10-4-2002

CropWatch No. 2002-23, Oct. 4, 2002

Lisa Brown Jasa
University of Nebraska-Lincoln, ljasa@unlnotes.unl.edu

CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 2002-23
Oct. 4, 2002

Consider benefits of cover crops this year

In fields where crop yields were low, there may be much nitrate-nitrogen carryover and increased potential for wind and water erosion due to poor ground cover. In these areas, cover crops may be a feasible option this year.

Some nitrogen-fixing legumes, such as hairy vetch, can be good cover crops for Nebraska; however, it is too late to sow these. The best option is winter rye if sown soon. Winter rye needs to be established this fall with the expectation that it will make good growth early next spring. In late April or early May, it can be killed with a herbicide or with tillage.

Several factors need to be considered when determining whether a cover crop would benefit your operation.

Soil residual nitrogen. Soil nitrate levels are expected to be high where dryland crops did poorly.

If ground cover next spring is likely to be less than 50% on highly erodible land, a cover crop should be seriously considered.

Nitrate is susceptible to leaching, causing loss of nitrogen and potential ground water contamination. On fine-textured soils with little stored soil water, the risk of extensive leaching is low compared to sandy soils or soils that contain much water. A dry matter yield of 1500 lb per acre is a realistic expectation for a winter rye cover crop sown in early October and allowed to grow until early May. The dry matter should be about 3.5% to 4.0% nitrogen with45 to 60 lb nitrogen per acre per 1500 lbs of dry weight. This nitrogen should be fully credited when estimating nitrogen fertilizer needs if the cover crop is killed by incorporation. If killed with a herbicide and left on the surface, some nitrogen will be lost to the air during drying, but most of it should become available during the season.

Potential for wind and water erosion. Soil erodibility needs to be considered, as well as the expected ground cover by crop residues. If ground cover next spring is likely to be less than 50% on highly erodible

(Continued on page 213)

Inside

Assessing irrigation problems from the combine window

Drought was the overriding concern for many producers this season. For irrigators it meant the relentless task of irrigating almost constantly to keep up with the crop's water needs. In the Nebraska Panhandle where average precipitation is 16 inches, rainfall was half of normal for most of the growing season. In eastern Nebraska rainfall was more than 10 inches below an average 36 inches. Throughout the state rainfall was 35% to 50% below normal and perhaps more, depending on the time of the year.

Without precipitation to supplement irrigation, many systems were unable to keep up with crop demand. Irrigation systems are designed to supplement normal rainfall patterns in a given area. In years of extreme drought, such as this year, systems are taxed to or beyond capacity. If systems were designed to meet crop water demand during periods of severe drought, pump size, energy needs and costs would all be much greater than what would normally be

(Continued on page 213)

Updates

Field updates

♦ **Keith Glewen, Extension educator in Saunders County:** Harvest in east central Nebraska is progressing steadily. Yields ranged from 5 to 230 bushels per acre for corn and 2 to 60 bushels per acre for soybeans. Tillage, planting date, hybrid/variety, location, and available water all influenced what is going into the bin this year. Mycotoxins have been a challenge for some growers and elevators.

A renewed interest in wheat has surfaced this year as we progress into what looks like dry growing conditions this fall. Growers need to start giving thought to how they intend to mange their corn and soybean fields after harvest if soil moisture is not recharged. How important is tillage this fall? What was the financial payback for the fall or spring tillage? Will herbicide carryover affect next year's crops? Should some fields be rotated to a different crop? How much carryover nitrogen should I account for? Is fall fertilization in my best interest this year? Should I cultivate corn and soybean fields during the growing season? All these questions equate to significant dollars for each operator. In many instances they may mean the difference between profit and loss.

♦ **The next state and international Certified Crop Advisers exams will be Feb. 7, 2003, at the Holiday Inn in Kearney.** Registration materials will be available Oct. 1; the deadline for registration is Dec. 20. If you need exam registration materials, contact Dee Petersen, Nebraska CCA Administrator, at 402/476-1528 or e-mail your request to *info@necca.org*.

Review sessions for the state and international exam will be Jan. 9-10 at the Kearney Holiday Inn.

Management tips
Oct. 4 - Oct. 18

♦ **Soil testing where corn will follow corn should include a deep nitrate test.** Sample at least two feet deep, preferably three or four feet. If you don't sample to four feet, include a default value of 3 ppm to four feet (for fine and medium soils) in your calculation. Your NRD may offer a cost-share program for soil testing.

