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Lisa Brown Jasa

University of Nebraska-Lincoln, ljasa@unlnotes.unl.edu

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 99-9
May 14, 1999

Early weather may affect season-long diseases

Early season weather conditions can influence the management of plant diseases in field crops for the rest of the season. The low soil temperature and high soil moisture conditions prevalent in several counties provide near ideal conditions for many pathogens that attack seeds and seedlings. If those conditions prevail at planting or in the 10-14 days after planting, immediate and/or long-term negative effects may result.

The immediate effect may be poor stand establishment as a result of seed and seedling decays that cause pre-emergence and post-emergence damping-off diseases. This will be true for both corn and soybean. Seeds take longer to germinate and seedlings take longer to emerge from low temperature, high moisture soils. This gives the soil-borne pathogens more time to infect and colonize the developing plant. Depending on how long the conditions persist, the seed may fail

And, how's this cool, rainy weather affecting your preemergence herbicide? See page 79.

to germinate due to decay or the seedling may be killed by one or a combination of damping-off pathogens. Surviving plants may have reduced root function as a result of root decay initiated during this cool, wet period. Depending on the degree of root decay, plants may be stunted and yellow or appear normal but fail to translocate sufficient water and nutrients during grain fill due to reduced absorptive capacity. In either

case yield may be reduced significantly.

Two corn diseases — gray leaf spot and stalk rot — cause considerable concern related to delayed planting. With gray leaf spot, delayed planting may delay grain-fill. If the weather conditions (specifically, daily minimum and maximum temperatures and relative humidity) in July and August are average for Nebraska, then the epidemic will peak at the same time the corn plant is filling the grain. The kernels will be in competition with the pathogen for the available nutrients in the plant leaves. In 1998, the corn crop matured ahead of schedule, escaping the impact of gray

(Continued on page 79)

Wheat potential looks good, but crop may lack vital nutrients

The Nebraska wheat crop has the potential to yield at least 46 bushels per acre, according to field observations made statewide during the sixth annual Wheat Quality Survey May 3-5. This is about three bushels higher than estimates made after last year's survey, and equal to the 1998 record yield. However, because wheat statewide appears to be short of nitrogen, it is doubtful the crop will reach its potential.

Soil moisture is generally the biggest concern for wheat at this time of year. This spring, however, moisture levels in the top two feet

are adequate to above average, which provides an opportunity for extraordinary yield potential. Unfortunately, the Nebraska wheat crop generally appears short of nitrogen. This lack of nitrogen may be attributed to several factors:

- 1) Many producers didn't apply adequate nitrogen last fall because they wanted to keep input costs as low as possible.
- 2) Others may have applied their normal amount of nitrogen, but

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Field updates

Ralph Anderson, Extension educator in Buffalo County: The planters are in the fields again this week, with many farmers having spent Mother's Day planting corn. We still have many acres to plant, especially in the northwestern part of the county.

It's not time to panic yet; however, producers may want to reconsider any hybrids that are already stretching the season. Many of our rains have been very localized with three inches on one section and a half-inch three miles away. There is some concern for herbicide activity, both too much with possible crop injury, and not enough due to late application or incorrect timing.

Also, the **Kearney Area Ag Producers Alliance (KAPPA)** has planted research plots to evaluate several specialty crop varieties. They have had several high oil plots in the past, but have had difficulty finding hybrids that consistently produced competitive yields. While the high yielding high oil hybrids might match the average of the yellows, the average of the high oil corns has been below average of the yellows. This years plots include some of the specialty hybrids such as high protein, high nutrient density, and food grade numbers. The group also would like to include some specialty soybeans but is having trouble finding seed.

Nebraska Agricultural Statistics Service: Winter wheat condition continued to move higher and rated 2% poor, 16% fair, 67% good and 15% excellent. Wheat jointed was at 66%, ahead of 50% last year, and average. Oats planting was 98% complete, not far behind 100% for last year at this time. Oat emergence was at 90%, ahead of 74% last year.

