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Hail, winds strike western Nebraska; field crop losses from 5% to 100%

More than half a million acres of crop land in western Nebraska was damaged last weekend when a series of three storms swept through the area. Some of the state's best wheat fields, many of which were from one to two weeks to maturity, suffered losses of 5% to 100% from hail, high winds, and possible tornadoes. Corn, dry edible beans, sunflowers, proso millet, alfalfa and some sugar beets also sustained injury, with some fields destroyed.

The Kimball County Wheat Variety Tour scheduled for this week was cancelled when the field was destroyed.

Wheat, dry beans, and irrigated corn likely suffered the greatest damage, with other crops set back but probably able to recover, said Drew Lyon, dryland cropping specialist at the Panhandle Research and Extension Center. Most damage occurred Saturday night when a storm cut through the area, hitting

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Cheyenne and Scottsbluff counties hardest. A second storm Saturday night and a third Sunday night expanded the injury.

Karen DeBoer, Extension educator in Chevenne County, reported that hail, torrential rain, wind and possible tornadoes demolished wheat, corn, sunflower and proso millet fields there. The hardest hit areas were north, west and south of Sidney. Personal property damage was extensive. Some lowland flooding damaged crops and pastures. Ray Weed, Extension educator in Kimball and Banner counties reported that in Banner County a storm cut a swath 12 miles wide through farmland from the northwest to the southeast part of the county, and then moved through a large area of Kimball County.

Some wheat heads on downed plants may have stayed intact and be harvestable, depending on the plant stage, although significant losses are expected.

Replant options

In some cases, producers are quickly looking at their replant options, which will be severely limited depending on previous herbicide use and any delays to replanting. Short-season dry edible beans and proso millet may still be planted, however timing is crucial. It's likely too late for many other viable crops for the Panhandle.

Before considering replanting, carefully check the label for previously applied herbicides to deter-

(Continued on page 143)

Greensnap causes corn losses in south central fields

Several areas of south central Nebraska experienced high winds of up to 70 mph Sunday morning causing greensnap (mid-season stalk breakage) and considerable loss in corn. Some fields in the Clay Center area suffered up to 80% stalk breakage. Fortunately, corn growth stages vary tremendously this year because of differences in planting dates and crop development. The impact on smaller, less developed corn was less but in some cases it too was severely damaged. In addition, corn in some areas of west central Nebraska was reported to have sustained hail damage.

A lot of corn is also root lodged, i.e. the soil was soft or wet and the root system gave way during the high winds, resulting in plants

(Continued on page 144)



UNIVERSITY OF NEBRASKA-LINCOLN, COOPERATING WITH THE COUNTIES AND THE U.S. DEPARTMENT OF AGRICULTURE

HWR

Field updates

Paul Hay, Extension educator in Gage County: Wheat is moving toward maturity and warm weatner this week could mean cutting sometime next week. A few farmers just finishing planting this week. A rush to get furrowing done as corn is growing well despite the cloudy wet days.

Our 1999 crop water use weather data features three emergence dates for corn, soybeans, and milo in response to the wet planting season.

Many farmers took advantage of the cool weather to run air on the stored grain this past week.

Ray Weed, Extension educator in Kimball and Banner counties:

Our out-state wheat variety trial at the Jack Cook farm in northern Kimball County was a complete loss. I've also received reports of severe hail in southern Banner County east of Albin, Wyoming and on the Kirk table in the southeast part of the county.

Projected start of harvest (depending on soils and elevation) varies from July 7 to July 20.

Volunteer rye in the winter wheat continues to pose a major quality problem. The rye population is heavy enough in some fields that dockage at the elevator due to foreign matter is a certainty.

Jim Schild, Extension ecucator in Scottsbluff County: Producers and ag officials were assessing the extent of storm damage this week following the weekend hail and high winds. It's estimated that 25 % or 30,000 to 35,000 acares of the irrigated crop acres in the county were affected by hail. The extent of damage is still being determine but a rough estimate would be 5% severe, 10% moderate to heavy, 10% light to moderate.

A storm Sunday afternoon tracked three to five miles wide from the western part of the county to the eastern. Beans were hit hardest. Growers will need to determine stand that is left. Replanting is still an option but the chance of frost damage is 50/50. Some corn fields lost stand as plants were broken off at the soil line. Sugarbeets lost a lot of leaves and some fields the crowns were damaged.

