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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2002-6
April 19, 2002

Vectored by overwintering bean leaf beetles

Bean pod mottle virus on the increase

In the 2001 production season, the most common soybean disease was bean pod mottle virus (BPMV). In surveys conducted by the UNL Department of Plant Pathology, in conjunction with state crop enumerators, bean pod mottle virus was detected in 48 out of 94 random locations (51%). The range of infield incidence was 10% to 100% with 30% of the positive fields having 50% or greater incidence. In 2000 we found 69% of 201 fields surveyed had bean pod mottle virus. While the incidence in 2001 was a slight decrease from 2000, occurrences of bean pod mottle virus are increasing across the state.

Plant damage typical of soybean pod mottle virus.

Neighboring states are seeing similar increases -- most states in the North Central Region list it as the most common viral disease of soybean. Like Nebraska, other states reported lower disease occurrence last year as well as lower bean leaf beetle populations. Bean pod mottle virus is a viral disease that is vectored or moved very efficiently by the bean leaf beetle.

Factors to consider

The first point to consider is that yield reductions as high as 52% have been documented. Does this mean all fields will be reduced this much? **Absolutely not.**

The key to yield reduction is *when* the virus is introduced to the plant. Viruses infect plants systemically.

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Focus on soybeans

Inside

Soybean insects

What to expect this season

Predicting insect infestations and population trends is notoriously difficult. Generally, winter mortality is relatively high for many insects in Nebraska. This year's mild winter conditions, however, were conducive to higher than normal insect survival. An early season soybean pest that may benefit from the mild winter is the bean leaf beetle, the major soybean insect pest in Nebraska.

Bean leaf beetles have two generations a year in Nebraska. However, since they over-winter as adults, three periods of beetle

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Updates

Management tips April 19-30

♦ **When planting, raise the residue movers in no-till and ridge-till.** In cold, wet springs, moving residue is common in no-till to aid soil warmup and drying. This spring, however, the soil is already warm and dry. Producers should leave as much residue as possible over the row to reduce drying out the seed zone and to help keep the root zone from getting too hot for seedling root and brace root development. Residue also will reduce crusting in the row when the spring thunderstorms blow through and reduce the chances of the row being washed out by runoff.

♦ **A 3-foot soil probe with a 15-inch tube is a good means of checking subsoil moisture when scheduling irrigations.** Order one to arrive before irrigation season. Two sources are Oakfield Apparatus Inc. (262-583-4114) and Clements Associates Inc. (JMC probes) (800-247-6630). Other sources also may be available.

♦ **It's time to prepare for millet and sunflower planting.** Early May planting dates enhance the yield of both crops.

♦ Producers should have their early pre-plant residual herbicides already applied or should apply them as soon as the winds allow. The sooner they are applied, the greater the chances for rainfall for incorporation before weeds get started. Too often surface applied herbicides are not activated soon enough, especially if the herbicides were applied with the planter or after planting. By using early pre-plant applications, burndown herbicides can be minimized in no-till, keeping the herbicide costs about the same as in tilled fields. Avoid use tillage for incorporation because it will dry out the soil, plant more weed seeds, reduce the residue cover, and destroy soil structure.

♦ **Kentucky bluegrass seed production** requires significant irrigation during the next eight weeks as it enters its maximum vegetative growth stage.

Field Briefs

Dave Baltensperger, Extension Crop Breeding Specialist, Panhandle REC: Many fields in the Panhandle are unusually dry and have received only limited rainfall this spring. We are approaching the end of the period for controlling broadleaf weeds in wheat. Most labels require application by jointing.

Ralph Anderson, Extension educator in Buffalo County: Things are a little slow in Buffalo County. The soil is too dry and producers are not eager to plant into a dry seedbed. A lot of fertilizer has been applied and some tillage has occurred, but there hasn't been much planting yet. The wheat I've seen looks pretty good, but there's not much subsoil moisture. Alfalfa is a little slow in starting and pastures are just starting to green up, but they really need rain.

Ralph Kulm, Extension educator in Holt County: Dry conditions continue in Holt and Boyd counties. We're lucky that we received quite a bit of wet snow in March because we've had 0.30 inch of precipitation since then. Wheat and alfalfa are growing but will need moisture soon. I have not seen or heard of any army cutworm problems so far. Producers are leery of insect problems in alfalfa after last year's onslaught.

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Bean pod mottle virus *(Continued from page 51)*

Once a plant is infected, it can never get rid of the virus. Greater yield loss occurs when plants are infected early in development. Plants with BPMV also can have higher levels of Phomopsis seed infection and produce discolored seed, which can have a significant impact on seed quality. It should be noted that seed coat mottling is not an indicator of seed infection by bean pod mottle virus. Sometimes bean pod mottle virus is confused with a soybean mosaic virus (SMV) infection, which generally are not common in Nebraska.

