2005

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

University of Nebraska Lincoln

No. 2005-24, October 28, 2005

Seed & nitrogen costs, crop rotations

Producer challenges for 2006

Should producers take advantage of the early purchase discounts for seed for 2006? Or, if purchases aren't made early, will the desired hybrids or varieties be available later? Waiting for 2005 harvest data to make an informed selection decision could pay larger yield rewards than the cost savings for buying early if the wrong hybrid or variety is selected.

With the high price of nitrogen, should producers alter their crop mix in 2006? News sources have stated that more winter wheat was seeded this fall because of high nitrogen prices. Likewise, nitrogen inputs can be reduced by using crop rotations and planting more soybeans. No nitrogen is applied for soybeans and the decaying soybean residue provides a 45-pound nitrogen credit for the following corn crop if the soybean yield was at least 30 bushels per acre.

Over the last 20 years, research at the South Central Ag Lab showed that there was about a $35 per acre net advantage to an irrigated corn-soybean rotation over irrigated continuous corn. This was with an average cost of about $40/acre for fertilizer over that period. With fertilizer prices that could easily double or even come close to tripling, the favorable economics of the corn-soybean rotation are greatly increased. Another factor to consider is that more energy is required for corn production than for soybeans. This includes energy for chopping stalks (which may not be needed), more energy for irrigation since corn requires more water than soybean, and more bushels to handle in harvesting, hauling, drying, and storage.

(Continued on page 225)

Inside

Variety and hybrid selection -- the right choice for your farm

Choosing the proper hybrid or variety can greatly enhance profitability of growing a crop. Corn hybrids and soybean varieties perform differently on different farms and years, making it important to view data from multiple locations and years. Planting several varieties or hybrids increases genetic diversity if they are chosen properly. Use of genetically modified varieties or hybrids can be profitable if they fit into the management scheme of the farm. Using varieties or hybrids which are tailor-made for a specific end user may be profitable but requires more labor and management along with marketing skills.

How fast should you change hybrids or varieties? An Auburn study compared the top hybrids from a three-year regional average, which yielded 114 bushels, with the top hybrids from the previous year's test yielding 119 bushels -- a 5 bushel increase. This data was

In addition to buying the genetics you need, it's important that you don't pay for the genetics you don't need.

(Continued on page 223)

Ag update

Corn harvest progressed to 60% complete, ahead of last year at 43% and average at 57%, according to Monday's crop report from USDA's National Agricultural Statistics Service Nebraska Field Office. Harvest was most advanced in east central areas and just getting a good start in the Panhandle.

Soybean harvest progressed to 95%, ahead of 89% last year and 88% for the average.

Sorghum harvest moved to 59%, ahead of last year at 41% but behind the average at 62%.

Wheat seeding progressed to 98%, equal to last year and near the average at 99%. Ninety percent of the wheat crop had emerged, just behind 91% last year and 93% for the average.

Ninety-seven percent of the **dry bean crop** had been harvested, ahead of 79% last year and average at 94%.

Banquet to feature local, sustainable foods

Locally, sustainably grown foods and information on how to buy and sell them will be featured at the inaugural Nebraska Food Banquet Nov. 4 in Omaha.

Food consumers and producers are invited to the banquet at 6:30 p.m. at Building 10 on the Metro Community College campus, 30th and Fort streets. The banquet costs $12 and organizers would appreciate advance reservations.

Area farmers working to organize the Nebraska Food Cooperative will supply food items for the banquet. A class in the Institute of Culinary Arts at Metro Community College will prepare the meal. The co-op will be a member-owned organization of consumers and producers that will serve members by offering year-round access to Nebraska products, explained Mark Hutchison, a food industry consultant for the University of Nebraska-Lincoln's Food Processing Center. The center is helping to organize the co-op.

"Anyone interested in locally produced food is welcome to attend. This will be a great chance to try some wonderful foods and learn about an exciting new way to buy or sell them," Hutchison said

Kamyar Enshayan, director of the Local Foods Project at the University of Northern Iowa, will present research on the economic impact of buying local foods. Enshayan coordinates a program that links institutional food buyers to nearby farms and processors in the Cedar Falls and Waterloo, Iowa, area. This program has grown from three institutions in 1997 to 25 in 2004 that bought $500,000 in local foods from area farmers.

Speakers also will outline plans for the Nebraska Food Cooperative. The co-op aims to improve access to reasonably priced, high quality, sustainably produced foods from Nebraska. Consumers and producers both will be members, said Randy Wattermann, a local foods consumer and producer from West Point, who chairs the steering committee organizing the co-op. The co-op is finalizing its incorporation and expects to begin operations in February.