Steve Pritchard, Extension educator in Platte County: More heavy rainfall this past week (3 to 6 inches) in some areas, has delayed most field work in the Platte Valley. Some lowland flooding reported along with standing water in fields. Level fields still have standing water in in areas. A few producers just threw in the towel in trying to plant or replant in wet or flooded fields. Noel Mues, Extension Educator in Furnas County: We've experienced warmer temperatures and high humidity, and row crops are responding with rapid growth. Producers are starting their first irrigation water. European corn borer infestation was low and most producers didn't have to treat. Balance and other herbicide injury has been a popular topic. Some areas recorded about 6 inches of rain during the first two weeks of June. Wheat harvest probably won't begin until after the July 4 holiday.



In print or on the Web

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UNL Department of Agricultural Meteorology 236 L.W. Chase Hall Lincoln, NE 68583-0728 mine residual action and any restrictions on replanting. Seed also may be in short supply, especially for short-season dry edible beans. Also consider whether you'll even be able to get into the field in time to get a crop. In some cases, fields are still too wet and tilling them could contribute to compaction or soil crusting.

Storm damage (Continued from page 141)

Before deciding whether to replant dry edible beans, carefully examine those plants struck by hail, suggests UNL Extension Engineer John Smith at the Panhandle Research and Extension Center at Scottsbluff. He recommends that dry bean producers in the hailed area examine their fields quickly to determine the number of viable plants per acre. Generally 60,000-70,000 plants per acre is suggested for most classes of beans, but if there are just 30,000-40,000 viable plants per acre it's probably still better not to replant.

"Look carefully at the bean stem itself. If the stem has taken a direct hit and is bruised or broken, the plant will probably die; however, if just a few leaves are gone, the plant may not contribute to bean yield," he said.

Some producers also may consider planting proso millet or Sudan grass in hailed-out wheat fields. Nebraska research indicates it may be better to plant it in the fallowed fields and let the hailed fields recover moisture loss, said Ray Weed, Extension educator in Kimball and Banner counties. This plan also provides a better option for control of volunteer wheat. If the downed wheat was past the soft dough stage, it may've had viable seed and lead to volunteer wheat, which can also lead to an increased incidence of wheat streak mosaic next year.

A substantial number of sunflower acres also were lost, but in some cases the contracting company may replace the seed for replanting. "Usually sunflowers would have been planted three weeks ago, but there's still a chance they'll do fine," Weed said.

Implications for harvest and next year

For wheat where the heads are intact but the plant's down, a pick-up reel or stripper header may help save some of the crop, Smith said. A pick-up reel, also know as a Hume reel in some areas, has fingers that go under the downed wheat and tend to lift up the crop as it engages the cutter bar. Smith said stripper headers have been reported to be very effective with downed wheat. With the stripper header, the reel turns backward from a conventional reel, catching the wheat in a groove and stipping the grain from the head as the reel rotates. This

system takes little straw and can increase combine capacity by 20%-40%.

Smith estimates that about 70% of the wheat in the Panhandle is combined by custom harvesters, who may not have either header. In some cases, Smith adds, if they knew in advance that there was a large area of downed wheat, they might make arrangements for a different header.

Overriding all these concerns for the state's wheat producers is a question of timing. Custom harvestsers are already waiting in Kansas for conditions to dry. If there are continued delays, wheat in both areas may be ready to harvest within a short period, possibly creating a shortage of harvestsers. UNL Extension Staff

Wind blown corn and rootworms

The wind and rain that occurred last weekend in parts of south central Nebraska has led to stalk breakage and lodging of corn. Some lodging may be associated with rootworm feeding, but not all lodged corn is necessarily caused by rootworm feeding. The only way to be sure is to examine the roots for feeding injury.

I looked at a sample of lodged corn plants that had 1-2 nodes of roots chewed back to the stem. In this case the only portion of the field that lodged was where a soil insecticide had not been applied at planting due to a planter malfunction. In past years, greensnap has been more common on plants with strong root systems; plants with some root injury are able to give to the wind and remain standing.

