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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2002-21
Sept. 6, 2002

Storing grain to maintain quality, value

Clean bins, equipment; check wiring

With harvest quickly approaching, it's time to prepare your grain bins and equipment to limit insect problems and potential loss of crop value in storage. Remember that grain harvested in Nebraska is essentially insect-free, but can become infested by storage insects, which originate in or around the bin or in contaminated equipment such as combines and grain augers.

First be sure to store sound, clean, dry grain. It may be advisable to screen out broken grains, trash and fines to increase the quality of the final storage product. Eliminating trash also will enhance fumigation, should this procedure be

required later.

Since stored grain insects can invade new grain from infested harvesting and handling equipment (combines, augers, etc.), it's essential that this equipment be well cleaned. Carefully remove all traces of old grain from combines, truck beds, grain carts, augers, and any other equipment used for harvesting, transporting, and handling grain. Even small amounts of moldy or

insect-infested grain left in equipment can contaminate a bin of new grain. Then clean grain bins thoroughly, disposing of spilled, cracked and broken grain and grain flour, along with the insects feeding on such material. A simple broom and a vacuum cleaner are essential pieces of equipment in cleaning grain bins.

Around the bins, be sure to remove old equipment, junk and

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Combine, harvest adjustments can help salvage droughty yields

The effects of this summer's drought stress conditions will continue into harvest, drying, and storage. Paying special attention to each of these activities will help reduce further losses in a year when each ear, head, and pod will be important economically.

Yields for dryland crops will be low, making it difficult to keep enough material flowing into the combine to effectively thresh the crop without excessive damage to kernels and beans. Combine adjustment is the key to preventing excessive damage. One possibility is to increase field operating speed. This will only be successful if corresponding adjustments are made to all header controls. Gathering chain, snapping roll, and reel speeds will

have to be increased with higher field speeds. Be sure to monitor both the amount and the evenness of material flow through the header to the feeder house. Uneven flows will indicate improper adjustments and can result in increased grain damage or combine plugging. Remember to adjust stripper plate and snapping roll openings on your corn head to compensate for potentially smaller ears and stalks.

Another solution to the decrease in material flowing through the combine is to adjust the cylinder (or rotor) speed and concave clearance. Check your owner's manual to set the machine for expected conditions and make refinements as field

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Assessing 2002; planning for 2003

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Updates

Management tips Sept. 6-20

◆ Producers should properly schedule their last irrigation to make sure they achieve their yield potential this year. While some may be tempted to shut off early to save a little money, they should not cut short the water needed to fill the grain that they have strived so hard to produce. Corn at full dent (1/2 starch line) still needs about 2.5 inches of water to finish out to maturity and to protect test weight. Soybeans at full pod fill still need about 3.5 inches of water to mature and develop full-sized beans. Even when the first leaves begin to yellow, soybeans still need about 2 inches of water to completely fill up the pods.

More information can be found in the Aug. 31, 2002 *Crop Watch* at <http://cropwatch.unl.edu/archives/2001/crop01-21.htm>. A worksheet for determining the need for another irrigation can be found at <http://cropwatch.unl.edu/archives/2001/lastirrigation-tbl-wrkst.htm> or in a NebGuide, G602, *Predicting the Last Irrigation for Corn, Grain Sorghum and Soybeans*, <http://www.ianr.unl.edu/pubs/irrigation/g602.htm>. Extra or unneeded irrigations at this time of year add to production costs and decreases the soil's ability to store off season precipitation. Preirrigation for next year is unnecessary except perhaps for established alfalfa fields that are extremely dry, deep into the soil profile.

Caution: That last irrigation also may insure that nitrate is leached with late fall or next spring rains.

◆ Take a corn stalk nitrate test to confirm whether there was too little, enough, or too much nitrogen available this year. Collect an eight-inch stalk section from 6-14 inches above the ground from 15 stalks in a field. Sample from shortly before to

three weeks after black layer. For more information see *The Corn Stalk Nitrate Test*, NebFact NF01-491, available from local Cooperative Extension offices or on the Web at <http://www.ianr.unl.edu/pubs/fieldcrops/nf491.htm>

Field updates

Paul Hay, Extension educator in Gage County: I rode the combine with a farmer harvesting 35 bushels per acre dryland corn with a 50 lb test weight. The poorest areas were 10-15 bushels per acre and still 25% moisture and the cobs could be tied in a bow; the crop was leaning and ears dropping. I would advise combine adjustment, be aggressive in harvesting, be careful in dryer management, and feed the lower test weight grain if possible. Two University of Nebraska corn feeding trials with 47 lb and 49 lb test weight showed equal performance to 56 lb test weight corn.

Terry Gompert, Extension education in Knox County: The

drought seems to have broken here — Center had received 6.18 inches of precipitation through Aug. 29. Pastures are growing and we may get another cutting of alfalfa. Many dryland corn fields have zero yield.

