areas of the field to get a more accurate estimate. In narrow row beans you can still sample with a drop cloth, but the procedure is slightly different. Set the rod at the base of the row of plants and lay part of the cloth on the ground and hold the rest of the cloth upright or over the opposite row to be sampled. Shake the soybeans against the upright cloth, and then count the beetles knocked down on the bottom of the cloth.

Thresholds are based on the number of beetles per foot of row, which varies according to total application cost and the crop value per bushel.

Tables 1-3 show economic thresholds for beans in 30- and 7-inch rows. To use the tables find the number that fits both crop value and application costs. For example, if you set the value of your soybeans at $6 per bushel and your application costs would be $9, you would need 6.8 or more beetles per foot of row to justify an application in 30-inch row beans or 1.6 or more beetles per foot of row in 7-inch row beans.

Sweep at least five randomly selected sites. Walk through the field at an even pace, performing about 25 sweeping arcs. The best sweeping action for bean leaf beetle is a consistent upward motion through the foliage, using as much force as needed to move the net smoothly through the foliage. Bean leaf beetle activity varies during the day. Activity patterns suggest the best times to sample are around mid-morning or in the afternoon. Try to maintain a similar sampling time in each field to eliminate variability.

Economic thresholds for reproductive stage soybeans other than R6 are probably higher (more beetles are needed to justify a treatment). This is because pods on plants past R6 are maturing and there is less green pod tissue available for beetle feeding, and plants in earlier reproductive stages have greater yield compensation potential than those in R6 or older.

Keith Jarvi, Integrated Pest Management Assistant
Northeast REC
Tom Hunt
Extension Entomology Specialist
Haskell Ag Lab, Northeast REC

Insecticides Registered for Bean Leaf Beetles

Bean leaf beetles can be controlled by several insecticides. Be aware that most have 14- day or more pre harvest intervals (phi). Here is a table of insecticides for bean leaf beetle control.

Restricted Use	Product Name	Rate *(formulation/ac or lb/ac)*	Pre-harvest interval *(days)*
Yes	Asana XL	5.8 - 9.6 oz	21
Yes	Baythroid	1.6 – 2.8 oz	45
No	dimethoate	1 pt	21
No	Lorsban 4E	1-2 pts	28
Yes	Lannate WSP	0.25 – 0.50 lb14	
Yes	Lannate LV	3/4 - 1 lb	14
No	Larvin 3.2F	18-30 oz	28
Yes	Mustang Max	2.8 – 4.0 oz	21
Yes	Penncap-M	2-3 pts	20
Yes	Pounce 3.2 EC	2-4 oz	60
Yes	Pounce 25 WP	3.2-6.4 oz	60
No	Sevin XLR Plus	0.5 - 1 qt	21
No	Sevin 80 S	5/8 - 11/4 lb	21
Yes	Warrior	1.92 - 3.2 oz	45

Wheat variety info

Research-based, objective information on current and new wheat varieties is available:

- UNL Virtual Wheat Tour at **www.panhandle.unl.edu/wheat/**
- UNL Fall Seed Guide 2004 (EC04-103)
- UNL variety test multi-year results at **varietytest.unl.edu**

West Central REC celebrates 100 years

Sept. 17 open house tracks a century of progress and valuable research

Nebraska Congressman Tom Osborne will be the guest speaker at a celebration marking the centennial of the University of Nebraska West Central Research and Extension Center at North Platte on Friday, Sept. 17.

The event, which is open to the public, will feature demonstrations and tours of the center, as well as a complimentary lunch. A variety of exhibits will showcase research at the extension center.

In 1903, legislation was passed and signed by Gov. John H. Mickey, which recommended that an agricultural substation be established in western Nebraska to "...determine the adaptability of the arid and semiarid portions of Nebraska to agriculture, horticulture and forest tree growing, such as the production of grain, grasses, root crops and fruits of the kinds commonly grown in such latitudes of other states, also the most economical methods of growing such crops without irrigation." The land was purchased in 1904.

The importance of growing crops with irrigation and livestock's value to the region led the center to expand its mission into these areas.

Today, researchers in the West Central district, which includes 20 counties, investigate both dryland and irrigated cropping systems, water use, soil fertility, weed management, horticulture, range management, beef systems and reproductive management, hydrogeology, forestry, 4-H and youth development, agricultural economics, and control of external livestock parasites.

The center, which is the oldest research and extension center in the state, was originally called the North Platte Substation and later renamed the North Platte Experiment Station in 1952 and the North Platte Station in 1966. It was given its current name, the West Central Research and Extension Center, in 1984.

The Centennial Field Day Sept. 17 will begin with registration and lunch at 11:30 a.m. CT at the center. The program is scheduled to begin at 12:15 p.m., followed by field demonstrations at 1 p.m. that will be repeated at 2 p.m.

John Owens, IANR vice chancellor and vice president, will speak at 3 p.m., followed by Congressman Osborne at 3:30. To RSVP for lunch contact Linda Lehmann by phone at (308) 532-3611, ext. 120, or by e-mail at llehmann1@unl.edu.

The celebration originally was scheduled for June 11, but was postponed because of the national day of mourning for President Ronald Reagan.

The WCREC is located 1.65 miles south of Interstate 80 on Highway 83 at North Platte.

Women In Ag Conference Sept. 16-17 in Kearney

Women will improve their business, management and financial skills while enhancing the well-being of their families and themselves at the Women in Agriculture: Today's Critical Difference conference Sept. 16-17 in Kearney.

