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CROP WATCH

University of Nebraska Cooperative Extension
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Crops maturing under dry conditions

With one eye on the weatherman and another on their fields, Nebraska growers are marking time as delayed but very promising corn, soybean and sorghum crops continue maturing, trying to beat an early frost.

Al Dutcher, Extension state climatologist, said Wednesday that "models have backed off of freezing temperatures in the near term. Normal to above normal temps are projected for the next seven days, before cooler weather arrives as early as next weekend." The current models don't indicate when a first freeze may occur, but a "significant cool down" does appear likely.

This year's unusually cool summer affected both crops and pests. In June and July, crop development began lagging as average temperatures in Nebraska dropped 1.5-6 degrees Fahrenheit below normal. The Nebraska Agricultural Statistics Service Monday reported that 64% of the corn crop had dented, behind last year at 73% and average at 80%. Thirty-two percent of the soybean acreage was turning color, behind average at 40%, and 37% of the sorghum fields were showing color, behind average at 60%.

Bob Klein, Extension cropping systems specialist in the West Central REC at North Platte, said crops there were progressing well and that most would make it to maturity unless there's an early freeze. The exception will be those fields which were replanted following the May 14 freeze, "some of which have quite a ways to go," he said. In addition fields that appeared earlier to be recovering from the freeze and were not replanted now appear to have suffered more stand loss than originally believed, he said. Producers in south central Nebraska who replanted after a May 22 frost also are hoping for a reprieve from an early frost.

"Really, the biggest problem here is that it's so dry," Klein said. "We'll be ending the season with no moisture in our soil profile. That's not unusual here -- that's why we fallow -- but a good rain would help."

Jerry Volesky, range specialist at the WCREC, agreed. "We received some maintenance rains, but a lot of the summer rains were too fast and too heavy to soak in."

The lack of moisture is particularly difficult for wheat growers preparing to plant. For those planting after a fallow season, there should be enough moisture to get the wheat up and growing, Klein said. In non-fallow fields, however, topsoil moisture is very limited or nonexistant and a lot of seedbeds are loose. Tillage, for example with

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Inside

Use fall field assessments to fine-tune 2005 management

From taking notes at harvest to taking soil tests in the field, a variety of fall activities and measurements can help producers assess their 2004 management practices and improve on them for 2005.

Following are some of the recommendations from Extension specialists:

- **Take notes from the combine of areas where yields dropped, erosion is developing and other problems. Use a handheld GPS (Global Positioning System) tracker to pinpoint the exact location in the field.** This will make it easier to return to the site to conduct soil or other tests or take steps to solve site problems.

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Fall assessments

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♦ **Assess how efficiently corn plants used the nitrogen applied** and adjust application plans for 2005 accordingly. See *page 196* for information on conducting corn stalk nitrate tests.

♦ **If you've planted non Bt corn, scout for evidence of corn borer or western bean cutworm injury,** such as stalk breakage or tunneling from corn borers or ear tip feeding by western bean cutworms. Factor this information into your seed selections for 2005. Some hybrids will have resistance to both insects, while others will offer resistance to one or the other.

♦ **In winter wheat, scout the emerging crop in late September and October for insects.** Significant fall insect damage is uncommon, but not unheard of, said Bob Wright, Extension entomologist. Greenbugs and caterpillars would be the most likely culprits to scout for in the fall.

♦ **If you treated for soybean aphids this year** and left an untreated test strip, use it as a tool to compare treatments and costs.

♦ **Scout late planted fields for insects,** which will tend to migrate to these fields for a good meal as other fields dry down. Such populations may indicate a need for extra scouting or treatments in these fields next year.

♦ **Conduct soil tests this fall** to assess your soil fertility program and fine tune it for next year. *(See story on page 199.)*

♦ **Graze cool season pastures judiciously.** Grazing them too heavily this fall can delay spring greenup and may affect overall pasture quality.

Next issue: Tips for making your grain drying more efficient.

Crop maturity *(Continued from page 193)*

a disk, would be discouraged in these situations, Klein said, because of the potential for drying the soil even further.