Paul Hay, Extension educator in Gage County: Most of the corn is in and soybean planting has started.

It is very clear in the wet spring that no-till farmers are planting a day ahead of the conventional tillage operations. Alfalfa weevil damage is varying considerably, some fields need to be sprayed while others had only minor damage.

Fields coming out of CRP should not be planted to wheat for two years. I looked at another example of why this week. The entire field is lost due to take-all disease.

Terry Gompert, Extension educator in Knox County: Only about 25% of the of corn is in the ground so concerns are growing about possible problems from delayed planting. Some alfalfa weevils have been reported. This

might be a typical year when alfalfa doesn't bloom due to the cool, wet spring. Blue grass is heading and brome will be heading in a few days. The grass is very short, which may mean less grazing. We need warmer, but not hot days.

Ray Weed, Extension educator in Kimball/Banner counties: Winter wheat fields and pastures are in good to excellent condition following more than 4 inches of rain in the past month. Corn producers are rushing now to get corn planted because of delays due to rain events in the previous two weeks or so. We also had scattered rain showers today around our area. Roundup

(Continued on page 81)



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Lisa Jasa, Editor
Email: ljasa1@unl.edu

For more information about a particular subject, write the authors at the addresses below:

UNL Department of Entomology
202 Plant Industry Bldg.
Lincoln, NE 68583-0816

UNL Department of Plant Pathology
406 Plant Science Bldg.
Lincoln, NE 68583-0722

UNL Department of Agronomy
279 Plant Science Bldg.
Lincoln, NE 68583-0918

UNL Department of Agricultural
Meteorology
236 L.W. Chase Hall
Lincoln, NE 68583-0728

Wheat update *(Continued from page 77)*

because of above-average moisture, the wheat crop is using more nitrogen than normal to achieve high yields.

- 3) The above-average precipitation has caused more nitrogen to be leached below the normal root zone.

Most fields observed had uniform plant populations with well developed root systems. There were isolated incidents of army cutworm, greenbug, bird cherry-oat aphid, septoria, leaf blotch, crown and root rot, tan spot, powdery mildew and wind erosion injury. Most fields along all routes had below average disease, insect, and weed problems; however, if cool wet weather continues, the incidence and severity of foliar diseases could increase.

Plant heights ranged from eight to twenty inches, with the growing point from just above ground level to eight inches above. Crop development on the average appears to be ahead of normal; most fields surveyed were in the jointing or flag leaf stage.

During the two-day survey tour, the 28 participants split up into several teams to thoroughly survey much of the Nebraska wheat production area. Each team used a mathematical model provided by the Nebraska Agricultural Statistics Service to predict the yield of the random fields surveyed based on the number of tillers present and other important factors impacting yields.

Yield estimates ranged from the low 20s to more than 80 bushels per acre for the 175 surveyed fields (included both irrigated and rainfed).

The second day of the Nebraska field survey concluded with a meeting in Colby, Kan. where survey results were shared with participants in the Kansas Wheat Quality Tour sponsored by the Wheat Quality Council.

The Annual Wheat Quality Tour is sponsored by the Nebraska Wheat Growers Association in cooperation with the Nebraska Wheat Board. Observers in 1999 included wheat producers and staff of these organizations, plus representatives of the

Nebraska Agricultural Statistics Service, Nebraska Department of Agriculture, U.S. Risk Management Agency, Nebraska Crop Improvement Association, the seed industry, and the grain trade.

Brian Siebold, Information Specialist, Nebraska Wheat Growers Association
Matt Vieselmeyer, Program Asst., Nebraska Crop Improvement Association
Steve Knox, Field Services Supervisor, Nebraska Crop Improvement Association
Roger Hammons, Manager, Nebraska Crop Improvement Association

Cool, wet weather may add to herbicide injury

This year's cool, wet weather is ideal for crop injury from preemergence herbicides; however, this may not necessarily translate into yield loss. With cool, wet weather, the metabolic activity of the crop is reduced and the crop is slow to germinate. This allows the crop to contact the herbicide for a much longer time. The result is that the crop may take in more herbicide than it can metabolize and injury may result.