♦ **Manure applied to soil at agronomic rates for nitrogen or phosphorus will rarely cause a salt toxicity to crop roots after planting.** Excessive application rates or non-uniform application may cause salt problems. When beginning to apply manure to your soil have EC measured on a soil sample in order to get a background value. Repeat the test every three or four years to see if salts are accumulating. Protect your next crop and the environment: apply manure at agronomic rates for nitrogen.

Resources

The following publications were recently released by NU Cooperative Extension. To get your copy, check at your local Cooperative Extension Office or visit the Extension publications Web site at: *http://www.ianr.unl.edu/pubs.*

- 2002 Nebraska Farm Custom Rates - Part I, EC 02-823
- Federally Registered Restricted Use Pesticides, EC 02-2500
- Residential On-site Wastewater Treatment: Site Evaluation, G 02-1469
- Prairie Dogs and Their Control, G 02-1476
- Fumigation of Burrowing Rodents with Aluminum Phosphide or Gas Cartridges, G 02-1477
- Managing the Russian Wheat Aphid with Resistant Wheat Varieties, NF 96-307
- Ascochyta Blight of Chickpeas, NF 02-543

CROP WATCH

cropwatch.unl.edu

Crop Watch is published from March to November by Cooperative Extension and Communications and Information Technology in the University of Nebraska Institute of Agriculture and Natural Resources, PO Box 830918, 108 Agricultural Communications Bldg., UNL, Lincoln, NE 68583-0918. To order either a printed subcription or to change your address, write to *Crop Watch* at the above address or call (402) 472-7981. The newsletter also is available on the web at **cropwatch.unl.edu**

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

For more information about a particular subject, you may contact the authors:
NU Department of Entomology, 202 Plant Industry Bldg., Lincoln, NE 68583-0816
NU Department of Agronomy, 279 Plant Science Bldg., Lincoln, NE 68583-0918
NU Department of Plant Pathology, 406 Plant Science Bldg., Lincoln, NE 68583-0722

Assessing irrigation (Continued from page 211)

needed. While designing irrigation systems to meet a typical range of crop water needs may be cost efficient in the long run, in a year of severe drought, it may leave even irrigated crops under stress.

In these situations crop stress can be reduced by ensuring that the irrigation system is uniformly applying water on the field and that none is misdirected. Uniform water application can help reduce total water pumped and deep percolation and limit movement of chemicals below the root zone. During drought the uniformity of water application becomes very visible and can be easily evaluated since there is little or no supplemental water available to mediate the effect on the crop.

During harvest, survey your field from the combine to identify any patterns or problem areas where irrigation may have been uneven. Many center pivot systems are operated with drops extended down into the corn canopy. Lack of uniform water application will appear as circular patterns in the field. This will be more evident with systems that have drops spaced more than 5 feet apart and is especially visible during a drought. UNL research indicates that yields may decrease up to 40 bushels per acre between drops when drops are spaced too far apart in the corn canopy. In years with normal precipitation, the areas between drops may not become stressed and be visible because rain supplements the irrigation. However, the area close to the drops will likely be over-irrigated, resulting in additional pumping costs. Either way, the lack of uniform water application has reduced your bottom line.

Although drops are mostly influenced when operated in a corn canopy, nonuniform water application can occur anytime drops are located too far apart. Regardless of the crop, surveying the field before harvest is an excellent way to evaluate just how your system operated.

For furrow irrigators an inability to move water across the field fast enough was one of the biggest problems this year. Top portions of the fields may have received more than enough water while the bottom end of the field may have been shorted. Surge irrigation is a system that can improve uniformity of furrow irrigation systems by shortening the time to advance water to the end of the field as compared to conventional practices. UNL research has shown that surge performs even better under hot dry conditions.

Yield loss that averages as little as one to two bushel per acre is all that it would take to pay for adding additional drops if the spacing of in-canopy nozzles is too wide. Likewise, only a two to three bushel per acre yield increase is needed to pay for a surge valve. While it's too late to correct irrigation problems this year, surveying your field at harvest can provide important insight into changes that may need to be made to your irrigation system for next season.

Extension Irrigation Specialists
C. Dean Yonts, Panhandle REC
Bill Kranz, Northeast REC
Jose Payero, West Central REC

Cover crops (Continued from page 211)

land, a cover crop should be seriously considered.

