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Assessing hail damage and stand loss

Recent hail storms in areas around the state have pummeled row crops and wheat, leaving producers to determine whether replanting or planting to another crop is a viable option. Such storms are likely to occur for the next six to ten weeks.

For many producers, their options may be limited by previous herbicide selection, timing (in some areas it’s too late to replant corn), and wet fields. In many areas, with the hail came heavy rains which have made planting impossible until the soil dries further.

Producers will need to consider potential yield loss of the existing crop vs. replanting costs and potential reduced yields. In some cases, the reduced yield of a hail-damaged field may be higher than the potential yield from replanting.

It’s almost too late to replant corn for grain and replanting soybeans now could mean up to a 25% potential yield reduction.

(Continued on page 121)

Alfalfa weevils continue to harm regrowth

Extension Educator Ralph Kulm and I scouted many alfalfa fields, primarily in the Boyd County area, last week. Many of those fields were still completely brown or had large patches of brown where the alfalfa had failed to green up after the first cutting. Some of the fields had been harvested for over 10 days.

Upon inspection, alfalfa weevils — larvae, cocoons, and newly emerged adults — were discovered in the alfalfa crowns. It appears that the plants are failing to green up because of larval feeding on the new growth. Early damage indicates we may have had two feeding “peaks.” While in Nebraska most weevils overwinter as adults, some eggs are laid in the fall. The mild winter may have allowed more eggs than usual to survive. These would have hatched earlier than eggs laid by overwintering adults, extending the time the weevils were present. I’m assuming that larval feeding is almost complete, with many cocoons out there with newly emerging adults. Spraying will not greatly affect weevils in the cocoon stage until they emerge and become active. The pupae stage in the cocoon lasts 7 to 14 days. Adults will feed for a week or so after emerging and also may hurt regrowth. With both larva and adults feeding and regrowth already set back, we recommend spraying immediately to eliminate new adults. Use enough insecticide so residual activity will kill weevils emerging from the cocoons. This will enable the new growth to get a “jump” on any late emerging adults. To get residual activity, rates must be used in the mid to upper end of the labeled rates. This situation has never occurred in my 19 seasons of observing insects so this control strategy is a best guess.

Suggested insecticide rates for this treatment are: Lorsban or Furadan at 1 to 1.5 pts per acre; Penncap-M at 2 to 2.5 pts per acre, methyl parathion at 1 pt per acre, Pounce 6 to 8 oz per acre, Ambush at 10 to 12 oz per acre, Baythroid at 2 oz per acre and Warrior 2.5 oz per acre.

Keith Jarvi, Extension Assistant, Integrated Pest Management, Northeast REC, Norfolk
Jim Peterson, Extension educator in Washington County: Heavy rains the past two weeks have put a dent in farming activities. It is estimated that about 20% of the soybeans have not been planted the first time, particularly in the Missouri River bottoms. There has been a lot of flooding in this area with both corn and soybeans being in water for over a week.

Many producers have alfalfa down, but are not able to bale it because of rainfall. Besides reducing the quality of the alfalfa in the first cutting, it also has adverse effects for later cuttings of alfalfa.

Chuck Burr, Extension educator in Oay and Webster counties: We experienced some extensive hail damage last Saturday night. Golf ball sized hail was reported from the Clay Center area east to the county line. The area covered was about 4 miles wide and 12 miles long. Some fields will need to be replanted, while the average loss was about 30% over the entire area.

Ralph Kulm, Extension educator in Holt and Boyd counties: Alfalfa weevils continue to plague producers in Holt, Boyd and Knox counties (See page 119). We received heavy rain (up to 2 inches) over the weekend with some hail so the nitrogen sidedressers are slowed.

Alan Corr, Extension educator in Kearney and Franklin counties: Crop development is normal to ahead of normal in most areas here, however hail damage has been extensive in some areas. Corn suffered a 15-20% stand loss in some areas. In several instances, soybeans have been replanted due to hail loss. Areas in Franklin County suffered freeze damage to corn, however most of the acres will recover. Some corn, mainly in the Republican River Valley, was a total loss from the freeze.