The largest used family of preemergence herbicides is the

acetamides, including acetochlor, alachlor, dimethenamid, flufenacet, metolachlor and propachlor. Acetochlor (Harness, Surpass, Topnotch) has a crop safener and crop injury is reduced. Metolachlor (Dual II Magnum) has a crop safener in all II formulations. Alachlor (Lasso, Freedom, Partner, Micro Tech) does not have a crop safener, although Partner and Micro-Tech are encapsulated. Flufenacet (Axiom and EPIC) has no

(Continued on page 83)

Early season *(Continued from page 77)*

leaf spot which developed on schedule. If the corn crop matures late this year, the gray leaf spot epidemic will be underway prior to maturity and may likely affect yield.

Delayed planting may delay harvest. The longer harvest is delayed into October, the greater the risk of loss to stalk rot from lodging. Lodging also increases the risk of ear molds. Some of the pathogens that cause early season root decay also

cause stalk rot. Consequently, these early season root infections can serve as the starting point for stalk rot. A reduced root system with impaired function can stress the plant, allowing stalk rot to develop sooner and more severely.

When early season weather creates unfavorable conditions for planting and subsequent plant development, there is the potential for cascading problems related to

diseases. If you planted early and the seed was in the ground during adverse weather or if you delayed planting, a disease management strategy that includes diligent scouting is warranted. Whether seed treatment fungicides should be applied to corn and soybean depends on an accurate assessment of economic and disease risk.

Jim Stack
Extension Plant Pathologist
South Central REC, Clay Center

Options for using preemergence herbicides after germination

Due to the prolonged period of precipitation the last several weeks, many producers have not been able to apply preemergence herbicides.

Because of this, producers have voiced concerns about applying preemergence herbicides after the corn has emerged. Several preemer-

gence herbicides are labeled for application after emergence without injury to the crop. The table lists those herbicides along with crop stage and weed height restrictions. **Herbicides not listed can not be applied postemergence due to label restrictions.**

Many producers, especially those in no-till, also have been concerned that weed size may exceed the range of most preemergence herbicides by the time they are applied this year. Many of these products contain atrazine and have burndown properties. One can expect to control 4-inch broadleaf weeds at 1.5 lb and 3-4 inch broadleaf weeds at .75-1 lb of atrazine.

Increase postemergence atrazine activity by:

1. Including an oil additive
2. applying with UAN as the carrier
3. adding Gramoxone Extra or
4. adding Roundup Ultra for additional burndown activity.

Remember that Roundup activity often suffers when mixed with other herbicides or UAN so use the 1 quart rate. Another option would be Field Master which contains both Harness Xtra and Roundup as a premix. If burndown application is made before planting, 2,4-D or 2,4-D and Banvel can be used to increase control of broadleaf winter annuals and early summer annuals. Remember to delay planting five days for corn and seven days for soybeans for 1 pint of 2,4-D and 30 days for 2 pints.

