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CROP WATCH

University of Nebraska Cooperative Extension
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Sample wheat fields for residual nitrate-nitrogen

Most winter wheat grown in Nebraska requires some additional nitrogen fertilizer for profitable production. This is true for virtually all soils in Nebraska where wheat is commonly grown unless there is a large carry-over of fertilizer nitrogen.

Soil sampling

Because soil nitrate levels vary year to year as a result of soil and climate variability, residual soil nitrate tests can be a valuable fertilizer management tool. Residual fertilizer nitrogen can be measured effectively with a residual soil nitrate test of the root zone. While the depth of the root zone is often six foot or more for wheat, most available nitrogen affecting yield is in the top two or three feet of soil. Samples should be taken to a depth of three feet to determine residual nitrate levels. Samples may be taken from less than three feet deep, but they will be slightly less accurate. Refer to the NebGuide, *Guidelines for Soil Sampling* (G91-1000), for an overview and recommendations for soil sampling. (This publication also is available on the Web at: *http://www.ianr.unl.edu/pubs/soil/g1000.htm)*

Soil samples can be taken in late fall, winter, or spring; however taking samples in late fall or winter offers the added benefits of avoiding busy spring laboratory testing periods and allowing more time to get results before having to make decisions. Fall sampling, however, may not be appropriate for nitrate-nitrogen in sandy soils. Fall samples should provide meaningful results for all nutrients; however, excessive rainfall between sampling and when crops grow the next year may result in some leaching of nitrate-nitrogen to greater soil depths. If more than 8 inches of effective rainfall (total amount that percolates into the soil) occurs on fine textured soils between the time when samples are collected and the crop is planted, leaching losses may have occurred. To determine the remaining nitrate-nitrogen in the soil, additional samples should be taken. For sandy soils, 4 inches of effective rainfall can cause significant leaching. Delaying sampling until spring provides for soil moisture replenishment from fall, winter, and early spring precipitation. Thus, the soil test should reflect the nitrate-nitrogen distribution more accurately for when the crop is growing.

When to apply nitrogen

Nitrogen applications have a high probability of increasing yield when soil nitrogen availability is low in relation to yield potential; however, some studies also have shown depressed yields from nitrogen applications. Yield depressions have occurred more often with fall applications than with spring topdressing applications. Fall

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Inside

2003 wheat harvest ties for second largest

The final 2003 estimate for Nebraska wheat production totaled 83.7 million bushels, 72% above last year's crop and 41% greater than two years ago, according to a recent report by USDA's Nebraska Agricultural Statistics Service.

This estimate is up less than 1% from the August 1 forecast. Average yield in Nebraska is estimated at 46 bushels per acre, down 3 bushels from the August forecast, 14 bushels above last year, and ties with the second highest on record. Planted acreage was up 250,000 acres from a year ago. Acreage for grain, at 1.82 million, is 300,000 more than last year and 120,000 acres above August.

Updates

Keith Jarvi, Extension IPM at the Northeast REC: Following the increased populations of soybean aphid in eastern Nebraska this year, its predator -- the lady beetle -- can now be found in large numbers seeking a cozy place to overwinter. A beneficial insect for crop producers, these lady beetles feasted on the soybean aphid buildup and reproduced rapidly. It is really impressive as clothes hung out to dry and sides of buildings are being overrun by the multi-colored Asian lady beetles. Further information on this beetle is available online in a USDA regional publication: *http://www.pmcenters.org/northcentral/MALB/MALB_Fact.pdf* It recommends keeping the pests outside of your home by sealing cracks and other entry points and vacuuming any that enter and throwing away the bag.

Ron Seymour, Extension educator in Adams County: Harvest is continuing with soybeans coming out quickly. Irrigated soybean yields range from 50 to 60 bushels per acre while dryland soybean yields range from 20 to 30 bushels per acre. Corn harvest is a bit slower because grain moisture is too high in most of the irrigated crop. Grain sorghum harvest also has been slow to start because of high plant moisture. The wheat crop has emerged in most area fields. Although we have received some rainfall, pastures are still severely drought stressed.

Duane Lienemann, Extension Educator in Webster County: Pastures are short and feeling the effects of the previous years of drought added to this dry, hot summer. Compounding the problem is the early influx of epidemic proportions of wild oats that have literally smothered the warm season grasses that tried to come out and of course took up a lot of the much needed moisture. Early weaning and pasture supplementation have been a rule of thumb as have been bad eyes in cows and calves. There have been electric fences going up around early harvested crops and cattle moved from pasture to stalks much earlier than normal. More wheat than normal was planted this year, with many waiting for improved moisture. The wheat is coming up and looks good.