The lack of moisture is speeding crop development and yield reductions are likely, he said, noting that several inches of water would make a big difference. There are some predictions of rain in the next 7-10 days, which may be affected by the path that Hurricane Ivan takes. If it comes into lower Texas, Nebraska stands an outside chance of some significant moisture sweeping up into the state, Dutcher said.

Roger Elmore, Extension crops specialist, noted that pivot corners were drying down and maturing before the pivot areas, as is expected but doesn't always happen.

"When we've had a poor spring and a poor soybean pod set in dryland areas but good moisture at the end of the season, plants tend to stay green longer," he said. They keep trying to nourish the nonexistant or smaller number of pods. Generally this year, plants had set on a good number of pods and seeds before irrigation started and should be able to finish the year well.

Don't forget to stop by the UNL IANR Big Red Building at Husker Harvest Days to visit with Extension specialists.

"We should see a big response from well-timed irrigation this year," Elmore said.

Several Extension specialists expressed concern, however, that producers may have discontinued irrigation too early, both in corn and soybeans.

"A lot of years farmers stop irrigating around Labor Day, but that wasn't necessarily the case this year," Elmore said. In many areas crops would have benefitted from continued irrigation -- for soybean, into mid September.

Irrigation should be scheduled according to growth stage, heat units, moisture needs and available moisture, not by the date on the calendar, specialists said.

As harvest approaches, growers can scout for potential stalk or root damage and plan to harvest any affected fields first, reducing the likelihood that they'll go down in a wind storm.

Lisa Jasa, CropWatch Editor

CROP WATCH

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Fall management

Test corn stalks for nitrogen; adjust plans

With energy prices climbing again, higher nitrogen prices could develop next spring. If prices increase, there may be a temptation to lower nitrogen application rates. Taking time this fall to evaluate the efficiency of the nitrogen application rate you're currently using can help provide information on which to base any changes next spring.

Taking corn stalk samples now can help determine if the corn was under, adequately or over fertilized with nitrogen. If the nitrogen applied this year was greater than that recommended by the University of Nebraska and this fall's stalk nitrate samples indicated excess nitrogen, consider reducing nitrogen rates for next season.

Use the corn stalk nitrate test in irrigated fields where moisture was not limiting. Fields that tend to have high stalk nitrate tests are those where manure or excess nitrogen was applied and fields following alfalfa. Iowa State University developed the corn stalk nitrate test, and its usefulness has been verified in other states. A full explanation and discussion of the test can be found in the NU Cooperative Extension publication, *The Corn Stalk Nitrate Test*, NF01-491. (Available online at *http://ianrpubs.unl.edu/fieldcrops/nf491.htm)*

What does the test show?

The results of the corn stalk nitrate test indicate whether the corn was over fertilized during the season. The test shows low, optimal and excess stalk nitrate values (*Table 1*). Low values indicate nitrogen may have been deficient. Excess values indicate that there was more nitrogen than the plant needed to produce grain. The scientific basis for this test is the fact that corn will continue to accumulate nitrogen past the level at which grain yield is increased. Since corn does not show visible symptoms of excess nitrogen, analysis of the stalk tissue can determine when this occurs. This test is probably best used for finding excess nitrogen since deficiencies can be spotted visually by leaf yellowing.

Take an 8-inch segment of corn stalk from 6 inches to 14 inches above the ground.

This season, if the test comes back in the "excess" range, that indicates that reductions in nitrogen may be possible next season. (For more information on recommended rates, see the NU Extension NebGuide, *Fertilizer Suggestions for Corn*, G174, available online at *http://ianrpubs.unl.edu/fieldcrops/g174.htm* or visit the Web site, *Managing Nitrogen Efficiently in Nebraska Crop Production* at *http://cropwatch.unl.edu/nitrogenissue/focusnitrogen.htm*, where there are worksheets and an on-line calculator to help determine recommended nitrogen rates.)