Jeff Rawlinson

Extension Assistant Weed Science

Alex Martin

Extension Weed Specialist

Stevan Knezevic

Extension Weed Specialist

Treatment	Crop stage	Weed stage
Corn		
Aatrex/Atrazine	0-12"	1.5" ^G
Bicep	0-5"	2-leaf ^{G&B}
Bicep Magnum	0-2"	2-leaf ^{G&B}
Bicep Magnum TR	0-2"	2-leaf ^{G&B}
Bladex 80W	before 5th leaf	1.5" ^G
Broadstrike + Dual	0-5" ^{**}	unemerged
Bullet	0-5" ^{**}	2-leaf ^{G&B}
Contour	0-12"	0-3" ^B
Dual	0-5" ^{**}	unemerged
Dual II Magnum	0-5 [*]	unemerged
Dual + Aatrex	0-5"	2-leaf ^{G&B}
Extrazine	before 5th leaf	1.5" ^{G&B}
Frontier ^{**}	0-8"	unemerged
Guardsman ^{**}	0-8"	1.5" ^{G&B}
Harness	0-5" ^{**}	unemerged
Harness Xtra	0-5" ^{**}	2-leaf ^{G&B}
Hornett	0-24"	2-8" ^B
Lariat	0-5"	2-leaf ^{G&B}
Lasso	0-5"	2-leaf ^B
Lasso + Atrazine	0-5"	2-leaf ^{G&B}
Lasso + Banvel	0-3"	2-leaf ^B
Lead Off ^{**}	0-8"	1.5" ^{G&B}
Marksman	0-5"	0-4" ^B
Optill	0-5"	unemerged
Prowl + Atrazine	up to 2-leaf	1" ^{G&B}
Prowl + Bladex 80W	up to 2-leaf	1" ^{G&B}
Pursuit (IMI corn)	corn <8-leaf	weeds <3" ^{G&B}
Python	0-5" ^{**}	unemerged
Ramrod + Atrazine	0-5" ^{**}	2-leaf ^{G&B}
Shotgun	0-12"	0-4" ^B
Surpass	0-5" ^{**}	unemerged
Surpass 100	0-5" ^{**}	2-leaf ^{G&B}
Topnotch	0-5" ^{**}	unemerged
Soybeans		
Broadstrike + Dual	thru unifoliate	unemerged
Detail	up to unifoliate	unemerged
Dual	thru unifoliate [*]	unemerged
Dual II Magnum	0-5" ^{**}	unemerged

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Fertilize warm-season grasses now

Warm-season grasses provide good pasture and hay and use soil nutrients efficiently; however, adding a little nitrogen can stimulate a lot more growth.

Now that we're beginning to get some hot weather, apply nitrogen soon to warm-season grasses. These grasses will begin growing rapidly as soil and air temperature increase. Adding the correct amount of nitrogen as they begin their rapid growth spurt will help these grasses produce extra hay or grazing.

How much should you apply? That depends on your situation. Will you actually use the extra grass to graze more cattle or increase hay yields? It's surprising how often we apply fertilizer and then waste extra growth by poor grazing management. This may seem obvious, but unless you economically harvest

extra growth as hay or with livestock, do not fertilize.

Also consider the ability of your warm-season grass to yield more. Taller warm-season grasses like big and sand bluestem, switchgrass, and indiangrass will respond to nitrogen better than shorter grasses like little bluestem, sideoats grama, or blue grama.

When calculating how much nitrogen to apply, adjust for your moisture conditions. In southeastern Nebraska, 60 to 80 pounds of nitrogen per acre will work well. In northeast and south central Nebraska use 40 to 70 pounds where soil moisture is high. In western Nebraska only subirrigated meadows have enough growth potential to respond to added nitrogen so use about 40 pounds per acre.

If you can benefit from extra growth on your warm-season grasses, fertilize now for high yields. Then graze or cut hay on a timely basis for profitable returns.

Bruce Anderson
Extension Forage Specialist

Field updates

(Continued from page 78)

Ready soybeans used primarily for forage, but also for grain production will be planted for the second year in the area. Longer maturity group soybeans will be used for forage. They will be planted by dryland integrated crop/livestock operators who need to produce their own hay to lower the cost of purchased feedstuffs.

Del Hemsath, Extension educator in Frontier County: Corn planting is in full swing this week as the fields have dried enough to allow field work. If the weather stays dry, most field corn will be planted in a couple of weeks. With the cool weather, there is a danger of cutworms causing problems when corn emerges. The alfalfa is progressing well, timely rains have helped the cool season grasses grow ahead of normal which is a help for the early grazing. Wheat is developing ahead of normal as stem elongation is beginning in most fields.

Some producers here are trying "field peas". I don't whether the market is ready for it as a grain but as a livestock feed for hay or silage, it holds some possibilities.

Noel Mues, Extension educator in Furnas County: Planters began moving full speed May 6. We planted the Furnas and Red Willow irrigated corn variety plots May 8. Corn planting should be completed and farmers will be shifting to soybeans and grain sorghum. Approximately 5 inches of rain was recorded in the Arapahoe area in April and May.