Tom Dorn, Extension Educator in Lancaster County: Corn harvest for grain has started. I've heard reports of shorter season dryland corn coming out of the combine at 14.5-18% moisture. As expected, yields are much below average. Some fields have been assessed by crop insurance at less than five bushels per acre. One recently combined field had 22 bushels per acre. Stand counts in dryland fields suggest yields will vary widely from 10 bushels to 40-60 bushels per acre. Soil type, amount of tillage, weed control, compaction, salinity, grasshopper damage, all contribute to the variability.

Early season soybeans are beginning to turn color. Recent rain

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With all pesticide recommendations, carefully read and understand label instructions. Any reference to commercial products is made with the understanding that no discrimination is intended and no endorsement by Nebraska Cooperative Extension is implied.

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Clean bins *(Continued from page 191)*

clutter to reduce attractiveness to insects and rodents. Make sure that the bin is insect- and rodent-proofed by plugging holes, sealing bins, caulking and making general repairs. Grain spilled near the bin attracts insects and draws mice and rats. Clean up and dispose of any spilled grain several weeks before harvest. If rats have tunneled under foundations, use baits or traps to reduce or eliminate them.

Tall weeds can harbor insects and provide cover for rodents. Mow around the bin site to remove tall grass and weeds to reduce the potential for insect and rodent infestation. If necessary, re-grade the site so that water readily drains away from bin foundations. One cannot always wait for the soil to dry before loading or unloading grain from bin sites. Make certain that travel lanes have enough rock or gravel to bear the weight of heavy trucks and grain carts.

Landscaping should be maintained well away from grain storage facilities. Leave a four-foot wide strip of bare gravel around the perimeter of storage bins. If you buy old crop grain for storage with newly harvested grain, be sure to watch for insects in the incoming grain. If infested grain is purchased for livestock feed, store it away from the new crop and feed it as soon as possible. Grain stocks may be rotated or moved and a grain protectant applied.

Stored grain insects cannot live on extremely dry grain (less than 10% moisture), however, it is impractical to reduce grain moisture much below minimum moisture levels necessary for long-term storage. Insect activity and reproduction are favored, however, by high grain moisture (14% or more), especially when condensation and molds occur, and fermentation raises temperature in the grain mass. A bin of 19% moisture corn with a starting temperature of 75°F can lose a full market grade in about five days if the

aeration system shuts down, allowing the grain to heat and deteriorate. Electrical system maintenance before harvest can prevent costly downtime. Spoilage and internal heating allow insects to remain active even in winter. By properly managing grain aeration the grain temperature can be manipulated. Grain cooling can be particularly important in reducing insect reproduction since insects are cold-blooded and not active much below 55°F. Condensation of moisture in the grain mass is prevented by slow cooling and gradual reduction of the gradient between the grain mass temperature and the outside (ambient) temperature.

Wiring for fans and other electrical components should be inspected for corrosion and cracked, frayed, or broken insulation. Exposed wiring should be run through waterproof, dust-tight conduit. Avoid kinking the conduit, and make sure all connections are secure.

Mice often nest in control boxes where they are protected from predators. They can strip insulation from wires for nest material and their urine sometimes causes corrosion on relays and other electrical components. If rodent damage is found, clean and repair or replace damaged wiring, relays, and other electrical equipment. Then seal over knock-outs and other openings that may permit rodent entry.

Fans, heaters and ducts should be checked for corrosion and other damage. Remove any accumulated dust and dirt that may reduce operating efficiency and be sure all connections are tight to prevent air leaks that can reduce operating efficiency.

Once empty bins have been thoroughly cleaned, a residual treatment may be applied to bin surfaces to protect incoming grain from insect infestation. Follow label instructions carefully. The following materials can be applied as residual sprays to bin surfaces: malathion EC, premium grade, chlorpyrifos-

methyl (Reldan 4E), INSECTO/Diatomaceous Earth, pyrethrins, or cyfluthrin (Tempo SC Ultra). Note that pyrethrins would provide a relatively short residual and that malathion is not effective for some stored grain insects due to resistance. Methoxychlor is no longer labeled as a residual spray in stored grain facilities in Nebraska.

For bins with false floors, which are inaccessible for cleaning, Chloropicrin, a bin "clean-out" fumigant, is legal to use prior to binning the grain. Other fumigants that could be used on empty bins include magnesium phosphide and methyl bromide.

Caution! Fumigants are dangerous, restricted-use pesticides and may require gas monitoring devices and respirator protection for the applicator. It is highly recommended that fumigation be done by a commercial pesticide applicator who has been trained and certified by the Environmental Protection Agency and Nebraska Department of Agriculture in safe fumigant handling and application techniques. Refer to current labels for specific details and instructions.