In many parts of south central Nebraska it is probably getting too late for rescue treatments against larval rootworms. At Clay Center we saw last (third) instar rootworm on June 21. By July 1, 50% or more of larval damage will probably have occurred. It is possible that some areas may see first emergence of rootworm beetles by July 4.

> Bob Wright Extension Entomologist South Central REC, Clay Center

Diagnostic Clinic update

Corn diseases diagnosed in the last two weeks were Stewart's wilt, pythium crown and root rot, fusarium crown and root rot, and root rot, rhizoctonia root rot, eyespot, phylosticta leaf blight, and holcus leaf spot. Soybean diseases included pythium, rhizoctonia, and fusarium root rots causing damping off.

Alfalfa diseases included fusarium damping off and phytophthora root rot.

Sorghum damping off caused by fusarium and Rhizoctonia was also diagnosed.

> Loren J. Giesler Plant and Pest Diagnostic Clinic Coordinator

Greensnap (Continued from page 141)

leaning severely. Had the soil been dry, the plants might have been broken off. The leaning plants' hormones will take over quickly and the stalks will bend back up to a vertical position. (The non-technical term for this is 'goose necking.'). This phenomenon will slow harvest some and may result in greater harvest losses. There also may be some physiological yield loss associated with this. A field near Clay Center has a two-row standing, ten-row leaning pattern. Apparently the two rows received soil insecticide, but the ten rows did not due to a mechanical problem. The 10 rows had rootworm feeding damage.

Greensnap

Researchers in south central Nebraska have been studying the causes and yield implications of greensnap since the devastating storms and high winds that struck there in July 1993 and July 1994. Observations following those events showed that hybrids differed dramatically in their susceptibility to breakage, yields were directly proportional to stalk breakage, and that factors which accelerated earlyseason plant growth increased the crop's susceptibility to breakage. Factors that accelerated early-season plant growth that also increased stalk breakage were: increased nitrogen rate, preplant nitrogen application in contrast to sidedressed nitrogen, and conventional tillage in contrast to notillage. Increased stalk breakage was also closely related to increased soil organic matter and plant orientation in the field, especially in low to medium breakage environments. Plants that are oriented parallel to the wind, will break far more frequently than plants that are oriented at other angles. Several University projects are currently examining this aspect from different perspectives.

Wally Wilhelm, USDA-ARS, Lincoln, and others examining the implications of greensnap, observed that plant phenological development strongly affected stalk breakage in 1993, but not 1994. They suggested four factors that relate to the devastating impact of mid-season stalk breakage:

 stalk breakage below the ear node severely reduces yield potential;

2) broken plant tassels are ineffective and may reduces pollen supply and possibly kernel set;

3) leaf area is reduced resulting in reduced light interception, increased weed competition, and reduced yield potential; and,

4) broken plants are more susceptible to pathogen and insect invasions that can reduce yield potential and grain quality and increase harvest losses.

In a 1997 masters thesis from the UNL Department of Agronomy, graduate student Meijuan Li, reported that hybrids susceptible to breakage had greater intercellular space than resistant hybrids in one of two years. Our preliminary data also suggest that hybrids with either greater rates of lignification or greater lignin content in mature plants may be more prone to stalk breakage.

Roger W. Elmore, Extension Crops Specialist, South Central REC

Curious about the weather?

If you've become a weather junky or have ever pictured yourself as a storm chaser, you'll love the recently updated Web site hosted by the High Plains Climate Center. The site at *http:\\hpccsun.unl.edu* offers lots of data and maps specific to Nebraska, customized information services (see story, page 145), content to help you understand the science behind the weather, and links to numerous other sites.

While much of the site is filled with down to earth information and maps pertinent to Nebraska and the High Plains, it also has plenty of photos for weather enthusiasts who thrill at chasing a tornado or for factfinders who love weather details. For example:

• Did you know that according to the Storm Prediction Center data from 1950 to 1994, Nebraska ranked fifth in the nation for number of tornadoes, twenty-third for number of fatalities (51), twenty-fourth for number of injuries (1046) and eleventh for CPI-adjusted dollar losses (\$632,463,872). Texas ranks first in all categories with almost \$2 billion in damages.