Toxic effects of winter rye. Research has indicated that there may be some toxic or alleopathic effect from rye, especially if the rye plant tissue is less developed in the spring. Corn yield following a rye cover crop was reduced by 9% in one year but there was no effect in the other two years of a study conducted at the NU Agriculture Research and Development Center near Mead.

Residual effects of herbicides. The residual effect of the herbicide clomazone (e.g. Command) which was applied to a 2002 soybean crop may inhibit rye growth. Also, atrazine applied at more than 1.25 lb active ingredient per acre could reduce cover crop performance.

Water use by the cover crop. A cover crop will deplete water from the soil, meaning less water would likely be available for the 2003 crop. While difficult to estimate, soil water loss may be increased over evaporation by 2 inches for each 1500 lb dry weight produced. If winter and spring precipitation fully recharges the soil water profile, this will not be a concern. However, with predictions of a relatively dry winter, producers should keep this in mind when considering a cover crop for non-irrigated fields.

Cost of establishment. The costs of seed (about 50 lb/A) and sowing the winter rye need to be weighed against the potential benefits.

Grazing of the cover crop. The spring growth of the rye cover crop is highly digestible, with high protein content. However, avoid grazing when the soil is wet so compaction doesn't develop, affecting subsequent crop performance.

Charles Wortmann, Extension Nutrient Management Specialist

Smart weeder

An optical sensor that detects weed patches and prompts a herbicide sprayer is being developed by KSU and USDA ARS researchers. The technology would mean less herbicide in the environment and lower costs for farmers.

Using a near infrared spectrometer, the researchers studied the light absorption characteristics of weed stems and leaves. They identified five wavelengths that can be used to discriminate weeds from crops and soil and developed the optical sensor.

For more information, see this week's AgNews at *cropwatch.unl.edu*

Comparing options under the new farm bill

The 2002 farm bill offers three distinct types of support for producers of covered commodities (wheat, feed grains, oilseeds, cotton and rice).

First, traditional marketing loans essentially assure a minimum price on all bushels produced, either through marketing loan gains or loan deficiency payments. Loan levels have been increased for wheat and feed grains but decreased for soybeans in the new legislation. This may slow, if not reverse, the expansion in soybean acres that has been underway since the mid-1990s.

Farm bill calendar

September 2002 — FSA mails *Base Option Reports* and *Yield Reports* to landowners.

October 1, 2002 — Signup begins for the direct and counter-cyclical program for crop years 2002 and 2003.

April 1, 2003 — Ending date for owners to select base and yield options.

June 2, 2003 — Signup ends for the 2002 and 2003 direct and counter-cyclical program.

The other two support provisions — direct and counter-cyclical payments — are based on historical crop bases and yields, not the current year's output. A key change is that soybeans and other oilseeds become full program crops for the first time. Producers may choose among five different crop-base options. Four of the five options are carried over from the old farm bill and its production flexibility contracts (PFCs):

Option 1: 2002 PFC (old) wheat and feed grains bases.

Option 2: 2002 PFC (old) wheat and feed grains bases; add minimum oilseed acres.

Option 3: 2002 PFC (old) wheat and feed grains bases; substitute maximum oilseed acres.

Option 4: New bases to reflect acres planted (or prevented from planting), 1998-2001.

The example

Initial assumptions

1,000 acres of cropland.
600 acres of PFC (old) corn base.
500 acres of corn, 1998-2001.
500 acres of soybeans, 1998-2001.

Crop base options with given assumptions

Option 1: 600 a. corn base (60% of cropland).
Option 2: 600 a. corn base; 400 a. soybean base (60%; 40%).
Option 3: 500 a. corn base; 500 a. soybean base (50%; 50%).
Option 4: 500 a. corn base; 500 a. soybean base (50%; 50%).
Option 5: 501-599 a. corn base; 499-401 a. soybean base (50.1%-59.9%; 49.9%-40.1%).

Other initial assumptions

	Corn	Soybeans
PFC (old) or direct yields	85 bu/a	31 bu/a
Ave. actual yields, 1998-2001	130 bu/a	40 bu/a
Partially updated yields, 1998-2001; CC (3)	122 bu/a	37 bu/a
National loan rate	$1.98/bu	$5.00/bu
Expected 12-month price	$1.95/bu	$4.95/bu
Target price	$2.60/bu	$5.80/bu
Direct payment (DP) rate	$0.28/bu	$0.44/bu
Counter-cyclical payment (CCP) rate	$0.34/bu	$0.36/bu

Direct and counter-cyclical payments made on 85% of base.
Oilseed base selected in *Option 5* is halfway between minimum and maximum.