Terry Hejny, Extension educator in Fillmore County: High winds and hail here affected approximately 95,000 acres of cropland. Approximately 60,000 acres of corn and 16,000 acres of soybeans have an estimated field loss of 10%. Insects seem to be waiting for warmer temperatures.

Ray Weed, Extension educator in Kimball and Banner counties: Last week in Banner County about 20,000 acres of wheat, 1,000 acres of sugar beets, 4,000 acres of corn, 3,000 acres of alfalfa and an unknown number of acres of dry edible beans were damaged by high winds, flooding and hail.

This amounts to 33-50% of the total acreage of each affected crop. Yield damage estimates range from 5 to 100%. Several thousand acres of dryland and irrigated corn suffered frost/freeze damage June 6. Where the corn was severely damaged or killed, fields are being replanted with shorter season corn.

Salvaging hay

Recent rains also have damaged the state’s hay. One inch of rain typically leaches 10% of the nutrients out of hay. High quality hay (Continued on page 123)
Hail damage  (Continued from page 119)

Estimated yield losses for sorghum are slightly less than for soybeans at this time.

Hail damage assessment and management options vary according to plant stage, however the procedures are fairly similar from crop to crop and stage to stage:

1) estimate the growth stage;
2) assess the damage; and
3) consider options if yield potentials are low.

Three NebGuides — for corn, soybeans and sorghum — offer valuable information on assessing hail damage and estimating potential yield losses at various stages. Correct assessment of potential yield is essential when determining continued inputs (herbicides, tillage, irrigation, etc.)

Check with your local Cooperative Extension office or on the web for copies of:

1) Assessing Hail Damage to Corn (G86-803), http://www.ianr.unl.edu/pubs/fieldcrops/g803.htm, which includes illustrations and tables from the National Crop Insurance Association’s Corn Loss Instructions;
2) Soybean Yield Loss Due to Hail Damage (G85-762), http://www.ianr.unl.edu/pubs/fieldcrops/g762.htm, which includes stand loss tables and a worksheet to calculate total actual loss; and
3) Sorghum Yield Loss Due to Hail Damage (G86-812), http://www.ianr.unl.edu/pubs/fieldcrops/g812.htm, which also includes illustrations, tables and a worksheet to calculate total actual loss.

When possible, wait 7-10 days following the storm to determine loss. By that time, regrowth of living plants will have begun and discolored dead tissue will be apparent. Also, some plants initially surviving a storm may soon die because of disease infection entering at the site of plant damage.

The corn NebGuide addresses losses due to stand reduction and defoliation as well as when the plant is most susceptible to damage.

With soybeans, yield loss predictions are based on: stage of growth and degree of plant damage, including leaf defoliation, stand reduction, stem damage and pod damage. Stand reduction refers to the number of plants actually killed by hail; defoliation is measured as a percentage of the leaf area destroyed by the storm; and stem damage covers stem cutoff (stems completely cut off and removed from the plant) and stems bent over or broken.

With sorghum, yield loss predictions are based on two factors: growth stage and plant damage. Plant damage may be either direct (stand reduction, stalk damage and head damage) or defoliation.

Roger Elmore
Extension Crops Specialist
South Central REC, Clay Center

Should hail damaged crops be fertilized?

(This is a reprint of a June 20, 1997 Crop Watch article, which addresses questions currently faced by some producers.)

Recent hail storms have prompted questions about management options, including whether additional fertilizer will help the hail-damaged crop recover sooner, resist disease or enhance yield.

The bottom line is most likely, no.

Some additional nitrogen and sulfur might make the crop look better, but may not improve yield. Other nutrients (P, K, Zn) applied before or at planting are still in the soil and will provide sufficient amounts for the remaining crop. Since soybeans do not usually respond to nitrogen, no additional fertilizer is recommended. For dry beans, if additional nitrogen has not been applied, follow guidelines in NebGuide G92-1102, Fertilizer Management for Dry Edible Beans. Remember, the hail and additional nitrogen will delay maturity.

For corn and sorghum, applying additional nitrogen and sulfur fertilizer should be based on yield potential and how much of the total crop requirements have already been applied. If all of the nitrogen or sulfur has not been applied, additional fertilizer nitrogen or sulfur will be needed to meet the crop’s yield potential.