The conference, in its 20th year, offers educational opportunities to all women involved in agriculture and agribusiness as well as women landowners, said Beth Eberspacher, University of Nebraska program coordinator and organizer of this year's event. Registration for the two-day conference begins at 9 a.m. Sept. 16 at the Kearney Holiday Inn. The conference concludes at 3:15 p.m. Sept. 17.

"The Women in Ag conference not only is an educational opportunity, but also a rejuvenating experience that provides the tools and strength for these admirable women to persevere yet another year in the challenging agricultural industry," said Karrie Blake, who became the Women in Agriculture program coordinator in July 2004.

Keynote speakers include Sara Fogleman, extension agricultural economist, Kansas State University; Elbert Dickey, dean and director, Nebraska Cooperative Extension; Beth Birnstihl, assistant dean, Nebraska Cooperative Extension; Juli Burney, assistant professor of communication and theatre at Doane College in Lincoln; and Joan Burney of Hartington, counselor, columnist, public speaker and author.

Several workshops and informal group sessions will be offered: Marketing 101; Farm Accounting; Carbohydrates: Fact, Fallacy and Fun!; Landscaping; 12 to 24 Hour Vacations; Choosing the Right Business Entity; Achieving Life Balance; Income Tax Update; Ten Ways to Boost Profit; Ag and Water Law Update and more.

Registration is $75 by Sept. 3 and $85 afterward. The fee includes workshop materials, breaks, lunch and dinner on Sept. 16, and lunch on Sept. 17. For lodging, contact the Kearney Holiday Inn at (800) 248-4460. For more information or to register, contact Women in Agriculture, 303C Filley Hall, University of Nebraska-Lincoln East Campus, Lincoln, Neb. 68583-0922, call (800) 535-3456 or fax (402) 472-0776.

Wahoo, Wesley, Jagalene '04 leaders

Wahoo and Jagalene were among the top performers in this year's University of Nebraska winter wheat variety trials, as they were last year. Under good conditions, Wesley also was a good performer. The results of this year's trials are now available in the extension publication, *Fall Seed Guide 2004* (EC 04-103), available from county extension offices and on the Web at varietytest.unl.edu (Copies also were distributed widely in the most recent Midwest Messenger.)

Wahoo's yields ranged from 7 (drought damaged dryland) to 89 bushels per acre (irrigated, Cheyenne County). Jagalene yields ranged from 11 bushels per acre in the Furnas County trial to 115 bushels per acre in the irrigated Cheyenne County trial.

Lenis Nelson, Extension Crop Variety and Seed Production Specialist

Table 1. Three-year average yields (2002-2004) for the top three producers in UNL winter wheat variety trials, averaged together for all trial sites within a region. (*Fall Seed Guide 2004*, EC04-103)

Variety	*Yield*
Southeast	
NE98471	67.5
2137	66.6
Jagalene	66.4
South Central	
Jagalene	97.3
2145	91.5
Wesley	89.3
West Central	
Jagalene	59.6
Wahoo	57.6
Wesley	56.0
West, Dryland	
Harry	46.0
Jagalene	45.5
Pronghorn	45.2
West, Irrigated	
Wesley	102.2
Jagalene	101.7
2145	96.8

Visit with Extension specialists *and Market Journal* panelists at Husker Harvest Days

University of Nebraska extension specialists will be available to answer questions in a variety of agricultural, rural, family living and natural resource areas throughout the 27th Annual Husker Harvest Days show Sept. 14-16 in Grand Island. UNL's Institute of Agriculture and Natural Resources (IANR) will have more than 20 exhibits and displays at its Husker Red metal building at lot 325 on East Third St. of the show grounds.

"NU Cooperative Extension offers a one-stop service center for information and answers to questions on many of the most timely and pertinent rural, agricultural, family and environmental topics," said Larry Schulze, NU pesticide education specialist and coordinator of the IANR displays.

Displays and speakers will focus on current topics, including: soybean aphids and soybean rust, technology in crop production, cost share funding for livestock producers, water quality research and water conservation, identification of blue-green algae in lakes and ponds, 4-H, integrated crop management, pesticide security and new pesticide labeling, the Nebraska LEAD program, cooking for food safety, corn husk fiber for fabrics, Nebraska families weathering life's ups and downs, and more. Sawmill demonstrations will be part of an exhibit on Nebraska's lumber industry, Schulze added.

Individuals wanting to explore opportunities in higher education can visit with representatives of the College of Agricultural Sciences and Natural Resources, School of Natural Resources, College of Technical Agriculture at Curtis and Department of Agronomy and Horticulture, Schulze said.

Market Journal

Cooperative Extension's Market Journal program will again be broadcasting two live shows a day from Husker Harvest Days. Attendees are invited to take a break in the shade of the presentation tent and listen to speakers address current issues of agriculture and new ag products at Nebraska's largest agricultural trade show.

The presentation tent will be located near the Big Red IANR Building. For more information visit the Market Journal Web site at *http://marketjournal.unl.edu*

Tuesday

11 a.m. What's New at Husker Harvest Days?

2 p.m. What About Precision Agriculture

Wednesday

11 a.m. New Cropping Systems

2 p.m. Water Issues and Nebraska's Agriculture

Thursday

11 a.m. New Seeds and What They Do

2 p.m. Market Journal Programming at Husker Harvest Days

Governor's news conference

IANR again will host Governor Mike Johanns and State Director of Agriculture Merlyn Carlson in a news conference at 10 a.m. Tuesday, Sept. 14.

"NU and IANR have been part of Husker Harvest Days from the very beginning in 1978 and we again welcome the opportunity to be available to the public during this premier agricultural event," Schulze said.

Steven W. Ress
Communications Specialist