Symptoms of bean pod mottle virus are green to yellow mottling (blotchiness) of younger leaves in the upper canopy. In severe cases leaves may show puckering and distortion and plants can be stunted. The only way to confirm the presence of this virus is with serological testing (Elisa). Bean pod mottle resistance has not been identified, however, varieties will respond differently to the virus.

Virus vector -- bean leaf beetle

The bean leaf beetle is a vector of the bean pod mottle virus. The beetles first appear in soybean fields in the spring during seedling stages. These are the beetles that have successfully overwintered, and appear to be the primary vectors of the virus. Growers also see bean leaf beetles during the later vegetative and reproductive stages of soybean production, but the role of these mid to late season beetles in vectoring the virus is not clear and probably not as important as the spring beetles.

The overwintering beetles emerge from leaf litter in early spring and move to other legumes, such as alfalfa, before soybean fields are typically planted. When soybean plants begin to emerge, the beetles move to the seedling soybean. The earliest planted fields are the first to be colonized and usually end up with the largest beetle populations. It appears that as the beetles move around and feed on seedling soybean, they transfer the virus from plant to plant. Much about the relationship between the beetle, virus, and soybean remains unknown.

Will controlling the spring, overwintered beetles help control bean pod mottle virus? Preliminary studies conducted in Iowa indicate that this may be an effective strategy, but many questions need to be answered, such as "When is the best time to treat the beetles -- at plant emergence, the unifoliolate stage, or in a herbicide/insecticide tank-mix?". We don't yet know the answers to these questions, but studies are underway in Nebraska and other states to address these issues.

What about planting date? Planting date studies in 2001 showed that by planting soybean later in the year, less virus occurred. This is similar to what is observed for bean leaf beetle populations. This was based on mid-April and mid-May planting dates at sites near Mead and Fremont.

2002 NU research plans for bean pod mottle virus

We will continue monitoring the amount of bean pod mottle virus throughout the state. One point, which will be addressed in 2002, is how much yield loss current soybean varieties suffer from BPMV infection. We will plant the top three entries from several companies to assess this. Currently varieties are not rated for susceptibility to BPMV. Management studies focusing on early-season insecticide applications also are planned for this production season. Management studies are being funded in part from a grant by the North Central Soybean Research Program. Other aspects, including variety evaluation and virus monitoring, are being funded by the Nebraska Soybean Board. Hopefully, through these efforts we will also get a better idea of the yield loss associated with bean pod mottle virus in Nebraska and how to manage it.

Loren Giesler
Extension Plant Pathologist
Thomas Hunt
Extension Entomologist

Market Journal web site: Using UNL weather resources to manage risk

Ken Hubbard, director of the High Plains Climate Center based at UNL, demonstrates some of the products available via the Center's Web site on a recent Market Journal broadcast. The story is available on the Market Journal web site at *http://marketjournal.unl.edu.*

The highly interactive HPCC site provides in-depth data on weather from around the country. Farmers can get information specific to their fields and their crop of interest. The site also features information on how to best use that data – crop water use estimates, soil temperature, insect growing degree models, and more. Plus, delivery mechanisms that allow you to receive information automatically. The HPCC provides the data for the *CropWatch* weather site at cropwatch.unl.edu

Visit the *Crop Watch* web site and check out its many features as well as an archive of previous years newsletters. See
cropwatch.unl.edu

Soybean insects *(Continued from page 51)*

activity are seen in the growing season: Overwintering colonizers, F1 generation (offspring of the colonizers, the true first generation) and the F2 generation.

Bean leaf beetles overwinter as adults in protected sites such as grassy field edges, leaf litter, and crop residue. They become active fairly early in the year and often can be found in alfalfa prior to soybean emergence. As soybeans emerge, the beetles quickly move to the seedling plants, feeding on cotyledons and expanding leaf tissue. These overwintered beetles, called colonizers, mate and begin laying eggs. Females live about forty days and lay from 125 to 250 eggs. After egg laying is complete the colonizing population dwindles as the beetles die. A new generation of beetles (F1) will begin to emerge in late June to early July. The F1 beetles mate and produce a second generation of beetles (F2) that begin to emerge in mid August and feed on leaf and pod tissues. The pod-feeding F2 beetles are most likely to cause economic damage.

Bean leaf beetles vary in color, but are usually reddish to yellowish-tan. They are about ¼ inch long and commonly have two black spots and a black border on the outside of each wing cover. These spots may be missing, but in all cases there is a small black triangle at the base of the wings near the thorax.