In many cases the total amount of nitrogen or sulfur has already been applied for an even higher yield potential than exists after the hail storm. Yield potential is often reduced 10-40% depending on hail severity. In these situations, adding fertilizer is not likely to increase yields. If there was sufficient nitrogen for a 180 bushel crop, there will be sufficient nitrogen for a 120 bushel crop.

There is limited research on additional fertilizer response of hail damaged corn or other crops. Data from Kansas in the early 1980s showed no yield increase during three years if sufficient fertilizer had been applied prior to hail. Fertilizer combinations tested were 28-0-0, 12-0-0-26S, elemental sulfur, and 10-34-0.

What about the effect of sulfur (S) or copper (CU) to speed up the plant’s recovery or to protect it from disease? Aren’t sulfur or copper mixes used to suppress some leaf diseases? Yes, these mixes are used with many crops including dry

(Continued on page 123)
When it rains, it certainly pours

Saturated soils can suffocate plant roots

Farmers from central to eastern Nebraska are keeping one eye on the clouds and one eye on their soil moisture profile as they consider the potential for more rain on already saturated soils.

How much rain is too much and how long is too long when fields are flooded?

The severity of damage from flooding and ponding will depend on the depth of the flooding, the length of time an area was flooded and the temperature of the flood water.

Depth of flooding refers not only to the water visible above ground, but also to the level of moisture in the soil profile. In some situations, producers may want to dig ditches to help drain a field more quickly. Before doing so, check with the Natural Resource Conservation Service (NRCS) to ensure that you will not be committing a wetlands violation. Help facilitate field drainage by ensuring that drainage paths are clear of plant residue, brush and other clogging materials. Even after the surface flood water has receded, the soil may remain saturated for some time.

Rains not a statewide problem

These recent downpours have been impressive with weekly rainfalls up to 5 inches, but it’s important to note that much of the state continues to be fairly dry.

While the average precipitation for the state was 262% of normal from June 8 to June 14, the precipitation since the last growing season (Sept 1 - June 14) is only 91% of normal. For that recharge period, average moisture levels ranged from 47% of normal for Alliance to 146% of normal at Halsey and 128% of normal at Kearney.

Residue for erosion control stays put

With the heavy rains and flooding this season, people have been concerned about crop residue washing off fields, getting caught in fences and plugging culverts.

While this is more likely to occur with reduced tillage systems than with no-till systems, it does not lessen the value of residue. Crop residue management is one of the most effective and least costly methods for reducing soil erosion. Without residue, soil would be washing off the fields and into the ditches.

The residue needed to absorb raindrop impact and reduce erosion on sloping soils stays in place on the field. Before residue can move, the runoff has to be deep enough to float the residue, which seldom happens on a hillside. After this point, producers are dealing with a runoff control problem, not an erosion control problem. Runoff must be controlled using structural methods, such as terraces, debris basins, waterways, and underground outlets, or reduced using cultural practices, such as contour farming and cropping practices.

During rainfall simulator demonstrations, water has been applied at rates of 5 and 10 inches per hour on saturated soils and the residue stays in place, even with large amounts of runoff. The residue in these demonstrations has been added to the soil surface, left unanchored, and it still doesn’t move with the runoff. Residue attached to the soil surface, like in no-till systems, is less likely to move even if flooding does occur. Reduced tillage systems or stalk shredding cuts the residue loose, allowing it to move with flood waters.

On highly erodible fields, residue management should be used to reduce soil particle detachment and erosion. The same residue reduces crusting by absorbing the energy from raindrop impact, allowing more water to soak into the soil. Unfortunately, excess runoff and flooding, when left uncontrolled, can move residue off flatter areas where water ponds and floats the residue. This residue “settles” out wherever the water slows down or spreads out. While potentially a problem, many county and state road crews say that residue is much easier and less costly to clean out of the road ditches and culverts than soil.

Paul Jasa
Extension Engineer
Saturated soils (Continued from page 121)

time. While the shoot may appear healthy, the roots may be suffocating.

Once the surface water has receded, the field’s ability to drain internally will be important. Tiled fields will drain faster, providing quicker relief to the crop.

