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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

University of Nebraska Lincoln

No. 2003-22, September 5, 2003

Ending irrigation early can cut yields

Soybeans need water through seed fill

While most corn growers are ending their irrigation season, soybean producers should assess their crop's water needs before shutting down too quickly. In most areas soybeans may have two to three more weeks of growth and, given the lack of precipitation and soil moisture, may require 3-4 more inches of moisture to avoid yield loss. At the full seed fill stage (R6) soybeans are approximately 17 days from maturity and still need 3.5 inches of moisture.

Determining when to apply the last irrigation for the season is an important water management decision for any crop. While shutting off too early could potentially reduce yield, running later than necessary reduces room for storing off-season precipitation, increases the potential for leaching nitrogen, and adds to production costs. Balancing between the two requires knowledge of how much water is available in the root zone and how much more water the crop will need to reach physiological maturity.

The last irrigation usually can be applied two to four weeks before physiological maturity, depending on the water holding capacity of the soil (*Table 1*). This will leave room in the soil moisture reservoir for off-season precipitation. Typically, 60% of the available moisture in the top four feet of the root zone can be depleted at crop maturity without reducing grain yield. *Table 2* gives the minimum allowable balance for common soil textures. The need for additional irrigation can be determined if you know the predicted water requirement to reach maturity and the remaining usable moisture.

Producers can follow a step-by-step process outlined here to determine if soybeans would benefit from further irrigation. (For more information, see *Predicting the Last Irrigation for Corn, Grain Sorghum and Soybeans*, NebGuide G82-602,

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Inside

Consider likelihood of available water when selecting 2004 crops

No one likes to pass up discounts. Soon seed companies will be offering early discounts on seed corn and other crops. Buying seed early not only saves money, but it allows you to choose the variety you desire.

However, before selecting a specific hybrid, consider how to achieve the best crop mix for likely conditions in 2004. In planning the mix, consider soil water storage and availability of irrigation water, including how much water the crop needs (*Table 1*), the crop response to water (*Figure 1*) and when the crop requires water (*Figure 2*). Other items include crop bases, crop revenue coverage or revenue assurance programs, expected net income from each crop, ability to control the weed mix present, and equipment and labor availability.

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Some irrigated soybean farmers in central Nebraska are testing a relay cropping system and considering changes for 2004. With this system, wheat is planted in the fall and soybeans are planted into the growing crop in the spring. For more information, visit the *CropWatch* web site or see the next print issue of *CropWatch*.

Adjust combine to get the most from uneven, drought-damaged crops

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.

Your success or failure harvesting this year's crop will be determined where the combine first touches the crop. Ears may be small and light, meaning it will be easy for them to "escape" the combine header. Take a critical look at your header to determine if add-ons are necessary to keep small ears from falling back down the snouts or from being thrown out of the header as you move through the field. Beans may be difficult to harvest again this year if they are short or if they mature early due to dry conditions. Matching header adjustments to crop conditions will be very important to prevent harvest losses.

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; however, 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.

Monitor both the amount and evenness of material flowing 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 conditions change. Remember that the variation in yield and grain moisture content from dry areas of the field to not-so-dry areas 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

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Updates

Keith Jarvi, IPM Extension Assistant at the Northeast REC: Based on field observations at the Haskell Ag Lab and at other sites, soybean aphid numbers have dropped to the point where they are no longer a concern. The heat, rapidly maturing soybeans, and natural enemies have combined to greatly diminish populations.

Soybean aphids will be a very hot topic for winter meetings and will provide soybean growers with yet another factor to consider.

Paul Hay, Extension Educator in Gage County: Early dryland corn harvested in southeast Nebraska is yielding in the range of 20-50 bushels per acre with no signs of harvest molds. There has been lots of interest in additional wheat planting after fall crop harvest. Extension is urging farmers to remember the average wheat yields rather than the last two years for planning purposes. There has been significant movement of operating loans to FAS/FmHA in recent weeks.

CROP WATCH

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Lisa Jasa, Editor; Email: ljasa1@unl.edu

Irrigating soybeans *(Continued from page 203)*

available online at *http://www.ianr.unl.edu/pubs/irrigation/g602.htm.)*

Step 1: Determine the amount of water needed to carry the crop through to maturity. Develop a field average stage of growth by evaluating the crop at four to five sites. Most soybeans in the seed fill stage will need 4-6 inches of moisture to reach maturity.