• Did you know that the 30year normal average temperatures for July are 76-80 F for central to southeastern Nebraska and 72-76 for the rest of the state.

• Did you know that on this New Year's Eve in Lincoln, the sun will set at 5:09 p.m. The moon will be in a waning crescent with 29% of its visible disk illuminated. Of course if you're thinking of traveling for New Year's, you can check any site worldwide if you know its longitude and latitude. Source: U.S. Naval Observatory Astronomical Applications Department.

• And if you're still looking for an unusual get-away, several private companies offer vacation packages for those who want to chase tornadoes with the experts. Costs range from \$2,000 to \$2,400 for a 10-14 day tour.

• And for those interested in the science of hail storms, the Web site has a special section with photos and information.

Test soil moisture to determine first irrigation

The irrigation season will soon be in full swing. The exact start of irrigation depends on several factors, including crop growth stage and the root zone soil moisture status.

The crop growth stage can be easily observed in the field. Remember that it is critical to ensure that there is adequate moisture available during the crop's reproductive stages. For corn, the tasseling, silking, and pollination stages are especially important.

While many areas of the state had significant June moisture, we shouldn't be lulled into thinking adequate moisture will be available as the corn enters the reproductive stage. The corn has been growing rapidly and water use rates will increase significantly as more normal summer conditions return.

The only way to know exactly what the current soil moisture is in an individual field is to do field moisture checks. The most common method for checking field soil moisture is with a soil probe and by making a "feel and visual" estimate of the soil moisture status. With experience you can achieve a relatively close estimate of soil moisture status with the feel method. Estimating Soil Moisture by Appearance and Feel, NebGuide G84-690, provides guidelines for making soil moisture estimates and is available from your local Cooperative Extension Office or on the University of Nebraska Cooperative Extension Publications Web page.

The estimated crop water use information provided by the High Plains Climate Center is also a useful tool to assist in determining when irrigation is needed. A "checkbook" soil water balance can be maintained using the estimated crop water use values as withdrawals and irrigation and rainfall amounts as deposits. The irrigation system efficiency and effectiveness of any rainfall must be estimated to determine the net irrigation and rainfall. *Irrigation Scheduling Using Crop Water Use* In the midst of your irrigation season, if you have a few questions about assessing soil moisture or cutting your irrigation costs, make a mental note to try one of the study-at-home courses offered by UNL Cooperative Extension. One course deals with soils while two others deal with irrigation and water resources. Contact your local Cooperative Extension office for more information.

Data, NebGuide G85-753, provides basic information for "checkbook" scheduling.

Most of the factors considered when deciding whether to irrigate are estimates — crop water use, net irrigation, net rainfall, and soil moisture status. This means that irrigation decisions are not necessarily yes/no decisions, but involve a lot of judgment and experience with a given field, soil, and crop.

Following are some key points to remember:

• Soil moisture monitoring is a key to making good decisions.

• Crop water use estimates are "estimates."

• Soil moisture status in the active crop root zone should be maintained above 50% of the available soil water holding capacity. (Do not deplete more than 50% of the available water holding capacity.)

• Don't apply more water than the soil can hold.

• Manage the irrigation system to apply water as uniformly as possible across the field.

DeLynn Hay Extension Specialist for Water Resources and Irrigation

Nebraska ET and GDD data available from the Web

Managing your irrigation water resources requires a current assessment of soil moisture, precipitation, expected precipitation, and crop water use. The High Plains Climate Center, a regional service cofunded by the National Weather Service, is located at the University of Nebraska at Lincoln and provides a variety of climate information products. It uses automated weather stations to obtain near-real time climate data, particularly valuable when planning irrigation. The site's archive also includes data from the National Weather Service.

Many of these information products can be customized to fit your

needs and automatically sent to you. (The High Plains Climate Center provides our Crop Watch web subscribers regular updates of precipitation, growing degree day, and crop water use data for 18 sites around the state.) Climate Center products include hourly or daily updates of automated weather data and national weather service information which can be faxed, mailed or Emailed to you automatically. Data includes one- and seven-day readings on soil temperature, low and high air temperatures, relative humidity, solar radiation, precipitation, wind speed

(Continued on page 146)

ET and GDD data (Continued from page 145)

and potential evapotranspiration. Also available are maps showing 30year normals for precipitation, average temperature, maximum and minimum temperature, and heating and cooling degree days. For special inquiries you can even contract for a staff member or scientist to analyze your data (\$50-\$100 an hour).