Post germination herbicides *(Continued from page 80)*

First Rate**	up to 1/2 flower	unemerged
Frontier	up to 3rd trifoliolate	unemerged
Lasso	thru unifoliolate*	unemerged
Pursuit	---	weeds <3"
Python	thru unifoliolate*	unemerged
Grain Sorghum		
Aatrex/Atrazine	0-12"	1 1/2" ^G
Bicep	up to 5"*	2-leaf ^{G&B}
Bullet	0-5"*	2-leaf ^{G&B}
Dual	up to 5"*	unemerged
Dual II Magnum	0-5*	unemerged
Frontier**	up to 3rd trifoliolate*	unemerged
Guardsman**	0-8"*	0-1.5"
Lariat	up to 5"*	2-leaf
Lasso	up to 5"*	unemerged
Lasso + Atrazine	up to 5"*	2-leaf
Lead Off**	0-8"*	0-1.5" ^{G&B}
Ramrod + Atrazine	0-5"*	2-leaf ^B
Shotgun	0-12"	0-4" ^B

* Not labeled postemergence; however, experience indicates little chance of crop injury.

** Labeled as EPP, PPI, PRE, and EPOST.

^G Grass

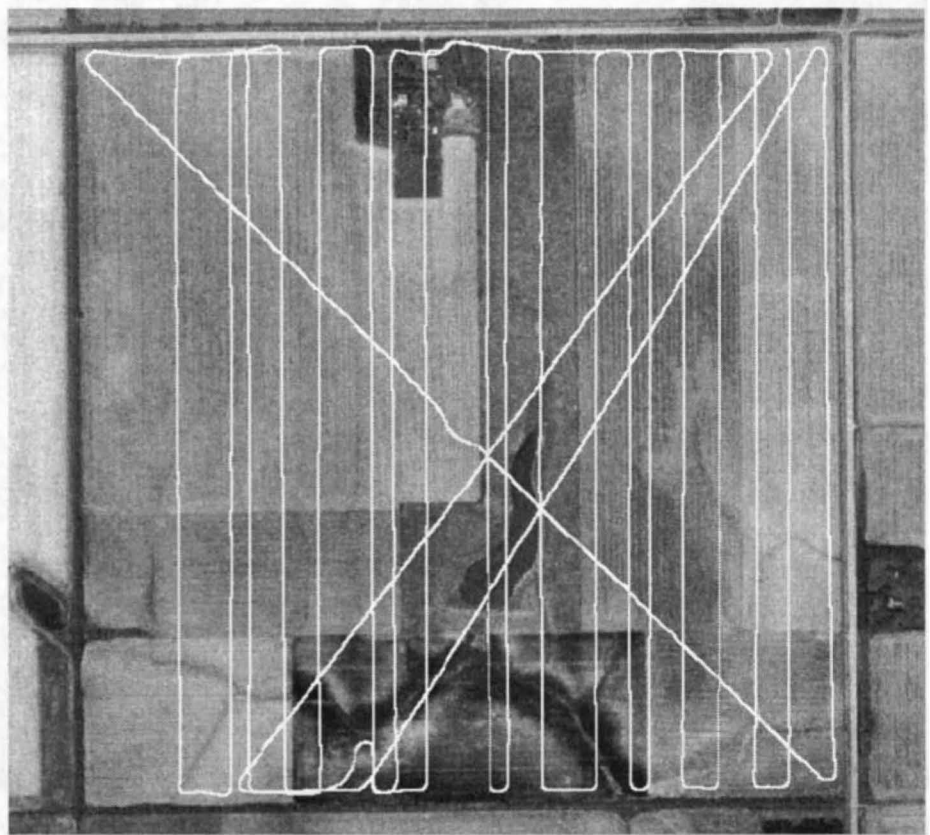
^B Broadleaf

Aerial photography tracks crop progress

There is no substitute for hands-on crop scouting. Important things in your crops, like pests and injury symptoms, can't be measured any other way.

