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When do: Hail + wind = replant?

Recent thunderstorms and associated high winds and hail have caused crop damage in south central Nebraska. Don’t get too anxious about estimating stands since at least two to four days of 70°F or warmer temperatures are necessary to stimulate new leaf growth in damaged plants. Assess plant survival at that time. Defoliation of either corn or grain sorghum up to the seventh leaf stage will not affect grain yield. The growing points of these crops are below the surface until then and can sustain considerable defoliation without an effect on yield, assuming growing conditions following the storm damage are conducive to growth. Likewise, defoliation now will not affect grain yield of indeterminate soybean; however, determinate soybean may incur yield losses.

Remaining plant stands should be estimated too. Both corn and soybeans can incur considerable stand losses and still remain a better option than replanting because of the known 20% to 30% yield penalty for replanting these crops. Grain sorghum planted in the second week of June still has fairly good yield potential.

Injured crops require care with postemergence herbicides

Producers run a greater than normal crop injury risk when applying postemergence herbicides to crops damaged by wind, hail, and blowing sand and soil. The bruised and damaged tissue permits increased herbicide uptake. Waiting several days for the crop to recover from storm damage reduces the risk of herbicide injury. However, don’t wait too long while weeds continue growing.

Herbicides posing the greatest risk to corn and sorghum include 2,4-D, Banvel, Bladex, and atrazine. Atrazine can be used postemergence on corn that is not severely damaged, but should not be used on sorghum. Basagran and Laddok should be fairly safe on corn and sorghum. Buctril and Buctril-Atrazine do not pose an unusual risk on storm damaged crops. Storm damaged soybeans should not be treated with Basagran, Blazer, Cobra, Classic, Galaxy, Pinnacle or Pursuit until they recover. Assure, Fusilade, Fusion, and Poast are relatively safe.

Assuming an average fall frost date. Use early to mid-season soybeans that are normally grown in your area when planting or replanting soybeans in June. The photoperiod response of these varieties will allow them to mature before the normal frost date. Early-season varieties imported from more northern soybean producing areas do not yield well.

The following University of Nebraska Extension publications are excellent resources:

- NebGuide G85-762, Soybean Yield Loss Due to Hail Damage;
- NebGuide G86-812, Sorghum Yield Loss Due to Hail Damage;
- Nebguide G86-803, Assessing Hail Damage to Corn;
- NebGuide G83-673, Maturity Dates and Freeze Risks Based on Growing Degree Days; and
- EC 89-119, Hail Damage Assessment and Replant Decisions.

Roger Elmore
Extension Crops Specialist

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Treating corn rootworms at cultivation

Corn rootworm egg hatch was detected June 2 near Mead at the University Agricultural Research and Development Center and near Clay Center at the South Central Research and Extension Center.

Begin scouting corn fields for corn rootworm larvae and damage, regardless of whether a soil insecticide was applied at planting. This will allow you to determine whether an insecticide is needed, if one was not used at planting, and provide a check of the effectiveness of planting time insecticide applications. In case of poor control, this will allow you to apply a rescue treatment before further damage occurs. Apply cultivation treatments of insecticides soon, if needed.

To check for larvae, dig a 7-inch cube of soil centered on the corn plant. Sample a minimum of two plants at each of five sites in a field. Carefully search through the soil and plant roots for larvae. There are three larval instars (stages). The first stage is difficult to find without magnification. Often the first detected rootworms are second instars. Corn rootworm larvae are slender, cream-colored, with brown heads and a dark plate on the top side of the tail, giving them a double headed appearance.

Chinch bugs not expected to cause serious problems

A recent article in the Lincoln Star newspaper erroneously quoted me saying that "chinch bugs are expected to be bad this year". I did not tell the reporter that and I wish to set the record straight.

Chinch bug numbers are very low this year and are not expected to be a serious problem in general. A hot, dry season could set the stage for higher numbers and more problems in future years, but would likely not influence the potential for losses from chinch bugs this season.

As for greenbugs, there could be some serious problems later this season. Greenbugs do not overwinter here and must fly in from the southern states. They increase their numbers through asexual reproduction before sorghum damage occurs. Sorghum growers should begin scouting seedlings for greenbugs which initially will be in the whorl and then will move to the underside of lower leaves.