Step 2: Estimate how much water remains in the soil. An excellent discussion of how to use the hand feel method is presented in NebGuide G84-690, *Estimating Soil Moisture by Appearance and Feel,* available online at *http://www.ianr.unl.edu/pubs/irrigation/g690.htm.*

Begin by squeezing the soil as if making a fist, if a wet outline of the ball of soil remains on your hand, the soil is very near field capacity or 100% of available soil water content, states Kranz. As the soil dries, the wet outline disappears and the soil will crumble when pressure is applied to the ball of soil with your thumb. At 50% available water content, sandy soils tend to form a ball, but crumble when your hand pressure is released. Silt loams will tend to stick together after pressure is released. Clay loams will stick together, and form a short ribbon when the soil is squeezed between your thumb and forefinger.

Step 3: Multiply the active rootzone depth in feet by the total soil available water capacity and the current average percent available soil water content of the soil. A silt loam soil 3 feet deep can hold up to 7.5 inches of available water. If the average current percent available soil water content is 75%, then 5.6 inches of plant available water remains in the soil.

Step 4: Subtract the minimum balance from the current average percent available water content. Soybeans need adequate water through to maturity to ensure that the seeds are filled to full size in the pods. Keep the soil water content above 60-70% of available water capacity. Lower soil water contents tend to reduce yields due largely to smaller seed size.

Step 5: Subtract the depth of water needed to take the crop to maturity from the remaining useable water from *Step 4.* If the result is positive, no further irrigation is needed. If not, keep track of crop water use rates and effective rainfall. Irrigate only if rainfall does not meet crop needs.

The water requirements between a given stage of growth and physiological maturity given in *Table I* were developed using long-term average crop development rates and normal water use patterns for Nebraska. Each year and variety will be slightly different so field scouting is an important part of making that final decision.

Bill Kranz
Extension Irrigation Specialist
Northeast REC

Note: If you're using the online evapotranspiration data on the *CropWatch Weather Web* site, be sure that the GDDs required for maturity match those of the variety you've planted. If you've planted a longer season variety, adjust the data accordingly. Also remember that this data is for a fully irrigated crop. Dryland crops will use less water on a day-to-day basis.

Table 1. Normal water requirements for soybeans at various stages of growth and maturity in Nebraska. *(See illustration on page 206.)*

Stage of growth	*Approximate number of days to maturity*	*Water use to maturity (inches)*
Soybeans		
Full pod development (R4)[a]	37	9.0
Beginning seed fill (R5)	29	6.5
Full seed fill (R6)	17	3.5
Beginning maturity (R7)	0	0.0

[a] The R-number corresponds to the soybean growth stage number.

Table 2. Allowable soil moisture deficits and minimum allowable balances at physiological maturity.

Soil type	Available water capacity	Allowable soil moisture deficit in top 4 feet of soil profile[a]	Minimum allowable balance in top 4 feet of soil profile[a]
	(inches/foot)	*(inches)*	
Silty clay loam	1.6	3.8	2.6
Upland soil loam	2.0	4.8	3.2
Bottomland silt loam	2.5	6.0	4.0
Very fine sandy loam	1.8	4.3	2.9

Crop selection *(Continued from page 203)*

Also consider limitations on these items such as how many acres of corn can be planted on a timely basis. At harvest time, crop mix also can be influenced by 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 you should be considering in determining your 2004 crop mix may likely be water for irrigation. This will be especially true for crop producers whose water supply comes from storage reservoirs; however, those depending on ground water also may be affected. In 2003 there were significant ground water declines, and without significant precipitation, ground water recovery may be slow.

Most reservoirs are at extremely low levels as the 2003 cropping season comes to an end. Unless we have way rain and snow amounts that are substantially above average, water from many reservoirs also will be very limited in 2004. Table 2 shows present and 2002 reservoir levels.

Jeremie Kerkman, Civil Engineer for Central Nebraska Public Power, made the following comments at the August 4 Central Nebraska Public Power and Irrigation District's Board of Directors Meeting

1. Depending on whether next year's inflows/ releases follow the 30-year average, repeat the extremely dry conditions of 2002, or are similar to this year's slightly improved conditions, Lake McConaughy could hold as much as 310,000 acre-feet or as little as 160,000 acre-feet by the end of next year's irrigation season.

2. Water carried over from 2003 will be adequate to provide a full supply of water for Central Nebraska Public Power's irrigation customers in 2004. If conditions in 2004 are better than -- or at least similar to -- 2003 conditions, there will still be enough water to meet full irrigation demands in 2005.