For an additional perspective though, aerial photography can help you stay in touch with what's happening on your entire farm. This year in *Crop Watch* we will provide examples of how aerial photography is being used to check crops. If 1999 is anything like past years, we expect to have stories on how and why crop health varies so much from place to place within fields.

Even if you have not hired an aerial photography service, images for your farm are available. Check your county soil survey first, available through the USDA Natural Resources Conservation Service. The main soil features for your farm are mapped and described there. The Nebraska Natural Resources Commission is another good source (see their Web site: <http://www.nrc.state.ne.us/databank/doqqs/>



Example of a digital orthophoto. The path of the fertilizer spreader (white lines) matches up with features in the aerial image because both are "georeferenced" by a Global Positioning System.

Interested in conducting your own trials?

For more information about on-farm experimentation, contact your local extension office for Extension Circular EC125, *On-farm Trials for Farmers Using the Randomized Complete Block Design*.

Cooperative Extension provides direct help for on-farm research through the Nebraska Soybean and Feed-Grain Profitability Project (<http://ianrwww.unl.edu/ianr/dodge/nsfgpp/images2/overview.htm>).

[doq.html](#)). The Natural Resources Commission provides images in digital format, ready for use in farm mapping software. These images, called digital orthophotos, are now available for most of Nebraska.

Having your aerial photography in digital format becomes important when you are ready to overlay other sources of map data, collected with a Global Positioning System. The image above shows a digital orthophoto from the Natural Resources Commission, with a map of the path of a fertilizer spreader (white lines). The fertilizer was spread this spring as part of a research project funded by the Nebraska Soybean Board. The placement of the fertilizer strips, and the skips between the strips, is based on the rules for a randomized

complete block design. Will we see a response to the fertilizer? Will some parts of the field show a response, but not others? These are things we will be looking for in this year's *Crop Watch* articles on site-specific management.

Bob Caldwell
Cropping Systems Specialist
Southeast and Northeast RECs

Coming soon:

Management options to consider with new specialty and genetically modified crops.

Tilling wet soil causes compaction

With the rainy spring, many producers are behind with tillage and planting. Some are tilling fields to dry them out so they can plant; however, tilling wet soil causes compaction and should not be done. Instead, producers should wait a day or two for the soil to dry or consider no-tilling.

When tilling wet soil, the excessive moisture lubricates the soil particles, allowing them to "slide" under the weight of the tractor and tillage implement.

This destroys soil structure, squeezes the air spaces out of the soil, and reduces the pore spaces available for water storage. This also reduces the infiltration rate of the soil which actually makes wet spots in the field larger with the next rain. The weight of the tractor and implement is supported by the soil below the tillage layer, forming a tillage pan.

By staying off wet soils, the natural soil structure can build, infiltration improves over time and the wet spots can heal themselves. Many no-tillers and ridge-tillers have reported this after several years of not tilling the soils.

In addition, they have seen that as the natural soil structure builds, the fields are firmer and they can actually get into them earlier after a rain. The planter and the tractor pulling it are usually quite a bit lighter than tillage implements and the larger tractors required to pull them, further reducing compaction.

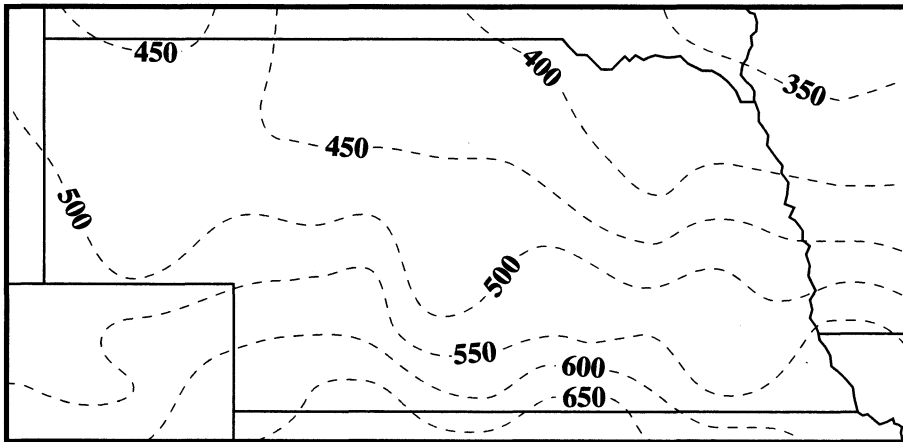
With the improved structure, ruts at harvest also become less of a problem. Typically, ruts are as deep as the tillage because the soil has very little structure in the tillage layer and the tires cut down through to the compacted soil of the tillage pan. When compaction is severe, this pan reduces root penetration