Harvest has been going full bore for about 10 days now with most harvesting their beans. We have had reports of dry beans with green foliage making for tough combining and sluggish machines. This greening up was due to those aforementioned showers. Some fields were exhibiting splitting pods so farmers had to

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Additional treatment option for grain bins

The Sept. 19 issue of ***CropWatch*** included a story on preparing grain bins for grain storage. Several treatments were included in the story. Please add **cyfluthrin/Tempo SC Ultra Premise Spray** (EPA Reg. No. 11556-124) to our recommendations for the prevention and control of stored grain pests in empty bins. The following is a direct quote from the label, obtained from Mr. Buzz Vance, with the Nebraska Department of Agriculture:

"For stored product pest control of exposed adult and immature stages of insect pests, apply to cracks, crevices, and other surfaces where the pests have been seen or have harborage. Treat warehouses, production facilities, storage areas, and other areas where products are stored before filling with the product. Tempo SC Ultra may be used by pest control operators and grain producers to treat grain storage facilities and other areas noted above for stored product pest control. Cleaning of all areas prior to use of Tempo SC Ultra will increase levels of control. Any foodstuffs infested with pests should be removed and destroyed."

This product was not listed in the original ***CropWatch*** story because it did not show up in our search of the NDA registration data base and was listed under another search category.

David Keith
Extension Entomologist

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Fertilizing wheat *(Continued from page 225)*

applications tend to stimulate increased fall growth, which depletes the soil moisture supply and may increase susceptibility to disease. Yield depressions associated with fall nitrogen applications have been relatively rare and should not be used as a basis for not applying nitrogen if the soil tests recommend it. If yield depression is a concern, especially in western Nebraska, topdressing is highly recommended. Topdressing allows the producer to evaluate yield potential based on stands and soil moisture in the spring. Topdressing has a significant advantage because it can help the producer avoid investing in a wheat crop that has low yield potential. Topdressing should be completed before April 15 or prior to jointing. Wheat grain yields generally decrease and grain protein increases as a result of later nitrogen applications.

Yield decreases due to nitrogen application also can occur on soils high in available nitrogen. When available nitrogen is too high, lodging often results, especially with high soil moisture in the spring. This emphasizes the importance of soil tests to determine soil nitrogen availability for high yield management.

The optimum nitrogen rate (lbs N/acre) for winter wheat (with a maximum rate of 100 lbs N/acre for dryland and 150 lbs N/acre for irrigated) is calculated using *Equation 1.*

Table 1 provides the nitrogen recommendations (lbs N/acre) for wheat for various nitrogen and wheat prices at several soil nitrate concentrations.

Equation 1. Calculating the optimum nitrogen rate for winter wheat.

((N PRICE / WHEAT PRICE) + 0.014558 x NO_3-N - 0.235) /- 0.00138

Where,

-- N PRICE is the price of nitrogen fertilizer in dollars per pound
-- WHEAT PRICE is the price of wheat in dollars per bushel
-- NO_3-N is the average ppm nitrate-N in the top three feet of soil.

Table 1. Recommended nitrogen application rates (lbs N/acre) for winter wheat in Nebraska for various nitrogen and wheat prices at several soil nitrate concentrations.

Residual Nitrate-N	Wheat price per bushel					
	$2.50			$3.50		
	Fertilizer price per pound of nitrogen					
Average ppm in 3 ft.	0.20	0.25	0.30	0.20	0.25	0.30
	Nitrogen rate (lbs N/acre)					
1	102	87	73	118	108	98
2	91	77	62	108	97	87
3	81	66	52	97	87	77
4	70	56	41	87	76	66
5	60	45	31	76	66	55
6	49	35	20	66	55	45
7	38	24	9	55	45	34
8	28	13	0	44	34	24
9	17	3	0	34	24	13
10	7	0	0	23	13	3
11	0	0	0	13	2	0
12	0	0	0	2	0	0

Nitrogen sources for wheat

All nitrogen fertilizer sources -- ammonium nitrate (33-0-0); urea (45-0-0); urea-ammonium nitrate (28-0-0); and anhydrous ammonia (82-0-0) – are generally very effective. Dry and liquid nitrogen sources vary in their susceptibility to volatilization or gaseous loss as ammonia to the atmosphere. Ammonium nitrate is the least susceptible, while urea is usually most susceptible. Therefore, ammonium nitrate is the preferred nitrogen fertilizer for topdressing where incorporation is impossible. With incorporation soon after fertilizer application, all nitrogen sources should be equally effective.

Anhydrous ammonia is usually the most economical source of nitrogen, especially under normal tillage; however, if applied with standard knife applicators, the increased power requirements add to application costs, making the lower ammonia price less advantageous compared to other nitrogen sources. Depending on local pricing, ammonia application rates must be more than 50 pounds of nitrogen per acre to be more economical than other nitrogen sources. It is possible to topdress ammonia, but special applicators equipped with narrow knives are required to avoid damaging wheat stands. In western fallow areas, ammonia is generally the best nitrogen source to avoid drying the soil prior to seeding, if it is applied early in the fallow period.

