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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

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No. 2004-11, May 28, 2004

Storms delay planting or necessitate replanting

Don't switch corn hybrids yet

After recent storms destroyed a number of corn fields in south central and southeast Nebraska, producers are quickly assessing their replanting options. Some may be worried that planting full-season hybrids now may expose them to a greater risk of frost prior to crop maturity. They may be considering a switch to earlier maturing hybrids.

Fortunately, although delayed planting shortens the growing season, corn hybrids adjust well to this. Adapted hybrids can be planted into early June without major risks of fall frost injury. But, if planting is delayed until the second week of June, producers should think about switching away from typical full-season hybrids.

As producers weigh their options, a review of Midwest research on the effects of late corn planting dates and fall frosts is helpful. It is clear that delayed planting usually reduces corn yields. A report by Golden Harvest summarized yield across several "northern" Cornbelt locations including Hastings, North Platte and Waterloo, Nebraska. The trials were conducted from 1993 to 2001.

The greatest yield potential occurred with a May 7 planting date. Yield potential declined slowly during mid-May and dropped rapidly in late May and early June. For example, yield potential with a May 19 planting date was about 94% of maximum while that of May 29 was about 83%. By June 9, yields were less than 80% of normal.

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Inside

Panhandle wheat enters grain fill; significant rainfall needed

The cooler weather the past two weeks has helped the wheat in the Panhandle survive despite a lack of appreciable rainfall in most areas. Significant rainfall without storms and high winds is necessary in the next two weeks for a decent crop, especially if warmer weather returns.

Much of the wheat is flowering or in early grain fill. Freeze damage is evident in some fields, but the damage appears to be restricted to a few florets in scattered heads throughout the affected fields.

Drought is definitely a larger concern in the Panhandle than the freeze of a couple weeks ago.

With western Nebraska in its fourth to fifth year of drought, subsoil moisture is limited and has not been recharged. Since January 1, the northwest reporting district has received only 67% of normal precipitation. The southwest district has received only 82% of normal since Jan. 1 and only 71% since Sept. 1, 2003. Wheat is currently estimated to be using as much as 0.30 of subsoil moisture a day for this growth stage, although with cooler temperatuares, use has dropped significantly.

Drew Lyon, Extension Dryland Cropping Systems Specialist
Panhandle REC

Ag briefs

Dewey Lienemann, Extension Educator in Webster and Clay counties: The May 22 storms, high winds, hail and tornadoes damaged or destroyed numerous fields throughout southern Nebraska. I counted about 100 center pivots that were destroyed from just west of Bladen to Clay Center and have received reports of even more. I think it will be impossible to replace all of these pivots (even if retailers had them available) before irrigation needs to begin.

Corn and beans were snapped off at the ground and most residue was just sucked up like a vacuum cleaner had run over it -- leaving the ground bare and hard. The damage, along with the dirt/silt deposited on the growing points, may later lead to stalk rot. Alfalfa and wheat survived the storm fairly well although earlier drought conditions are becoming apparent. There are lots of white caps, unfilled heads, stunted growth and poor color in wheat. Alfalfa weevil numbers have decreased, but cutworms are being reported in corn.

Jennifer Fleer. Extension Educator in Clay and Webster counties: Clay County was hit pretty hard by this weekend's storms. Farmers have been busy clearing fields of tree, irrigation pipe, grain bin and other debris blown in from the storms. Corn in the worst areas was broken off at ground level and is visible as rows of dots in the field The amount of damage will depend on how much rot occurs and if corn can grow through the silt and debris covering many fields. Soybean damage is difficult to assess since plants in the worst areas were covered with silt and debris and in some cases. In some cases it's difficult to tell what fields had been planted or where beans were coming up. Wheat looks normal for the most part. Overall, it'll take about a week to see how the crops respond to the damage from these storms and if replanting is necessary.

Tom Dorn, Extension Educator in Lancaster County: The southern part of the county was hit with severe thunderstorms, heavy rain, hail, high winds and multiple tornadoes May 22. Almost 300 square miles of the county is estimated to have received more than three inches of rain, with a considerable area receiving over five inches and some six to eight inches.

Most corn was in the four to six leaf stage May 22. Wind and hail ripped and shredded the leaves but in most fields over 50% of the exposed leaf tissue was still attached. Many soybeans had one or two trifoliate leaves. In the hardest hit fields, 75-90% of the exposed leaf tissue was lost, including one or both cotyledons. In many fields standing beans were coated with soil. It is too early to know whether auxiliary buds will activate or whether soil-borne diseases will reduce stands. Nearly all wheat has headed and appeared to be in the best condition of the crops surveyed. It is going to be critical to clear wheat fields of large rubble before combining.