Because they move to soybean fields so soon after seedling emergence, early-planted fields will usually have more beetles and suffer the most injury. This has become more of a problem in recent years because planting dates seem to be getting earlier each year. Although the defoliation the beetles cause can appear quite severe, research in Nebraska and elsewhere has shown that it usually does not result in economic damage. Soybean plants can compensate for a large amount of early tissue loss, so it takes a considerable amount of beetle feeding to impact yield. Generally, unless insect populations are large enough to cause more than 50% to 60% defoliation of seedling soybeans, it is unlikely that treatment would be economically justified. *Tables 1 and 2* show economic thresholds for bean leaf beetle on seedling soybean. Be aware that these thresholds are for defoliation of beans at VC - V1. If beetles enter the field right at or during seedling emergence, the thresholds will likely be lower because the beetles do not have leaf tissue to eat and will feed on the growing point, stem, and cotyledons. We do not have a good research base for bean leaf beetle injury to newly emerging soybean, but the thresholds are probably about 1.5 beetles lower than the VC thresholds.

Bean leaf beetle

Remember that early-planted soybeans are the most susceptible. If economic thresholds are reached, many insecticides are available for bean leaf beetle control. All will do an adequate job if applied according to label directions.

Another reason some producers treat bean leaf beetle on seedling soybeans is to reduce the pod-damaging F2 generation that emerges in August; however, UNL Extension does not recommend this practice. There are many environmental factors that can impact beetle populations throughout the growing season, making it impractical to use spring beetle numbers to accurately predict if beetle populations will reach economically damaging levels in August. Regular scouting and the use of the appropriate economic thresholds are the best way to manage late season bean leaf beetle in soybean. Economic thresholds will be included in *CropWatch* later this summer.

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Table 1. VC Economic thresholds (beetles per plant)

Crop value, $/bu	*Pest management cost, $/acre*			
	$6	*$8*	*$10*	*$12*
$5	3	4	4	6
$6	2	3	4	5
$7	2	3	3	5
$8	2	2	3	4

Table 2. V1 Economic thresholds (beetles per plant)

Crop value, $/bu	*Pest management cost, $/acre*			
	$6	*$8*	*$10*	*$12*
$5	4	5	7	8
$6	3	4	6	7
$7	3	4	5	6
$8	3	3	4	5

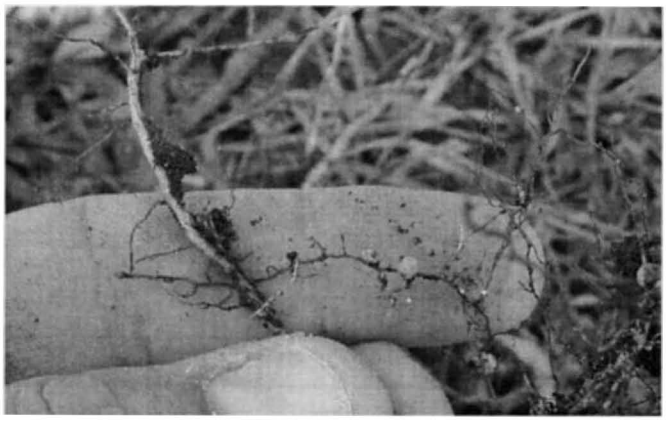
Soybean cyst nematode range expands

Soybean cyst nematode (SCN) previously had been thought to occur in eastern Nebraska along the Missouri River; however, new information indicates otherwise. Recently, we reviewed the occurrence based on UNL and private lab records. We found positive SCN samples across more counties than previously reported. New counties with SCN were Boyd, Pierce, Antelope, Nance, Boone, Cedar, and Thurston. Now, does this mean that SCN is on the move recently? Probably not. I suspect these locations may have had the problem for some time, but recently discovered it. Based on this information, however, it would be good to check your fields for soybean cyst nematodes, particularly if you have a field that has been dragging in yield recently.

How to check for soybean cyst nematode

There are two ways to check for soybean cyst nematode. 1) examining the roots or 2) submitting a soil sample to a laboratory. On the roots, cysts will appear as cream to brown-colored bodies, which are pinhead in size. They should be present on the roots anytime after the Fourth of July. If you decide to take a soil sample for soybean cyst nematode, this can be done at any time of the year, but populations will be highest at harvest. Often people take soil samples after harvest when things slow down.

Once in a field, soybean cyst nematode will never go away. The key to keeping soybean fields at high production levels is to keep the population of soybean cyst nematode low. The population being referred to is the number of SCN eggs per 100 cc soil (roughly half a coffee cup). Very high populations of soybean cyst nematode will develop in fields that are not managed properly. This is especially true in fields with sandy soils. If the nematodes are not detected soon enough and numbers become high, fields will need to be rotated to a non-host crop for several years.