The length of time a field is flooded also affects the rate of plant survival. Peter Thomison, Horticulture and Crop Science Department, Ohio State University, notes that corn usually can survive two to four days of ponding, depending on the temperature. If the air temperature is over 77°F, plants may not survive longer than 24 hours.

Early spring flooding is a lot less harmful than late spring flooding when the flood waters are apt to be warm. The temperature of the flood water is important for two reasons: 1) There is less oxygen available in warm water than in cool water; and 2) microorganisms that use oxygen are more active in warm water and will compete with roots for oxygen. After using the oxygen, microorganisms will begin to break down nitrate nitrogen, converting it to a gas through denitrification.

(During flooding, nitrogen also is apt to be lost through leaching.)

Even if flooding doesn’t kill plants outright, it may have a long-term negative impact on crop performance and the potential for disease development. Thomison notes, “Excess moisture during the early vegetative stages retards corn root development and can kill the deepest roots. As a result, plants may be subject to greater injury during a dry summer because root systems are not sufficiently developed to access available subsoil water.”

Producers may want to carefully weigh the costs and benefits of further inputs into some badly damaged fields. To confirm plant survival, check the color of the growing point. It should be white and cream colored rather than dark and soft. New leaf growth should appear three to five days after water drains from the field.

Replanting may not be a very viable option in many fields where conditions are likely to stay soggy for several weeks, not allowing for timely field work and planting.

Soybean producers with field populations below 75,000 plants per acre may consider replanting if they can get back into the field relatively soon. Lenis Nelson, Extension Crops Specialist, did not recommend changing the maturity class significantly when replanting soybeans. If a producer had previously planted a mid-group II variety, he or she might consider now planting an early group II variety.

Nelson also recommended planting in narrow rows so the canopy closes faster and weeds are better controlled.

Bob Caldwell, Extension Cropping Systems Specialist
Lisa Jasa, Crop Watch Editor

Salvaging hay (Continued from page 120)

has higher losses than low quality because it contains more soluble nutrients. Rain also causes leaf shatter. This may be as low as 5% of the yield, but hay turned after being rained on may lose up to 15% from leaf shatter.

The key to minimizing rain damage is to reduce field exposure time. Encourage rapid drydown. Practices like chemical or mechanical conditioning, wide windrows, and timely raking help reduce field exposure from one-half to two days.

Harvest at high moisture levels. Chopping alfalfa for silage is a proven way to reduce weather risks. A newer similar technique is to wrap high-moisture alfalfa as bale silage. All silage-making methods can get alfalfa off the field in two days or less.

Diagnostic Clinic Update

Wheat diseases diagnosed in the last two weeks were loose smut, cephalosporium stripe, barley yellow dwarf, wheat streak mosaic, crown and root rot, and tan spot.

In corn seedling damping off caused by Pythium and Rhizoctonia was identified. Several soybean samples with Pythium damping off or Pythium blight were identified.

Alfalfa diseases included common leaf spot, Stemphyllum leaf spot, summer black stem, and downy mildew.

Loren J. Giesler
Plant and Pest Diagnostic Specialist, West Central REC, North Platte
Adjust sprayer to avoid plant injury

Getting the most from late postemergence herbicide treatments

Wet weather has interfered with postemergence herbicide applications. Corn over Nebraska ranges from 12" to 36" tall and is beyond the ideal stage for postemergence herbicide applications. Corn is now in the very rapid vegetative growth period, rendering it particularly sensitive to growth regulator herbicides. Potential ear size is determined between V7 and V10 stages. Crop injury during this time can affect ear size. If growth regulators are used they should be applied with drop extensions on the spray boom to minimize spray contact with the corn whorl. The whorl can act like a funnel collecting spray droplets and directing the material to the most sensitive area of the plant. Drop nozzles will reduce but not eliminate the risk of crop injury on taller corn.

After corn reaches 12" and certainly by 18" height, drop extensions on spray booms improve crop safety and weed control. Spraying with drop extensions minimizes herbicide contact with the whorl and increases contact with shorter weeds. Follow label directions for other application restrictions with late applications.