Darrel Siekman, Extension Educator in Merrick County: The county was lucky and mainly suffered wind damage on crops. Merrick has received minimal rainfall with only 0.10-0.40 inch in several showers. Surface moisture is okay, but there is little subsoil moisture. Pastures are not responding well. There is some feed as well as a decent first cutting of alfalfa. Corn and soybeans look good.

Del Hemsath, Extension Educator in Dakota, Dixon and Thurston counties: This area received about four days of rain from storms of differing intensity. Rainfall amounts ranged from 3 to 6 inches. There was some erosion in over-prepared fields with some minor flooding in low areas. Most of the early planted corn is up and some soybeans were planted before the rains began last week. A few alfalfa fields have been cut.

Keith Jarvi, Extension IPM at the Northeast REC, Norfolk: The rain was quite welcome here and the hail wasn't big enough or lasted long enough to do significant damage. Crops are slow to grow since some of the corn was nipped by the frost, but it is recovering. Some soybeans still need to be planted.

Gary Zoubek, Extension Educator in York County: We received 0 - 1.55 inches of rain Saturday night. We did have some hail damage, but from what I've observed, nothing like what occurred in Saline, Gage and Lancaster counties.

Paul Hay, Extension Educator in Gage County: On the field scene water damage, flipped pivots, hail,

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Replanting corn *(Continued from page 97)*

Of course, every year is different and planting late in 2004 may actually enhance yield. The Golden Harvest work from all north and south locations also shows that grain moisture contents at harvest increased about 1% for every four- to five-day delay in planting.

In addition to the issue of potentially lower yields with delayed planting, there also is concern about the possibility of frost occurring before crop maturity. One of the NebGuides (G1312) listed in the *Sources* section below includes data for autumn frost probabilities in Nebraska. A map *(right)* from the NebGuide shows the median probability of a 32° fall freeze and indicates that in a large portion of southeast and south central Nebraska, half of the freezes would likely occur before October 6 and half would likely occur afterward. Ideally I'd like to have corn mature at least two weeks before this date.

We also should consider measures of crop maturity, which can become somewhat confusing given the variety of measurement systems available. While there is no single standard, researchers Bob Nielsen (Purdue University) and Peter Thomison (Ohio State University) clarified the relationship between hybrid comparative relative maturity (CRM) and growing degree days (GDD).

The CRM system they used is similar to that of Pioneer Hi-Bred International and is thought of as days required from planting to maturity. The equation generated for this relationship was:

Hybrid GDU to black layer = 24.908x - 82.821 (R2 = 0.9273)
where x is CRM.

For every day increase in CRM, GDD requirements appear to increase about 25 units. *Table 1* shows this relationship too.

Based on this table, a 115 CRM hybrid would use about 2800 GDD to mature with a normal planting date. The last five words are important! Research cited by Nielsen and Thomison shows that:

1) although delayed planting shortens the growing season, corn hybrids adjust well to this, and

2) adapted hybrids can be planted into early June without major risks of fall frost injury.

Nielsen and Thomison found that delayed planting decreases hybrid GDD to physiological maturity (black layer) by about 6.8 GDD per day. Thus, we can plant full season hybrids much later than we used to think and they will still mature before the risk of fall frost is high. With the 6.8 GDD loss per day with delayed planting, a hybrid planted on May 30 would behave much like a hybrid with 204 less GDD planted on May 1. *Table 2* combines the relationship of CRM and GDD with the concept of reduced GDD requirements for

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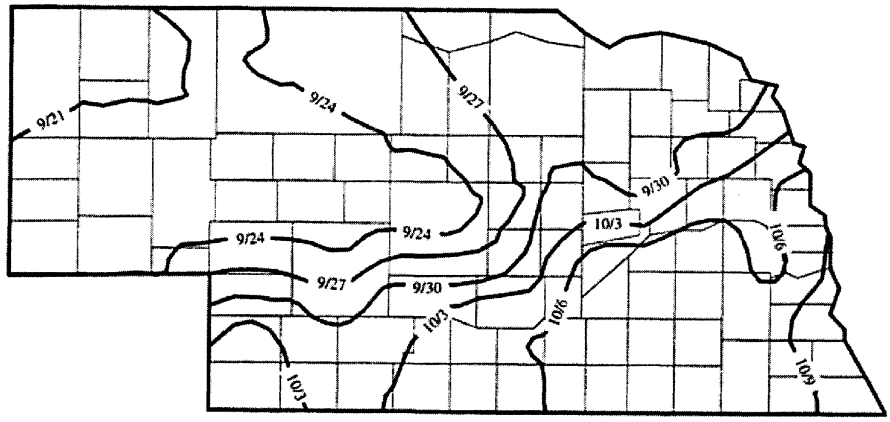


Median autumn freeze (32°F) date. Half of all autumn freezes will occur before the dates shown on this map and half will occur after (based on 47 years of records, 1949-1995). From the NU NebGuide, *Autumn Freeze Probabilities* (G96-1312).