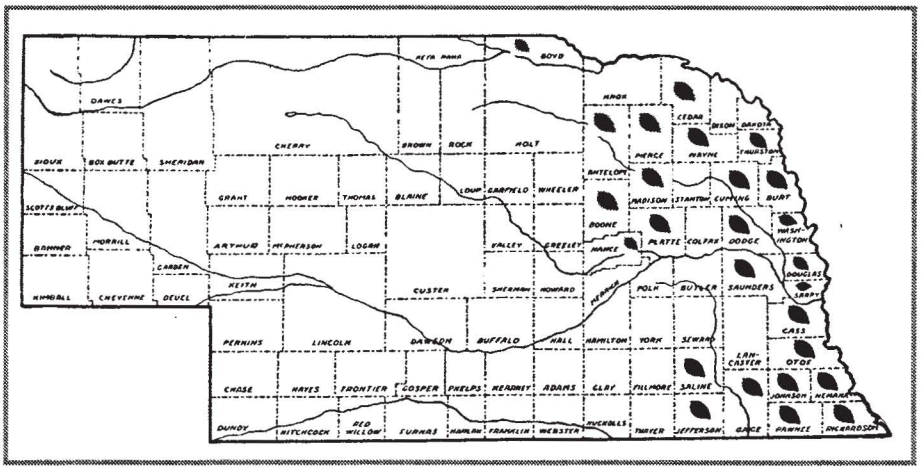


Three small nematodes on a soybean root.

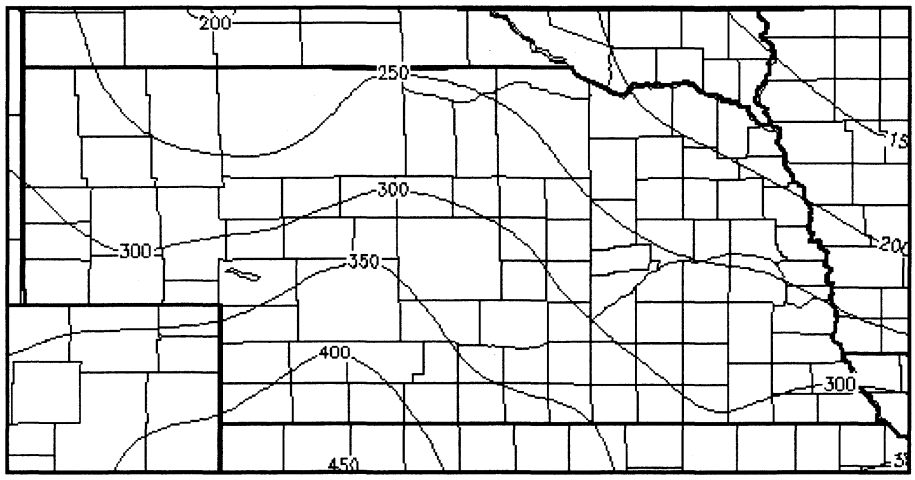
If there is a history of soybean cyst nematode in a field, choose a variety resistant to it. Unfortunately, most varieties in Nebraska have the same sources of resistance. This makes it difficult to rotate sources of resistance, which is recommended as part of an overall management strategy. If you cannot find a different source of resistance, at least rotate varieties. The most common source of resistance – PI88788 – is not the same in all varieties. The recommended rotation for fields infected with soybean cyst nematode is a six-year corn / soybean rotation (SCN resistant soybean – corn – SCN resistant soybean – corn – susceptible soybean – corn). The susceptible soybean is placed in the rotation so that SCN populations doesn't develop a resistance to the plant.

In fields found positive for soybean cyst nematode, plan to monitor the population every few years. Remember that pathogen populations can and do change. By monitoring your situation you can hopefully say in pace with the change.

Loren J. Giesler
Extension Plant Pathologist



Soybean cyst nematode distribution in Nebraska. Once thought to occur just in counties bordering the Missouri River, distribution has now been verified as far as five counties away.



Alfalfa weevil scouting

Accumulated growing degree days, base 48, as of April 15, used to determine the development of the alfalfa weevil. Prepare to scout for alfalfa weevils when GDD accumulations approach 350. This is when visible damage on the tips of the alfalfa can first be detected. A more detailed story on scsouting for and treatment of the alfalfa weevil will be in the April 26 *Crop Watch*. *(Map prepared by Al Dutcher, State Climatologist, NU School of Natural Resource Sciences)*

Soybean insects *(Continued from page 54)*

Beyond the beetle

Of course, there are other insects that may be found in soybean fields. Last year we had numerous reports of several species of caterpillars infesting Nebraska soybeans, including wooly bear, thistle, and red admiral caterpillars. These are sporadic pests of soybeans, so we will report on these insects as necessary throughout the season.