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Fertilizing wheat *(Continued from page 225)*

Fertilizing with nitrogen for grain protein

Nebraska wheat has traditionally been high in protein content and quality, desirable characteristics for the baking industry. The amount of nitrogen available to the wheat crop directly affects grain protein content. Under high soil nitrogen availability, grain protein is often 13% or higher, depending on yield levels. If soil nitrogen is low, grain protein tends to decrease as grain yield decreases. Since grain protein reflects soil nitrogen availability, it can reflect when wheat yield will increase with applied nitrogen. A grain protein level of 12% to 13% with an average yield indicates adequate nitrogen. If grain protein is in the 9% to 10% range, however, yield response to nitrogen is probable.

A producer relying on University of Nebraska fertilizer recommendations for nitrogen will probably produce grain protein around 12%. If the goal is for higher grain protein to obtain premium grain prices, about 20 pounds per acre of additional nitrogen will need to be topdressed in the spring for each 1% increase in grain protein.

Fertilizing with nitrogen after high yields

When a producer plants wheat following above average grain yields, increased nitrogen fertilizer may be required because of increased nitrogen removal with the previous crop and because increased straw yields require additional nitrogen for decomposition. Straw yields increase about 0.5 ton for each 10-bushel-per-acre increase in grain yields. Straw contains about 10 pounds of nitrogen per ton. Therefore, wheat following grain yields of 70 bushels per acre (about 20 bushels per acre above normal) may require additional nitrogen before soil organisms can decompose the straw.

This can result in a temporary nitrogen deficiency for continuous wheat, but it also may limit straw decomposition during fallow in western areas. Under favorable soil moisture and temperature conditions, straw decomposition is usually quite rapid, releasing nitrogen for wheat growth in the fall. If straw decomposition is not complete, the immobilization of nitrogen in the straw can result in nitrogen deficiency during rapid spring growth. If such conditions exist, an additional 20 pounds of nitrogen per acre may be required for proper straw decomposition to prevent yield limitations to the following wheat crop.

David Tarkalson, Soil Fertility and Nutrient Management Specialist, West Central REC

USDA small grain yield report

USDA's Nebraska Agricultural Statistics Service: Oat production in 2003 totaled 6.6 million bushels, nearly three times the 2002 production and the highest since 1996. Planted acreage, at 220,000 acres, was up 26% from 2002 while harvested grain acreage, at 90,000 acres, was up 64% from a year ago. Yield was a record high 73 bushels per acre, up 30 bushels per acre from last year and 2 bushels above the previous high set in 1996.

Barley production totaled 200,000 bushels, down 7% from last year's crop.

Updates

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go even if they would benefit from later harvest.

Grain sorghum looks good in many places with some dryland yields over 100 bushels per acre. Some early drought-affected sorghum is problematic for harvest as there are new shoots with green heads coming up directly under the mature heads. These fields need a solid freeze to help with harvest. Many farmers were pleasantly surprised at the yields they were getting in their milo fields.

A lot of the dryland corn did not make it this year and was disked under or put up for silage. The pivot corners seemed to be the worst. Those dryland fields that have been harvested are all over the board for yield. I have heard of yields from 6 bushels per acre to a high of 95 bushels per acre. Harvest of irrigated corn is just starting and there are reports of some outstanding yields -- some over 200 bushels per acre and most at the average mark of 150-160 bushels per acre. The exceptions are those fields which were hard hit earlier this season with wind and hail and have low dryland yields. I have heard several comments that they felt that gravity flow irrigated fields were outyielding pivot fields this year. Dryland alfalfa has been disappointing this year in tonnage and quality. Even irrigated alfalfa has not been as good as anticipated.

David Baltensperger, Extension Alternative Crops Breeder, Panhandle REC: Spectacular harvest weather has predominated in the Panhandle for the past week. Rapid progress has been made on proso millet and sunflower harvest, but yields are much below normal on most fields with the ongoing drought the primary factor. Dryland winter wheat planting is off to a good start. With a relatively late dry edible bean harvest, irrigated wheat behind the beans needs some continued good growing weather to be well established going into the winter.

Cool and dry grain rapidly

Protect stored grain from deterioration

Al Dutcher, UNL state climatologist, says that in the next 10-14 days Nebraska will see rotating temperature trends with highs ranging from the mid 60's to upper 70's and nightly lows sometimes dropping to the mid 30s. A frost isn't expected during this period and chances of precipitation are fairly limited.