How to take the test

Take corn stalk samples up to three weeks after black layer formation in 80% of the kernels. Newly published information indicates that the stalk test can be taken as early as when the milk line

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Table 1. Interpretation of the test results

Plant nitrogen status	*Stalk nitrate (ppm)*	*Management suggestions*
Low	0-250	Increase nitrogen
Marginal	250-700	Increase nitrogen
Optimal	700-2000	Yields are not limited by nitrogen stress
Excess	Greater than 2000	Plant nitrogen greater than needed

Nitrate test (Continued from page 195)

Table 2. Summary of diagnostic techniques, critical values and error rates. (after Fox et al., 2001. *Agronomy Journal* 93:590-597)

Samples in database	*Diagnostic Technique*	*Critical value*	*Falsely predict N deficient*	*Falsely predict N sufficient*
			%	
702	Chlorophyll meter	52	13.4	1.7
702	1/4 milkline growth stage	48	2.7	4.6
209	Stalk nitrates	250 ppm	5.3	1.9
209	at black layer	700 ppm	12.0	0.0

is one-fourth of the way down the kernel. To take the test, remove an 8-inch segment from 6 inches to 14 inches above the ground.

Remove the sheaths. Don't take diseased stalks or stalks damaged by hail or insects. Take 15 stalks per sample, keep them cool and send to the laboratory immediately. Samples should be sent in paper wrapping and not plastic since plastic wrapped samples may mold. Have the samples analyzed for nitrates.

An article (Fox et al., July 2001) in the *Agronomy Journal* compared the stalk test, late season chlorophyll meter, and green leaf count techniques.

Based on this article, I have summarized their analysis of the results in *Table 2*. The authors used experimental data to determine the error rate of using different critical levels to interpret the test results. Because the tests were conducted on corn grown in replicated experiments, they could determine if the diagnostic test level accurately matched the plant response. Their criteria for whether the test was valid was whether the yield was at 93% of maximum yield. For example, with the chlorophyll readings taken at one-fourth milk line they used a critical value meter reading of 52. They derived the 52 reading from their previous research.

Once the criteria was set, they determined if the treatment correctly predicted sufficient nitrogen. They also divided the errors into two groups: one predicted the plant was nitrogen deficient when it wasn't while the other predicted the plant had adequate nitrogen when it was deficient. Using the chlorophyl meter reading to determine if the plant had adequate nitrogen wrongly predicted the crop was deficient 13.4% of the time. The plant actually had adequate nitrogen even though the meter suggested it was low. Using the same meter reading criteria, 1.7% of the time it falsely suggested the plant had adequate nitrogen when it was low.

When the authors lowered the criteria from 52 to 48, the total error rate actually decreased from 15.1% to 7.3% because the percent the meter falsely predicted deficiency decreased from 13.4% to 2.7%. There was not a corresponding increase in the false prediction of adequate nitrogen.

The data on the stalk nitrates also shows the change of error rates when the criteria for predicting deficiency changes. The Fox et al. data indicates that using 250 ppm would keep prediction errors to 7.2%. Using the 700 ppm critical value used by Iowa had a 0% error rate for falsely predicting nitrogen sufficiency and a 12% overall error rate.

The Fox et al. data provide more evidence that corn stalk nitrate tests are a useful tool in nitrogen management. They are best used to determine if adequate nitrogen was available. They would be especially useful in fields with manure history where the producer needs reassurance that reducing fertilizer nitrogen will not affect yields. This year they may also help producers determine if reducing nitrogen rates decreased yields.

Charles Shapiro
Extension Soils Specialist
Haskell Ag Lab, Northeast REC

Hot off the press . . .

A new NebGuide, *Seeding Rates for Winter Wheat in Nebraska* (G04-1543), recommends that growers switch from planting pounds of wheat seed per acre to seeds per acre. The number of seeds per pound varies widely. Learn how to determine seeding rates and calibrate planter drills for optimal seeding.

Potentially the next state noxious weed

Saltcedar digs in for the long term

Saltcedar (*Taramix ramosissima*), also known as tamarisk, is an invasive weed introduced from Eurasia and found in Nebraska's wetland habitats in all soil types. It is a perennial deciduous or evergreen shrub or small tree from the tamarisk family (Tamaricaceae) that reproduces both by seeds and perennial structures such as taproot and stem.