Table 1. Relationship between CRM and GDD for days to physiological maturity (black layer) (86/50) for 'normal' planting dates.

CRM	GDD
100	2408
105	2533
110	2657
115	2782
120	2906

Table 2. Relationships between CRM and GDD for days to physiological maturity (black layer) for normal and delayed planting dates.

For normal planting date about 1 May		*GDD required for delayed planting with adjustments made for hastened maturity*				
CRM	*GDD*	*May 15*	*May 30*	*June 4*	*June 9*	*June 11*
100	2408	2306	2204	2170	2136	2102
105	2533	2431	2329	2295	2261	2227
110	2657	2555	2453	2419	2385	2351
115	2782	2680	2578	2544	2510	2476
120	2906	2804	2702	2668	2634	2600

Replanting (Continued from page 101)

delayed planting: A 115 CRM hybrid (2782 GDD) planted on May 15 would behave like a 111 CRM hybrid and when planted on May 30, it would behave like a 107 CRM (2578 GDD) hybrid.

If planted on May 30 this hybrid should mature around September 14 in southeast and southern Nebraska and around September 27 in central and northeast Nebraska. These probabilities are based on the Zone A and B maps and tables in the NebGuide, *Maturity Dates and Freeze Risks Based on Growing Degree Days* (G83-673).

The probability of a 32° freeze occurring before maturity of this 155-day hybrid is less than 26% for most of the corn-producing area in Nebraska (Zones A and B in Figure 1 of the cited NebGuide). This is about a little more than a week earlier than average date for a 32° frost. That may be too close for comfort for some of us. A 120 CRM hybrid planted on May 30 would have nearly a 50% probability of frost damage before maturity. Fortunately, we don't grow too many hybrids of this maturity.

Table 3. Hybrids for late planting in south central and southeast Nebraska that have less than a 30% chance of frost before maturity.

Expected planting date	*Hybrids with less than 30% chance*
May 30	115 day CRM or earlier
June 4	115 day CRM or earlier
June 9	110 day CRM or earlier
June 14	110 day CRM or earlier

If we are willing to accept a 30% or less freeze risk before physiological maturity, *Table 3* offers some guidelines on hybrids to plant in the next few weeks in south central and southeast Nebraska.

Frankly, after June 9 I'd plant a crop other than corn. Use the tables in NebGuide G83-673, *Maturity Dates and Freeze Risks Based on Growing Degree Days,* to develop estimates for other hybrids and zones.

It is not necessary to change to earlier maturing hybrids until early June for most of Nebraska's corn production area if hybrids require 115 CRM or less to mature. Even considering this, when fields are dry enough to plant, I'd plant my full-season hybrids first. If planting dates are delayed into mid-June, then you may want to plant crops other than corn.

Sources

The following publications are available from your local Cooperative Extension Office or on the Web at the addresses provided.

- *Growing Degree Day Requirements and Freeze Risk as a Guide to Selecting and Planting Corn Hybrids* (G86-796), R. E. Neild, Extension Climatologist, available at *http://ianrpubs.unl.edu/fieldcrops/g796.htm*
- *Maturity Dates and Freeze Risks Based on Growing Degree Days* (G83-673), R. E. Neild, Extension Climatologist, D. T. Smith, Research Graduate Assistant, available at *http://ianrpubs.unl.edu/fieldcrops/g673.htm*
- *Autumn Freeze Probabilities* (G96-1312), Steven J. Meyer, Extension Specialist, Agricultural Climatology, Allen L. Dutcher, Nebraska State Climatologist, available at *http://ianrpubs.unl.edu/fieldcrops/g1312.htm* This publication also includes a table of the earliest, median, and latest date of the last occurrence of a light (32°F) and moderate (28°F) autumn freeze for 48 locations in Nebraska (based on 47 years of data, 1949-1995).
- *Delayed Planting and Hybrid Maturity Decisions.* R.L. Nielsen, and Peter Thomison. 2002. Purdue Coop. Extension Service. AY-312-w, available in a pdf format at *http://www.agry.purdue.edu/ext/pubs/AY-312-W.pdf.*

Roger Elmore
Extension Crops Specialist

Crop replanting options after herbicide applications

The damage from recent stormy weather across much of the state means many producers may be looking to replant corn or soybeans in the next week or two.

Many preemergence herbicides restrict replant options and producers should use caution when faced with replanting. One method of planting into soil containing damaging herbicide residues is to set furrow openers on the planter to remove the surface soil. A heavy rain after planting would negate this technique and may result in the crop being "silted under." Use herbicides only "as needed" on the replant crop.