Corn is a perishable commodity with a limited shelf life that depends on the moisture content and temperature of the corn. 'Shelf life' is the length of time good quality, aerated shelled corn can be stored before losing one-half percent of dry matter. With this amount of dry matter decomposition, it is assumed that the corn loses some quality, but maintains its market grade. Grain dried well in the field and some may have been harvested at what is normally considered a safe storage moisture. Remember, however, that grain harvested when air temperatures are in the 70s is not at a safe temperature for long-term storage.

To understand the importance of both grain moisture content and temperature on safe storage times, consider the results of experiments conducted with corn held at a constant temperature and moisture level in the laboratory.

At 15% moisture the shelf life of corn decreased from 414 days at 55°F, to 206 days at 65°F degrees, to 115 days at 75°F. A rule of thumb is that for each 10 degree increase in temperature, storage time is cut in half when held at a given moisture content.

Storage times at higher moisture contents are greatly reduced from those at 15%. For example: the shelf life of corn held at a constant 55°F with aeration is reduced from 414 days at 15% to133 days at 17% to 58 days at 19%. The rule of thumb would be safe storage times are one-third as long for every two point increase in moisture content between 15% and 19% if the temperature is held constant with aeration. Grain held without aeration will have a shelf life of about one-third of the values mentioned above due to the heating that occurs when grain respires. The NebGuide, *Holding Wet Corn with Aeration* (G87-862), includes tables showing the shelf life of corn for a range of temperatures and moisture contents.

Aeration systems designed for temperature management of stored grain should not be confused with grain drying systems. Low airflow rates, typically between 0.10 and 0.20 cubic feet of air per minute per bushel (cfm/bu), are adequate for aeration to regulate temperature but airflow rates of 1.5 cfm/bu or higher are required for drying. Therefore, grain placed into storage equipped with an aeration fan intended only for controlling the temperature must already be at the proper moisture content for storage (15.5% for corn if marketed by June, 14% if held up to one year, and 13% if held over one year; about 2 points lower for soybeans).

The primary objectives of aeration are to keep the grain at a seasonally cool temperature and to maintain uniform grain mass temperatures, preferably with no more than a 10°F difference in temperature from one part of the bin to another. These objectives can generally be achieved by keeping grain temperatures within 10°F to 20°F of the average outside air temperature.

It is important to understand how cooling occurs in a bin with aeration (the same principles apply for warming grain). A cooling zone is established and moved through the grain in the same direction as the airflow. The rate at which the cooling zone moves is directly related to the total volume of air moved through the grain or a function of both the airflow rate (cfm/bu) and the number of hours the fan is operated. The amount of time required for an aeration cooling cycle depends on the airflow rate. The cooling time in hours can be estimated by dividing 15 by the airflow rate, measured in cubic feet of air per minute per bushel (cfm/bu). For example, approximately 75 hours is needed to push a cooling front through grain with an airflow rate of 0.2 cfm/bu.

Grain temperature changes about 50 times faster than the moisture content, so the air's relative humidity is of little concern during grain cooling. When changing grain temperatures during the fall and spring, run the fan continuously until the cooling or warming zone has been moved completely through the grain. The amount of time actually required to change the temperature of a specific bin of grain can only be determined by monitoring cooling or warming zone progress. Monitoring is especially important in facilities where airflow distribution is nonuniform due to such factors as duct placement or fines concentrations. Move at least one (preferably

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Grain storage

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two) cooling zone(s) through the grain to remove field or dryer heat. Thereafter, move one cooling zone per month through the grain until it is cooled to between 30°F and 40°F. Not only will this help prevent moisture migration due to uneven temperatures within the grain mass, but it will effectively prevent insect activity in the grain. Most insect activity stops at temperatures below about 55° F.

Check the grain temperature and condition every two weeks and as needed to monitor cooling zone progress. The initial cooling is important. Do not skimp on fan operation. Turn the fans on as soon as grain covers the perforated floor or aeration ducts, and operate them continuously until all the grain has been cooled to the prevailing outside temperature. Since cooling is the primary concern, especially if the grain has come from a dryer, do not turn the fans off during rainy or humid weather. Failing to properly cool the grain can cause more problems than the small amount of re-wetting that occurs from running the fan on a humid day. For more information, ask at your local Cooperative Extension office for *Aeration of Stored Grain*, (G692) and *Holding Wet Corn with Aeration* (G862).

Tom Dorn, Extension Educator
Lancaster County

Timely fall herbicide treatments effective for perennial weeds

Fall is the best time to apply herbicides to control several perennial weeds including Canada thistle, field bindweed and leafy spurge. As temperatures drop these weeds translocate sugars from the top growth to the root system. Fall applications of herbicides, including 2,4-D, Tordon, Banvel/Clarity, Roundup (glyphosate) and others, may move more readily to the root system of perennial weeds during this translocation process. Research and field experience documents the effectiveness of fall applications.