Its root system is extensive. Its primary taproot easily grows to 15 feet and when searching for moisture, as deep as 150 feet. Once the water table is reached, secondary root branching becomes profuse. The plants can grow as individual trees or in sparse groups. It has an erect woody stem that can grow up to 20 feet tall, brown or reddish brown bark and highly branched saplinks. Leaves are small and scale-like (as in many cedar trees) with many divisions on slender highly branched green stems.

In Nebraska, saltcedar can flower from June to August, with small pink flowers positioned on the top of the main woody stem and branches (saplinks) in finger-like clusters. The flowers produce small, numerous, and tufted seeds that can be carried a long distance by wind and water. The seeds, however, have a short period of viability, and need to contact suitable moisture within a few weeks of dispersal.

Saltcedar is sold as an ornamental plant species, but has escaped and become naturalized along streams, canals and reservoirs in much of the western United States. In addition, in early 1900 saltcedar was purposely planted along stream banks for soil erosion control.

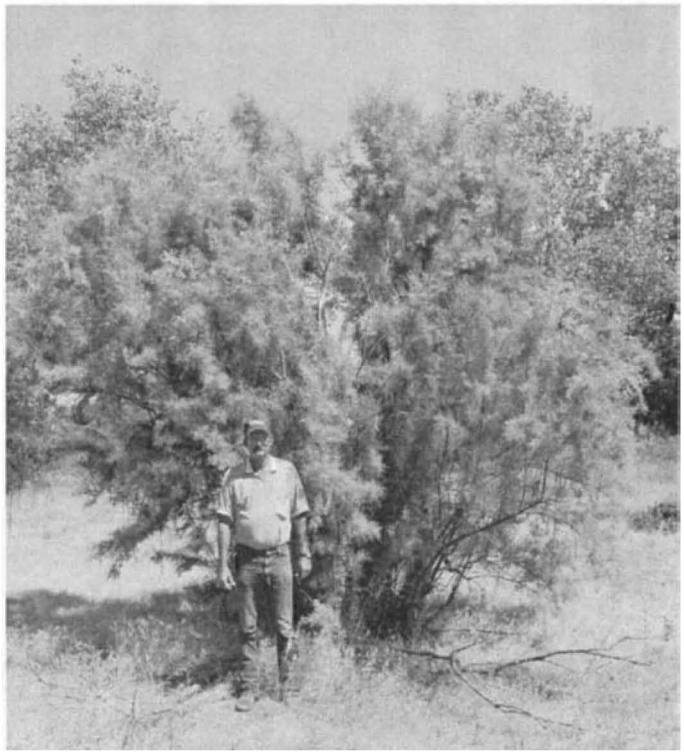
There are several means by which saltcedar can injure the natural habitat. Its high evapo-transpiration rate can lower the water table in streams and canals. The salt excreted from the leaves to the soil surface under the plant inhibits germination and growth of competing species. Thus the name "saltcedar" is derived from the salty residue that collects on the small scale-like leaves. The sticky salty substance exuded by the leaves can damage bird plumage and with the loss of habitat, most wildlife species will move to more diverse native plant communities.

Control recommendations

Due to its detrimental effect on both wildlife and land, salt cedar should be controlled in its early stages. If you've identified salt cedar on your property, use the following guidelines to establish control.

1) Treat young or regrown plants when they are under 6 feet tall because they are easier to spray and control when small.

2) Treat areas previously root plowed or mowed or areas where saltcedar appears to be newly invading.



A saltcedar plant in northeast Nebraska. Plants can grow up to 20 feet tall and may have roots extending 15-150 feet deep.

3) Treat areas with tree densities of fewer than 150 plants per acre.

4) Spray foliage to wet (no dripping) especially terminal ends, and allow two full growing seasons before follow-up management.

5) Time herbicide application toward the latter part of the season, but not too late. August and September treatments are much better than May, June or October treatments.

6) Use broadcast treatments -- aerial or via high-clearance sprayers -- with a water volume of at least 15 gallons per acre for better penetration into the dense canopy. Aerial application using a global positioning spray system matched with the survey maps can allow the pilot to locate saltcedar sites and exclude sensitive areas such as cottonwood groves and other vegetation. For broadcast treatments Habitat (imazapyr) is recommended at the rate of 3 pints per acre.