To make banquet reservations, contact Elaine Cranford at UNL, (402) 472-1748. For more information on the cooperative, contact Hutchison at (402) 472-0381, mhutchison1@unl.edu.

Vicki Miller, IANR News

Specialist Directory

Please add the following entry to your Directory of Extension Specialists for Crop Production and Pest Management included in the Oct. 14 *CropWatch.*

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Hybrid/variety selection *(Continued from page 221)*

based on comparisons from 11 locations and 8 years. This increase was at the 114 to 119 bushel level. Does this double at the 224 to 238 bushel level?

Plant breeders depend on the response of a genotype being different in different environments to make improvements in varieties and hybrids for a given geographic area. Grain producers need to be aware of that same response when searching for the best variety selection for their farm. The cost of seed of the best adapted variety and a lesser adapted variety may be equal so the benefit derived from spending the time to choose the correct variety is pure profit.

Within the University of Nebraska–Lincoln variety testing program, varieties are included because either the farmer cooperators are growing them on the farm or because they are widely grown in that area. These are termed "popular" or "widely grown" entries. *Table 1* summarizes information from 13 irrigated corn tests in Nebraska in 2004. Column 1 lists the county where the trial was grown. Column 2 lists the total number of popular and company corn hybrids which were compared and Column 3 gives the average yield of the popular entries. Column 4 gives the yield of the same number of top hybrids entered by seed companies in the test. This average showed a 16 bu/ac advantage of the company over the popular hybrids. Such a comparison may be too severe since it includes all the popular hybrids and only the top company entries. Column 5 lists the top popular hybrid. The average of Column 5 at all locations is 7 bu/ac higher than the top group of company entries. Finally, Column 6 shows the yield of the top company entry. This average is above the average of the top popular entries in Column 5 by 4 bu/ac. The message from this is that there is an opportunity to improve the yields on your farm by choosing the proper adapted hybrid.

Table 1. Comparison of widely grown and farmer entries with top company corn entries.

County	Popular Number	Popular Entries	Top Company Entries	Highest Popular	Highest Company
		Bu / A Yield			
Furnas Irr	12	238	256	261	268
Red Willow Irr	12	218	250	268	273
Lincoln Irr	12	294	305	307	317
Dundy Irr	12	239	257	270	269
Dawson Irr	12	169	171	188	177
Custer Irr	12	231	244	244	255
Brown Pivot Irr	10	207	220	251	232
Brown Furrow Irr	10	186	206	212	225
Clay Irr	10	232	250	249	257
York Irr	16	244	253	267	260
Buffalo Irr	8	220	235	230	250
Filmore Irr	8	206	223	217	225
Pierce Irr	7	188	211	204	215
Average		221	237	244	248

One reason for the yield advantage of company entries is that they are usually more recently developed than varieties which were widely grown the previous year. It has been stated that corn hybrids are improving at the rate of one bu/ac per year and soybean at the rate of one-half bu/ac per year. This leaves an interesting dilemma in using yield data to select varieties. Research indicates that data becomes more reliable as we add locations and years. Unfortunately, each year of data we add makes the variety that much further behind. Recently, there is more interest in using only two years data from two or more locations when making variety selections. Corn genetics are changing so fast that waiting for a third year of data can be costly.

Most producers choose more than one variety for their farm. There are many benefits to having several varieties. The first benefit is from having genetic diversity. This assures having the best variety for a given year. One method of obtaining diversity is to select varieties from the top yielding group which are different in harvest moisture or other traits. Another advantage of growing several varieties is to spread the maturity date. Some agronomists advise planting the earliest maturing varieties first to further spread the harvest schedule and the pollination period. Another advantage of growing several varieties is the disease and insect resistance package each brings to your farm. Overall, including several diverse varieties spreads the risk and workload. Also, if an early maturing hybrid gets early season frost damage, it can be replanted later in the season without changing hybrids.

Data about soybean, corn, grain sorghum, sunflower, grain pea, proso and foxtail millet are available from many sources. The *University of Nebraska Seed Guide* (EC 05-101) is

(Continued on page 224)

Hybrid/variety selection *(Continued from page 223)*

a good starting place in choosing a new variety. Information from this publication is also available on the Web at *varietytest.unl.edu*. These trials allow for fair comparisons of entries from many companies. Information presented includes yield, moisture, bushel weight, disease reaction when differences were noted, and other characteristics when available. This data is also summarized over multiple locations and years. After identifying some superior varieties from these tests, consult literature or representatives from the companies that market them to get further information about other strengths and weaknesses of each variety. Once a new variety is chosen, we would suggest that it be limited to less than 20% of your acres the first year and increased the second year if its performance warrants that.