Water storage for the North Platte Project in the Panhandle is at zero. The large canals stopped water deliveries about September 1 using all of the water that was available for irrigation. While there is no carryover storage, the situation is better than in 2002. Last year, the North Platte districts borrowed approximately 100,000 acre-feet of water from another district. That option was not available in 2003 so districts won't be starting with a deficit.

However, considering that the districts are starting in a situation similar to last year, it is quite likely that irrigation supplies will continued to be short. Irrigation deliveries were delayed until late June in 2003 and restrictions were placed on water delivery rates. Both decisions were made to extend the irrigation season to approximately 60 days. Producers who receive water from an irrigation district should consider whether the crop they're considering needs water earlier or later than when water deliveries might actually occur. Planting crops that need water earlier or later than when it might

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Table 1. Seasonal crop water use (ET) in Nebraska.

Crop	Western	Central	Eastern
		inches/year	
Corn	23-26	24-27	25-28
Soybeans	20-22	21-23	22-25
Dry Beans	15-16		
Sorghum	18-20	19-22	20-23
Winter Wheat	16-18	16-18	16-18
Alfalfa	31-33	32-35	34-36

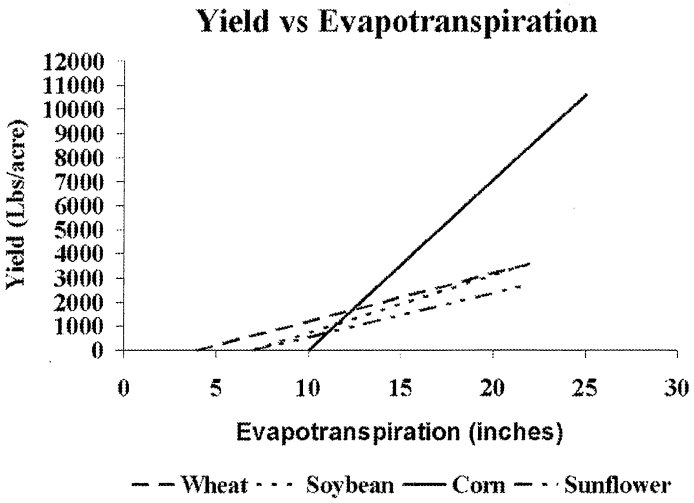


Figure 1. Yield versus rate of evapotranspiration for wheat, soybean, corn and sunflower. *(Courtesy of J. Schneekloth and D. Nielsen)*

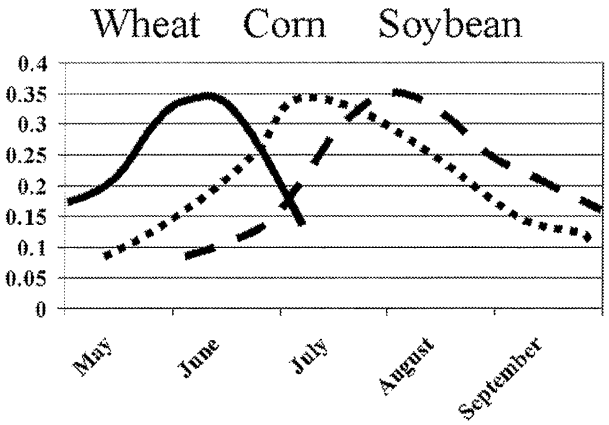
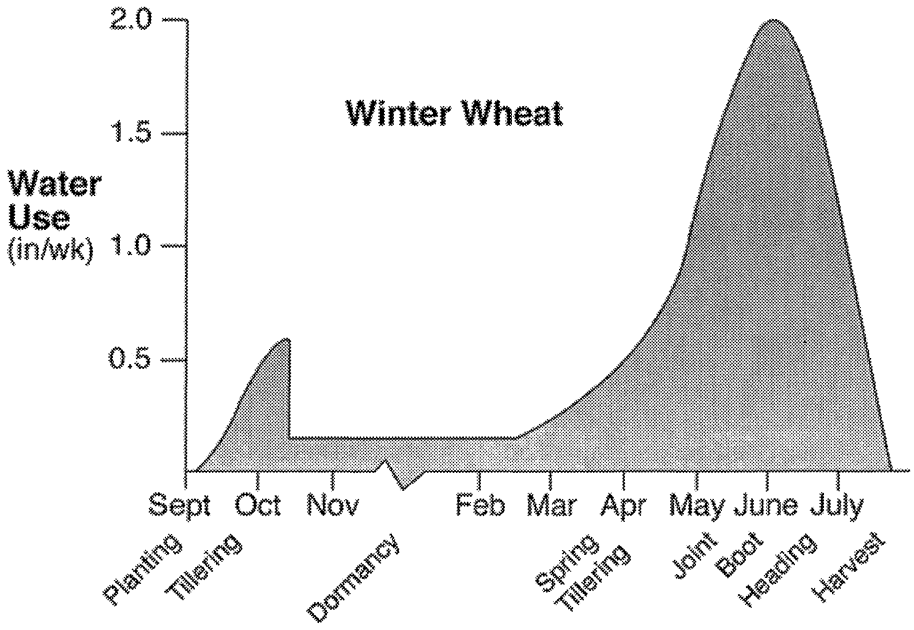