Finally, a new soybean pest, the soybean aphid, has been receiving a lot of attention the last couple years. First found in Wisconsin in 2000, the aphid has since spread to 13 states. Although we have yet to find this insect in Nebraska, it was found just across our borders in South Dakota and Iowa last summer, so we expect to see it eventually.

The soybean aphid, *Aphis glycines*, originated in Asia. A small yellow aphid with black cornicles ("tail-pipes"), it can be found on soybean from seedling through reproductive stages. It typically feeds on new growth or the undersides of mature leaves. Heavy feeding may produce wilting, leaf distortion and yellowing. Yield losses exceeding 25% have been observed in Minnesota and Iowa.

Because of the potential impact this insect may have for Nebraska soybean farmers, the Nebraska Soybean Board has funded a "Soybean Aphid Survey and Early Alert Program". If you find colonies of yellowish aphids with black cornicles in Nebraska soybeans this summer, please contact Tom Hunt at (402) 584-2863 or *thunt2@unl.edu* . More information concerning the aphid will be presented in subsequent issues of *CropWatch*.

Tom Hunt, Extension Entomologist
Haskell Ag Laboratory
Keith Jarvi, Extension Assistant
Integrated Pest Management
Both at the NEREC

Consider conditions before planning prescribed burn

Prescribed burning of grasslands can improve stands, control weeds and trees, enhance wildlife habitat, and improve animal gains, but during a dry spring it can be dangerous and counterproductive. This spring in particular, I think that burning could be the wrong thing to do on most grasslands, especially those that will be grazed or cut for hay later this summer.

I'm concerned because most pasture subsoils in our area are extremely dry. Whenever pastures are burned, about one inch of effective soil moisture is lost. Along with that moisture loss is a proportionate loss in pasture growth and carrying capacity.

When pastures start out relatively dry like they may this spring, this loss in carrying capacity often becomes quite serious. Not only do you lose potential growth for the grass this year, you also lose the carryover feed value from last year's residue. It may not be very high quality feed, but when pastures get short during a drought, almost anything is better than nothing.

Green-up and rate of growth right after the fire also is much slower when soils are dry at time of burning. This increases the chance of wind and water erosion, and delays when these pastures will be ready for grazing.

Burning still might be appropriate on CRP lands, though. The loss of production isn't nearly as important as improving stands. Even so, when it's dry you must be extremely careful.

Fire is valuable tool. But like any other tool, in the wrong hands or at the wrong time it can be costly or dangerous.

Bruce Anderson
Extension Forage Specialist

Selecting nozzles to minimize drift

In selecting spray nozzle tips, the objective is to get the highest possible efficacy for the product. This requires achieving good spray coverage while minimizing spray drift. With the advent of more postemergence pesticide applications, spray drift has become a much bigger concern.

To learn which nozzles worked best in which situations, a two-year UNL research project evaluated six sprayer nozzles for efficacy and drift. Following is a synopsis of the results. (*CropWatch* on the Web at *cropwatch.unl.edu* includes graphs of further results.)

Two nozzles, the Turbo FloodJet and the Air Induction nozzle from TeeJet, reduced drift compared to the standard XR TeeJet @ 40 psi. The Turbo Drop and Turbo TeeJet also reduced primary drift (the distance to last dead plant), but were not statistically better than the standard treatment. When secondary drift (the distance to the last injured plant) reduction is compared, all four drift-reducing nozzles outperform the standard flat fan.

The second year of the study included three new nozzles from Lechler Inc., providing nine treatments. The Turbo FloodJet, both AI nozzles and the Turbo Drop outperformed the standard flat fan in controlling primary drift. When comparing the performance of reducing secondary drift, only the Turbo FloodJet was statistically better than the control.

Drift-reducing additives can be best evaluated by comparing the nozzle itself against the nozzle plus an additive. Data from 2000 and 2001 was combined to evaluate all the additives. None of the additives significantly reduced primary drift. Although Border reduced drift compared to Placement, none of the treatments were statistically different than the AI nozzle alone. Border applied with the AI TeeJet nozzle did reduce the amount of drift compared to the AI nozzle used alone.

When comparing the efficacy of the original six nozzles, data was pooled over both years. This research was completed in planted crops, all of which were approximately the same size. It is possible that the larger spray particle size may not be as critical as if smaller plants were present, such as in a field with different weed sizes. The standard treatment in this experiment was the XR TeeJet nozzle @ 40 psi. In general Roundup Ultra had higher injury ratings than Liberty. Since there was no herbicide/ nozzle interaction, data was pooled over herbicides.

The Turbo FloodJet, Turbo TeeJet and Turbo Drop nozzles provided significantly greater efficacy than the two XR flat fan treatments. Another drift-reducing nozzle, the AI TeeJet had significantly greater efficacy than the XR TeeJet @ 20 psi but was similar to the other nozzles. The top four nozzles are designed to produce larger droplets. These experiments were conducted on days with little wind.