A number of characteristics have been mentioned here regarding variety selection. Generally yield is the first factor considered in choosing a new variety. Maturity is usually a close second. In the case of corn, maturity will influence planting date, determine harvest date, harvest moisture, and the chances of getting caught with immature corn in case of an early frost. With soybean, the maturity will be more closely related to the area of adaptation. A maturity group that is inappropriate will not perform well regardless of planting date or harvest date. Other factors to consider with both crops are disease resistance, insect resistance, herbicide resistance, quality, and in some cases, price of seed.

To GMO, or not to GMO

There has been a lot of discussion about Genetically Modified Organisms (GMOs). The following discussion will not end that debate, but provides some things to consider.

First, changing to a GMO should be part of a well planned management scheme. A decision to use a Roundup Ready variety, for example, will influence the type of pre-emergence herbicide, the timing and type of post emergence herbicide, and should be decided based on the type of weeds in a field. There is an additional cost for GMO seed and that must be weighed against the cost of competing herbicides, ease of management and other specific requirements.

Second, the cost of GMO seed must be compared to its benefits. In the case of Bt corn, you should factor in the cost of treatment, the odds of needing treatment and the damage caused by corn borer. In the case of herbicide resistance, it is more cost effective when planted in areas with high weed pressure or hard-to-control weeds. These same varieties may not be profitable on fields where weeds can be easily controlled with pre-emergence herbicides. Seed of varieties with "stacked" genes can be very expensive -- in some cases doubling the price. These genes should be purchased because they are needed, not because they are available.

Third, consider the market for GMO grain. While many GMO events have been officially accepted in many markets, citizens of some of those markets are boycotting all GMOs. This may leave an opportunity to reap a small premium for grain that is not GMO. The picture is changing daily and it requires considerable study and planning before planting.

A final topic for discussion is the use of "designer traits". By this we are referring to traits which are incorporated into a variety designed for a specific end user. Examples in soybean include uses as edemame, tofu, miso, and natto. In corn, examples include white, high oil, modified starch, and yellow food grade. Using genetic engineering, it is possible to change the oil components, starch characteristics, and many other traits to exactly fit the specifications of a product's end user. Any producer wanting to

(Continued on page 225)

Resources on variety/hybrid

Several University of Nebraska–Lincoln Extension resources are available to help you in your variety and hybrid selection:

- G04-1546, *Using Soybean Yield Data to Improve Variety Selection - Part I*, available online at
- G04-1547, *Using Soybean Yield Data to Improve Variety Selection - Part II*, available online at
- G03-1521, *Using Corn Hybrid Yield Data to Improve Selection of Rapidly Changing Hybrids*, available online at
- EC05-101, *Fall Seed Guide* and the related Web site, Variety Testing Results, at *varietytest.unl.edu*. These resources, developed by the UNL Department of Agronomy, provide the results from hybrid and variety trials conducted across the state. Some results from this year's corn harvest are already available and more are being added as they're available.

Disease tolerance traits available in corn hybrids

There are a lot of factors to weigh when making hybrid seed selections. If you have had yield loss due to a disease(s) or are growing corn in a higher risk environment for some pathogens (e.g. corn on corn, reduced tillage, etc.), it's probably worth your time to explore using hybrid genetics to more economically and effectively manage some of the diseases that occur in Nebraska. The following list is a composite of the hybrid disease tolerance traits that are evaluated by one or more of the 20+ companies in Nebraska. When comparing hybrids from different companies, remember that they don't always use the same rating scales when describing traits. For example, 1 – 9 might mean "best to worst" for one company, but may mean "worst to best" for another.

Hybrid disease tolerance traits

Anthracnose leaf blight
Anthracnose stalk rot
Gray Leaf Spot (GLS)
Common rust
Corn lethal necrosis (CLN)
Northern corn leaf blight (NCLB) races 1 and 2
Eyespot
Fusarium ear rot
Gibberella ear rot
Goss's wilt
Head smut
Southern rust
Stewart's wilt

If you have had problems with lodging due to stalk rots or any of the ear rot or grain molds, an additional management strategy is to plant hybrids that have resistance to stalk boring and ear feeding insects. The wounds that these pests create in plants are entryways for many pathogens. And, reducing general plant stress and using good agronomic practices will help reduce damage caused by plant diseases.

Tamra Jackson
Extension Plant Pathologist

Hybrid/variety selection

(Continued from page 224)

make maximum profits from a crop should continue to investigate these possibilities; however, be aware that marketing varieties with these designer traits becomes more of a challenge. There will be a much higher requirement in terms of crop management with more stringent requirements for the quality of the end product. Varieties with these designer traits should be viewed more as an alternate crop because of the higher management and labor costs along with marketing challenges.