The Web site has instructions for subscribing to the interactive system, which allows you to enter the crops of your choice, to characterize the crop according to the hybrid (variety), to specify emergence dates, and then to obtain the crop water use estimates for these specific conditions related to your situation. This system also can update your report and Email it to you at 7:30 each morning.

The subscription form can be found at *http://hpccsun.unl.edu* The subscription costs \$100 which goes on account. Interactive sessions are debited to the account. The average user spends about \$15 a month during the growing season.



Reports are available from 50 weather stations in Nebraska and 150 in the region including Colorado, Iowa, Minnesota, North and South Dakota, Montana and Wyoming. Research has indicated that generally a weather station should be within 60 miles of the farm for reliable evapotranspiration data. To learn more about these and the many other products available, visit the site at *http://hpccsun.unl.edu* or call the High Plains Climate Center at 402/472-5206.

ET data for irrigation

Evapotranspiration or ET is the amount of water that is transferred to the atmosphere from a vegetated surface.

Weather conditions (sunshine, wind, humidity, and temperature) set the pace for evapotranspiration. When there is adequate water in the soil, water from the root system is evaporated from the leaf, which cools the leaf surface. When water is NOT adequate, the leaves warm and the higher temperatures can cause heat stress.

Balance update

Much of the corn which appeared to be injured by the herbicide Balance has snapped out of it. The fields are looking much better, except for those with variable height corn. Highly eroded fields are not recovering well.

Further field assessment of Balance response or injury shows that corn hybrids varied significantly in their response to the herbicide. On one farm, three different hybrids were planted the same day on the same field with the same kind of herbicide application. One of the hybrids suffered severe damage while the other two were fine.

In many cases there may be a thinning of the corn stands as well as a differential in height, due to the herbicide application. One of the questions farmers are concerned with now is whether the stalks can be grazed or the corn can be harvested for silage. Fields treated with Balance can be harvested for grain and stalks can beharvested for silage or used for grazing.

Producers whose fields were damaged, but who have not talked to a representative from Rhone-Poulenc, may consider calling the company's special hotline at 888-477-2476. A team of company representatives are currently in Nebraska and meeting with producers.

Ken Wurdeman, public information officer for the Nebraska corn board, said this week that 45 producers have reported damage to about 21,000 acres. Of those, 5,489 acres were suspected to be severely damaged.

Producers with herbicide-related corn damage may call the Corn Board's toll-free telephone number at (800) 632-6761 to include information in a statewide database.

Over the past two decades, weeds and grasses were becoming resistant to atrazine alone. Balance, touted as an atrazine replacement, was introduced this year after several years of field trials, including some in Nebraska. Balance contains a pigment inhibitor that leaves plants unable to photosynthesize or convert carbon dioxide from the air into energy to grow.

Gail Wicks, Extension Weeds Specialist at theWest Central REC at North Platte

July 2, 1999

Long-term plan and multiple methods needed for weed control in pastures

There are several ways to control weeds in pasture. For the most part, pasture weed control should be viewed as a long-term process, guided by other aspects of your management. We tend to think of weed management in terms of selective control on the spot. This is typical in row crops; however, in pasture, many techniques can be used to "selectively" remove weeds. These should never be a substitute for good, sound management.

Weed infestations in pasture are usually a direct result of mismanagement. Pastures are unique ecosystems that do quite well when managed properly. Grazing livestock is very much a part of this management; however, when overgrazing and abuse occur, favorable perennial forages are replaced by a host of invaders and/or exotic plants. When pastures are grazed, vegetative material is removed and openings are left in the grass canopy. When overgrazed, favorable forages are weakened and slow to regrow, providing good opportunity for weeds to move in and establish.

Chemical Control

There are several pros and cons to chemical control of weeds in pastures. For most broadleaf weeds, chemicals work quite well. Depending on the specific weed, either Tordon, Banvel, 2,4-D or some combination will control most infestations. Producers should remember that more than one application may be needed for complete control.