7) Control individual trees with Habitat at 1% volume/volume (v/v). Habitat is absorbed through foliage and roots and is translocated throughout the plants. Complete kill of plants may not occur within a

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Saltcedar *(Continued from page 197)*

month or two. In addition, a mix of Roundup (0.5% v/v) and Habitat (0.5% v/v) is also very effective. Roundup is added to the mix to reduce the cost of the treatment since Roundup (or any generic glyphosate) can be four to five times cheaper that Habitat alone.

8) Do not treat irrigation ditches and water for domestic use. Do not use near desirable trees and near homesteads. Clean equipment with water following spraying.

Saltcedar features a bright pink flower.

9) Be safe. As with all pesticide applications, read the product label thoroughly and follow directions carefully.

Stevan Knezevic, Extension Weeds Specialist
Haskell Ag Lab, Northeast REC

Crop condition

The USDA Nebraska Agricultural Statistics Service reported Tuesday that **corn** condition rated 3% very poor, 7% poor, 17% fair, 50% good, and 23% excellent, above last year and average. Irrigated fields rated 84% good and excellent while dryland fields rated 56%. This compares to 73% and 10%, respectively, a year ago.

Soybean condition declined and rated 4% very poor, 12% poor, 30% fair, 44% good, and 10% excellent, still well above last year and average. **Sorghum** condition declined and rated 18% poor and very poor, 38% fair, 37% good, and 7% excellent, still well above last year and average.

Alfalfa conditions rated 13% very poor, 20% poor, 28% fair, 32% good, and 7% excellent.

Soybean stem borer in south central Nebraska

The soybean stem borer beetle (*Dectes*) has been observed in south central Nebraska soybean fields this summer. In the late 1990s Kansas State University entomologists reported that this insect was increasing in numbers in north central Kansas and causing economic loss. In 2000, this insect was confirmed to be causing economic damage in a soybean field in Thayer County, Nebraska, just across the Kansas-Nebraska border.

Apparently it is becoming more common in south central Nebraska.

This is a native insect that has been reported in the central and eastern United States from Texas to Canada. It can grow in a variety of broadleaf weeds, including cocklebur, common and giant ragweed, sunflower, as well as soybeans. It has one generation a year.

Adults are a light gray, narrow beetle, about ½ inch long, with the antennae longer than the body. Adults lay eggs in the upper petioles of soybean leaves in midsummer. As the eggs hatch the larva feeds inside the stem and moves down the plant as it matures. At maturity it is about ¾ inch long, legless and cream-colored. At maturity the larva girdles the inside of the stem just above ground as part of its preparation of an overwintering cell. This stem girdling predisposes the stem to breakage, especially if strong winds occur before harvest. If you notice broken stems in a soybean field, check to see if you can find a *Dectes* larva at the base of the stem to confirm that this is what is causing the breakage.

Reports of the soybean stem borer, a relatively new pest to Nebraska, increased this year in south central counties.

Foliar insecticides treatments are not effective against the larvae and are not economically feasible against the adults because of their extended period of emergence during the summer. Nonchemical controls include harvesting infested fields first to avoid harvest losses, control of the alternate weed hosts near soybean fields, and crop rotation.

Bob Wright
Extension Entomologist

Assessing, meeting winter wheat nitrogen needs

Most Nebraska winter wheat will benefit from adding nitrogen. This is true for virtually all Nebraska soils unless there is a large carry-over of fertilizer nitrogen.

Nitrogen applications have a high probability of increasing yield when soil nitrogen availability is low in relation to yield potential; however, studies also have shown yield depression due to nitrogen fertilizer application. Yield depressions have occurred more often with fall applications than with spring topdressing applications, but incidents have been relatively rare and this should not dissuade growers from applying nutrients in the fall. (Where yield drops occurred, it was thought that fall applications tended to stimulate increased fall growth, which depletes the soil moisture supply and may increase susceptibility to disease.)

If yield depression is a concern, especially in western Nebraska, a spring topdressing is highly recommended. This allows time for the producer to evaluate yield potential based on stands and soil moisture in the spring. 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 reinforces the importance of soil tests.