Proper planning and attention to the market should allow producers to take advantage of the superior genetics that are being marketed each year in both corn and soybean. It will require studying information from many sources and some trial and error on your farm. In addition to buying the genetics you need, it's important that you don't buy and pay for genetics you don't need.

Robert N. Klein, Extension Cropping Systems Specialist

Challenges for 2006

(Continued from page 221)

Some have said that these extra costs have been partially offset since recent corn yields are increasing faster than soybean yields, but in 2005 soybeans yields were extremely good and corn prices were lower than normal. In planning for 2006, producers must also consider soybean aphids and soybean rust which may affect the economics of producing soybeans if outbreaks occur and treatment is warranted.

What guidelines should a producer use then in selecting the crop mix for 2006?

First consider water availability for irrigation – does the amount available and the time it's available match your crop's needs? Can other inputs and crop production practices be managed, such as weeds and other pests? If these situations can be handled, a producer should take a deep soil sample for nitrates. If there is a large amount of nitrates in the soil profile, you could plant corn and use these residuals, greatly reducing nitrogen fertilizer inputs; however, is residual soil nitrate levels are low after corn, there is a good probability that soybeans may be a more profitable crop in 2006. It is also possible that even with a medium amount of nitrates in the soil profile, soybeans could still be more profitable than continuous corn. To save and accumulate more soil water and reduce energy used in crop production, no-till usually is the best production practice. The rotation corn-soybean makes the no-till system easier by avoiding monocrop problems and pests.

A corn-soybean crop rotation can offer benefits and balance to your cropping strategy.

Producers need to consider all expenses and receipts in growing a crop, along with crop insurance, farm service agency crop history and other factors that can affect the profitability of their crop mix when planning for 2006.

Bob Klein, Extension Cropping Systems Specialist
Paul Jasa
Extension Engineer

Careful storage can reduce nutrient losses from hay

Hay stored outside this fall and winter will be damaged by rain, snow, wind, and ice this fall and winter. The average round bale loses about one fourth of its original nutrients during storage, but with careful management these losses can be reduced to about 10%.

This may require changing some current practices. For instance, do you usually line up bales for easy access so the twine sides touch each other or do you stack your bales? If so, extra spoilage will occur as rain, snow, and ice gather in spots where bales touch instead of running off. Round bales butted end-to-end, cigar-like, usually have less spoilage.

Does snow drift around your bales? Bales in east-west rows often have drifts on the south side. Hay next to fencelines or trees can get extra snow. As snow melts, it soaks into bales or makes the ground muddy. Plus, the north side never gets any sun so it's slow to dry. This year, line bales up north-and-south for fewer drifts and faster drying as sunlight and prevailing winds hit both sides of the row.

Some of the most important changes can affect the bottom of your bales. Always put bales on higher, well-drained ground so water drains away from them. Keep them out of terrace bottoms or other low spots. If necessary, use crushed rock, railroad ties, or even pallets to keep the bottoms dry. This also will reduce problems from getting to your hay or getting it moved due to snow drifts or mud.

Bruce Anderson
Extension Forage Specialist

Revitalize warm-season pastures

Do you have native warm-season pastures that are becoming overrun with cool-season plants? Revitalizing these warm-season grasses can provide for better grazing next summer.

Cheatgrass, downy brome, bluegrass, smooth brome and other cool-season plants have invaded many warm-season grass pastures. This invasion shifts good grazing away from summer toward spring when most folks have plenty of pasture anyway.

Cool-season grasses take over summer pastures relatively easily because they develop rapidly during fall and spring when native grass provides little competition. Then they use moisture and nutrients during spring before warm-season plants have a chance to use them.

Fortunately, several tools can revitalize warm-season grasses and reduce pressure from brome and bluegrass.

Hard grazing in late fall and early spring as well as prescribed spring burning will weaken brome and bluegrass when warm-season plants are dormant and unaffected. An even faster approach is to apply glyphosate herbicides like Roundup now after a hard freeze when weedy cool-season grasses are still green but warm-season plants are dormant.

This will kill or weaken the green and susceptible cool-season grasses but not affect dormant warm-season plants. Recent weather is making this fall ideal for use of herbicides, with cold nighttime temperatures to turn warm-season grasses dormant plus sufficient rainfall in many areas and daytime warmth to keep cool-season grasses active. By reducing competition, warm-season plants will grow more vigorously and provide better summer pasture.

Bruce Anderson
Extension Forage Specialist

Insurance workshop focuses on climate, new products

A Nov. 10 workshop at the I-80 Holiday Inn in GrandIsland will help crop insurance agents, agricultural lenders, farmers, ranchers and others learn more about climate impact and new insurance products and regulations.