Steve Danielson
Extension Entomologist

Mature larvae are 1/2 inch long. Search through the soil and roots over a sheet of black plastic so the small white worms are more visible. There is no established treatment guideline for corn rootworm larvae, but some consultants advise treating if there are two or three rootworms per plant. The usefulness of this guideline is dependent on your ability to find rootworm larvae in the soil.

Cultivation time applications of insecticides are an effective means of reducing injury to corn plants from rootworm feeding damage. Most planting-time soil insecticides labelled for corn rootworms are also labelled for use at cultivation.

(Continued on page 69)
Western rain spotty; wheat dry, deteriorating

Panhandle rainfall has been spotty for the past several weeks. With the recent high temperatures, fields that have not benefitted from one of the more recent thunderstorms are deteriorating rapidly. The flag leaf is beginning to fire and, in several fields, beards are turning white. There is little doubt that this is reducing yield potential with each day of high temperatures and no additional moisture. The problem is especially severe where the wheat stands are the best.

The high temperatures have caused very rapid development of the wheat kernels. Wheat that was flowering over the memorial day weekend is already in the milk stage. During this time many plants failed to develop the middle kernel on each row of the wheat head. If hot dry conditions continue we would not expect wheat kernels to fully develop, thus reducing kernel size, test weight and yield even further. Cool wet conditions would be very beneficial to the wheat crop throughout the Panhandle over the next three to four weeks.

D.D. Baltsenperger, Extension Crop Breeding Specialist
D.J. Lyon, Extension Dryland Crops Specialist, both at Scottsbluff

Cereal leaf beetle found in Missouri, Kansas

The cereal leaf beetle (CLB) has been observed feeding in wheat in northern Missouri and east central Kansas. This pest has not been found yet in Nebraska — this year or ever as far as we can determine. Both the larvae and adults can cause damage to small grains and are most serious when feeding on oats or barley. Adults devour portions of the newest leaves at the top of the plant while the larvae consume tissues between leaf veins of the newest leaves, giving the plants a silvery appearance. Adult CLB are 3/16 of an inch long and have a metallic bluish-black head and wing covers with red legs and prothorax (shield behind the head). Larvae are pale yellow with a black head. The larvae are usually covered with fecal excrement and will then have a dark appearance.

Growers in southeastern Nebraska should scout their small grains for the presence of these insects and their feeding damage. Economic damage to wheat is not expected, however, oats and barley may be seriously damaged in some cases. If you believe that you have located this pest in your area, please send some specimens to us via your University of Nebraska Cooperative Extension Office. The insects should be preserved in a small bottle or vial of alcohol.

Steve Danielson
Extension Entomologist

Scout for root and crown rot

Root and crown rot is present in scattered wheat fields throughout Nebraska. At this development stage, plants with root and crown rot lack vigor, are chlorotic, often stunted and have fewer tillers. The stand will appear thin and yellow. To diagnose the disease, remove suspect plants, wash the roots free of soil, and examine them for dark brown lesions and nonfunctional roots. Split the crowns at the base of stems with a sharp knife to detect crown rot. Infected crowns will be tan to brown rather than white. The disease seems to be more prevalent in continuous wheat. No controls are available at this late stage. In planning for next year, rotate wheat with soybeans and avoid growing continuous wheat for more than two years.

As of the last week of May only a trace of leaf rust was present on flag leaves of TAM 107 at Clay Center. If the present dry weather trend continues, leaf rust probably will not become severe this season. Most wheat is beyond the stage for fungicide treatment; but even if rust does develop during June, it is late enough that yields shouldn’t be affected.

Other diseases showing up are barley yellow dwarf, wheat streak mosaic, and Cephalosporium stripe. The incidence and severity of all three are light.

John E. Watkins
Extension Plant Pathologist
1994 precipitation compared to normal average precipitation through June 5

**Much of west still dry**

**Will precip or drought be the trend?**

While recent rains may have provided central and eastern Nebraska some immediate relief, drought concerns in western Nebraska and the potential for a late summer drought for much of the rest of the state prompted a second meeting of the Water Availability sub-committee of the Climate Assessment and Response Committee (CARC).