Most labels suggest that postemergence herbicides not be applied during cultivation because efficacy may be reduced. Cultivation during or prior to application creates dust and puts weeds under stress, reducing control. Growers pressed for time may consider combining the two operations to save time in spite of the possibility of reduced weed control. If postemergence herbicides are to be applied during cultivation, mount the spray tips ahead of the cultivator shovels to obtain maximum spray contact with the weeds. The following table lists corn herbicides applicable for late postemergence treatments, crop height restrictions and application information.

Jeff Rawlinson
Extension Weed Science
Alex Martin
Extension Weed Specialist

Late postemergence herbicides and application method.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Action</th>
<th>Timing</th>
<th>Rate</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accent</td>
<td>Broadleaf + Grass</td>
<td>Corn 4-36&quot;, broadleaves &lt;4&quot;, grass &lt;3&quot;</td>
<td>0.67 oz</td>
<td>&gt;20&quot; use post directed</td>
</tr>
<tr>
<td>Beacon</td>
<td>Broadleaf + Shattercane</td>
<td>Corn 4&quot;-tassel, broadleaves &lt;4&quot;, grass &lt;3&quot;</td>
<td>0.38-0.76 oz</td>
<td>&gt;20&quot; use post directed</td>
</tr>
<tr>
<td>Clarity</td>
<td>Broadleaf</td>
<td>Corn 8-24&quot;</td>
<td>0.5-1.0 pt</td>
<td>Post directed</td>
</tr>
<tr>
<td>Exceed</td>
<td>Broadleaf + Shattercane</td>
<td>Corn 4-48&quot;, broadleaves 2-12&quot;</td>
<td>1.0 oz</td>
<td>&gt;20&quot; use post directed</td>
</tr>
<tr>
<td>Hornet</td>
<td>Broadleaf + Shattercane</td>
<td>Corn spike to 24&quot;, broadleaves &lt;8&quot;</td>
<td>1.6-4.0 oz</td>
<td>&gt;18&quot; use post directed</td>
</tr>
<tr>
<td>Liberty</td>
<td>Broadleaf + Grass</td>
<td>Corn up to 24&quot;, Weeds 1-4&quot;</td>
<td>20-28 oz</td>
<td>&gt;18&quot; use post directed</td>
</tr>
<tr>
<td>Permit</td>
<td>Broadleaf + Grass</td>
<td>Corn spike to layby, broadleaves 2-6&quot;</td>
<td>0.66-1.33 oz</td>
<td>&gt;18&quot; use post directed</td>
</tr>
<tr>
<td>Poast</td>
<td>Grass</td>
<td>Corn until pollen shed, Grass &lt;8&quot;</td>
<td>1.0 pt</td>
<td>&gt;18&quot; use post directed</td>
</tr>
<tr>
<td>Pursuit</td>
<td>Broadleaf + Grass</td>
<td>Up to 45 days before harvest, Weeds &lt;4&quot;</td>
<td>4 oz</td>
<td>&gt;18&quot; use post directed</td>
</tr>
<tr>
<td>Resource</td>
<td>Broadleaf + Grass</td>
<td>Corn 2-10 leaf, broadleaves &lt;4&quot;</td>
<td>4-6 oz</td>
<td>&gt;20&quot; use post directed*</td>
</tr>
<tr>
<td>Roundup</td>
<td>Broadleaf + Grass</td>
<td>Corn up to 24&quot;</td>
<td>24-42 oz</td>
<td>&gt;18 use post directed</td>
</tr>
<tr>
<td>Ultra</td>
<td>Broadleaf + Grass</td>
<td>Corn up to 24&quot;</td>
<td>24-42 oz</td>
<td>&gt;18 use post directed</td>
</tr>
<tr>
<td>Spirit</td>
<td>Broadleaf + Grass</td>
<td>Corn 4-24&quot;</td>
<td>1 oz</td>
<td>&gt;20&quot; use post directed</td>
</tr>
<tr>
<td>2,4-D Amine</td>
<td>Broadleaf</td>
<td>Corn to tassel</td>
<td>1-2 pt</td>
<td>&gt;8&quot; use post directed</td>
</tr>
<tr>
<td>2,4-D LV Ester</td>
<td>Broadleaf</td>
<td>Corn to tassel</td>
<td>0.5-1 pt</td>
<td>&gt;8&quot; use post directed</td>
</tr>
</tbody>
</table>

*Use COC at rate of 1 qt/a when using drop nozzles
Crop management, diagnostics training

Training in soil fertility, soil and water management, pest and disease management, and crop diagnostics and production will be featured during this year's Crop Management and Diagnostic Clinics. Information on genetically altered crops also will be featured during the training sessions in July and August at the University of Nebraska Agricultural Research and Development Center (ARDC) near Mead.