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 the following equation:

((N PRICE / WHEAT PRICE) + 0.014558 x NO3-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

— NO3-N is the average ppm nitrate-N in the top three feet of soil.

Table 1 on *page 200* shows the nitrogen recommendations (lbs N/acre) for wheat for various nitrogen and wheat prices at several soil nitrate concentrations.

Use soil tests as base for decisions

Sample for nitrogen in late fall or winter, except when testing in sandy soils.

The best guideline for determining crop fertilizer needs is a soil analysis based on a laboratory test of representative soil samples from the field. Because soil nitrate is very mobile and can vary from year to year, an annual soil sample is necessary. Other nutrients, including phosphorus, potassium, and micronutrients, can be sampled every three to five years.

To collect representative samples, proper procedures must be followed. For a comprehensive overview of soil sampling guidelines, see the NebGuide, *Guidelines for Soil Sampling (http://www.ianr.unl.edu/pubs/soil/g1000.htm)*. Soil samples should be taken to a depth of at least three feet for residual nitrate levels and eight inches for phosphorus, potassium, and micronutrients.

While spring soil sampling is an option, we recommend sampling in late fall or winter, except when testing for nitrate-nitrogen in sandy soils. Fall sampling allows the laboratory more time to process the results and the grower more time to develop a plan based on the results.

Fall sampling should provide meaningful results for all nutrients; however, excessive rainfall between sampling and planting may result in some leaching of nitrate-nitrogen to greater soil depths. If more than 8 inches of effective rainfall (total which percolates into the soil) occurs on fine textured soils during this period, leaching may occur and additional samples would be needed. For sandy soils, 4 inches of effective rainfall can cause significant leaching. In these instances, a spring sample would better reflect the nitrate-nitrogen distribution available for initial crop growth.

Nitrogen sources

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 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. When incorporation is impossible, ammonium nitrate is the preferred nitrogen fertilizer for topdressing. With

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Nitrogen

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incorporation soon after application, all nitrogen sources should be equally effective.

Anhydrous ammonia is the most economical source, especially under normal tillage; however, if applied with standard knife applicators, the increased power requirements increase application costs, reducing potential cost savings. 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.

Fertilizing for grain protein

Traditionally Nebraska wheat has been high in protein 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 suggest when wheat yield will increase with applied nitrogen. A grain protein level of 12-13% with an average yield indicates adequate nitrogen. If grain protein is in 9-10%, however, yield response to nitrogen is probable.

A producer using University of Nebraska fertilizer recommendations for nitrogen probably will produce wheat with a grain protein of about 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.

Table 1. Nitrogen fertilizer recommendations.

Residual Nitrate-N	Wheat price per bushel					
	$2.50			$3.50		
	Fertilizer Price per pound of nitrogen					
Average ppm in 3 ft.	0.25	0.30	0.40	0.25	0.30	0.40
	Nitrogen rate (lbs N/acre)					
1	87	73	44	108	98	77
2	77	62	33	97	87	66
3	66	52	23	87	77	56
4	56	41	12	76	66	45
5	45	31	2	66	55	35
6	35	20	0	55	45	24
7	24	9	0	45	34	14
8	13	0	0	34	24	3
9	3	0	0	24	13	0
10	0	0	0	13	3	0
11	0	0	0	2	0	0
12	0	0	0	0	0	0

Fertilizing after high yields

In high residue continuous wheat following a crop of 70 bushels per acre (about 20 bushels per acre above normal) 20 pounds of nitrogen per acre may need to be added for proper straw decomposition to prevent yield limitations to the following wheat crop.

Using phosphorus in winter wheat

Wheat responds to phosphorus more than the other major Nebraska grain crops do. Soil test levels of phosphorus must be higher for wheat than for corn, grain sorghum, or soybeans.

Phosphorus mainly increases tillering in fall, which increases the number of heads harvested, and thereby, grain yields. To a lesser extent, phosphorus increases seed size and number of kernels in the head.

Winterkill is often associated with phosphorus deficiency because of how phosphorous affects wheat rooting. Phosphorus deficiencies also result in delayed maturity. Areas of green wheat among mature golden wheat are good indicators of phosphorus deficiency.