Fall is also an excellent time to treat musk and plumeless thistles with herbicides. Both plants act as biennials or winter annuals and rarely as summer annuals. Almost all of the plants that flower and produce seed next year will be present as rosettes this fall. That means controlling weeds this fall will usually substitute for a spring treatment. This can help move the workload away from the spring "crunch". There is one qualification with fall treatments. Examine the area to make certain there are enough plants to justify treatment; a dry summer and fall reduce seed germination and treatment may not be warranted.

With fall herbicide applications, some weather related factors will need to be heeded. Soil moisture must be adequate to support active growth. In drought stressed plants herbicide absorption and translocation can be greatly reduced. With a drought stress situation it is more cost effective to forego treatment until more favorable conditions exist next season. Questions often arise regarding the impact of frost on weed response to herbicides. Frost does not automatically signal the end of the season for applying foliar active herbicides. Many of our most serious biennial and perennial weeds are quite frost tolerant. The key is to examine the foliage. Healthy green foliage indicates active growth and favorable conditions for treatment. If the foliage has become discolored due to low temperatures, the herbicide effect will be reduced.

With leafy spurge the key is to break the stem and check for the presence of the white latex like substance. Bob Masters, formerly at UNL with the Agricultural Research Service, determined that the presence of latex indicated a plant actively growing and responsive to herbicide. Some plants may actually become more susceptible to herbicides after a frost.

Bob Wilson, Extension weeds specialist at the Panhandle Research and Extension Center in Scottsbluff, recorded an increase in Canada thistle control with treatments applied after a frost. Again the key is to examine the foliage to make certain there has been no low temperature damage. For specific herbicide treatment recommendations for many weeds, check the *Troublesome Weeds* section of the *Guide for Weed Management in Nebraska* (EC130), available at Extension offices and on the Web.

Alex Martin
Extension Weeds Specialist

Crop condition report

Corn condition in Nebraska rated 14% very poor, 13% poor, 23% fair, 33% good, and 17% excellent, according to an Oct. 8 report from USDA's Nebraska Agricultural Statistics Service. Irrigated fields rated 76% good and excellent while dryland fields rated 15% good and excellent. This compares to 52% and 8%, respectively, a year ago. Eighty-five percent of the acreage was mature, behind last year at 91% and average at 94%. Harvest reached 18% picked to date, about a week behind last year at 23% and average at 31%.

Soybean condition rated 13% very poor, 25%, 35% fair, 21% good, and 6% excellent. Ninety-three percent of the crop had dropped leaves, behind 94% last year and 97% average. Harvest progressed to

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Controlling winter annual grasses in winter wheat

Check your winter wheat fields shortly after emergence. If they look like a lawn, you may have a downy brome, jointed goatgrass, and/or feral rye problem. These weeds and winter wheat are all grasses with a winter annual growth habit.

Maverick® and Beyond™ herbicides are both effective at selectively controlling downy brome when applied postemergence in winter wheat. Beyond can only be used with herbicide-tolerant wheat varieties in the Clearfield Production System. Beyond herbicide is used primarily to control jointed goatgrass, but is also fair to good at controlling feral rye when applied early postemergence.

Maverick is a sulfonylurea herbicide similar to other common wheat herbicides such as Ally and Amber, with the exception that it may also provide excellent control of grasses in the *Bromus* genus such as downy brome, Japanese brome and cheat.

Like may of the other sulfonylurea herbicides, Maverick has a long persistence in the soil. Sunflower, grain sorghum, and corn (except for imidazolinone-resistant hybrids) should not be planted for at least 22 months after herbicide application. Soybean should not be planted for at least 12 months after application. Proso millet, sulfonylurea-tolerant soybean (STS™) , and imidazolinone-resistant corn, may be planted three months after herbicide application.

Maverick should be applied at a rate of 2/3 ounce of product in 5 to 20 gallons of water per acre per cropping season. It may be applied preemergence or postemergence in winter wheat. A non-ionic surfactant should be applied to postemergence treatments at 0.5% on a volume basis.

In testing by the University of Nebraska, Maverick has given good efficacy on downy brome in wheat when applied early postemergence, that is shortly after the downy brome has emerged in the fall. Control during this time period has ranged from 80% to 100%. Sufficient rainfall prior to late October improved soil activation and root uptake of the herbicide, providing for excellent downy brome control. Without the fall precipitation following application, downy brome control has been closer to 80%.