Instruction is aimed at agricultural industry representatives — crop consultants, farm managers, seed and chemical company representatives, farm service center staff and other professionals — as well as agricultural producers.

Participants may attend the Soil Fertility and Soil and Water Management Clinic on either July 13 or July 17; and/or the Pest Management and Crop Production Clinic on July 14 or July 16. Clinics are 8:30 a.m. to 5 p.m.

Six CCA-CEUs are expected for the Soil and Water Management Clinic with two-and-one-half credits in soil, two-and-one-half credits in oil and water management, and one credit in pest management.

Six CCA-CEUs also are expected to be awarded for the Pest Management and Crop Production clinic with three-and-one-half credits in pest management and two-and-one-half credits in crop production.

A one-day clinic is slated for 7:30 a.m. to 5 p.m. July 15. Topics include European corn borer management, crop diseases, diagnosing field problems, fertilizer use in Nebraska crops, understanding genetically engineered crops and herbicide mode of action. Organizers will request at least six CCA-CEUs.

A late-season clinic Aug. 25 includes intensive crop disease diagnosis and management, calibrating yield monitors, diagnosing soil problems using GPS/GIS technology and European corn borer management. Organizers will request at least 5.5 CCA-CEUs for this 8 a.m. to 5 p.m. clinic.

Participants should bring rain gear and meet at the ARDC Research and Education Building on Nebraska Highway 63, about 6.25 miles east of U.S. Highway 77.

Each clinic is limited to 72 participants so that more individualized training can be provided. Presenters include NU Institute of Agricultural and Natural Resources scientists and instructors and Extension specialists and educators. Clinics are sponsored by the Institute's Cooperative Extension, Agricultural Research Division and ARDC.

Registration deadline is one week before each session. Cost for attending both the Soil Fertility and Pest Management clinics is $225 and includes the two-day training, reference notebook, lunches and refreshments. Fee for each one day clinic is $135, including training, reference notebook, lunch and refreshments.

Checks should be made payable to University of Nebraska and mailed to: 1998 NU Crop Management and Diagnostic Clinic, 1071 County Road G, Room A, Ithaca, Neb. 68033. Indicate clinic preference and dates. Online registration and detailed information is available at iannwww.unl.edu/ianr/ardc/CMDCreg.htm.

Clinic coordinators are Keith Glewen, Extension educator in Saunders County, and Barb Ogg, Extension educator in Lancaster County. For more information, phone (402)624-8000, fax (402)624-8010, or e-mail cnty5061@unlvm.unl.edu.

Following is a more detailed description of the class offerings for each of the clinics.

Soil Fertility and Soil and Water Management Clinic, July 13 and 17

Anhydrous Ammonia Applicator Calibration — Fine-tuning nitrogen rates means accounting for nitrogen available from residual nitrate, organic matter mineralization, irrigation water, legumes and manures. This demonstration will discuss factors that can influence the accuracy of anhydrous application rate and uniformity, and illustrate procedures to calibrate anhydrous application equipment for maximum profit and yield.

Fertilizer use in Nebraska crops — Features nutrient deficiency symptoms in corn plants. Fertilizer demonstrations will highlight incorporated and non-incorporated manure treatments and how residual nitrate tests can be used to understand mineralization rates. Demonstration areas will show the value of using Presidedress Nitrogen Test (PSNT) and chlorophyll meters to determine in-season nitrogen needs. Participants will see the effects of applying nitrogen at various growth stages of soybeans.

Sprayer Technology — Increase skill in identifying herbicide application problems in the field. A sprayer with setup mistakes will be displayed with diagnosticians available to make recommendations for an improved setup. The session will conclude with a demonstration of the best setup for a sprayer, including a hands-on nozzle tip selection discussion with special emphasis on drift and drift reduction.