Remember:
Flotation tires don't.
 Large tires may spread the load, but it's total weight that causes compaction.

and water infiltration and can affect yields.

Tilling deeper than the tillage pan can open up the soil but it also destroys soil structure, making the soil more susceptible to compaction with the next field pass. This fracturing can only occur with dry soils normally found with fall tillage and should not be attempted in the spring. Care must be taken with subsequent field operations to avoid recompacting the soil.

Paul J. Jasa
 Extension Engineer



Alfalfa weevil scouting

Alfalfa weevil activity should be visible in the southern half of Nebraska. The northern half should see some beginning feeding but it may not be highly visible yet. Regardless, in the next few days producers will be faced with decisions regarding their alfalfa management. The excellent growing conditions and modest prices should limit treating for first cutting alfalfa. However, the regrowth should be monitored carefully for alfalfa weevil larvae "carrying over" to the next cutting.

Keith J. Jarvi, IPM Extension Assistant
 Northeast REC, Norfolk

Acclaimed NU corn publication to be reprinted after 50 years

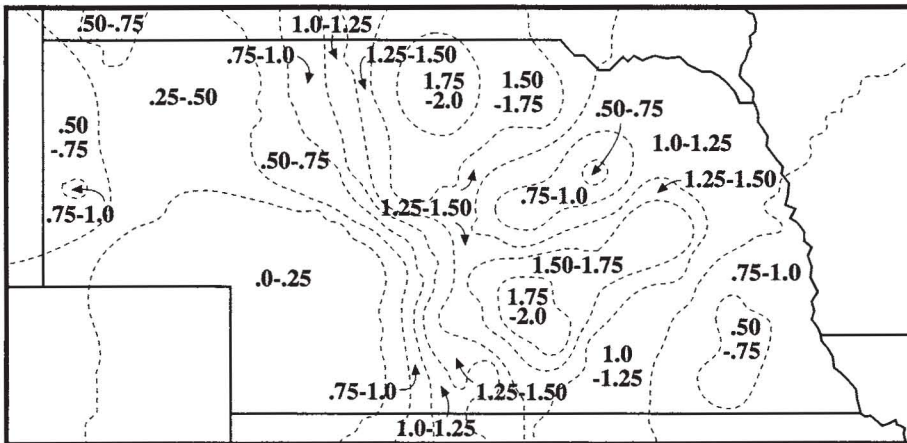
A 50-year-old University of Nebraska research publication long regarded as a valuable reference for plant scientists worldwide is back in print.

The Structure and Reproduction of Corn by Theodore A. Kiesselbach, longtime NU College of Agriculture agronomist and geneticist, was originally published in 1949 as Nebraska Agricultural Experiment Station Research Bulletin 161.