A sound strategy is to keep replant options in mind when choosing a herbicide for a given site. Understanding that herbicide choice with respect to replant options is not always possible, the table on page 101 lists planting options based on our judgment for various herbicides with the time delay required between application and planting. These estimates can be influenced by several factors including application rate, soil organic matter content, and pH.

Always read and follow the herbicide label.

Brady Kappler
Extension Weed Science

Table 1. Herbicide replant options

Herbicide	Replant crops	Time delay
Accent	Corn	None
Accent Gold	Corn	None
Aim EW	Corn	None
Atrazine	Corn, sorghum	None
Authority	Soybeans	None
Axiom	Corn, soybean	None
Balance	Corn	None
Banvel	Corn, sorghum	15-30 days
Basis Gold	Corn	None
Beacon	Corn	None
Bicep II Magnum / BicepII Mag Lite	Corn, sorghum (safened seed)	None
Buctril/Atrazine	Corn, sorghum	None
Callisto	Corn	None
Canopy XL	Soybeans	None
Celebrity	Corn	7 days
Celebrity Plus	Corn	7 days
Clarity	Corn, sorghum	15-30 days
	Soybeans	1/2pt, 14 days after 1" rain
Command	Soybeans	None
Connect	Corn, sorghum	None
Dual II	Corn, sorghum (safened seed)	None
	Soybeans	None
Distinct	Corn	7 days
EPIC	Corn	None
Eradicane	Corn	None
	Sorghum	30 days
	Soybeans	10-15 days
Exceed	Corn	None
Expert	Corn, sorghum (safened seed)	None
Field Master	Corn, sorghum (safened seed)	None
First Rate	Soybeans	None
Glyphosate	Corn, sorghum, soybeans	
G-Max Lite	Corn, sorghum (safened seed)	None
Guardsman	Corn, sorghum (safened seed)	None
Harness Plus	Corn, soybeans, Sorghum	
None	(safened seed)	None
Harness Xtra	Corn, Sorghum (safened seed)	None
Hornet	Corn	None
Keystone	Corn, Sorghum (safened seed)	None
Keystone LA	Corn, Sorghum (safened seed)	None
Lasso	Corn, sorghum (safened seed)	None
	Soybeans	None
Lariat	Corn, sorghum (safened seed)	None
Liberty	Corn, sorghum, soybeans	None
Liberty ATZ	Corn, sorghum	None
Lightning	IMI Corn	None
Lumax	Corn	None
Marksman	Corn	None
	Sorghum	30 days
Micro-Tech	Corn, soybeans	None
	Sorghum (safened seed)	None
Option	Corn	7 days
	Soybeans	14 days
Outlook	Corn, soybeans	None
	Sorghum (safened seed)	None
Paramount	Wheat, sorghum	None
Peak	Corn, sorghum	None
Permit	Corn	30 days
	Soybeans	60 days
Poast Plus	PP Corn, soybeans	None
Prowl	Soybeans, sunflowers	None
Pursuit	Corn (IMI), soybeans	None
Pursuit Plus	Soybeans	None
Python	Corn, soybeans	None
Raptor	Corn (IMI) soybeans	None
Resource	Corn, soybeans	30 days
Scepter	Corn (IMI), soybeans	None
Scorpion III	Corn	None
Select	Corn, soybeans, Sorghum	30 days
Spirit	IMI Corn	None
	Conventional corn	4 weeks
Steadfast	Corn	None
	Soybeans	15 days
Surpass	Corn, soybeans, Sorghum (safened seed)	None
Topnotch	Corn, soybeans Sorghum (safened seed)	None
Treflan	Soybeans	None
2,4-D	Corn	3-7days
	Sorghum	10-30 days
	Soybeans	7-30 days
Valor	Corn, soybeans, Sorghum	None

Cool, wet weather may facilitate soybean disease

In a "normal" year in Nebraska, soybean seedling diseases occur somewhere in the state. With the week of cool, wet weather we have just had, I suspect we will be seeing our share of soybean seedling disease problems. In many parts of the state, soybeans were planted early as a result of favorable planting conditions prior to the recent wet conditions. This makes an excellent set up for seedling disease.

The most common fungi involved in seedling diseases in Nebraska are species of *Fusarium, Phytophthora, Pythium,* and *Rhizoctonia.* All four are capable of killing soybean seedlings or at least causing damage sufficient enough that it affects the ability of the plant to achieve its full yield potential. Diagnostic characteristics of common soybean seedling diseases are described in *Damping off, Root Rots, and Vascular Disorders of Soybean,* Extension Circular EC99-1877-B. Cool, wet weather favors a couple of our most common fungi causing seedling disease problems. Those, which I predict to be a problem this year, are *Pythium* and *Phytophthora.* Of the two, *Pythium* is usually the most common. In fields with a significant stand loss after the wet conditions that have a history of replant anytime wet weather occurs near planting, *Phytophthora* should be the number one suspect.