Dave Keith
Extension Entomologist
Tom Dorn, Extension Educator
Lancaster County

Updates

(Continued from page 192)

is helping beans to fill but there are fewer pods per plant than average. Grain sorghum has turned color where there was enough moisture. Somewhat to my surprise, areas that had not headed previously are putting out small heads now. These later heads are just pollinating; however, I wonder if there'll be another time for heads to mature.

Alfalfa is greening up. With high hay prices, the temptation is to utilize the forage immediately but I would recommend not doing so.

Combine adjustments *(Continued from page 191)*

conditions change. Remember that the variation in yield and grain moisture content from dry areas of the field to not-so-dry areas (were there any "wet" areas this year?) will be more pronounced this year and you will have to be on your toes when it comes to in-field adjustments.

As if the variations in yield weren't enough to worry about, dry years also tend to cause decreases in test weight and smaller kernels (or beans). Fan speed and sieve openings should be adjusted to compensate for this. Again, start with the owner's manual settings and fine tune as you go.

Unfortunately, maturity of different parts of the plants will likely be off schedule this year. Stalks may dry faster or slower than the ears, depending on the variety and severity of stress. This can increase the potential for lodging and pod or ear losses as the fall progresses. This, coupled with a potential increase of stress-induced diseases, may cause producers to consider harvesting at the upper range of moisture content to prevent field losses and storage problems. *(See page 199 for more on late-season corn diseases.)* The decrease in vegetation in the field should speed in-field drying, but could increase shatter losses if over-drying occurs.

Drying grain for storage also will be tricky this year. Those variations in crop moisture content that made combine adjustments necessary will also cause grief when drying and storing the crops. Over-drying, under-drying, and decreases in already low test weights could all contribute to storage problems and crop marketability. Decrease the dryer temperature and consider relying more on combination drying or natural-air drying and aeration to minimize test weight losses and more evenly dry the entire grain mass. Lighter test weights and potentially higher amounts of trash going into bins could make "coring"

The author, Bill Campbell, joined the NU Department of Biological Systems Engineering in Lincoln July 1 as an Extension Agricultural Systems Specialist.

a necessity to remove fines and foreign matter from the center of all bins, including those with spreaders. Coring also will make crop insurance yield measurement more accurate since it tends to level the surface of the grain in the bin. Remember to take measurements relative to the yield from each field to

get a more accurate accounting of drought-related losses.

Finally, this crop is going to require more frequent monitoring to make sure it stays in condition through the storage season. Proper cool-down and possible warm-up (depending on length of summer storage) will be important. Be sure to contact a University of Nebraska Cooperative Extension educator if you have questions related to drought-related grain harvest and storage.

**Bill Campbell, Extension
Agricultural Systems Specialist**

When children and youth help with harvest, be sure tasks are appropriate and safe

In the hectic pace of harvest, it's easy to call on your children to join in the work and activity. Just be sure that the work you ask of them is appropriate to their age and size.

Each year, more than 100 children are killed and 33,000 seriously injured on farms and ranches in the United States, according to the North American Guidelines for Children's Agricultural Tasks, published in Marshfield, Wis. The group's Web site offers checklists for various ag jobs and tasks, such as helping with unloading grain or silage or planting small grains, to help parents assess whether their child can safely accomplish a given task.

It also recommends safety precautions parents can take and the level of supervision for youths of specific ages. For example, for children ages 14 and up helping unload grain, it notes that the key hazards are moving parts that can entangle arms, legs, hair and clothing or dust that can cause breathing problems. It asks such questions as: "Is the child strong enough to start the auger motor and open the door on the gravity box without straining? *Children who have to strain to operate the equipment are more likely to be injured.*

National Farm Safety and Health Week Sept. 15-21

"Can the child balance, turn and stretch on a two-step ladder, with a spotter? *Children with poor balance are likely to fall off the ladder on the gravity box.*"

For the checklist on unloading grain, view the site at <http://www.nagcat.org/poster/ImpOper/unloadgrn.htm>

Another program, Farm Safety 4 Just Kids, offers resources and information on farm safety issues for youth, including activities just for kids. This program was started by an Iowa farm mother, Marilyn Adams, after she lost her son to a farm accident during harvest. For more information and activities, visit their Web site at <http://www.fs4jk.org>

Safety during harvest should be a concern for all ages. Be sure to get plenty of rest, eat regularly, avoid alcohol, take regular breaks and wear appropriate clothing for the job. Check and repair equipment before harvest to avoid frustrating breakdowns and take time to approach tasks safely.

Lisa Jasa, CropWatch Editor

Factors affecting crop selection for 2003

No one likes to pass up discounts. Early discounts on seed corn and other crops soon will be offered by seed companies. Buying seed early not only saves money, but it allows you to get the variety or hybrid you want.