"Impacts of Climate and Making New Insurance Products and Regulations Work" is the title for the seventh annual crop insurance workshop jointly sponsored by Extension at the University of Nebraska-Lincoln, Kansas State University and Colorado State University. The workshop also will be available Nov. 8 in Brush, Colo., and Nov. 9 in Salina, Kan.

"The workshop will assess what changing climate conditions and reductions in water availability mean for farmers and ranchers," said Doug Jose, UNL farm management specialist. "In addition, it will help participants enhance their risk management knowledge and ability to design an appropriate risk management plan for their farm or ranch or provide risk management advise to clients."

Presentations include: Recent Drought and Climate Research for Insurance Applications, Washington Update, Getting a Grip on GRIP, Update on APH Issues — Declining Yields, RMA Perspective, Tax Law and Bankruptcy — Impacts on Customers, Insurance Options for Deficit Irrigation and LRP Update.

Continuing education credits will be available for insurance agents. For more information or to register, visit the Web at *www.agmanager.info/events/* or contact the UNL Department of Agricultural Economics, Room 303A Filley Hall, University of Nebraska-Lincoln, Lincoln, Neb. 68583-0922, call (402) 472-2039 or fax (402) 472-0776.

So far, so good in many areas

Fall moisture recharge off to a good start

After an unusually dry stretch during the first three weeks of September, several storm systems the last 30 days have helped improve the soil moisture outlook. Although the precipitation wasn't distributed evenly across the state, some southern and northeastern areas are showing promise at the start of the fall/spring recharge season.

The current weather pattern can provide normal to above normal soil moisture recharge this fall and heavy snowfall in the mountains of Colorado and Wyoming which will benefit Platte River basins.

Figure 1 shows the total precipitation received across the state from September 24 to October 23. Areas showing more than three inches include the southern half of the Panhandle, the southwest, and northern half of the northeastern corner of the state. Areas receiving at least two inches of moisture include east central, northeast, southeast, and portions of south central Nebraska. The remainder of the state received between 0.50 to 1.50 inches of precipitation.

The moisture received during the last 30 days can be confined to three separate events. Northeastern Nebraska received the brunt of their moisture the last week of September when a strong low pressure system moved across the Dakotas and generated a large swath of strong to severe thunderstorms. The southern Panhandle and southwestern corner of the state were on the northern fringe of a strong upper air low that moved out of the southwestern United States October 9-10, dropping heavy snow in Colorado and southern Wyoming. The bulk of the moisture in southeastern Nebraska fell during the last 10 days as another upper air low moved from the southwestern United States and merged with the northern jet stream over the central Plains.

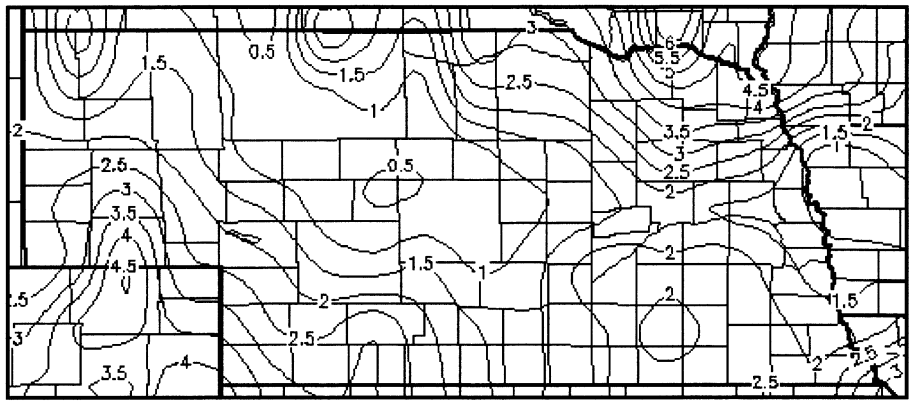

Figure 1. Total precipitation from September 24 to October 23. (Data used to compile *Figures 1-4* was derived from information collected by the National Weather Service Cooperative Data network, which has more than 200 stations in Nebraska.)

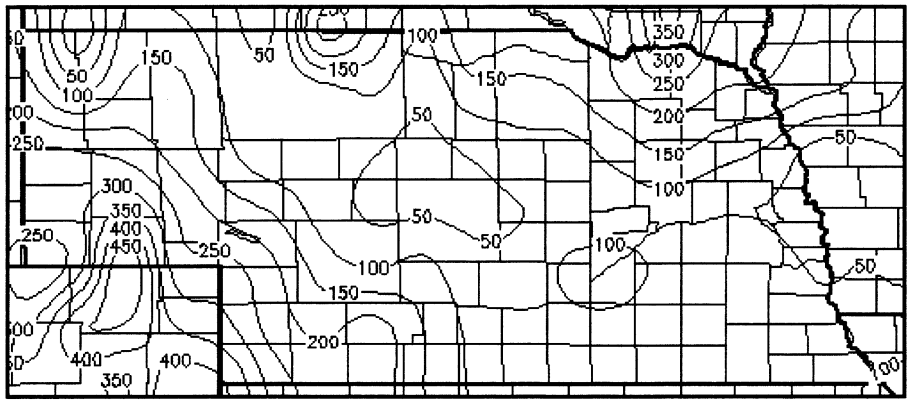

Figure 2. Percent of normal precipitation from September 24 to October 23.