Figure 2. Average daily crop water use for wheat, corn, and soybean. *(N. Klocke et al.)*

Irrigation recommended this fall for winter wheat

Winter wheat will likely be used in western Nebraska next year to extend depleted irrigation water supplies. Precipitation in the fall and winter help supplement crop water needs as wheat begins to grow and coincides with normally abundant precipitation patterns in the spring. Winter wheat develops an extensive and efficient root system for extracting soil water. All of these factors help improve water use efficiency, reduce irrigation and energy demand and extend aquifer life.

Winter wheat has two peak water use periods as can be seen in the figure, fall and late spring. In the fall, water use continues as long as weather conditions are favorable. Upon freezing, transpiration by the wheat is near zero, but evaporation from the soil surface continues and must be replaced through precipitation or irrigation. Wheat can use up to four inches of water from fall planting through dormancy, depending on the duration of snow cover.



Winter wheat water use peaks in mid Ootober and again in the spring.

Most everyone knows that the critical time for irrigation in wheat production is prior to flowering. But equally important is the need for water during fall growth. Because of the need for water during fall growth and winter dormancy, a fall irrigation is recommended if precipitation has not been adequate. Soil water must be present in the top two feet of the soil profile to be of use during this early stage of growth. It could take two

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be delivered will often mean 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.

With limited water supplies 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 destroyed with herbicides and another crop can be planted.

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

Table 2. Reservoir levels and percent of full capacity for 2002 and 2003.

Reservoir	% Full	2002	% Full	2003
Box Butte	13.0	9/2	11.9	8/28
Calamus	48.6	9/2	53.8	8/28
Enders Dam	23.2	8/30	25.4	8/28
Harlan County Dam	52.7	9/2	38.7	8/28
Harry Strunk Lake	34.8	9/2	45.6	8/28
Hugh Butler Lake	29.5	8/30	41.9	8/28
Merritt Dam	39.0	9/2	46.6	8/28
Sherman Reservoir	38.0	9/2	21.0	8/28
Swanson Lake	21.0	8/30	26.0	8/28
Virginia Smith Lake	48.6	9/2	53.8	8/28
Lake McConaughy	33.9	8/30	26.7	8/26

Irrigation status in the North Platte Valley

Water levels in irrigation canals are beginning to drop as water supplies are depleted. Unless producers have access to an irrigation well, they can begin picking up their gated pipe. Even though water supplies have lasted to September 1, many producers were forced to irrigate fewer acres in 2003. Irrigation districts cut the rate of water delivery during the season to extend the time water would be available for irrigation.

As we consider the impact on individual crops, dry beans that received timely irrigation this spring are well on the way to maturity. Lack of water at this stage will only impact those producers who planted beans late or more significantly, delayed spring irrigation which in turn delays the rate of dry bean maturity.

Corn that is at beginning dent requires approximately 5 inches of water to reach maturity while corn at full dent requires only 2.5 inches of water to complete the crop. Most corn should be at or beyond beginning dent and therefore will need only 3-4 inches of water to reach maturity. A medium textured soil can hold more than 3.0 inches of water in the top four feet of the soil profile. On those fields where irrigation has been maintained throughout the season, there will be little impact on yield whether the corn is taken for silage or grain.

For alfalfa and sugarbeet growers the situation is a little different. Since these crops continue to grow until frost occurs, we can likely expect some yield reduction due to the lack of water late in the growing season. Again, if irrigation has been maintained throughout the season, sugarbeets, after using available water in the soil, will need an additional 3 inches of water before harvest begins October 1. Those sugarbeets harvested later in October will continue to use some water. Although water stress at this stage should have minimal impact on yield, water needs to be available during harvest to avoid root breakage and yield loss.