Timing of weed control is also very important. If annual weeds are present, including ragweed, sunflower, prostrate vervain, catchweed bedstraw, beebalm and annual sage, control should occur early in the season before the plants produce seed. Perennials such as canada thistle, hoary vervain, ironweed, goldenrod, and curly dock generally respond better to fall applications when the plant energy reserves are translocated down to the roots.

On the downside, some pasture herbicides do not differentiate between Canada thistle and a desirable legume. Broadcast applications tend to injure most broadleaf plants in the field while spot treatments may provide acceptable control while at the same time reduce the amount of injury to desirable species.

Grazing

Perhaps no other management factor has as great an impact on the species composition of a pasture as grazing. When well managed, livestock can be very beneficial to the overall vigor and health of a pasture. Of course, when timed incorrectly or at too heavy of stocking rate, livestock can also be very hard on pastures, leading to weed infestations.

Livestock, like all animals, have certain preferences for some plants over others. For instance, little bluestem may not be grazed readily but eastern gamagrass is like icecream to cattle. It does not take long to figure out which one will disappear first. Good management will focus on redistributing livestock to minimize overuse of desirable forages.

Warm vs. Cool-Season Pastures

Warm and cool-season grass forages are mixed in pastures throughout Nebraska. While this provides for ideal grazing sched-

ules, this can make grassy weed management quite difficult. If coolseason grasses are a problem in a warm season pasture, remove coolseason grasses early in the spring before the warm season grasses break dormancy. Roundup does well here, providing you are sure the warm-season grasses are dormant. Remember, switch grass breaks dormancy around April 15. Another technique is to heavily graze the cool-season forage in the spring and late summer, allowing the warm- season grasses to remain dominant. Fire has been used for centuries in early to mid spring. This is perhaps one of the most efficient management tools the producer can use. Burning pastures heavily infested with cool season grasses and woody plants in the spring will do a lot for the overall health of warm-season forages. Heavy grazing can also work well to remove warm-season grasses from a cool-season pasture provided the grazing occurs in mid summer.

Remember that range management should be ecologically based. Livestock, herbicides, a working knowledge of plant ecology and common sense can be used to maintain pastures in a desirable stage. This balance is delicate and will not be maintained with improper management. The producer has a narrow window each year to implement changes that will have impacts for several years to follow. As stated earlier, weeds are a signal in a pasture of mismanagement. Controlling them is important, but understand what they are telling you first.

Jeff Rawlinson, Extension Technologist Weed Science Alex Martin Extension Weed Specialist

Crop update

Corn conditions rated 1% very poor, 2% poor, 12% fair, 57% good, 28% excellent. Dryland corn rated 86% in good or excellent conditions and irrigated corn rated 84%. Numerous reports of herbicide damage were received. Wire worms and root worms were noted in corn.

Soybeans planted moved to 99%. Soybeans emergence was at 94%, behind 100% last year and just ahead of 96% average. Soybean conditions were rated 1% very poor, 2% poor, 15% fair, 62%good, and 20% excellent. Bean leaf beetles were still in seedling soybeans.

Sorghum planted was at 99%. Sorghum emergence was at 94%, compared to 99% last year, and 95% average. Sorghum condition rated 1% poor, 19% fair, 65% good, 15% excellent.

Winter wheat conditions were 5% poor, 20% fair, 55% good, and 20% excellent. Wheat turning color rated 88%, ahead of last year's 80%, and 71% average. Ripened wheat was at 18% above 15% last year and 13% average. Wheat harvest had not yet begun and was behind last year and the average.

Nebraska Agricultural Statistics Reporting Service

Insects in alfalfa? Try a new resource

A new regional publication, *Pest Management of Alfalfa Insects in the Upper Midwest* has been published by Iowa State University. The publication is 48 pages and contains numerous color photos of insects in alfalfa. It provides a very complete overview of insect pest management in alfalfa, with specific information on the biology, identification and management of all the major insects you are likely to find in alfalfa. Copies may be ordered from Iowa State University Extension Distribution Center at 515-294-5427.

Ask for publication IPM-58. Cost is \$7.50 per copy.

Bob Wright Extension Entomologist South Central REC

Precipitaiton











April 1-June 28 (Percent of normal)