Soil Quality Assessment — Attendees will gain familiarity with the concept of soil quality and be able to identify its basic elements and outline the most efficient

(Continued on page 126)
approach to assessing soil quality. They will conduct simple descriptive and analytical assessments of soil quality indicators in the field and interpret results.

**Crop and Soil Water Relationships** — Topics cover crop water needs of Nebraska crops at different growth stages and environmental conditions; how plants change as they respond to drought stress; the effect of drought stress on crop development and yield.

**Pest Management and Crop Production, July 14 or July 16**

**European Corn Borer Management** — Scouting, economic threshold calculation and treatment timing for first and second generation corn borer. Role of hybrid selection, including Bt corn in European corn borer management.

**Weed and Herbicide Management** — Crop plants will be planted and sprayed with herbicides to show herbicide mode of action and injury symptoms. Herbicide resistant weeds and their mechanisms will be discussed and herbicide-resistant crops and weeds, sprayed with herbicides, will be shown.

**Understanding Genetically Engineered Crops** — Focuses on how transgenic crops are different from other varieties; what a gene is; how transgenic hybrids are developed. Assays will show how to determine if a crop is a transgenic variety. Demonstration plots will show insect and herbicide resistant crops, like Bt corn and Round-up Ready soybeans.

**Crop Diseases** — Field diagnostics demonstrations may include the following crops and diseases: field corn, gray leaf spot and other foliar diseases, stalk rot; popcorn, Goss's bacterial blight and wilt; white corn, gray leaf spot; sorghum, sooty stripe and foliari diseases; soybean, sclerotinia stem rot and foliar diseases; pinto beans, common blight and rust; wheat, leaf rust and foliar diseases, wheat streak mosaic; and alfalfa, foliar diseases. Environmental monitoring for soybean and corn diseases also will be addressed.

**Crop Diagnostics** — Some stressors may include simulated hail injury at several growth stages, aqueous nitrogen burn injury, soil compaction and seeding, cultivator blight, Round-up injury, accidental misapplication of an IMI herbicide; and effect of shade on soybean plants.

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**Is a La Nina dry spell lurking behind the storms?**

Three consecutive weeks of heavy rainfall have left many areas of eastern Nebraska vulnerable to flash flooding. Many fields near rivers and their tributaries are saturated and need an extended period of drying to minimize crop losses. East-central Nebraska has been particularly hard hit during the last week with more than 4 inches of rainfall in an area 60 miles north and south of a line from Lincoln to Omaha.

By midweek the Missouri, Platte, and Big Blue rivers were at or near flood stages. Most crop damage has been confined to bottomlands adjacent to these rivers. If the current weather pattern continues, serious problems similar to those in 1993 will rapidly materialize. Top soils are saturated and can't hold additional rainfall.

Even as eastern Nebraska struggles with flooding, southwestern Nebraska continues to battle dry conditions. Rainfall totals approaching one inch during the last week were beneficial, but more is needed to counteract the last two months of below normal precipitation. This area is on the northern fringe of a larger area including western Kansas, Oklahoma and Texas that is experiencing drought-like conditions.

It now appears that El Nino is rapidly being replaced by a developing La Nina. With a La Nina, the opposite of El Nino, the sea surface temperatures become colder than normal across the eastern Pacific Ocean. This leads to a decrease in ocean evaporation and moisture available for precipitation across North America. Although it is unclear whether a La Nina will continue to build or how strong it might be, the rapid development of colder than normal sea surface temperatures is an ominous sign.

The central United States typically can expect to receive below normal precipitation and above normal temperatures during the growing season after the peak of a La Nina event. If La Nina continues to develop and strengthen like last year’s El Nino, dry conditions could develop during the latter half of the 1998 growing season, and from fall through spring.

In a La Nina, fall temperatures average above normal, but winter and spring temperatures generally average well below normal. Wheat would be more vulnerable to winterkill under La Nina conditions because there is an increased risk of below normal temperatures coupled with below normal snowfall.

Forecasters should have a good idea by late July to early August whether a La Nina event is developing or if the current ocean cooling is just a brief hiccup while the Pacific tries to find an equilibrium temperature after the strong 1997-98 El Nino.

Al Dutcher, State Climatologist
Agricultural Meteorology