Such areas can benefit from spot treatment with phosphorus in subsequent years and generally require higher application rates to optimize yields. Soils from these areas should be sampled separately from other areas to provide a more accurate representation of field variations.

All soils are not phosphorus deficient for wheat, so good soil sampling and testing are necessary to minimize unnecessary phosphorus applications and to maximize profits. Soils should be sampled for phosphorus and soil pH every three to five years.

Plow-layer samples (0-8 inches) should be taken for phosphorus analysis. Collect composite cores from at least 15 points in the field. More than one set of samples may be necessary from some fields if areas differ in slope or soil characteristics such as color, sandiness or previous crop. For more information on soil sampling see NebGuide G91-1000, *Guidelines for Soil Sampling*.

The optimum phosphorus rate for winter wheat can be calculated using the equations on page 201.

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Swath grazing damaged corn

Hail. Drought. Green snap. Even an early freeze. All these weather events can greatly lower corn grain yield. When this occurs often the grain is used as a forage to get a little more value from it. Traditionally, chopping it for silage has been the most popular option but cutting it for hay or even grazing the standing corn have been used.

There is another forage option, though, that you might want to try this year or in the future — swath grazing.

Swath grazing has some advantages over the other salvage methods. Compared to silage, timing of harvest isn't as critical for swath grazing and you don't need storage or as much harvest equipment. Compared to hay, you don't need to bale and move the feed around. And compared to grazing standing corn, setting fences will be much easier and there will be much less trampling loss.

Swath grazing really is quite simple. The hardest part is making the swath. Thick stalks can be hard to cut and feed cleanly through a swather or windrower. If you have a hay conditioner, remove it or open it as wide as possible, otherwise quite a bit of the grain will be shelled from the ear, fall to the ground, and be lost.

Before you start grazing, be sure to condition cattle to eating grain, otherwise if they selectively eat mostly ears at first they may suffer acidosis. And use fences to force them to clean up most of the swath. Not only does this stretch your feed supply, it also removes residues that could impede next spring's tillage or planting.

If you plan to salvage corn as a forage, don't automatically chop silage. Consider swath grazing as an easier and cheaper alternative.

Bruce Anderson
Extension Forage Specialist

Phosphorus *(Continued from page 200)*

Optimum Phosphorus Rate for Row or Dual Placement

Bray-1 P Test

P_2O_5 rate (pounds per acre) = (-9.98 - 2.38 x LN Bray-1P + 4.39 x LN YG)/(P PRICE/WHEAT PRICE)

Olsen P Test

P_2O_5 rate (pounds/acre) = (-9.98 - 2.38 x LN (OlsenP x1.5) + 4.39 x LN YG)/(P PRICE/WHEAT PRICE)

Optimum Phosphorus Rate for Broadcast Application

Bray-1 P Test

P_2O_5 rate (pounds/acre) = (17.13 - 3.21 x LN (Bray-1P) + 2.89 x LN YG - 9.81 x LN pH)/(P PRICE/WHEAT PRICE)

Olsen P Test

P_2O_5 rate (pounds/acre) = (17.13 - 3.21 x LN (OlsenP x1.5) + 2.89 x LN YG - 9.81 x LN pH)/(P PRICE/WHEAT PRICE)

Where

LN is the natural logarithm,

Bray-1P is the soil phosphorus test (ppm) for use in acid or neutral pH soils,

OlsenP is the soil phosphorus test (ppm) for use in alkaline soils,

YG stands for yield goal in bushels per acre,

pH is soil pH,

P PRICE is dollars per pound P2O5, and

WHEAT PRICE is in dollars per bushel of wheat (includes actual selling price and yield-bound government subsidies).

David Tarkalson, Soil Fertility and Nutrient Management Specialist

Recent weather conducive to rust in alfalfa

Warm, humid weather has caused rust to form in many alfalfa fields throughout our region. Rust rarely infects our alfalfa before mid-July because it won't overwinter here. But if the summer is humid, like we've experienced this year, rust blown up from the south can infect our fields.

Rust usually causes little damage in fields harvested monthly, but more mature alfalfa or alfalfa grown for seed can be injured and defoliated by rust. So one way to minimize damage is to harvest fields infected with rust early.