Option 5: 2002 PFC (old) wheat and feed grains bases; partially substitute oilseed acres.

If and only if producers choose Option 4, yields may be partially updated for the counter-cyclical payment. Options for yield updates are as follows:

CC (1): Retain PFC (old) yields.

CC (2): Add 70% of the difference between the PFC (old) yield and the actual yield, 1998-2001, to the PFC yield.

CC (3): Multiply the actual yield, 1998-2001, by 93.5%.

The same crop base and yield options must be selected for all crops on a farm. However, if a producer has more than one farm number (as determined by USDA's Farm Service Agency) alternative options may be selected for different farms.

Whatever base and yield options are selected for a farm, the objective should be attain the highest level of support, measured in dollars per acre, for the 2002-2007 period. This may not be easy for two related reasons. First, an assumption has to be made about future market prices. If market prices exceed the national loan rate, counter-cyclical payments will be reduced accordingly. Equally important, market conditions are likely to change. This makes it difficult to select a base option that will fit all situations.

(Continued on page 215)

Table 1. An example of projected returns with various crop base options and given assumptions under provisions of the new farm bill.

Option 1: 2002 PFC (Old) base

Base x bu. x $/bu x .85 = payment/acre					
Corn DP	60%	85	0.28	.85	$12.14
Corn CCP	60%	85	0.34	.85	14.74
				Option 1 Total	**$26.88**

Option 2: 2002 PFC (Old) base; add minimum oilseeds

Base x bu. x $/bu x .85 = payment/acre					
Corn DP	60%	85	0.28	.85	$12.14
Soybean DP	40%	31	0.44	.85	4.64
				Total DP	$16.78
Corn CCP	60%	85	0.34	.85	$14.74
Soybean CCP	40%	31	0.36	.85	3.79
				Total CCP	$18.53
				Option 2 Total	**$35.31**

Option 3: 2002 PFC (Old) base; add maximum oilseeds

Base x bu. x $/bu x .85 = payment/acre					
Corn DP	50%	85	0.28	.85	$10.12
Soybean DP	50%	31	0.44	.85	5.80
				Total DP	$15.92
Corn CCP	50%	85	0.34	.85	$12.28
Soybean CCP	50%	31	0.36	.85	4.74
				Total CCP	$17.02
				Option 3 Total	**$32.94**

Option 4: Update bases and yields to 1998-2001

Base x bu. x $/bu x .85 = payment/acre					
Corn DP	50%	85	0.28	.85	$10.12
Soybean DP	50%	31	0.44	.85	5.80
				Total DP	$15.92
Corn CCP	50%	122	0.34	.85	$17.63
Soybean CCP	50%	37	0.36	.85	5.66
				Total CCP	$23.29
				Option 4 Total	**$39.21**

Option 5: 2002 PFC (Old) base; oilseeds between minimum and maximum

Base x bu. x $/bu x .85 = payment/acre					
Corn DP	55%	85	0.28	.85	$11.13
Soybean DP	45%	31	0.44	.85	5.22
				Total DP	$16.35
Corn CCP	55%	85	0.34	.85	$13.51
Soybean CCP	45%	31	0.36	.85	4.27
				Total CCP	$17.78
				Option 5 Total	**$34.13**

Table 2. Returns with initial assumptions (*Table 1*) and three adjustments.

	Initial assumptions	900 a. PFC Base	98-01 Corn Yld 100 bu/a	$2.35 Corn $5.50 Syb
Option 1	$26.88	$40.32	$26.88	$12.14
Option 2	35.31	42.42	35.31	16.78
Option 3	32.94	32.94	32.94	15.92
Option 4	39.21	39.21	35.45	15.92
Option 5	34.13	37.68	34.13	16.35

Farm bill

(Continued from page 214)

Returns ($/acre) with initial assumptions and three adjustments

Table 2 shows the results when certain adjustments are made to the initial assumptions. The purpose is to view differences in returns for each of the five base options as the assumptions change. For example, in the second column, the PFC (old) corn base is 900 acres, not 600 acres, as assumed in the example above. The third column assumes that corn yields 100 bushels per acre, not 130. And in the last column, market prices for corn and soybeans are much higher than assumed initially. Each adjustment is independent of the other and is compared only to the results under the initial assumptions.