If frost were to occur September 25, alfalfa would need about 5 inches of water between September 1 and the 25. The degree of stress will depend on when alfalfa was cut. Alfalfa harvested around September 1 will use about 2.5 inches of water or about half of the water needs of a full growing crop.

Irrigation in the North Platte Valley has been a challenge in 2003 and may likely be challenging again in 2004. Producers continue to look for methods where they can improve their irrigation practices. What they have found is that even minor changes can improve irrigation efficiency.

C. Dean Yonts
Extension Irrigation Engineer

Assess nitrogen use

Taking a corn stalk nitrate test this fall can help you evaluate whether you're applying too little, too much or just the right amount of nitrogen for your crop and soil conditions. Learn more about this test in the next issue of *CropWatch* or check for an early posting at the *CropWatch* web site at *cropwatch.unl.edu*

Irrigating wheat *(Continued from page 207)*

inches of water on sandy soil and four inches on a clay soil to fill the top two feet of the soil profile. When fall irrigating, the goal should be to provide adequate water for germination and early growth, yet leave room deeper in the soil profile for expected precipitation. This allows one to take full advantage of off-season precipitation, yet meet winter wheat water requirements.

Be sure soil water in the fall provides adequate water below the seed. Water in the soil moves from wet areas to dry areas. As evaporation dries the surface, soil water moves from the deeper depths to replace the water being evaporated near the surface. As the water migrates, it replenishes the soil water around the seed during the critical germination and emergence time period.

If soil water conditions are extremely dry, irrigate before planting to partially fill the soil profile. Planting into moist soil conditions allows more consistent and uniform seeding depth. Applying one to two inches of water after the seed has been planted will cause soil particles to dislodge and move from the tops of soil ridges into the seed furrow. This results in the seed being covered with more soil. More importantly, the soil moved by the water over the seed is composed of fine soil particles that are tightly packed, increasing the potential for crusting which can make emergence more difficult and leave the soil vulnerable to wind erosion.

Producers new to growing winter wheat should understand that soil type can have a significant influence on the yield potential when irrigation is limited. Most dry land winter wheat is produced on finer textured soils where water holding capacity is much greater than on coarser soils . Finer textured soils have the potential of storing a greater amount of water than many of the traditionally irrigated areas that have lower water holding capacity soils.

C. Dean Yonts
Extension Irrigation Engineer

South Central REC specialists move to Lincoln

Several Extension crop specialists are establishing new offices on UNL's East Campus in Lincoln, following the July 1 closing of the South Central Research and Extension Center near Clay Center. These faculty members, many of whom regularly contribute to *CropWatch*, will continue pursuing the research and extension programs they had conducted in south central Nebraska. Established in 1970, UNL's South Central REC administered county and district Extension programs whose subjects ranged from crop production and irrigation to 4-H and youth development, small scale entrepreneurship, and livestock production. Research and extension programs were conducted on SCREC's 640-acre research farm as well as on the farms of constituents throughout the 22-county district.

"The faculty and staff associated with SCREC have been productive valued members of the IANR community. Budget shortfalls have led to very difficult decisions that have had significant impacts on the lives of those and other members of the IANR community," Alan Baquet, former SCREC director, said this week. "Even though we will not have a resident research faculty at the Clay Center location, we will continue to have a research program that addresses the critical needs of crop producers in that region."

David Althouse, SCREC/SCAL farm manager and long-term IANR employee, and several research technicians will continue to be located at the newly named South Central Agricultural Laboratory.

Following is information on research and extension responsibilities and contact information for these faculty members.

Alan Baquet, former SCREC district director, was named Associate Vice Chancellor for the Institute of Agriculture and Natural Resources on a three-year fixed term basis.

As part of his focus to update IANR's Strategic Plan, he has attended 30 listening sessions with constituents across Nebraska and is seeking input from IANR faculty, staff and administrators. He also is leading a committee looking at IANR land resources used for research and demonstration. The committee will develop recommendations regarding the future use of these holdings.