At least five species of *Pythium* cause seed decay, damping off, and root rot of soybean. Although these fungi are capable of infecting the soybean plant at any developmental stage, early infections on seedlings are the most damaging. Seed rot and seedling diseases caused by *Pythium spp.* develop early in the season under cool temperatures and wet soil conditions. In cool (50° to 60°F) and wet soil, they, like *Phytophthora,* produce zoospores that move through soil water to seed or roots where they infect the plant. Seedlings are the most susceptible to infection and the soybean plants become progressively more resistant as they age. Look for seeds rotted in the soil that are soft and slimy to the touch or overgrown with other fungi and bacteria, giving the seed a fuzzy appearance. Infections that cause seedling blights occur after the seed has germinated but before or just after emergence. Infected roots have a brown color and appear wet, or they may have brown lesions on the hypocotyl. If seedlings are infected after emergence, leaves have a gray-green cast, wilt and then die within a day or so. For *Phytophthora,* seedlings infected after the unifoliate leaf stage (VC) will typically have a visible discoloration in the stem center which is evident when the stem is cut. Many times these plants will have an externally visible dark discoloration of the stem which extends from the soil-line upward into the canopy.

If you are experiencing these problems, you are probably wishing you had put a seed treatment on your soybean seed. If you did have a seed treatment applied and are still experiencing significant stand loss, this could indicate a *Phytophthora* problem as the standard rates will not generally be effective against this pathogen. Nonetheless, if you have to replant into a field with a stand problem, make sure you put a seed treatment fungicide on to protect the seed when you are planting it into a very active disease zone. An updated (as of January 2004) listing of seed applied fungicides and their activity is listed in NF00-411 "Seed Treatment Fungicides for Soybeans" (*http://ianrpubs.unl.edu/plantdisease/nf411.htm*). If you're not sure which fungus is causing the problem this year, I would recommend a good combination product with broad spectrum activity along with sending a plant sample into the UNL Plant & Pest Diagnostic Clinic so you know what to plan for in the future.

Soybean seedling damping off caused by *Pythium*

(Photo courtesy of X.B. Yang, Iowa State University)

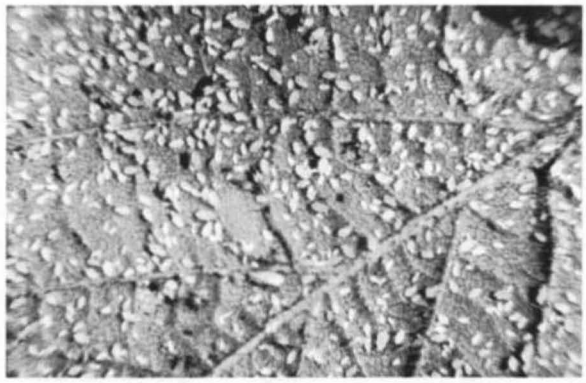
Loren J. Giesler
Extension Plant Pathologist

Soybean aphid 101

The soybean aphid (*Aphis glycines*) is Nebraska's newest soybean insect pest. While I don't expect to see many aphids until July, and few problems until mid to late July, farmers may want to start watching for it beginning in June. It is still very new to Nebraska and could surprise us.

Description

The aphid is light green to pale yellow, less than 1/16 inch long, and has two black-tipped cornicles (cornicles look like tailpipes) on the rear of the abdomen. It has piercing-sucking mouthparts and typically feeds on new tissue near the top of soybean plants on the undersides of leaves. Later in the season the aphids can be found on all parts of the plant. It is the only aphid in North America that forms colonies on soybean.



Soybean aphids. In Minnesota, as many as 13,000 soybean aphids have been found on a single plant.

> The seasonal life cycle of the soybean aphid is complex, with as many as 18 generations a year, and requiring two kinds of host plant -- buckthorn and soybean.

Life cycle and soybean injury

The seasonal life cycle of the soybean aphid is complex with up to 18 generations a year. It requires two species of host plant to complete its life cycle, common buckthorn and soybean. Buckthorn is a woody shrub or tree and is the overwintering host plant of the aphid. Soybean aphids lay eggs on buckthorn in the fall. These eggs overwinter and hatch in the spring, giving rise to wingless females. These females reproduce without mating, producing more females. After two or three generations on buckthorn, winged females are produced and they migrate to soybean.

Multiple generations of wingless female aphids are produced on soybeans until late summer/fall, when winged females and males are produced. They migrate back to buckthorn, where they mate. The females then lay eggs on buckthorn, which overwinter, thus completing the seasonal cycle. Although a few aphids have been found this spring on a buckthorn plant in Lincoln, I have not found any on the buckthorn plants I have been monitoring in northeast Nebraska. It remains to be seen how successful the aphid will be at overwintering and colonizing soybean in Nebraska.