Rust can cause damage several ways. Heavy rust infections can cause leaf drop and defoliation of alfalfa if plants aren't cut on a timely basis. This type of injury also will greatly reduce seed yield and quality.

Rust-infected hay sometimes causes allergic reactions in animals, more often with horses than with ruminant livestock. Rust also lowers the digestibility of hay, and this lower energy value often isn't detected well by standard laboratory tests. If you feed rust-infected hay, your animals may not get as much energy from it as expected.

One of our biggest concerns is late summer seedings infected with rust. Infected seedlings may be weakened and not develop as much winterhardiness as normal, making them more susceptible to winterkill. If your fields have this problem, monitor them closely next spring to determine if a change in cropping plans is warranted. There's nothing you can do economically to control rust. So monitor, harvest, and adjust plans to minimize damage.

Bruce Anderson
Extension Forage Specialist

Events calendar

Information about these events is available in this and previous issues of *CropWatch* or from your local Cooperative Extension office.

September

- Husker Harvest Days, September 14-16, Grand Island; visit with Extension specialists and hear Market Journal panelists at the Husker Red metal building at lot 325 on East Third St.
- Women in Ag Conference, September 16-17, Kearney
- University of Nebraska West Central Research and Extension Center Centennial Celebration, September 17, North Platte
- Land Application of Manure Workshop, September 20, Neligh

October

- Land Application of Manure Workshop, October 7, Ohiowa
- Land Application of Manure Workshop, October 27, West Point

New nutrient planning programs guide input, reports for growers

Two new software programs — **Nebraska_CNMP** and **Nebraska_AMUP** — are now available to aid in manure use planning for Nebraska. Both are used with the Manure Management Planner (MMP) from the USDA Natural Resource and Conservation Service and Purdue University. MMP is free and available for download at *http://www.agry.purdue.edu/mmp/.*

Nebraska_CNMP generates a document for a comprehensive nutrient management plan that is needed by animal feeding operations applying for a permit to operate a livestock waste control facility. **Nebraska_AMUP** generates a document for an annual manure use plan which will be required for maintenance of a permit to operate a livestock waste control facility.

These tools operate with MMP. A fertilizer and manure use plan covering several years is first developed in MMP. When the plan is complete, custom reports can be generated from MMP "Tools".

The Nebraska CNMP and AMUP documents are generated as Microsoft Word documents and are easily edited. Document generation requires Microsoft Access, but Access is not needed to develop a plan in MMP or to edit the generated Word document.

The CNMP and AMUP documents contain tables of information and much of the text needed in the comprehensive plan and annual plan, respectively. Tables and text are fully editable in Word. At places in the CNMP document, the planner can right-click to get a list of phrases from which to select to better adapt the document to the animal feeding operation; this is a function of Microsoft Word's 'auto-text' feature.

MMP cannot provide all of the information needed for the comprehensive and annual plans. The generated CNMP and AMUP documents advise the planner that this information is needed. For each informational need it either provides forms to be completed or provides links to Internet access for the needed forms.

These products are among a number of software tools to help producers implement and carry out comprehensive nutrient management planning The files and instructions for using **Nebraska_CNMP** and **Nebraska_AMUP** are available at: *http://cnmp.unl.edu/cnmpsoftware.html.*

Charles Wortmann, Extension Nutrient Management Specialist

Software uses spatial data for nutrient management

The **Spatial Nutrient Management Planner (SNMP)** is now available for use in Nebraska. It is available for free download at *http://www.cares.missouri.edu/snmp/download/nebraska.html.*

SNMP is a decision support tool that uses spatial information in nutrient management planning. With SNMP you can map farm and field boundaries and setback areas; determine sizes of fields, management units, and areas available for manure application; and map fields according to soil test data.

SNMP interacts with Purdue's Manure Management Planner (MMP) and NRCS's Customer Service Toolkit. ArcView 3.x is required to run SNMP. This program was developed by John Lory and Arin Stark of the University of Missouri for use nationwide. Information and results, however, are state specific.

Charles Wortmann, Extension Nutrient Management Specialist