Nine treatments were compared in 2001. Again, herbicide/ nozzle interaction was not significant, so data was pooled over herbicides. The data are similar to previous results.

All the additives tested were sprayed with a conventional nozzle (XR TeeJet) and a venturi style nozzle (Air Induction (AI) TeeJet). When the data is averaged over the three additives, the nozzles were not statistically different. The venturi nozzle performed as well as the standard flat fan.

When the data is averaged over nozzle type, Array performed statistically poorer than Border and Placement. Array had an 80.1% injury rating while Placement had a 83.9% and Border had an 84.2% rating. While the additive's main purpose is to reduce drift, it should not reduce weed control efficacy compared to the nozzle treatment alone. Figure 1 indicates that none of the additives had a negative impact on weed control compared to treating the crop with the XR nozzle and no additive.

Adam K. Johnson, former NU Graduate Student in Weed Science
Robert N. Klein, Extension Cropping Systems Specialist

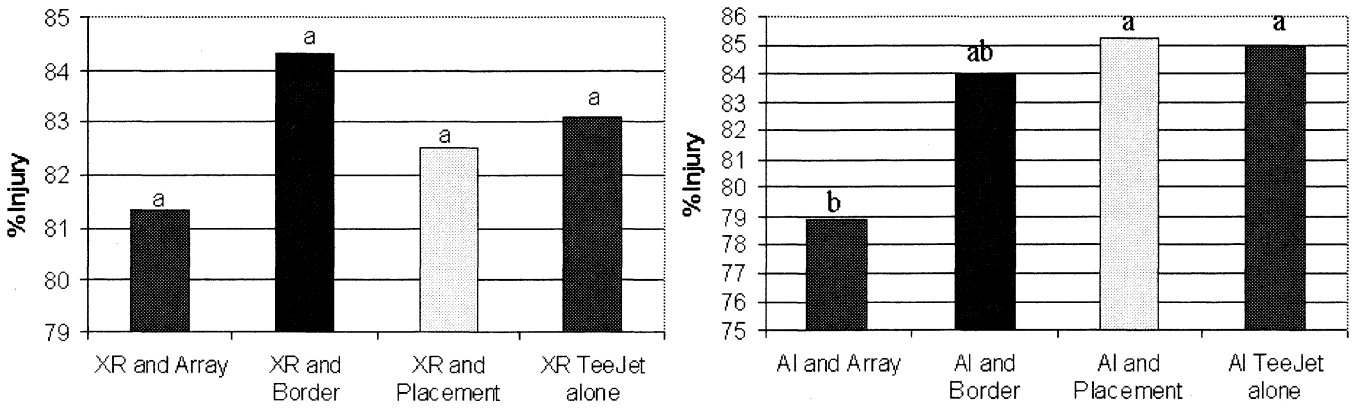


Figure 1. Additive performance by nozzle averaged over herbicide

Without rain, what happens to the preemergent herbicides you applied?

While some areas of the state have been fortunate enough to receive rainfall in the past week, other areas have not received any significant rainfall for at least 10 days. Producers in these areas are now asking questions about preemergence herbicides. At the forefront of these questions is how much rain is needed to incorporate preemergence herbicides and how long can they remain on the soil surface without rainfall.

Preemergence herbicides need to be incorporated into the soil in order for them to have the desired activity of preventing weeds from surviving. Many times herbicides are applied to soil with residue on the surface, blocking the spray from soil contact. This herbicide will be ineffective until it is moved to the soil via either rainfall or mechanical incorporation. Most preemergence herbicides require 0.5 inch of rainfall or greater for adequate incorporation. With mechanical incorporation, soil moisture must still be adequate for herbicide uptake and activity.

How long the herbicide can remain on the soil surface before incorporation and still remain adequately active depends on a number of issues, primarily the type of herbicide and the weather conditions. For example, Prowl is moderately volatile and should be incorporated within seven days before activity is lost. Hot temperatures and high winds may reduce this time. Many corn preemergence herbicides such as Dual, Bicep, Harness, Surpass, Balance, Frontier, and Atrazine are much less volatile and can remain on the soil surface longer without loss of activity. Under cool weather conditions, these herbicides can remain on the soil surface for two or more weeks before incorporation without significant loss. If rainfall has not occurred by the third week, other incorporation measures may be needed. Again, temperatures in the 80s with high winds will reduce this time.

If dry weather follows the application of a surface applied herbicide, weeds may emerge even though the herbicide is on the surface. If the weeds get more than 1 inch tall before rainfall occurs, most surface applied herbicide will not control them.

For the most part, producers do not need to worry about incorporation of preemergence herbicides immediately after application. Producers may want to keep this information in mind when buying herbicides, as some are much better than others with respect to vapor loss or degradation. Choose a herbicide that can remain unincorporated for two or more weeks and hope for rain.