Soybean aphid populations can grow to extremely high levels under favorable environmental conditions. Reproduction and development is fastest when temperatures are between 70-80°F. Aphids die when temperatures reach 95°F. When populations reach high levels during the summer, winged females are produced and they migrate to other soybean fields. Like a number of other insect species (e.g. potato leafhoppers), these migrants can be caught up in weather patterns, moved great distances, and end up infesting fields far from their origin. I believe these summer migrants were the major source of infestations in Nebraska during the last two years.

Soybean aphids injure soybeans by removing plant sap with their needle-like mouthparts. Plant symptoms include yellowed, distorted leaves and stunted plants. A charcoal-colored residue also may be present. This is sooty mold that grows on the honeydew that aphids excrete. Honeydew in itself makes leaves appear shiny. Soybean plants appear to be most vulnerable to aphid injury during the early reproductive stages. Heavy aphid infestations during these stages can cause reduced pod and seed counts.

Management

The soybean aphid is new to North America and our experience with it is limited. As we gain more experience, recommendations will be refined and developed to manage the aphid under Nebraska conditions. Following are our recommendations:

1. Begin scouting soybean fields once or twice a week in late June and early July. Check 20 to 30 plants per field. Aphids are most likely to concentrate at the very top of the plant, although they will move onto stems and within the

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Soybean aphid *(Continued from page 103)*

canopy as populations grow and/or the plant reaches mid to late reproductive stages. As the season progresses, aphid numbers can change rapidly (populations can double in two to three days).

2. The current threshold for late vegetative to R4 stage beans with actively increasing aphid populations is 250 aphids per plant. This gives you about seven days to schedule treatment (if populations do not increase during these seven days, you may be able to delay or eliminate treatment).

Determining if the aphid population is actively increasing requires several visits to the field. Factors favorable for aphid increase are relatively cool temperatures, plant stress (particularly drought), and lack of natural enemies. Thresholds for R5-R6 have yet to be determined, but are likely in the range of 500-1,000 aphids per plant. Yield response to treatment has been documented during R5 and early R6, but not as consistently as when treatment occurs during R4 or earlier. Treatment after R6 has not been documented to increase yield in the field.

3. Look for aphid natural enemies such as lady beetles, green lacewings, and other insect predators. Aphid "mummies" (light brown, swollen aphids) indicate the presence of parasitoids. These predators and parasitoids may keep low or moderate aphid populations in check. One can often find soybean aphids by examining plants where lady beetles are observed. The presence of "fuzzy" aphid carcasses indicates fungal pathogens are present, which can lead to dramatic reductions of aphid populations.

4. Look for the presence of winged aphids. If the majority of aphids are winged or developing wings, the aphids may soon leave the field and treatment can be avoided.

5. If the plants are covered with honeydew or sooty mold or stunted, an insecticide treatment may still be of value but the optimum time of treatment is past.

6. If fields are treated, leave an untreated test strip to compare against sprayed sections. This also provides a refuge for beneficial insects.

7. Good insecticide coverage and penetration is required for optimal control of soybean aphid, as aphids feed on the undersides of the leaves and within the canopy. Use high water volume and pressure. Arial application works well when high water volume is used. (Five gallons of water per acre is recommended.)

8. Several insecticides are labeled for the soybean aphid (called "Chinese aphid" on some labels). A list of registered insecticides, rates, preharvest intervals, etc. can be found at *http://entomology.unl.edu/instabls/soyaphid.htm.* Pyrethroids have a relatively long residual, and work best at temperatures below 90°F. Organophosphates have a fuming action, and may work well in heavy canopies or high temperatures. Dimethoate is least effective.

9. Spraying flowering soybean poses a threat to honey bees. Inform treatment plans to nearby beekeepers and follow precautions to minimize honey bee kills. When there is concern about honey bees, pyrethroids are the better insecticide choice.

More information on the soybean aphid will be in future issues of *Crop Watch.* Additional sources of information can be accessed through the UNL Entomology Web site at *entomology.unl.edu,* or the North Central Soybean Research Program Plant Health Initiative at *www.planthealth.info/soyaphid.htm.*

Tom Hunt
Extension Entomology Specialist
NEREC Haskell Ag Lab

Northeast Nebraska

Insect update

Ccool temperatures and welcome rain have slowed insect activity. Some **cutworm** damage has been reported, all in corn that has been planted into spring killed alfalfa. As reported in an earlier issue, alfalfa nearly always is a home to species of cutworms that overwinter as larvae (i.e. dingy and claybacked) and damage from these species is quite common in these situations.

With the advent of transgenics (Herculex) and systemic seed treatments (Gaucho, Poncho, and Cruiser), farmers have alternatives to use at planting time rather than the traditional liquids (pyrethroids like Asana, Pounce, Warrior, Mustang Max, Baythroid , and also the organophasphate Lorsban). However, transgenics and seed treatments require that the plants be fed on, since most control is obtained through systemic activity. This leads to some nervous moments for growers as they see the feeding damage on corn leaves.