Representatives from the UNL Department of Agricultural Meteorology, Natural Resources Commission, Department of Agriculture, National Weather Service, and State Hydrology addressed the lack of adequate spring rains, streamflow rates (present and projected), and long range weather forecasts. A brief summary of the information presented at the meeting follows.

Statewide average precipitation was 0.17 inches this March, making it the driest since records began in 1875. The statewide average precipitation for April was 95% of normal. All districts were above normal, except for the Panhandle (49%), East Central (75%), and North Central (99%) districts.

Preliminary estimates from the High Plains Climate Centers' Automated Weather Data Network indicates May statewide average precipitation at 38% of normal. District averages are: Panhandle (65%), North Central (42%), Northeast (27%), Central (29%), East Central (30%), Southwest (24%), South Central (24%), and Southeast (42%).

Heavy rains occurred over eastern Nebraska this week, supplementing the ample subsoil moisture remaining from last summer's rains. Those areas which received rains over 1 inch should be in good shape for the next few weeks, as young plants will have sufficient moisture to promote the necessary root growth to tap subsoil moisture. Areas which failed to receive adequate precipitation may begin to see heat stress on young plants increase with the return of hot and windy weather.

If the current pattern of below normal precipitation continues for the next 30 to 45 days, conditions will rapidly deteriorate as subsoil moisture reserves are depleted. Therefore, timely rains will be required to alleviate potential heat and drought stress problems which could occur around the critical pollination periods for corn and especially soybeans.

A very dry snowpack season across Wyoming will result in below average streamflows over western Nebraska. Wyoming (Continued on page 71)
Tackle weeds in soybeans postemergence

To save time during the busy planting season, some growers planted soybeans without using a herbicide. The recent weather has been ideal for weed growth. Weeds in soybeans planted in mid to late May are reaching the stage when they should be controlled. Control weeds between rows with a cultivator. Weeds within the row or in drilled soybeans are best controlled with herbicides. Success with postemergence herbicides hinges on timing the application. Timing depends more on the weed growth stage than on the crop stage; small weeds are more readily controlled than large ones. Apply herbicides when most susceptible weeds are less than 4 inches tall. Nitrogen solutions (28-0-0) increase the activity of many herbicides against velvetleaf, but weed size limitations remain. Taller weeds are defoliated, but they often recover.

The spectrum of weeds controlled varies with herbicide. Basagran is effective against cocklebur, smartweed, sunflower, and velvetleaf. Blazer, Cobra and Reflex control black nightshade, pigweed, and smartweed. A combination of Basagran and Blazer is often used for broader spectrum control. Galaxy is a premix combination of Basagran and Blazer. Classic is effective against cocklebur, smartweed, sunflower, and provides pigweed suppression. Pinnacle’s weed spectrum is similar to Classic except it is more effective against pigweed and has less soil persistence than Classic. Classic and Pinnacle also controls velvetleaf when a nitrogen solution is used as an additive.

Scepter controls cocklebur, pigweed, and sunflower. Pursuit is effective against most annual broadleaf weeds and many grasses, especially shattercane. The weed spectrum of Cobra and Reflex is similar to Blazer, with one difference being greater effectiveness against velvetleaf. Classic, Pursuit, Reflex and Scepter have crop rotation restrictions — consult the label.

Assure, Fusilade, Fusion, Poast Plus, and Select have excellent crop safety; soybean injury is not a concern with these herbicides. Treat annual grasses before they tiller. Tillering often occurs by the time grasses are 4 inches tall. Grasses treated after tillering usually recover and regrow from the crown. Combining broadleaf herbicides with these materials often results in reduced grass control, particularly yellow foxtail.

NOTE: Volunteer corn and shattercane are very susceptible to these herbicides. Good control can be achieved in plants up to 18 inches tall.