The southern Panhandle, southwest, and northeastern sections of the state have had 150% of normal or greater precipitation during the past 30 days (*Figure 2*).

Most of the remainder of the state has seen 50-150% of normal moisture, with much of east central, southeast, and central Nebraska having 75-125% of normal. Only the central Sandhills region and extreme eastern portions of east central Nebraska failed to receive 50% of normal moisture during the period. What does this moisture mean in terms of soil moisture recharge? If we assume that 70% of the precipitation during the fall/spring soil moisture recharge period will be stored in the soil, *Figure 3*

(Continued on page 228)

Moisture *(Continued from page 227)*

shows the estimated moisture added to the soil profile during the last 30 days. This figure doesn't include any surplus moisture that fell during August in excess of crop water demands. Therefore, the western third of the state probably has more moisture in the profile than *Figure 3* shows due to the above normal precipitation in August.

The southern Panhandle, southwest, and portions of northeast Nebraska are estimated to have added 2.0-3.5 inches of moisture to the soil profile during the last 30 days. The remainder of the state, outside the central and western Sandhills, added 1-2 inches of moisture. The central and western Sandhills region added 0.5-1.0 inches.

Figure 4 compares estimated soil moisture recharge during the last 30 days to what should normally occur. Most of the Panhandle, northeast, and southwest Nebraska range from normal recharge to a surplus of 2.0-2.5 inches. The remainder of the state is near normal or 0.5 inches below normal during the last thirty days. The only exceptions in this broad area lie across the eastern half of the east central district and a small pocket of the southern Sandhill region where deficits lie in the 0.5 - 1.0 inch range.

Long range outlooks continue their recent trends of indicating that most of the western United States, including Nebraska, will experience above normal temperatures throughout the winter. However, no precipitation trends can be discerned from these forecasts. This means that there are equal chances for above normal, normal, or below normal precipitation this winter.

Based on recent upper atmospheric conditions, it is apparent that storm systems that enter the Pacific Northwest are stronger than normal this fall. These systems have been able to move into the

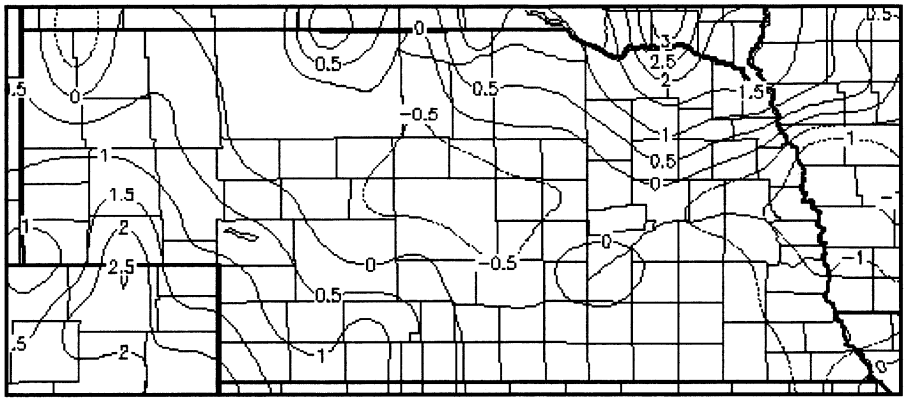

Figure 3. Soil moisture recharge departure (in inches).

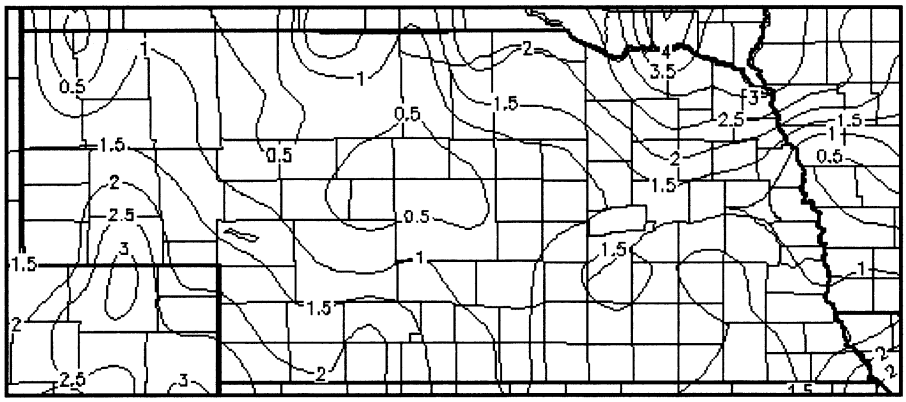

Figure 4. Estimated soil moisture recharge (in inches).