We have little data to give us insights as to how these new technologies work on overwintering cutworms, since most cutworm data is obtained by artificial infestation with black cutworms. While our gut feeling tells us that they should work, we would appreciate any feedback from "real-life" situations where these technologies have been used to learn how they fared against cutworms.

Alfalfa weevils are larger now and some damage is being observed in alfalfa fields. The damage in most areas is not economic and even if it were, the best solution at this time would be to harvest the alfalfa as soon as possible. However, regrowth after the first cutting needs to be carefully watched to see if the weevils (adults or larvae) hold back the new growth.

Keith Jarvi, Extension IPM
Northeast REC

Assessing post-storm soybean stands

Several factors must be considered when assessing the minimum stand necessary to achieve reasonable yields. The expected yield loss from the reduced stand must be balanced against the anticipated yield loss from replanting after the optimum planting date (mid to late May). Leaving a poor stand may result in poor weed control or increased herbicide costs. Replanting entails additional costs for seed, tillage, and replanting in addition to the potential yield penalty imposed by a later-than-normal planting date.

Obtaining stand counts is the first step to assessing the field situation. Count plants that have a good chance of recovery. Emerged soybean plants can recover from stem damage if the stem is not severed below the cotyledonary (seed leaf) node. This is the first node on the seedling; the two fleshy-like cotyledons are attached to this node. If still present, buds on each side of this node can produce regrowth. If the plant is broken off below this node, it will not survive.

Once stand counts are established, refer to *Figure 1* to estimate plants/acre. (For other row widths see table in Crop-sized ring toss story) Although yield is reduced when plant populations fall below 100,000 plants per acre, the yield loss is not proportional to stand loss. A general guideline is to leave a field alone if plant populations are greater than 50,000 plants per acre, the stand is uniform, and the field can be kept weed free. More information on assessing hail loss in soybeans is in *Soybean Yield Loss Due to Hail Damage*, NU Cooperative Extension NebGuide G762.

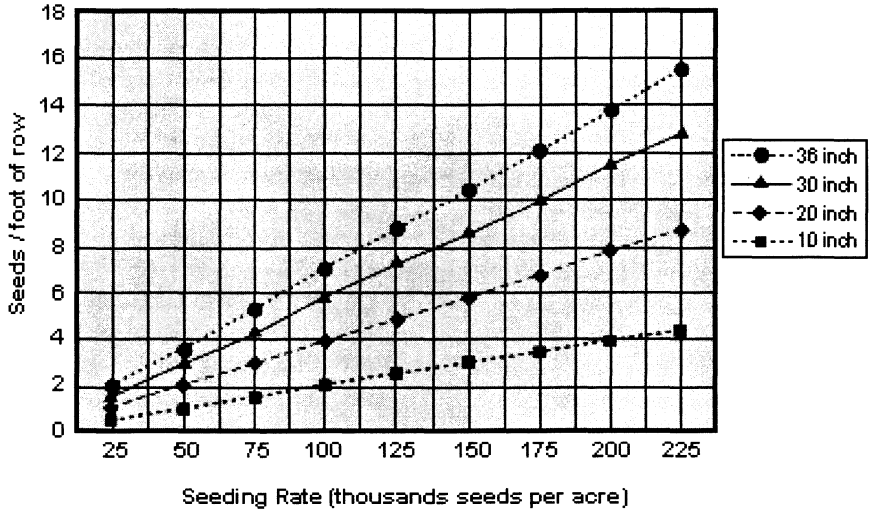

Figure 1. Soybean within-row seed spacing for different seeding rates and row spacings.

Replanting rates

If replanting is necessary, what seeding rates and other practices are recommended? Soybeans planted in June are usually shorter. If you can't plant until then, use a narrow row spacing if possible and higher seeding rates to hasten canopy closure. Faster canopy closure will suppress weeds. Avoid using very early maturing varieties because they will flower quickly, resulting in short plants. Tall, medium maturing varieties for your area offer the best hope of minimizing potential yield loss from planting late. Planting non-adapted, early-season varieties will not result in optimum yields. These recommendations apply to double-cropped soybeans as well.

Recommended soybean seeding rates, stand assessment and replanting rates based on Nebraska field research are discussed in *Soybean Seeding Rates*, NU Cooperative Extension NebGuide G99-1395.

Roger Elmore
Extension Crops Specialist
South Central REC

Field updates *(Continued from page 98)*

and field trash are the most significant problems in Gage, Lancaster and Saline counties. Soybeans are the most difficult to assess hail damage and wheat is the most troublesome due to crop damage and junk in the field.