Spray additives are required with these herbicides. Additives include crop oil concentrate, nonionic surfactants, fertilizer (Continued on page 74)
Reduce nitrogen use, costs

Pre-sidedress nitrogen test identifies need

The pre-sidedress nitrate test (PSNT) has been developed and used in the eastern United States (Connecticut, Pennsylvania, Vermont, New York, and Iowa) to measure early spring nitrogen mineralization, especially on manured soils. The greatest value of the PSNT is to show excess levels of nitrate from over application of fertilizer or manure thus preventing over application of nitrogen at sidedress time.

The test requires a soil sample from the 0 to 12 inch depth when corn is 6 to 12 inches tall. Guidelines from Iowa and other eastern states indicate that 25 ppm nitrate-N in this layer is sufficient and no additional fertilizer is required. If the soil nitrate-N concentration is less than 25 ppm, however, fertilizing will optimize yields.

Can we use the pre-sidedress nitrate test in Nebraska? Do we have enough data to make accurate recommendation? Yes and no. During the last few years more than 30 nitrogen research projects conducted across Nebraska by Dan Walters and Don Sander compared nitrogen rates for optimum yield based on preplant and pre-sidedress nitrate. Their data indicate that the critical nitrate-N level for Nebraska may be 21 ppm. They also found that soil samples taken deeper than 12 inches decreased variability and increased the precision of the proper nitrogen rate for optimum yield. However taking deep samples in June is not practical. Nebraska data indicates that if PSNT samples to 1 or 2 feet have 21 ppm, additional nitrogen fertilizer may not be needed on fine textured soils. But what about sandy soils and situations when the test is less than 21 ppm?

When using the PSNT we assume there will be little leaching or denitrification of nitrate after the soil samples are taken and that plant uptake will be the main nitrogen removal from the soil. This may be a good assumption under dryland conditions and will be valid most years. In irrigated nitrogen solution bands can result in high sample variability. Iowa State University recommends taking at least 24 cores per sample. Their procedure involves taking eight soil samples to a depth of 1 foot at equal spacings across the corn row. For 30 inch rows samples would be taken about every 4 inches. Sample positions are selected at random lengthwise to the row and the final sample is a composite of three sets of eight samples.

The key points to remember about the pre-sidedress test are:

1) The greatest value of the test is not in making fertilizer nitrogen recommendations but in determining where excess nitrate exists and no additional nitrogen is needed;

2) Nebraska data indicate that our critical level may be closer to 21 ppm as opposed to 25 ppm nitrate-N, indicating Iowa State University guidelines may be high for Nebraska conditions;

3) Use caution when interpreting the results in furrow irrigated conditions and on sandy soils because of potential nitrogen loss.

Even though the pre-sidedress nitrate test is not perfect, some information is better than none and any decrease in nitrogen application from a full rate based on no soil nitrate information improves nitrogen management.

Gary W. Hergert, West Central Research and Extension, North Platte
Grazing restrictions for pasture herbicides

Hard to control pasture weeds such as musk thistle, leafy spurge, and spotted knapweed can be managed with herbicides once the grazing season has begun. Many of these treatments require that the animals be withheld from treated areas after treatment. The following table provides the time restrictions between application and grazing for various herbicide applications.

<table>
<thead>
<tr>
<th>Herbicides</th>
<th>Lactating Dairy Animals</th>
<th>Beef and Non-Lactating Dairy Animals</th>
<th>Before Grazing Hay Harvest</th>
<th>Before Hay Harvest</th>
<th>Removal Before Slaughter</th>
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<tbody>
<tr>
<td></td>
<td>Products</td>
<td>lb/ai</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stinger 3E (Clopyralid)</td>
<td>0.66 to 1.31 pt</td>
<td>0.25 to 0.5</td>
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<td>Banvel 4S (Dicamba)</td>
<td>Up to 1 pt</td>
<td>0.5</td>
<td>7 days</td>
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<td></td>
<td>Up to 2 pt</td>
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<td></td>
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<td>Roundup/Rascal (Glyphosphate)</td>
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<td>Spot or Wiper</td>
<td>Any labeled rate</td>
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<td>Ally (Metsulfuron)</td>
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<td>Gramoxone Extra</td>
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<td>Tordon 22K (Picloram)</td>
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<td>Spike 20P (Tebuthiuron)</td>
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<td>Crossbow 3S Triclopyr +2,4-D</td>
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<td>Curtail</td>
<td>2.0 to 4.0 pt</td>
<td>—</td>
<td>14 days</td>
<td>30 days</td>
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</table>