Contact: Alan Baquet, Associate Vice Chancellor for IANR, 202 Agriculture Hall, University of Nebraska, Lincoln, NE 68583-0708; phone: (402) 472-2871; Email: abaquet1@unl.edu

Roger Elmore, extension crops specialist, is now based in the Department of Agronomy and Horticulture on UNL's East Campus. Roger will maintain his research program at the South Central Agricultural Laboratory, Clay Center, where his technician, Ralph Klein, is based. They will continue to pursue applied agronomic research questions mainly focused on producing irrigated corn and soybeans and will maintain Extension activities and the crop variety testing program in south central Nebraska Much of their experimental plot work was in counties in the former South Central District. Elmore sees that this will continue. Elmore currently is researching the effects of Roundup on the soybean nodulation process and soybean yield as well as the effects of extreme winds on corn, especially corn greensnap. The Roundup work is part of Lori Abendroth's master degree work.

Contact: Roger Elmore, Professor and Extension Crops Specialist, Department of Agronomy and Horticulture, University of Nebraska, 377 Plant Science

University of Nebraska, Lincoln, NE 68583-0724; phone: 402-472-1534; fax:402-472- 8650; or Email: *relmore1@unl.edu*

Richard Ferguson, Extension soils specialist, has relocated his office to the UNL Department of Agronomy and Horticulture on East Campus. His research and Extension efforts will remain focused on soil fertility issues in south central Nebraska, with an emphasis on site-specific nutrient management and water quality. He also will be involved in statewide coordination of precision agriculture activities.

Contact: Richard Ferguson, Professor of Soil Science and Extension Soils Specialist, Department of Agronomy and Horticulture; University of Nebraska; 377 Plant Science; Lincoln, NE 68583-0724; phone: 402-472-1144; fax 402-472-8650; or Email *rferguson@unl.edu.*

Fred Roeth, Extension weeds specialist, is continuing his weed management research in south central Nebraska and will be moving to the UNL Department of Agronomy and Horticulture in Lincoln this fall.

Contact: Fred Roeth, Extension weeds specialist, Department of Agronomy and Horticulture; University of Nebraska; 377 Plant Science; Lincoln, NE 68583-0724; phone: 402-472-1128; fax 402-472-8650; or Email *froeth1@unl.edu*

Bob Wright, Extension entomologist, has moved to the UNL Department of Entomology on East Campus. He continues to have research and extension responsibilities for field crop entomology and is maintaining his research program at the South Central Agricultural Laboratory at Clay Center. Research results from 2003 will be posted at *http://entomology.unl.edu/scal* later this fall. Data from previous years is already available.

Contact: Robert (Bob) Wright, Extension Entomologist, Department of Entomology, 202 Plant

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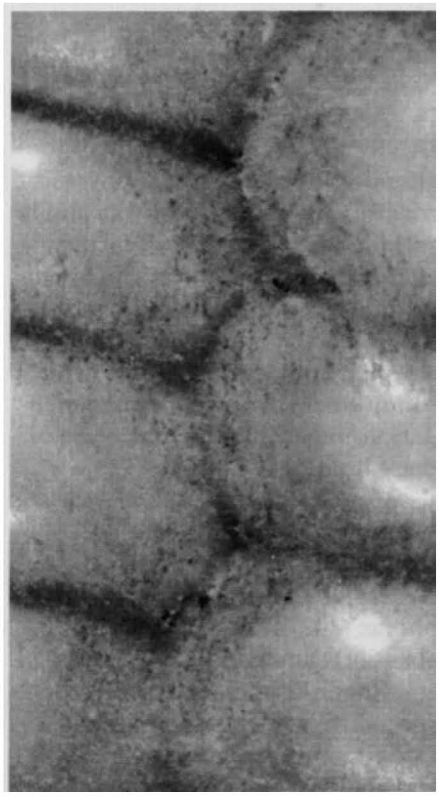
Dry conditions increase risk of aflatoxin in corn

This summer's hot, dry weather pattern could be conducive for the development of aflatoxin problems in corn, just as it was last year. When harvest begins we will know with certainty. Many excellent information sources are available to help Nebraska producers facing this problem. This article is intended to provide information on resources available to producers and grain marketing services.

For the most part, identification of the grain mold causing the infection is not as important as determining the concentration of specific mycotoxins in the grain, which might affect use and trade of the grain. Several fungi produce the mycotoxins commonly found in Nebraska. Common symptoms on the ear and individual kernels are described and summarized in a new photo guide, *Ear Rots and Grain Molds in Corn*, EC03-1888. The NU Cooperative Extension publication is available from your local extension office or by contacting IANR Communications and Information Technology, 402-472-2821 (voice) or 402-472-0025 (fax).