Brady Kappler, Extension Educator – Weed Science
Alex Martin
Extension Weed Specialist

Field updates

(Continued from page 52)

Keith Glewen, Extension educator in Saunders County: Most of the spring-applied nitrogen is in place. Growers can't remember when it worked so well to apply nitrogen. Some corn has bean planted, but it's only a small percentage. Burndown herbicide applications are being applied on no-till fields. Multiple tillage operations in some fields have dried out seedbeds. There's been more interest in planting alfalfa and oats than in recent years.

Gary Zoubek, Extension educator in York County: Most producers finished applying anhydrous ammonia this past week and a few started planting corn. We've received little moisture so far this spring, so fields that have been worked are dry. Moisture conditions are still favorable in ridge-till fields. Many will start planting this week.

Wheat condition below normal; crop planting forges ahead across state

Nebraska jumped into spring with a little bit of summer last week. Overall, temperatures averaged from five to eleven degrees above normals aross the state, according to the Nebraska Agricultural Statistics Service.

They reported that wheat condition is behind last year and average, with 6% rated very poor; 19% rated poor; 43% rated fair and 32% rated good. Last year at this time wheat rated 54% good and excellent with the five-year average at 62% food and excellent. The crop was jointed on 1% of the acareage, comapred with 2% last year and 3% average.

Oat planting was ahead of verage at 60% complete and compares with 19% last year and 47% for the five-year average.

Sugarbeet planting is well ahead of last year with 28% complete; 3% had been planted by this time last year. Corn planting was just beginning.

Producer on-farm research, model look at early soybean planting date

Crop producers may be interested in planting soybean early to spread out the use of their machinery and to avoid yield loss associated with late planting. Often yields are as high or higher compared to normal planting dates, but yields also can be significantly reduced.

Replicated trials were conducted by farmers participating in the Nebraska Soybean and Feed Grains Profitability Project (*http://on-farmresearch.unl.edu/*) and the Quad County On-farm Research Group in 2000 and 2001 (see *Table 1*).

Under non-irrigated no-till conditions, yields were increased in two cases with early planting but decreased in three cases. The average yield was 38.6 bu/A for early planting and 42.4 for the normal planting time. The two cases with a yield advantage with early planting occurred in 2000.

Two trials were conducted under irrigated, ridge-till conditions two were under pivot irrigation. Mean soybean yield was six bushels per acre more with early planting.

Water deficits were severe in July to early August 2001. Adequate soil moisture during this period is probably more important for the early planted soybeans while normal planted soybeans may benefit more from rain in mid to late August.

Jerry Mulliken, a crop consultant and Nickerson farmer participating in the NSFGP project, used the DSSAT crop growth model for soybean, SOYGRO, to simulate the effects of different planting dates on yield of a Group 3 variety. He used historical weather data for 1983 to 1998 for Mead. The outcome of these simulations sheds light on the inconsistent results with early planting (see *Table 2*).

The modeling results showed the greatest yield potential with April planted beans. For non-irrigated conditions, the mean yields were highest for mid-May to early June planting. Early planted beans were more affected by water deficits in July and early August as compared to the mid-May and early June planted beans. Simulated yields were much more variable with early planted beans than later planted beans. Early planted non-irrigated beans on sandy soils are likely to be even more affected by water deficits. When the water deficits did not occur, the best yields under non-irrigated conditions were with April planting.

Risk of frost damage is a concern but minimized by planting seed two inches deep into cool soil. Risk is further reduced with no-till as the crop residue cover prevents soil temperature from responding quickly to increases in air temperature. Emergence is delayed until air and soil temperatures are warmer.

Seed-applied fungicide should be used to protect the seed from soil borne diseases due to the long wait in the soil and slow early growth.

An important consideration is pest management. The bean leaf beetle, a foliar feeder, has been observed to most affect early planted beans. The bean leaf beetle (*see page 51*) transmits the bean pod mottle virus which also was observed to be worse with early planting. Careful scouting and properly timed insecticide application may be needed to control the beetle on early planted beans.

Early planting of soybeans should be considered when planting normally continues well into June, especially if the land is irrigated. The chances of good results are less under rainfed conditions if the soil does not have good water holding capacity.

Charles Wortmann, Extension Nutrient Management Specialist

Table 1. Results from on-farm replicated soybean trials in 2000 and 2001.