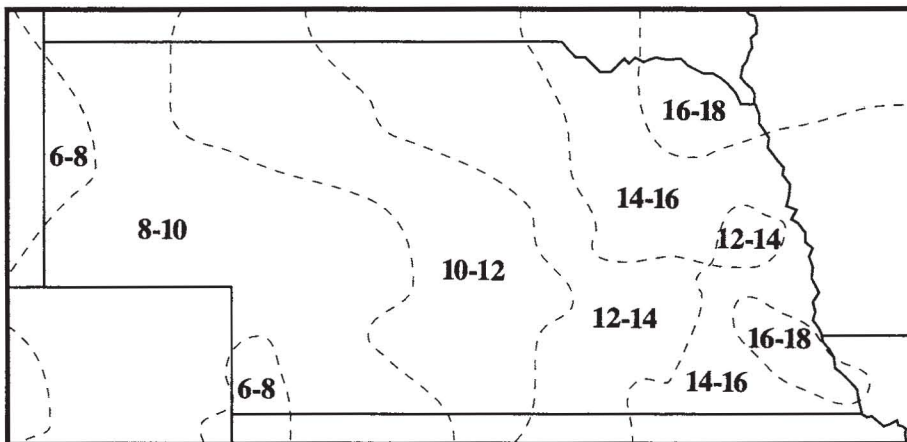
In a testament to its continued relevance, New York's Cold Spring Harbor Laboratory Press recently re-issued the book on the 50th anniversary of its original publication.

Kiesselbach, a Nebraska native, was a world leader in crop research during the first half of the century.

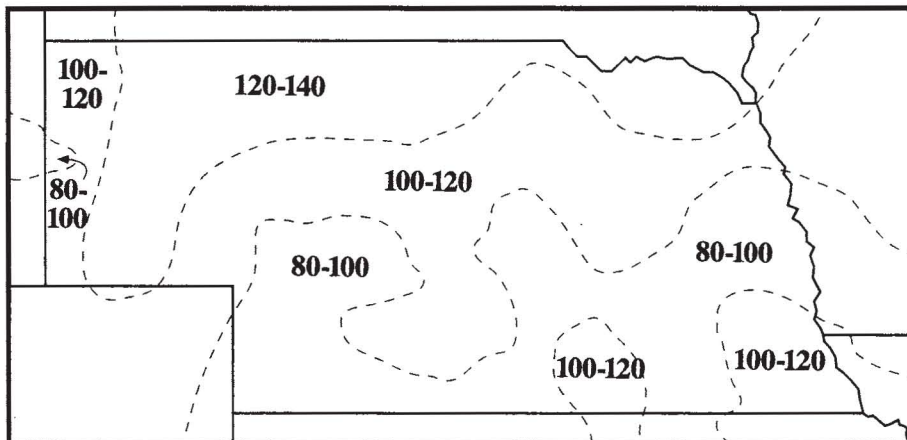
Precipitation totals (in inches)



May 4-10



Sept. 1-May 10

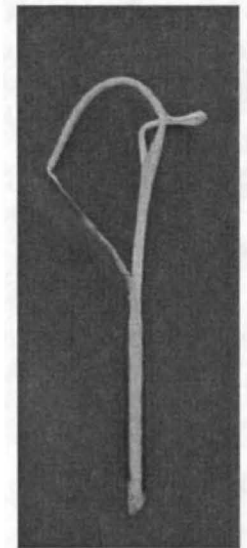


Percent of normal precipitation
Sept. 1-May 10

Herbicide injury

(Continued from page 79)

crop safener. Dimethenamid (Frontier) is sold without a safener and is not encapsulated. Flumetsulam (Python, Broadstrike, Bicep Magnum TR) has also shown to produce more crop response during cold, wet weather. Isoxaflutole (Balance) is a pigment inhibitor and also may be influenced by this weather.



Leaf trapping typical of chloroacetamide injury on corn.

Producers should be aware of these problems and know how to identify them in the field. Typical corn injury from the acetamides includes buggy whipping and trapped leaves (Figure 1). With Balance, bleached or whitened corn leaves may be visible for several days after corn emergence. Crop response to preemergence herbicide injury should be monitored but producers should not panic when a response is noticed. Only in severe cases will it affect crop yield. With the return of warm weather crops quickly outgrow early symptoms. In severe cases, a few pictures will be a good idea to document the response. Questionable cases can be submitted to the UNL Plant and Pest Diagnostic Clinic for injury identification and documentation for a nominal fee of \$5.

Jeff Rawlinson
Extension Weed Science
Alex Martin
Extension Weed Specialist