Before selecting a specific hybrid or variety, consider what crop mix may be best for 2003. Consider several factors, including soil water storage and availability of irrigation water, including how much and when the water might be available. Other factors to consider when selecting a crop mix include crop bases, crop revenue coverage or revenue assurance programs, expected net income from each crop, ability to control the weed mix that is present, equipment and labor availability and the limitation of these items such as how many acres of corn can be planted on a timely basis. At harvest the crop mix will influence how many bushels of corn need to be dried. If corn and soybeans are being grown on the same farm, while soybeans are being harvested, corn will be drying in the field and thus less corn will need to be dried in the bin.

Based on the current drought, the number one factor in determining your 2003 crop mix may likely be the availability of water for irrigation. This will be especially true for the crop producers whose water supply comes from storage reservoirs; however, it also will be true for the many areas in the state that depend on groundwater and had significant ground water declines in 2002. Without significant precipitation, ground water recovery may be slow.

Most reservoirs are at extremely low levels as the 2002 cropping season comes to an end. Unless we have rain and snow amounts that are way above average, water from many reservoirs will be very limited in 2003. Present levels at Conservation Active Pools are shown in the table.

Water levels at active conservation pools at several Nebraska reservoirs.

<i>Reservoir</i>	<i>% Full on</i>	<i>Date</i>
Box Butte	13.0	9/2
Calamus	48.6	9/2
Enders Dam	23.2	8/30
Harlan County Dam	52.7	9/2
Harry Strunk Lake	34.8	9/2
Hugh Butler Lake	29.5	8/30
Merritt Dam	39.0	9/2
Sherman Reservoir	38.0	9/2

The Oct. 4 *CropWatch* will feature information on the new Farm Bill and how options you choose may affect your cropping decisions. For more information, also see the NU Web site at <http://farmbill.unl.edu>

Water storage for the North Platte Project in the Panhandle is at a deficit of 100,000 acre feet. The deficit developed as irrigation districts in the Platte River Valley borrowed water from another irrigation district. The water borrowed must be repaid at the beginning of the 2003 irrigation season before any storage accrues to the North Platte Valley Districts.

If you receive water from an irrigation district, consider if the crop you plant will need water earlier or later than when water deliveries may actually occur. Planting crops that need water outside the window of availability often will lead to crop stress and yield loss. Even more critical will be the total amount of water that will be available once deliveries begin.

Pump irrigators facing limited ground water resources need to ask many of the same questions. Consider how many acres can be irrigated given well capacity, distribution system and soil intake rates. When operating with limited system

capacity and facing drought in the same year, yields can and most likely will be significantly reduced. Corn yields have been reported as low as 30 bushels/acre for some irrigators who were only able to apply a limited amount of water this past year.

If severely limited water supplies are expected, producers may want to consider planting a portion of their acres to winter wheat. If the crop can be established this fall, it will provide excellent ground cover to prevent soil erosion this winter and spring. If dry conditions continue, the wheat can be left in place and taken to harvest. Hopefully, spring rains will be similar to normal years which coincide with the peak winter wheat water use period. However, if water supplies rebound, the wheat can be killed with herbicides and planted with the desired crop.

**Robert Klein, Extension
Cropping Systems Specialist
Dean Yonts
Extension Irrigation Engineer**

See *Agnews* in the Web version of *CropWatch* for a story on how ag lenders in western Nebraska are taking a more flexible perspective post drought.

<http://cropwatch.unl.edu>

Strategies for post-drought nitrogen

Due to the unusual weather conditions and poor row-crop performance of 2002, nutrient uptake by crops has been less than normal and fertilizer application plans for 2003 may need to be adjusted accordingly.

This fall higher levels than normal of nitrate-nitrogen will likely remain in the soil and be available to next year's crop. In addition to less crop uptake of nitrogen, soil nitrate-nitrogen may be more than normal due to two other factors:

- ◆ In some cases, more organic nitrogen than normal may have mineralized due to cycles of severe drying followed by rainfall events.
- ◆ Less nitrogen than normal was lost to leaching and denitrification in 2002.

The nitrogen carryover is probably greatest for rainfed conditions, but also may be significant for

irrigated conditions when crop performance was less than normal.

Precipitation between now and 2003 planting will be important to the availability of nitrate-nitrogen. On sandy soils, 4 to 6 inches of rainfall could leach much of the nitrate-nitrogen beyond the root zone. On dryland fine textured soils, much carryover can be expected even with up to 10 inches of precipitation.

Where significant August and September rainfall occurs, consider sowing a winter cereal cover crop into dryland corn and soybean. This will trap nitrate-nitrogen as well as protect soil from wind and water erosion.

For corn, grain sorghum and soybean producers, three scenarios need to be considered.