Applications after Nov. 1 have tended to have much reduced control, probably due to reduced precipitation and a slowing down of plant growth. Spring applications to downy brome have been more inconsistent, with an occasional control rating as high as 85%, but more typically control in the spring has been in the 35% to 70% range. These plants are usually significantly stunted, but still produce seed. Again, precipitation after application appears to be important for improved herbicide activity.

While crop rotation using summer crops is an excellent way to reduce the impact of downy brome in winter wheat, Maverick herbicide may help wheat growers who find themselves with a downy brome infestation despite their bests efforts at cultural control. Growers should be aware of the rotation restrictions with this product and the effects of weather and timing of application on its downy brome efficacy.

The Clearfield Production System for Wheat combines the use of Beyond herbicide with a wheat cultivar containing a gene that confers tolerance to this herbicide. This allows for selective control of winter annual grass weeds such as jointed goatgrass, downy brome, and feral rye in winter wheat.

Wheat cultivars with this gene may be treated with Beyond herbicide with minimal risk of crop injury. Beyond will seriously injure or kill winter wheat cultivars without the tolerance gene. Remember that this is tolerance and not resistance. Tolerance means it can withstand the amount of herbicide recommended but will not tolerate excessive rates. In fact a 2X rate (for example overlap when spraying) may cause crop response. The cost of 4 ounces of Beyond herbicide is approximately $16.70/acre plus cost of application. A grower must take the necessary steps to prevent goatgrass resistance when using this program.

In field research in western Nebraska and throughout the western winter wheat belt, the Clearfield Production System provided excellent (95%+) control of jointed goatgrass and downy brome when weeds were treated with 4 ounces of product per acre in the fall or early spring. Fair to good (80%+) control of feral rye required an early fall application with 5 ounces of product per acre. It provided optimum control of feral rye with little wheat injury when Beyond was applied before rye plants had produced a tiller and wheat had at least three leaves emerged.

Robert Klein, Extension Cropping Systems Specialist
West Central REC
Drew Lyon, Extension Dryland Crops Specialist, Panhandle REC

Wheat resource

For more information on winter wheat production in Nebraska, be sure to check the UNL online resource: **Wheat Production Systems Handbook** at *http://www.panhandle.unl.edu/personnel/lyon/wheathbk.htm*

Using corn hybrid data when selecting seed

Recent research indicates that changing corn hybrids after reviewing just two years of yield data may be a viable option, given the rapid advancements and increased yields in corn hybrids. A new UNL Cooperative Extension publication providies the tools for using the latest data from the UNL Hybrid Testing program to evaluate and select hybrids best suited for planting next year.

"Corn hybrids are now improving at the rate of about one bushel per acre per year," according to the NebGuide, *Using Corn Hybrid Yield Data to Improve Selection of Rapidly Changing Hybrids* (G03-1521). It guides producers through how to evaluate trial data, adjust on-farm results so they can be compared to the trial results (ensuring that "apples to apples" are being compared) and select hybrids that could be expected to provide diversity and balance, as well as good yields. The NebGuide was written by three UNL agronomists: Bob Klein, Extension cropping systems specialist at the West Central REC; Lenis Nelson, Extension crop variety and seed production specialist; and Roger Elmore, Extension crops specialist.

"Research indicates that [hybrid] data become more reliable as we add locations and years," write the authors.. "Unfortunately, each year of data we add makes the hybrid that much further behind. Recently, there is more interest in using only one or two years of data from two or more locations each year when selecting hybrids. Using different locations provides information on how hybrids will perform in different environments. Corn germplasm is changing so rapidly that waiting for a second or third year of data can be costly."

When selecting a new hybrid, producers usually look first to yield data and maturity. They also consider disease resistance, insect resistance, herbicide resistance, quality, seed price, and the genetic diversity it will bring to their crop mix. The diversity provided by growing several hybrids with varying degrees of pest resistance will help spread the maturity dates, workload, and risk.

The NebGuide helps a producer identify the statistical range of top performers in the UNL trials conducted near his or her farm and then adjust and compare the yield data from an individual farm to the UNL results to estimate how various hybrids might do under local conditions. It also includes yield data and sample comparisons to follow as well as an empty data record for individual farm records.

Through its annual variety trials, UNL provides producers with objective, research-based crop and yield information, which can be compared with hybrid data from other sources, and used to make an informed hybrid selection. The results of the corn hybrid trials are published annually in the *Nebraska Corn Hybrid Test* (EC105) which is available from local Cooperative Extension offices or on the web at

The variety test publication provides average performance at each plot location, cooperators, soil types, planting and harvest dates; problems, farmer entries; maps of test sites and brands, seed company and addresses.