Farm	Year	County	Planting date		Yield, bu/A	
			Early	Normal	Early	Normal
Non-irrigated, no-till						
K.O.	2000	Saunders	3-24	5-10	41	40
K.O.	2001	Saunders	4-19	5-12	31	36
J.M.	2000	Dodge	4-14	5-16	45	38
J.M.	2001	Dodge	4-19	5-17	41	44
L.B./R.R.	2001	Saunders	4-16	5-28	35	54
SW	2000	Gage	4-15	5-18	48	48
Mean for non-irrigated					**40.1**	**43.3**
Irrigated						
D.K.	2000	Hamilton	4-14	5-20	64	56
J.S.	2001	York	4-20	5-17	71	69
B.N.	2000	Holt	4-10	5-10	59	53
B.N	2001	Holt	4-16	5-8	61	53
Mean for irrigated					**63.7**	57.7

Table 2. Results of crop growth simulation using the SOYGRO model for a Group 3 variety planted on a dryland Moody silty clay loam using Mead weather data for 1983 to 1998. The predicted average and maximum yields, and the coefficient of variability (CV) are given.

Planting Date	Avg Bu/A	Max Bu/A	CV
April 1	30	76	71%
April 15	33	74	75%
May 1	34	73	66%
May 15	38	71	55%
June 1	43	68	34%
June 15	42	56	17%
June 30	33	45	17%

In dry areas

Irrigate alfalfa fields now

With the limited precipitation in many areas, alfalfa growers may want to start irrigation early.

It may seem silly to irrigate alfalfa before first cutting, butlook at your soil moisture profile. If it's dry, you may need to. In fact, often early spring is the best time to irrigate alfalfa. After all, it's about the only time you can actually build a reserve water source for summer use.

Alfalfa can develop roots more than eight feet deep, but it will only do this when surface moisture does not meet crop needs and moisture is available all the way down to those depths. Deep roots and deep moisture will make your summer irrigating much easier by providing extra moisture when plants use as much as 0.5 inch a day. Unfortunately, typical shallow watering during summer encourages shallow rooting.

Early spring irrigation tends to help warm the soil since irrigation water usually is about 55°F. This will help speed early alfalfa growth.

Your biggest advantage from reserve water will come after each summer cutting. Alfalfa roots need oxygen in the soil if plants are to regrow rapidly. Watering right after cutting suffocates roots, slowing regrowth.

Immediate watering also stimulates shallow rooted or sprouting weeds, especially at a time when alfalfa plants are not very competitive. Both problems are solved when water is available for deep alfalfa roots while the top several inches of soil remain dry.

So, improve your alfalfa irrigation by watering early, with a goal of six to eight feet of soil at field capacity at first cutting.

Bruce Anderson
Extension Forage Specialist

Much of state in moderate drought

The National Drought Monitor, developed in cooperation with the National Drought Mitigation Center at the University of Nebraska-Lincoln, shows much of the state to be in a moderate drought, with areas of southeast and northeast Nebraska labeled as abnormally dry. A revised map was to be posted April 18 to the site at *http://www.drought.unl.edu/dm/monitor.html*

According to the High Plains Climate Center at the University of Nebraska precipitation April 1-14 ranged from 7% of normal in south central Nebraska to 47% of normal in the southeast district. Precipitation ranged from 0.07 inch to .58 inch.

Workshops target home termite control

If your home has been hosting more than your family for regualr meals, you might want to attend one of the upcoming seminars on termite control

University of Nebraska Cooperative Extension will present five workshops in May to help homeowners combat termites before they cause major treatment and repair headaches.

NU extension educators Barb Ogg and Dennis Ferraro and NU pesticide education specialist Clyde Ogg will present the three-hour workshops.

They will answer questions, discuss termite biology and behavior, home inspection tips, differences between barrier and bait treatments and how treatments should be done for best pest control. Other topics that will be covered include preventing termite damage; effectiveness, safety and environmental concerns of treatment chemicals; proper chemical application techniques; cost of treatment; and warranties.

Workshop dates, locations and contacts are:

- **May 6, Lexington:** 4-H Building, Dawson County Fairground; Bruce Treffer, (308)324-5501.
- **May 7, Grand Island:** College Park; Jim Hruskoci, (308)385-5088.
- **May 9, Omaha:** Douglas/Sarpy County Extension Office, 8015 West Center Rd; Dennis Ferraro, (402)444-7804.
- **May 14, Wilber:** Saline County Extension Office, 306 West Third St., Randy Pryor, (402)821-2151.
- **May 16, Lincoln:** Lancaster County Extension Education Center, 444 Cherrycreek Rd; Barb Ogg, (402)441-7180.

All workshops are 6:30 to 9:30 p.m.

Registration for the Omaha workshop is $25; all others are $20 and will include reference materials. Pre-registration is not required, but those interested should call their local extension office in advance to help ensure enough reference materials are available for everyone.

Nearly 1,000 have attended the workshops since 1995. Participant surveys indicate that over 80% received information that saved them money in preventing or treating termite-related problems, Ogg said.