1. The greatest concern with nitrogen carryover is with continuous corn or grain sorghum produc-

tion. Here it is especially important to sample soil to 36 inches or deeper for nitrate-nitrogen.

2. Where soybean will follow corn or sorghum, there is less concern since normally we don't apply nitrogen to soybean. The 2003 soybean crop will take up the available nitrate-nitrogen. If there is much nitrate-nitrogen, atmospheric nitrogen fixed by soybean will be less than normal but crop performance should not be affected.

3. The third scenario is where 2003 corn or grain sorghum follows soybean. We expect that the 2002 soybean used most of the available nitrogen in the soil and that there will not be much carryover of nitrogen. This is especially true where late-season growth occurred after August rains. However, where soybean performance was poor to fair, sample soil to 36 inches.

Fall application of nitrogen may be appropriate for the 2003 corn and sorghum crops. Soil test, account for nitrate-nitrogen and other nitrogen credits, and estimate fertilizer-nitrogen needs. Apply nitrogen in the fall only after the weekly mean temperature drops below 50 degrees to avoid conversion of the fertilizer nitrogen to nitrate-nitrogen.

Be prepared to apply some nitrogen in the spring in case there is leaching loss of the carryover nitrate-nitrogen. If soil water supply is still severely depleted at the time of fall fertilization, reconsider the yield potential for 2003 and adjust rates accordingly. If soil water is restored during the winter and spring, additional nitrogen can be applied in the spring or during the 2003 season.

The dry year does not have much implication for availability of other nutrients. Soil should be sampled at 0 to 8 inches approximately once every four years for organic matter, pH, phosphorus and potassium, as well as for micro-nutrients which may be of concern.

Charles Wortmann
Extension Soils Specialist

Common smut in corn

Common smut occurs in corn somewhere in Nebraska each year. In most years the incidence of common smut is 1-2% in field corn. This year, however, it is widespread and at higher levels. In some fields 5-10% of the plants are affected and yield loss may reach 5-8%.

The pathogen attacks actively growing portions of the plant. Symptoms occur on all plant tissues, including leaves, tassels, ears, and less commonly on stalks. When it infects the ear, it results in massive malformation of the kernels; this is the most distinctive symptom in the field.

Many questions concerning toxicity and allergenicity have been raised about corn contaminated with the spores of this fungus. There are



Corn smut -- appetizer anyone?

no reports of toxicity associated with common smut in corn and it is safe to feed livestock. In some parts of the world this fungus is collected before the white cap ruptures to release spores and is then eaten by humans. (See <http://www.halfmoon.org/story/smut.html>.)

Although common smut is not a specific allergen, field workers with respiratory problems should wear masks during harvest as large clouds of spores will be dispersed over the field.

Jim Stack, Extension Plant Pathologist, South Central REC

Skip fall tillage to conserve soil moisture and reduce wind-blown soil

Once the crops are harvested, producers should skip fall tillage this year to leave as much residue standing in the field as possible. Tillage dries the soil, buries residue, destroys soil structure, and increases erosion and runoff. With the heat and drought throughout the state this year, the residue is more fragile than normal and, in many areas, not as much was produced. When tilled, dry soil flows easily through tillage equipment, breaking up and burying even more residue than in normal years.

Even producers who shred their stalks should consider skipping that step this fall. Shredding or tilling stalks now will cut them loose and allow them to blow away. Standing residue, still attached, is one of the most effective ways to protect soil from the erosive forces of wind and to capture snowfall. The standing residue will greatly decrease the amount of blowing soil early next spring when wind erosion is at its peak before the planting season. Producers should consider no-tilling directly into the standing residue to continue the erosion control until crop canopy can take over. Any residue left standing is less residue that has to be cut or handled on subsequent field operations.

Tillage costs include far more than just fuel, labor, and equipment. Too often the soil will dry to the depth of tillage. An average silt loam soil can hold about 2 inches of soil moisture per foot of soil. Disking 6 inches deep or chiseling 12 inches deep and allowing the soil to dry to the depth of tillage could result in a soil moisture loss of 1 to 2 inches of water. Shallower tillage, even with a rolling stalk chopper, can still result in moisture losses of about 1/2 inch per trip. If the producer irrigates, irrigation costs are increased because more water must be applied to replace the lost moisture. In addition, tillage "plants" weed seeds,

increasing competition for soil moisture.

Some say the soil needs to be tilled to "open it up to let water in". Unfortunately it dries to the depth of tillage and the initial water that is let into the soil is just replacing what was lost, not adding to the soil moisture reserve. When tillage is performed, the soil surface is broken up and pulverized, making the soil prone to crusting from raindrop impact. Thus the tillage thought to open the soil up actually creates a condition that seals the soil, resulting in more runoff. The long-term use of no-till allows soil structure to build, increasing infiltration and decreasing runoff even more.