Doug Anderson, Extension Educator in Nuckolls County: Crops are getting a slow start here -- corn is emerged and growing slowly; soybean planting is slow and some of the first planted fields were frosted off; and milo is being planted now. Wheat condition is iffy due to limited precipitation and frost. Yield may be about 30 bushels per acre. The first alfalfa cutting was poor due to drizzle and excessive laying.

Andy Christiansen, Extension Educator in Hamilton County: We are one of the counties that seems to be in the middle of everything and getting nothing. This pattern has been pretty consistent for several years now. Storm systems and all the rain seem to split and go north and south of us. We got less than a 0.1 inch from Saturday's storm. We have been getting fractions of an inch fairly regularly over the past month – just enough to delay planting but not enough to really recharge the subsoil. Pastures and alfalfa are vulnerable again this year.

Irrigation engineer joins BSE faculty

Irrigation and soil and water resources engineering are among the priority interests of a new faculty member in the UNL Department of Biological Systems Engineering. An assistant professor and water resources engineering specialist, Dr. Suat Irmak will devote approximately 60% of his appointment to extension programming and 40% to irrigation research. One of Dr. Irmak's first priority projects is the development of the Subsurface Drip Irrigation Research Facility at the South Central Agricultural Laboratory near Clay Center.

Dr. Irmak received his Ph.D. degree from the University of Florida Department of Agricultural and Biological Engineering in Gainesville, Florida; his ME degree from the Mediterranean University in Antalya, Turkey Agricultural Structures and Irrigation Engineering Department and his BS degree from Cukurova University, Adana, Turkey Agricultural Structures and Irrigation Engineering Department.

His areas of interest include soil and water resources engineering; surface and pressurized irrigation systems -- design, management, and optimization; crop water requirements (evapotranspiration: direct measurement and modeling, and use of climate information in agricultural water management); crop water use efficiency; and soil physics.

Dr. Irmak shared the following:

"I'm in the process of planning and establishing my long-term research and extension programs. I have statewide research and extension responsibilities with an emphases in south central Nebraska. I'll be carrying out a significant portion of my research projects at the South Central Agricultural Laboratory (SCAL) near Clay Center.

Some of the research and extension projects that I'll be conducting this summer include:

1. Subsurface drip irrigation (SDI): Developing best management practices for subsurface drip irrigated corn. We'll quantify the nitrogen leaching from subsurface drip irrigated corn as compared with the furrow-irrigated plots. We'll quantify crop growth and yield, water application, water use efficiency, and nitrogen leaching. I'm working on this project with Richard Ferguson.

2. Measurement of crop evapotranspiration of corn and soybean using low-cost modified atmometers.

3. Calibration and error analyses of various types of soil water content and soil matric potential sensors and their use in irrigation scheduling.

4. Direct measurements of crop water requirements using Eddy correlation and Bowen ratio techniques.

5. Predicting soil temperature: a modeling approach and its experimental verifications for dominant soil types in Nebraska.

Dr. Irmak can be reached at the UNL Department of Biological Systems Engineering at 234 L.W. Chase Hall, P.O. Box 830726, University of Nebraska, Lincoln, NE 68583-0726; telephone (402) 472-4865; fax: (402) 472-6338; or E-mail: sirmak2@unl.edu The department's Web site is available at *http://www.bse.unl.edu*

Subsurface Drip Irrigation Open House June 3

A University of Nebraska open house will highlight the new subsurface drip irrigation research facility at the university's South Central Agricultural Laboratory near Clay Center.

The open house will be from 9:30 a.m. to 4 p.m. June 3. Visitors will be able to observe the installation of a subsurface drip irrigation (SDI) system and talk with UNL scientists about the technical details of installing and operating the system.

Subsurface drip irrigation has the potential to apply water more efficiently than other methods, such as center pivots, sprinkler systems or furrow irrigation, said Suat Irmak, extension water resources engineer.

"More efficient irrigation means water, fertilizer and energy savings," Irmak said.

An SDI system delivers water to crops at the root zone using polyethylene tubing buried below the soil surface. The system allows little or no soil wetting, significantly reducing evaporative water loss.

For more information about the open house, contact the South Central Agricultural Laboratory at (402) 762-4403. A light meal will be provided.

Organic Farming workshop June 16

Information on specific field practices and new regulations for organic farming will be addressed at a June 16 UNL workshop.

"Organic Farming in the New Century" will be held from 9 a.m. to 4 p.m. at The Grain Place, 1906 North Highway 14, near Marquette.

Participants also will tour The Grain Place, a nationally recognized organic specialty grain and product processing plant at the David and Don Vetter farm.

The workshop is free to the public. Lunch and a binder of organic recommendations and regulations will be provided.

To reserve a place, contact Chuck Francis, UNL, at (402) 472-1581 by June 14.