Aspergillus ear rot is characterized by a light green mold, and can develop into the mycotoxin aflatoxin.

Aflatoxin is just one kind of mycotoxin that may be present in Nebraska-grown corn. Fumonisin, vomitoxin (deoxynivalenol, DON) and zearalenone also may be present. They are different chemicals, so the adverse health effects they cause and the amounts expected to cause problems differ. Information about adverse health effects caused by those mycotoxins and ergot may be found in the NU NebGuide G03-1513, *Understanding Fungal (Mold) Toxins (Mycotoxins)*, and guidelines for use of mycotoxin contaminated feed may be found in NebGuide G03-1514, *Use of Feed Contaminated withFungal (Mold) Toxins (Mycotoxins).*

From the regulatory side, Nebraska Department of Agriculture (NDA) policy allows for grain to be blended when aflatoxin is found at levels greater than what is permitted for the intended species as follows: Grain containing aflatoxin levels at 100 ppb or less can be fed to breeding cattle, breeding swine, and mature poultry, 200 ppb or less to finishing swine greater than 100 lbs. in weight, and 300 ppb or less to finishing beef cattle. Grain containing aflatoxin levels at 20 ppb or less can be used for human food, dairy, and immature animals, and at no time will blending be permitted for the purpose of using the grain for human consumption or for feeding to dairy animals or immature animals.

When blending occurs the seller is required to have the grain tested by a certified grain inspection service to verify the level of aflatoxin in the blended corn. The seller is also required to label the corn for the intended species depending on the level of aflatoxin in the final blend. The seller is required to notify the buyer of such and the buyer's name and address, level of aflatoxin, and intended species is required to accompany the shipment of corn. A list of official service providers who can perform certified tests for commerce purposes is at: *www.usda.gov/gipsa/aboutus/servicemap/usmap.htm.* These are also referred to as Grain Inspection, Packers and Stockyards Administration (GIPSA) facilities.

The main management consideration at this time will be to make sure that harvest is timely and the grain moisture is reduced as quickly as possible. Often, fields with

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SCREC specialists

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Industry, University of Nebraska, Lincoln, NE 68583-0816; phone: 402-472-2128; fax: 402-472- 4687; and Email: *rwright2@unl.edu*

Roger Selley, Extension farm management specialist, has accepted an option for partial retirement and will remain in south central Nebraska where he'll conduct Extension meetings related to ag economics and production during the winter months.

James Stack, former Extension plant pathologist at SCREC, is now an Extension plant pathologist specializing in wheat pest management at Kansas State University.

Water Resources Engineer. The position of Extension Irrigation Specialist at SCREC was vacant when the closing was announced. The UNL Department of Biological Systems Engineering is close to filling a newly defined position of Water Resources Engineer and expects to have a specialist in place by Jan. 1. The new position will continue to focus on irrigation in south central Nebraska, but also will cover a broader range of water resource and management issues there and throughout the state.

Adjust combine *(Continued from page 204)*

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. 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" 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.

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Aflatoxin *(Continued from page 210)*

mycotoxin problems also have stalk rot problems. Timely harvest of these fields will be critical to obtain maximum yield and keep the grain off the ground. Harvest fields that had uneven stands earlier in the year first, if possible, as these will usually have more stalk rot. Once the grain is harvested, the grain moisture should be reduced to less than 15% within 48 hours. Moisture levels above 15% will favor continued development of the mold in the grain and can increase mycotoxin contamination levels during storage. Temperature also will affect grain mold development, with storage temperatures below 40°F being optimum to reduce the potential for mold growth in storage. Other management options for stored grain include:

- Maintain good air circulation in storage bins.
- Minimize mechanical damage during harvest and postharvest handling.
- Minimize insect damage during storage.
- Clean storage bins thoroughly each season to remove last year's grain mold problems.

-- Bin sanitation is critical when the ability to maintain cool and dry storage is lacking.

-- Bins with false floors may require additional efforts to remove fines and broken kernels.

-- Bins can be sanitized using a bleach solution (6 oz bleach per gallon of water).

Resources

Many excellent NU Cooperative Extension resources address various aspects of mycotoxins and are available online or from your local Cooperative Extension Office.