Residue cover will also protect the soil from raindrop impact, reducing erosion and soil crusting. Reduced crusting allows more rainfall to soak in. With more soaking in, less runs off. Also, the residue slows runoff giving it more time to soak into the soil. The residue acts as a mulch reducing evaporation from the soil surface, further conserving moisture. A moist soil with residue cover next season doesn't get as hot as a bare soil, allowing better root development, especially if the drought continues.

Even without drought concerns, producers should still consider using no-till to improve timeliness and profitability. The diesel fuel requirements for the typical chisel-disk-field cultivate tillage system is about 4.08 gallons per acre including knifing in fertilizer, planting, and one row crop cultivation. By switching to a no-till system, the fuel use decreases to about 1.43 gallons per acre including knifing in fertilizer, planting, and two sprayings. There is a corresponding decrease in labor requirements and an improvement in timeliness without the tillage.

With the soil moisture losses from tillage and reduced soil structure, yields are lower and production

costs are higher as tillage increases. No-till tends to be the most profitable tillage system, especially when there are soil moisture and erosion concerns.

Paul Jasa
Extension Engineer

Assessing damage

Gary Zoubek, Extension educator in York County, shares this photo and note to Extension specialists: Insurance adjusters wonder what might have caused the damage. These are two different hybrids in irrigated fields.

The corn was hailed at the 11-leaf stage. Are the problems related to pollination or something else?

Andy Christiansen,
Extension educator in



Hamilton County, and Bob Caldwell, Extension cropping systems specialist, responded, noting that pollination failure was likely at the heart of the problem. Ovule number and ear size would have been determined shortly after the hail damage.

Various factors can lead to pollination failures: out-of-sync pollen shed and silk emergence; insect damage to silks, extreme heat at pollination, or hail at a critical growth stage. In this case the shortened ears may provide a clue. The length of the ear is determined early in development. If hail at that time damages the plant and significantly reduces leaf area, the developing ear will be starved and the number of "flowers" it lays down will be limited. That can limit yield, regardless of later weather or insect pressure.

Learning from mistakes made large by a dry season, adjusting for next year

Dry weather over most of the state provided a "window" to observe the effects of a number of production practices on crop growth. Moisture is the single most yield limiting factor in Nebraska non irrigated crop production. Production practices that conserved soil moisture resulted in improved crop growth.

Early season weed growth had very noticeable effects on crop growth this year. Uncontrolled winter annual weeds including henbit and various mustards used so much soil moisture before planting that when the crop was planted there was not enough soil moisture for crop seed germination. The result in some cases was inadequate crop stand. Early season control of weed growth, preferably with herbicides to conserve moisture and crop residue, will prevent this moisture loss.

Allowing weed growth to occur in soybean for several weeks before removal strikingly reduced soybean growth this year due to moisture stress. Soybean weed control in particular is commonly accomplished with Roundup and various brands of glyphosate in Roundup Ready soybean. Because glyphosate is highly effective there has been a tendency to allow weeds to grow with the crop for several weeks before removal in order to use only one glyphosate application. In quite a few cases this extended period of

Hot off the press

A new UNL Cooperative Extension Publication, *Drought-stressed Corn*, NF02-547, provides detailed information on various options of handling the crop for grain or hay and how to price it.

weed and crop coexistence resulted in a stunted crop that apparently had not completely recovered by mid-August even though the weeds were eventually removed and the fields were weed free. The obvious solution is to remove weeds early -- in the second trifoliolate stage of soybean -- to protect the crop from weed competition.

Hot dry weather reduces the performance of most postemergence herbicides including glyphosate. To counter this effect treat early when weeds are small -- a good target would be when the weeds are two inches tall. Small weeds are more easily controlled than large weeds and there is the added benefit of avoiding the early competition described previously.

Herbicide carryover

The effects of this summer's drought may continue into next year as dry weather increases the chances of herbicide carryover damaging susceptible crops next year. Soil moisture and warm soils are required for herbicide degradation, either chemical or microbial, to proceed. Much of the non irrigated land in Nebraska was too dry to support "normal" herbicide degradation this summer. Late fall and winter precipitation will have little effect on carryover because the soil will be too cold for appreciable degradation to occur. Atrazine is the herbicide most widely used with increased potential for carryover to damage susceptible crops next year. In these high risk situations, avoid planting sensitive crops. Depending on the herbicide, a herbicide resistant crop variety may be available to counter the carryover risk.

Alex Martin
Extension Weeds Specialist

Winning jokes target hoppers and drought

Even in the most dire of years with drought and insects, storms and damage, farmers still manage to keep a sense of humor. In August, Extension educators in two counties -- Terry Gompert in Knox County and Ralph Kulm in Holt County -- hosted meetings on the drought. To add a little humor, they also invited local farmers to enter county contests for the largest crack in the earth and the best drought joke.