To access either of the two publications discussed here, contact your local Cooperative Extension office or check online. EC1521 isn't currently available on-line, but is expected to be posted later in October at the UNL Cooperative Extension publications Web site at *http://www.ianr.unl.edu/pubs/*

Irrigation may still be warranted for alfalfa

Alfalfa producers may want to delay shutting down their irrigation systems just yet. Last summer's dry weather has me a little worried for alfalfa. We need some surface soil moisture to prevent alfalfa roots from drying out and dying over winter. Soil moisture also helps keep soil temperatures from dropping too low for alfalfa plants to survive.

Alfalfa needs subsoil moisture now to provide for top yields next year. During the peak water use period in summer it can be impossible to irrigate enough to keep up with alfalfa's water demand unless a water reserve is available in the deeper portion of the root and soil profile. Irrigating in October and November until soils freeze can protect plants and improve yields.

There are several advantages to irrigating now:

- irrigation is not needed for other crops;
- evaporation from irrigation is lower than is typical in summer, permitting very high irrigation efficiency; and
- depending on the soil type, the water may be stored in the soil profile and take advantage of alfalfa's special ability to use water at lower depths.

Most irrigated alfalfa never gets much water below 4 feet, but alfalfa can develop roots down 8 feet or more. You waste some of alfalfa's ability to collect and use water by not building deeper reserves.

The reserve water will keep your alfalfa growing rapidly during next summer's heat and allow you to irrigate on a more timely basis. And, you won't need to worry much about winter survival or getting water immediately on your alfalfa after each harvest because you'll have a water reserve.

Bruce Anderson
Extension Forage Specialist

Show features skip-row planting techniques

A skip-row planted dryland corn plot at the University of Nebraska's West Central Research and Extension Center in North Platte provided a 32% yield increase over a more typically planted 30-inch continuous row plot. The findings should come as good news to corn growers in areas where soil moisture and precipitation are generally scarce.

The whole idea behind skip-row planting is to keep developing corn plants from using all of the available soil moisture in a field too early in the growing season, said Bob Klein, NU cropping systems specialist, who conducted the trials. Because moisture in the soil between widely spaced rows can't be reached by the maturing plants until later in season, there is more moisture available to the plants in July and August -- usually the driest months of the summer in Nebraska.

"We're planting two rows and skipping one and planting one and skipping two," Klein said. With drought conditions prevailing again this year, he said "it looks like there's quite an advantage to the skip-row planting here in 2003."

Skip-row planting also should provide some cost savings related to reduced seed, starter fertilizer and in-row insecticide treatments. These savings should more than offset the cost of a postemergence herbicide to kill weeds that develop where there is no crop canopy, Klein said. Roundup Ready corn is an ideal selection for this system because it will allow for the use of glyphosate, a relatively inexpensive herbicide. Potential weed problems also could be limited by planting in a field with a lot of crop residue to suppress weeds.

Two versions of the skip row trial provided 17% and 32% increased yields over the traditionally planted control plot, Klein said.

Following is a breakdown of the yield results:

- Control plot: 19,500 population with 41 bu/ac yield;
- Removing approximately every third plant, 14,700 population with 41 bu/ac yield;
- Thinned with every other plant removed, 11,200 population with 45 bu/ac yield;
- Series of two rows in corn followed by one row removed; 13,700 population with a 48 bu/ac yield (17% above the control);
- Series of two rows in corn with the next two rows removed with a 54 bu/ac yield (32% above the control).

For the trials, plants were removed July 2; however, if the corn had never been planted in some rows, Klein estimates a 3-6 inch moisture savings which would likely contribute to an even greater yield advantage with the skip row system. To test this theory, Klein will conduct further trials in 2004 and skip rows during planting.

The skip-row trial was to be discussed further on the Oct. 10 "**Market Journal**," an hour-long television program focusing on agricultural risk management and marketing issues. The program is hosted by Doug Jose, NU Extension farm management specialist.

The program also will include some tips for handling stored grain. Regular "Market Journal" features include corn, soybean, and wheat market analysis and an updated long-term climate and weather forecast.

Contact your local NU Cooperative Extension office for information on viewing times. Audio and video clips from the program will be available on the Web at *http://marketjournal.unl.edu.*

Ag at the Crossroads: Livestock policy challenges

Congressman Tom Osborne will be the keynote speaker for this year's Ag at the Crossroads conference: Policy Challenges Facing the Livestock Industry. Osborne will speak on "A Cooperative Approach to the Challenges Facing Nebraska Agriculture." The conference will be held Nov. 6 at the UNL East Campus Union from 8:30 a.m.to 5 p.m.