Grain Molds and Mycotoxins in Corn (G00-1408) *http://www.ianr.unl.edu/pubs/plantdisease/g1408.htm*

Fumonisins in Corn (NF03-570) *http://www.ianr.unl.edu/pubs/plantdisease/nf570.htm*

Aspergillus flavus and Aflatoxins in Corn (NF03-571) *http://www.ianr.unl.edu/pubs/plantdisease/nf571.htm*

Understanding Fungal (Mold) Toxins (Mycotoxins) (G03-1513) *http://www.ianr.unl.edu/pubs/plantdisease/g1513.htm*

Sampling and Analyzing Feed for Fungal (Mold) Toxins (Mycotoxins) (G03-1515) *http://www.ianr.unl.edu/pubs/plantdisease/g1515.htm*

Use of Feed Contaminated with Fungal (Mold) Toxins (Mycotoxins) (G03-1514) *http://www.ianr.unl.edu/pubs/plantdisease/g1514.htm*

Blending Grain and Feedstuffs – How to Figure the Proper Proportions (G03-1500) *http://www.ianr.unl.edu/pubs/animals/g1500.htm*

Aflatoxin M_1 in Milk (NF02-564) *http://www.ianr.unl.edu/pubs/dairy/nf564.htm*

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Treat wheat seed before planting this fall

Common bunt/stinking smut was present in harvested grain this year at a higher incidence than it has been for a number of years. Grain with a moderate to high level of bunted seed may be used for ethanol production, but has little value as feed or seed wheat. Growers with even light levels of bunt are encouraged not to use any of that seed for planting this fall. If that is not an option, then the seed lot should be thoroughly cleaned and treated with a seed treatment fungicide registered to control common bunt. A number of seed treatment products are available and include those that contain carboxin (Vitavax), difenoconazole (Dividend), mancozeb, maneb, PCNB (Terraclor), tebuconazole (Raxil) and tridimenol (Baytan). Some trade-named products, but not all, are listed in the table.

Some of these products are formulated for on-the-farm treatment. When treating seed with an on-the-farm treater or in the drill box, remember that it is very important to get uniform seed coverage. Over coverage will result in problems such as clumping and plugging up the drill or, with some products, excess treatment may hurt germination. In addition poor coverage may provide poor disease control which defeats the purpose of treating the seed. Product labels provide specific details on rates and how to apply the treatment. These directions should be followed to the letter.

Table 1. A partial list of wheat seed treatments for control of common bunt.

Fungicide common name	*Trade names*	*Also controls loose smut and seedling blight*
Carboxin	Vitavax 34	Loose smut only
Carboxin + Captan	Enhance	Both
Carboxin + Maneb	Enhance Plus	Both
Carboxin + PCNB	Vitavax - PCNB	Both
Carboxin + Thiram	Vitavax 200	Both
Carboxin + Imazalil + Tiabendazole	RTU Vitavax Extra	Both
Difenoconazole + Mefenoxam	Dividend XL	Both
Mancozeb	Dithane WSP Grain Guard Manzate Pencozeb	Seedling blight only
Maneb	Agsco DB Green	Seedling blight only
PCNB	Terra-Coat LT-2N	Seedling blight only
	PCNB Seed Coat	Seedling blight only
Tebuconazole + Metalaxyl	Raxil MD, XT	Both
Tebuconazole + Metalaxyl + Imazalil	Raxil MD Extra	Both
Tebuconazole + Thiram	Raxil-Thiram	Both
Triadimenol	Baytan 30F	Both
Triadimenol + Thiram	RTU-Baytan-Thiram	Both

The preferred method would be to either buy treated seed or have it treated by a commercial seed conditioner. Commercial operations have the proper application equipment to uniformly coat seed.

The primary purpose of treating wheat seed is to protect it from the smut diseases with common bunt being the target disease this season. Seed treatments also provide limited protection against poor stands due to seedling diseases, especially in years with limited fall rains.

John Watkins
Extension Plant Pathologist

Stop by the Big Red NU Bldg at Husker Harvest Days

Plan to take some time at Husker Harvest Days to talk with NU specialists and researchers in the Big Red NU Building near Third and Central streets.

Market Journal will be hosting two live broadcasts daily from a studio tent outside the building and invites you to stop by and enter into the question and answer sessions with some of the experts. See the last issue of *CropWatch* for the schedule of events.

Also be sure to step inside the building to tour NU displays and talk with Cooperative Extension specialists and researchers. *CropWatch* and NU Communications and Information Technology, which co-publishes *CropWatch*, will be at the *Market Journal* exhibit. Stop by and pick up a free Extension publication or sign up for email notification of the latest *Market Journal* or *CropWatch* issues.

See you there!