Following are some of the winners:

Best crack in Holt or Knox County: 3.25 inches wide, 30 inches deep and 26 feet long, in the yard of James and Lynette Mlady, who submitted the entry.

Best joke in Holt County: "It's been so dry at our place that we have fish in our pond that are three years old and have never learned to swim!", submitted by Helen Bilstein of Atkinson.

Best joke in Knox County was an anonymous submission attributed to the fictional Winnetoon Times: Drought, it could be worse if: Your 4-H club wins best pen of five and it's grasshoppers!

It gets dry enough that the leafy spurge chokes out the purple loosestrife.

You make it to the middle of August, get 4 inches of rain and then your well caves in and fills your pivot with sand, the end span collapses and the end gun is pointing to heaven.

You realize you will pay less college tuition for both your kids than the irrigation fuel bill totals up to this year.

You haul hay to your cows but find them in the neighbor's corn when you get there! And he's got ears on his corn and three of your cows die of shock!

The school board starts talking about changing the school mascot to a grasshopper.

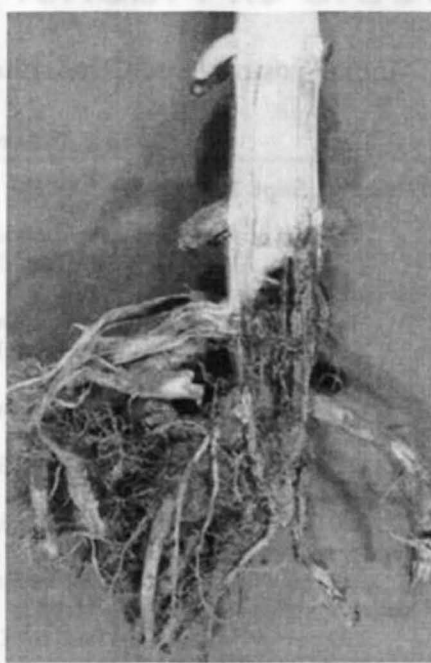
Scout for stalk rot; harvest affected fields first

This year most of Nebraska's corn crop experienced some degree of stress ranging from mild to severe, depending on the area of the state and whether the crop was irrigated. High temperatures and a rainfall deficit during the 2002 growing season had major direct and indirect effects on both the irrigated and rain-fed corn crops.

Direct effects included scald and scorch of the leaves, sheath, and husk tissues as well as incomplete pollination due to the inhibition of pollen production and germination or a pollen shed that was not synchronized with silk production. These conditions will result in significantly reduced yields. These same weather conditions led to indirect effects on corn growth and development by affecting the activity of herbicides and pathogens. The interaction of these issues made diagnosis of some problems very difficult.

Because of the high temperatures and dry conditions, many foliar diseases usually common to Nebraska corn were reduced or almost nonexistent this year. Leaf spot and rust were significant in only a few irrigated areas. Stewart's Wilt, predicted to be high based on the commonly used model (NebGuide G02-1462), was only reported in a few areas and is not expected to have a major impact on seed production fields.

Viruses, however, were prevalent and their effects are still being observed. Due to high wheat curl mite populations, wheat streak mosaic virus and high plains virus were reported in field corn, sweet corn, and seed corn production fields. Impact ranged from serious to mild yield reductions. Common smut is very widespread and at higher than normal levels; some fields are at 5-10% incidence; yield loss in these fields may reach 5-8%.



Corn crown and root decay can weaken stalks and complicate harvest. Scout fields regularly for stalk rot and decay and harvest fields with significant areas of stalk rot first.

Corn stalk rot

Corn stalk rot diseases are prevalent and may directly reduce yields as well as complicate harvesting (For more information see *Common Stalk Rot Diseases of Corn*, NebGuide G99-1385.) Some of the late season symptoms are a manifestation of the crown rot reported earlier in the season. Anthracnose, fusarium, and gibberella have already been reported; charcoal rot will likely be observed soon. Monitor fields and be prepared to adjust the harvest schedule to harvest the most severely affected fields before lodging occurs.

Grain mold

Due to the widespread drought stress and the late season rains

we have been getting in many counties this year, the potential exists for serious pre-harvest and storage grain mold problems. (For more information see *Grain Molds and Mycotoxins in Corn*, NebGuide G00-1408.) The potential also exists for mycotoxin contamination of corn at some locations. Mycotoxins can be toxic to farm animals, wildlife, or humans. However, the presence of mold does not indicate contamination of the grain with mycotoxins. Only certain strains of certain species produce these potentially harmful compounds. Monitoring and rapid drying of harvested grain is imperative in high risk fields.