southern and central Rockies every 7-10 days and slowly move eastward. In their wake, heavy moisture has fallen along and north of their eventual storm track. As they move east of the central United States, two to three days of below normal temperatures can be expected before temperatures return to normal.

At present, there doesn't appear that there will be any major deviation from this weather pattern. When and if these systems cross the central United States during the next few months, expect a broad area of moisture with the possibility of heavy snowfall accumulations, especially across the western half of Nebraska, Kansas, and South Dakota. After these systems pass, expect a brief bout of unseasonably cold weather before temperatures return to above normal as high pressure builds across the western and central United States.

All in all, the present atmospheric pattern has the potential to provide normal to above normal soil moisture recharge during the next few months. In addition, there's likely to be heavy snowfall accumulations in the mountains of Colorado and Wyoming that feed that Platte River drainage basins. This could translate into further storage improvements for Lake McConaughy as we move into the spring melt period.

Al Dutcher
State Climatologist

Long-term no-till proves more profitable than tillage

The 2005 yields for a long-term tillage system study on the University of Nebraska Rogers Memorial Farm (10 miles east of Lincoln) are given in *Table 1*. These research plots, established in 1981 in a dryland soybean/grain sorghum rotation, show that long-term no-till builds soil structure, usually has the highest yield, and is the most profitable. This was shown again in the no-till soybean yields, which were about 3.8 to 10.9 bu/ac higher than the other tillage systems and without the costs associated with tillage. This year corn was added to the rotation and no-till was again the most profitable.

The no-till treatment in this study has had grass weed control problems during the grain sorghum production year, primarily with sandburs creeping in from the field margins over the last few seasons, on both sets of plots. The burs were carried further into the field each year on tires, indicating the need for weed control even in field margins. They were not a major problem in the first 20 years of these plots and have started increasing recently. Using RoundUp Ready soybeans has helped keep them in check, but has not controlled them. Actually, overspray onto the field margins has killed some of the desirable bromegrass and allowed the later season sandburs to grow without competition and creep into the plots. In the plots, row crop cultivation has provided enough additional control to reduce the spread in those treatments.

While RoundUp Ready soybeans has helped control the sandburs, there are no effective herbicides for sandbur control in grain sorghum. (See the April 29, 2005 *Crop Watch* No. 05-8 for the 2004 results with sandburs in grain sorghum.) In order to clean up the sandburs, RoundUp Ready corn was planted this year instead of grain sorghum. This set of plots will continue as a corn/soybean rotation for future years, adding a new dimension to these long-term plots as corn will be grown every other year. The other set will remain a grain sorghum/soybean rotation, continuing the 25-year history of this study.

Table 1. 2005 yield results from dryland tillage trials at the University of Nebraska Rogers Memorial Farm.

Tillage System	2005 Yield, bu/ac*	
	Soybeans	*Corn*
Fall plow, disk, disk	48.3	183.6
Fall chisel, disk	51.2	185.7
Disk, disk	50.0	187.6
Disk	49.5	194.3
No-till with cultivation	55.4	181.1
No-till without cultivation	59.2	190.6

*Full plot harvest with a combine and weigh wagon; corrected for moisture.

For this first year of corn production in these established tillage systems, the single disk treatment had the highest yield, 194.3 bu/ac; however, the 3.7 bu/ac yield increase over no-till without cultivation was not enough to cover the cost of the single disking at current prices, thus no-till was still the most profitable. The single disking reduced the residue cover and dried the soil slightly which may have given that treatment a quicker start than the no-till which was planted into residue from 68 bu/ac soybeans. (The first week of May had several nights with temperatures below freezing.)

The weed control was excellent with the RoundUp Ready corn and one trip with the cultivator on the no-till reduced the yield 9.5 bu/ac, primarily because of soil moisture losses during a dry portion of the season and the reduction in residue cover. Likewise, cultivation of the no-till soybeans reduced yields 3.8 bu/ac. While the year started with almost a full soil moisture profile, only about 12.5 inches of rain fell during the growing season (22.5 inches since the 2004 harvest). Timely rains and no runoff from the no-till treatments resulted in respectable yields in this dry year.