Generalizations from example and three selected adjustments

1. Add soybean base to PFC (old) corn base, up to the point that it would be necessary to substitute soybean base for corn base.

2. If PFC (old) corn base is high relative to total cropland, it may be desirable to retain that base (not update to 1998-2001).

3. Other things equal, corn yields may drop significantly before it is not desirable to update bases and yields.

4. Higher market prices will reduce or eliminate counter-cyclical payments.

Concluding comments

The example above, while rather simple, is not atypical for Nebraska. Many farms have followed a 50-50 rotation of corn and soybeans in recent years, notwithstanding whatever their crop bases may be.

Producers may analyze options for their own farms by accessing pencil worksheets or electronic spreadsheets on the Internet at a University of Nebraska Web site at *farmbill.unl.edu.*

Roy Frederick
NU Agricultural Economist

Adding income from a niche market

Producing woody decorative florals

Adding pockets of woody decorative floral plantings on your farm can pay annual cash rewards while helping meet conservation goals. While woody florals may be too labor intensive to compete with commodity crops on a large scale, they can provide a side income.

Nestled down by the river where you're planting a riparian buffer or in the shelter of a windbreak, you just may be able to slip in plantings of curly willows or pussy willows which can be sold to wholesale and retail florists across Nebraska.

UNL field trials in eastern Nebraska (Mead, Nebraska City, St. Edward, and Concord) are testing the concept of "productive conservation" — producing commercially valuable products from woody plants in conservation plantings. Production of one class of product, woody decorative florals, is being tested in several agroforestry configurations (flatland and hillside alleycropping, riparian buffers, and silvopastoral systems). Experimental field trials, market assessments, and participation in the marketplace have generated considerable data on the selection, production, marketing, and profitability of woody florals (see *Tables 1-3*). Yields of florals in most years can be subtantial in a small area of land. Many woody florals are adapted to wet sites and generally must be irrigated to ensure consistent quality and growth.

See this week's *AgNews* section of *CropWatch* on-line at *cropwatch.unl.edu* for a story about a Kansas family who began a floral business on their farm in the 1980s.

A field day will be held at the NU Agricultural Research and Development Center near Mead Nov. 23 so you can view two years growth of 10 species of woody decorative florals being tested for use in Nebraska. Given the drought and grasshoppers this year, you'll be able to see how various plantings did under some of the worst of circumstances. You'll also be able to get some hands-on experience or view the entire harvest process, including cutting (by hand), grading, and bundling of the product.

Market assessments of wholesale florists (*Table 3*) indicate that fresh cut woody florals constitute approximately a $7.9 million industry in the United States. These data *do not* include woody florals that are:

1) marketed as dried product by hobby and craft stores across the United States and Canada;

2) produced by retail florists for self-use, or purchased from local producers;

3) ordered by larger retail florists directly from producers;

4) sold by large producers that also serve as wholesalers to retail florists and other wholesalers; or

5) Canadian, Washington, Oregon and California markets.

Thus, the total market for woody florals in the United States and Canada is likely to be considerably larger than that reported in *Table 3*.

(Continued on page 217)

Table 1. Woody floral yields in Nebraska

Species	*1st Harvest marketable stems/plant**	*2nd Harvest marketable stems/plant***	*2nd Harvest** marketable stems/1,000 ft*	*2nd Harvest gross value /1,000 ft*
Streamco Willow (*Salix purpurea*)	30	43	8,600	$2,580
Scarlet Curls Willow (*Salix "Scarcusam" hybrid*)	22	53	10,566	$4,140
French Pussy Willow (*Salix caprea*)	13	43	8,522	$1,300
Curly Willow (*Salix matsudana*)	0	16	3,938	$1,407
Bailey Redtwig Dogwood (*Cornus sericea "Bailey"*)	7.0	12	2,900	$870
Colorado Dogwood (*Cornus sericea "Coloradensis"*)	10	11	2,670	$801
Flame Willow (Salix hybrid *"Flame"*)	0	11	2,685	$806
Cardinal Dogwood (*Cornus sericea "Cardinal"*)	12	8	1,928	$578
Yellowtwig Dogwood (*Cornus sericea "Yellowtwig"*)	2	7	1,760	$792
Bloodtwig Dogwood (*Cornus sanguinea var atrosanguinea "Bloodtwig"*)	3	2	588	$178