Grain with mold symptoms should be assayed for the presence of mycotoxins before it's used for food or feed. Some grain elevators use the black light test as a preliminary indication of potential toxin contamination. This black light test is very unreliable as many things will fluoresce including non-toxin producing fungi and insect parts. Consequently, many false positives can result. Only certain laboratory analyses can establish the occurrence and concentration of mycotoxins. In several counties, fumonisin contamination of food grade corn was a problem in 2001. It may be more widespread in 2002.

Jim Stack, Extension Plant Pathologist, South Central REC



Corn ear molds and mycotoxins are likely to be more prevalent this year.

NU speakers, booths at Husker Harvest Days

"Market Journal" will host a slate of speakers from the Institute of Agriculture and Natural Resources at this year's Husker Harvest Days Sept. 10-12 in Grand Island.

From 10 a.m. to 3 p.m. each day, NU Cooperative Extension educators and specialists from across Nebraska will be speaking at the Market Journal stage adjacent to the University of Nebraska building on Third Street. Other specialists, many of whom regularly contribute stories to *CropWatch*, will be available inside the building to answer questions related to agricultural production. *CropWatch* information and extra copies of recent issues also will be available.

If you're not familiar with the on-line versions of *CropWatch* and *Market Journal*, stop by the building where web access to these sites will be available free.

A variety of ag-related topics will be addressed during the Market Journal presentations.

"Customizing the 2002 Farm Bill to Your Operation," a panel discussion led by Roy Frederick, NU policy specialist, will highlight the schedule. Questions and comments from the audience will be encouraged.

For those unable to attend, the farm bill discussion and all other presentations will be available on the Market Journal Web site at <http://marketjournal.unl.edu>.

Plus, for the first time, "Market Journal" will be taped live at "Husker Harvest Days." The focus of the program will be on the farm innovations and new technologies exhibited and demonstrated at "Husker Harvest Days." The taped program will be broadcast via satellite (NEBSAT 106) from 8-9pm CDT on Thursday, Sept. 12, and 9-10 a.m. Friday, Sept. 13. Contact your local extension office for viewing information. All programs are archived for later viewing online at <http://marketjournal.unl.edu>

Market Journal speakers scheduled for Husker Harvest Days

Time	Topic, University of Nebraska speaker
Tuesday, Sept. 10	
10:00 am	Governor's Press Conference, Governor Mike Johanns
10:30 am	Weed Control When Timing is Everything, Steven Knezevic, weeds specialist
11:00 am	Nebraska's Water Issues, Ray Supalla, ag economist
11:30 am	Irrigated Pastures in Nebraska, Bob Scriven, educator, Buffalo County
12:00 pm	Fall Nitrogen Application: Special Issues in 2002, Jim Peterson, educator, Washington County
12:30 pm	Dryland Corn Yield Simulation Research, Roger Selley, farm management specialist
1:00 pm	No-Till Nutrient Management, Charles Wortmann, nutrient management specialist
1:30 pm	How Brazil Successfully Competes with U.S. Agriculture, Steven Knezevic, extension weeds specialist
2:00 pm	What's Up With the Cattle Market?, Darrell Mark, agribusiness management specialist
2:30 pm	Analyzing Farm Efficiency, Tina Barrett, NU Farm Business Association
Wednesday, Sept. 11	
10:00 am	Dairy Opportunities in Nebraska, Jeff Keown, dairy specialist
11:00 am	Panel: Customizing the 2002 Farm Bill to Your Operation — Roy Frederick, policy specialist — Roger Selley, farm management specialist — Farm Service Agency Representative
12:30 pm	Value Added Agricultural Opportunities, Carol Ringenberg, educator, Kimmel Education and Research Center, Nebraska Arbor Day Foundation
1:00 pm	Price Outlook for Corn, Soybeans, and Wheat, Lynn Lutgen, marketing specialist
1:30 pm	Outlook for the Hog Market, Al Prosch, Director, NU Pork Central
2:00 pm	Pesticide Container Recycling, Larry Schulze, pesticide coordinator
2:30 pm	Farm Size and the Welfare of the Family Farm, Glenn Helmers, NU Prof. of Agricultural Economics
Thursday, Sept. 12	
10:00 am	Ag Cooperatives' Losses, Darrell Mark, agribusiness management specialist
11:00 am	Market Journal Program Taping , with Doug Jose, farm management specialist; Al Dutcher, Nebraska State Climatologist; Roy Smith, grain producer, marketing consultant; Lynn Lutgen, marketing specialist; Todd Gerdes, specialty grains manager, Aurora Coop; and Roy Frederick, policy specialist
1:00 pm	Heat Stress in Feedlot Cattle, Dee Griffin, feedlot veterinarian
1:30 pm	Coping in Stressful Times — Kathy Bosch, family life specialist, PHREC — John DeFrain, family & community development specialist