The morning sessions will address general trends and legislative and government initiatives related to the livestock industry. Morning speakers will include: John Allen, UNL Department of Agricultural Economics, on "Current Conditions and Trends in Rural Nebraska"; Dave Buchholtz of David and Associates on "Promoting Nebraska Agriculture"; Cheryl Stubbendieck and John McChesney of the Nebraska Farm Bureau on "Nebraska Policy Institute/teVelde Dairy Study"; Sen Curt Bromm of Wahoo on "State Legislative Initiatives Affecting the Livestock Industry"; and Greg Ibach, deputy director of the Nebraska Department of Agriculture, on "Executive Branch Initiatives Affecting the Livestock Industry."

Afternoon sessions will address production and marketing alternatives and labeling. Speakers will include: Monte Hemenover, consultant, on "Avenues of Change: Alternative Production and Marketing Approaches"; and Bob Hilger, a David City producer, on "A Producer Approach to Market Development."

Speakers addressing country of origin labeling will include: Darrell Mark, UNL Department of Agricultural Economics, on "Potential Economic Impacts from Country of Origin Labeling"; Bill Bullard from R-CALF USA on "The R-Calf Perspective"; and Mark Dopp of the American Meat Institute on "The American Meat Institute Perspective."

The conference is sponsored by the Nebraska AgRelations Council and the UNL Department of Agricultural Economics. Registrations are $30 for members of the AgRelations Council or $35 for non-members. For more information, call (402) 472-2821. The registration deadline is 5 p.m. Tuesday, Nov. 4.

UNL revises fertilizer recommendations for soybeans

The NebGuide *"Fertilizer Recommendations for Soybean"* (G87-859) was recently revised to reflect current research and changes in fertilizer and lime recommendations for soybean production in Nebraska. The primary change is in the UNL recommendation for phosphorus fertilization of soybean. Our phosphorus recommendation is now reflected in a continuous function for those wishing to implement variable rate fertilizer application. The equation is:

$$P_2O_5 \text{ (lb/acre)} = (15 - \text{Bray-1 P (ppm)}) \times 6, \text{ if Bray-1 P (ppm)} < 15$$

Table 1. Recommended application rate for phosphorus

Phosphorus Soil Test		P_2O_5 to Apply
Bray-1 or Mehlich-3	Olsen	
(ppm)		(lb/acre)
0 – 4	0 – 3	65
5 – 8	4 – 5	40
9 – 12	6 – 8	20
> 12	> 8	0

The NebGuide also has revised recommendations for using lime, nitrogen fertilization during pod fill, site-specific management for chlorotic soil conditions, and manure application for soybean production.

Richard Ferguson
Extension Soils Specialist

Crop condition

(Continued from page 228)

32% complete, ahead of last year at 31% but behind average at 38%.

Sorghum condition improved and rated 19% very poor, 31% poor, 35% fair, 14% good, and 1% excellent. The crop was mature on 67% of the acreage, behind 88% last year and 89% average. Harvest was 13% completed, although nearly two weeks behind last year at 30% and average at 28%.

Dry bean harvest progressed to 83% complete, ahead of 73% last year but the same as average.

Wheat planting progressed to 93% sown, ahead of last year and average at 90%. Seventy-one percent had emerged, ahead of last year at 69% and average at 65%.

Proso millet harvest advanced to 88% complete, ahead of 72% last year.

Alfalfa condition rated 15% very poor, 23% poor, 34% fair, 25% good, and 3% excellent. Fourth cutting activities continued where growth permitted with 86% harvested, ahead of both last year at 83% and average at 80%.

With dry soils common

Prepare to counter wind erosion in western wheat

Despite welcome rainfall this past spring, most of Nebraska finds itself back in the grip of drought this fall. Dry summer conditions made it difficult for many wheat growers to prepare a firm seed bed for wheat planting. Many areas in western Nebraska were fortunate to receive sufficient rainfall in September to get a reasonable stand of wheat; however, continued dry weather combined with loose, dry soil conditions sets the stage for potential problems this winter.

Wheat plants may go into the winter stressed, increasing the likelihood for crown and root rot and winter kill. Dry, loose soils are susceptible to wind erosion, which will only be made worse by poor wheat growth and winter kill.

Although we do not know what this fall and winter will bring, it would be wise to be prepared to deal with blowing soil conditions. Emergency tillage may be used to create a rough, ridged, cloddy surface that will be more resistant to wind erosion. If erosion is anticipated, focus efforts on areas in the field most vulnerable to erosion before the wind reaches a critical speed.

If soil conditions are too dry to form clods, crop residues, such as hay, straw, or corn stalks, or livestock manure may be used to prevent blowing from starting in vulnerable areas.

For more information on using emergency tillage, see the March 7, 2003 *Crop Watch* or read the NebGuide, *Emergency Wind Erosion Control* (G75-282) which is available from your local Cooperative Extension office or on-line at *http://www.ianr.unl.edu/pubs/soil/g282.htm.*

Drew Lyon, Extension Dryland Crops Specialist, Panhandle REC