1 Do not treat more than one-tenth of any given acre at one time with spot or wiper applications. Remove livestock before application.  
2 Restrictions based on the degree of new seedling establishment before grazing. Suggested at least 6 inches of grass or legume seedling growth which is approximately one month. Late fall seeding may require 3 to 5 months before the suggested 6-inch height is reached.  
3 Remove livestock to untreated grass pasture for seven days before transferring livestock to broadleaf crop or pasture areas. Removal before slaughter statement only applies to animals grazing treated forage for 2 weeks immediately after application. Use only west of Mississippi River.  
4 Be sure to check individual product labels for restrictions and use rates due to the large number of formulations available.  
5 One year if more than 1.5 gal/A rate used.  
6 If no more than 20 lbs per acre used.  
7 Withdrawal not needed if two weeks or more time elapsed since application.  
8 Move livestock to untreated grass pasture for seven days before transferring to broadleaf crop or pasture areas.
Managing weeds in sorghum postemergence

Crop growth stage restrictions are an important consideration when choosing a postemergence herbicide for sorghum. Gauge treatments on crop growth stage in the majority of the field. Early applications may allow lower rates, better coverage, and more effective weed control.

Laddok at 2.4 pints per acre plus either oil concentrate or UAN effectively controls 2-4 inch broadleaf weeds and can be applied until sorghum is 12 inches tall. A 3.5 pint rate will control taller weeds and help suppress yellow nutsedge and field bindweed.

Apply Atrazine 90 DF to completely emerged sorghum at a rate of 2.2 to 3.3 pounds per acre with water as the carrier. It will control grass and broadleaf weeds less than 1.5 inches tall. A rate of 1.3 pounds per acre plus oil concentrate also can be used to control broadleaf weeds 4 inches tall after the sorghum has reached the three-leaf stage. Do not use atrazine if the sorghum is more than 12 inches tall.

Apply Buctril plus atrazine alone or with Banvel or 2,4-D. The maximum sorghum growth stage for all Buctril plus atrazine treatments is 12 inches. Buctril plus atrazine at the rate of 1.5 to 2 pints per acre can be applied after sorghum emergence. When using the 3-pint rate, delay applications until the sorghum reaches the fourth-leaf stage. With 2,4-D or Banvel tank mixes, use drop nozzles if the crop is taller than 8 inches. Do not apply in the boot stage.

Banvel applications at 0.5 pints per acre alone or with 0.5 to 1.25 pounds active ingredient of atrazine should also be delayed until the sorghum is in the third-leaf stage. Banvel can be applied to sorghum up to 15 inches tall. Use drop nozzles if the sorghum is over 8 inches tall.

2,4-D amine at 1 pint per acre or 2,4-D ester at 0.5 to 1.25 pints per acre can be used on 6- to 15-inch sorghum. Use the 1.25 pints per acre rate of 2,4-D ester for perennial broadleaf weeds. Use drop nozzles if the sorghum is over 8 inches.

Alex Martin, Extension Weed Specialist
John McNamara, Extension Assistant, Weed Science

Growing degree day accumulations
as of May 22

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<td>1120</td>
<td>930</td>
<td>1356</td>
<td>1136</td>
<td>1026</td>
</tr>
</tbody>
</table>

*Recent research on winter wheat development uses the 0 (32°F) base. **Base 40 has traditionally been used to track winter wheat development. ***Base 48 is used to track alfalfa weevil development. ****Base 50 is used to track corn, sorghum and soybeans.

Postemergence in soybeans
(Continued from page 71)

solutions, and ammonium sulfate. Each herbicide has specific additive requirements — consult the label for details. In some cases, lesser herbicide rates are required with certain additives. Nitrogen solution (28-0-0) improves the activity of most broadleaf herbicides against velvetleaf.

Alex Martin, Extension Weed Specialist
John McNamara, Extension Assistant, Weed Science

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