Paul Jasa
Extension Engineer

Nebraska cattle on feed unchanged

Nebraska feedlots, with capacities of 1,000 or more head, contained 1.94 million cattle on feed on October 1, according to USDA's National Agricultural Statistics Service, Nebraska Field Office. The inventory was the same as last year but 6% above October 1, 2003.

Placements in feedlots during September totaled 500,000 head, up 6% from 2004 but 4% below 2003. Marketings of fed cattle during September totaled 320,000 head, unchanged from last year but 7% below September two years ago.

Nationally, cattle and calves on feed for U.S. slaughter market for feedlots with capacity of 1,000 or more head totaled 10.5 million head on October 1. The inventory was slightly below October 1, 2004 but up 3% from October 1, 2003.

With an eye on nitrogen prices

Manage nutrients to maximize profitability

We don't have a crystal ball on fertilizer prices but fertilizer use efficiency is key to maximizing profitability when fertilizer prices are high. Consider implementing the following suggestions for your operation:

♦ **Give credit to soil residual nitrogen.** Collect soil samples to at least a 2-foot depth and analyze for nitrate-N to determine the amount of carry-over nitrate-N in the soil. Residual nitrate-N is used as efficiently as fertilizer N. Residual soil nitrate is often greater where yields were less than expected or the field has a history of manure application, but can be substantial in other cases as well.

♦ **Give credit to nitrogen released from soil organic matter.** This can be considerable, depending on soil organic matter levels. UNL suggestions for nitrogen application to corn and grain sorghum consider soil organic matter.

♦ **Less nitrogen is needed for corn or grain sorghum after soybean or alfalfa in rotation.** This nitrogen credit has repeatedly been validated in Nebraska and in neighboring states. The 45 lb N credit for a previous soybean crop is a conservative estimate; research findings indicate the reduced need for applied N exceeds 45 lb/ac. Still, we find many producers who are reluctant to give this credit.

♦ **Set realistic yield goals.** Expected yield is a major factor in determining N rates. UNL suggests using an expected corn yield of 105% of the mean yield over the last five years. Expected yield as used in the UNL suggested N rates allows for enough N to achieve yields well above the expected yield.

♦ **Improve nitrogen use efficiency with timing of application.** The logistics of N application are often best in the fall, but a fall application creates more opportunity for N loss than a spring application. Nitrogen losses to leaching are likely to be less if N is applied in the fall after soil temperature drops and stays below 50° F. Split application generally improves N use efficiency, including multiple applications through center pivots.

♦ **Consider soil P and K levels.** Potassium levels are more than sufficient for optimum crop performance on most Nebraska soils. Many fields also have high enough levels of phosphorus that the likelihood of an economic response to phosphorus fertilizer is low. Collect soil samples for the 0- to 8-inch depth for management units within fields, have them analyzed for the basic test (pH, organic matter, P and K), and follow the UNL suggested application rates.

♦ **Nutrient placement may be important to efficient use.** Recovery of P and Zn during the year of application is greater with band applications than with broadcast application. Application rates for these nutrients can be reduced by 50% with band as compared to broadcast application.

♦ **Use manure effectively.** Several articles in recent Crop Watch issues have addressed manure use. Manure application provides a nutrient source and often results in higher yield than achievable with inorganic fertilizer alone. Test the manure for nutrient content. Consider manure N availability since much of the total N content will not be available the first year. Determine the desired application rate and calibrate the application equipment. Apply the manure uniformly. Some of these operations are not well controlled; leave some allowance for error in nutrient application rates.

♦ **Not all fertilizer rate suggestions are the same.** The UNL suggested rates of nutrient application tend to be lower than those suggested by many labs and fertilizer dealerships. UNL suggestions are well supported by research and on-farm verification and are generally found to be the most economical rates, even for high yield situations. Producers can have a high level of confidence in UNL recommendations.

♦ **Yield response to applied N may vary with fields.** Consider yield records for your fields. If some of your fields persistently are less productive, you may do better to allocate fertilizer to the more productive fields.

♦ **Fine-tune fertilizer use for your operation.** Fertilizer use recommendations can get you close to the right rate for your fields but, with data collection and a study of your records, you may be able to further fine-tune fertilizer use. This may be a particularly good investment if N fertilizer prices continue to be high. As football coaches and teams study game films to learn how to improve their performance, the stalk nitrate test is a means to study your N management to determine how it can be improved.

Consider replicated strip trials to determine the effect of lower or higher rates of nutrient application on yield. Use yield maps or aerial photos to determine the yield variability across fields and evaluate if fertilizer application should be on a management zone or variable rate basis. In fine-tuning fertilizer use, consider several years of data rather than just one. Fine-tuning fertilizer use needs to be an on-going process.

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