* Two years growth after planting large nursery stock.
** One year of growth after harvest.
** Four- to six-foot spacing, depending on species one year after first harvest.
Prices based on actual sales prices to wholesalers in the Lincoln/Omaha area from 12/2001-3/2002

Woody florals *(Continued from page 216)*

Initial steps to adding woody florals

If you're considering planting woody decorative florals next spring, following are a few tips on getting started:

♦ **Use the winter to research the local market and plan production.** The only wholesalers for woody florals are in Lincoln and Omaha, but numerous retailers across the state (florists, supermarkets with floral shops, craft stores, decorators) also purchase these products. You also could sell them through Farmer's Markets. Line up wholesalers or retailers and determine which kinds of florals they are most interested in and what price they typically pay.

♦ **Select a production site, being mindful that while areas already in CRP won't be eligible, other areas identified for cost-share from other agencies, such as NRDs, might be eligible.** Talk with an agency representative concerning your plans. While you might not be able to plant on CRP acres planted to a windbreak or buffer strip, you could plant just outside the area and still get many of the advantages of the windbreak's or buffer's microclimate.

♦ **Control weeds and prepare the site.**

♦ **Identify sources of plant material to plant in the spring and which plants do best in which areas.** Contact our office for further information on plant selection. In Nebraska the best markets often are for scarlet curls willow, pussy willow and curly willow.

Table 2. Nebraska woody decorative floral markets, 2001

Species	No. of stems	Estimated $ value*
Pussy willow	70,500	$56,400
Curly willow	68,400	$54,720
Red (sweet) birch	53,700	$42,960
Flowering branches	7,400	$11,100
Forsythia	10,100	$10,100
Red and yellow dogwood	3,500	$2,800
Totals	**213,600**	**$178,080**

*Based on average prices retail florists pay to wholesalers for woody florals, by species or type.

♦ **Probably most importantly, start small and give yourself some time to work into the care and harvest of your woody floral planting.** Harvest requires considerable hand labor in late fall and early winter.

For further information on adding a woody floral planting to your operation, contact Scott Josiah at 402-472-6511 or email sjosiah2@unl.edu or Heidi Brott at 402-472-4975.

Scott J. Josiah, State Extension Forester

Table 3. Wholesale woody floral markets (Non-Pacific coast states), 2001

	Curly willow	Pussy willow	Forsythia	Red birch	Dogwood	Flowering branches
No. of bunches/yr	902,000	331,000	152,600	93,132	47,855	33,662
Average wholesale price/bunch	$4.50-$6.50 for 10 stems	$3.50-$4.00 for 25 stems	$5.00-$6.00 for 10 stems	$4.00-$6.00 for 25 stems	$4.00-$5.00 for 10 stems	$1.50-$6.00 for 5 stems
Average wholesale value	$4,961,000	$1,241,250	$839,300	$465,660	$215,348	$126,233
Frequency of purchase	Weekly	Weekly in season Jan–April	Weekly in season March-April	Monthly	Weekly in season Dec-Feb	Weekly in season spring
Primary source of supply	Northwest, some Mexico	Calif, Northwest	Calif., some Holland	Upper Midwest	Calif., Northwest	Calif.
Quality criteria	No leaves, green or brown pliable branches	Catkins on, stems not dry	Tight bud stage	Dried product, 4-5 ft stems	Bright twig color	Slightly forced

UNL climatologist sees little relief from drought

Most of Nebraska will be dryer than normal this winter with normal to above normal temperatures, a University of Nebraska-Lincoln climatologist predicts.

Although recent rains in parts of Nebraska helped ease this summer's drought, most of the state remains dry. Agricultural Climatologist Steve Hu expects that dry pattern to continue statewide.

"I wish I could say we are going to see more precipitation this winter, but that's not what my analysis shows," the Institute of Agriculture and Natural Resources scientist said.

Hu uses sophisticated statistical analysis to predict precipitation anomaly patterns. Anomalies are important because they indicate departures, or variations, in long-term averages. His predictions are based on his research, which analyzed 112 years of precipitation data and identified precipitation variation patterns throughout most of the last century.

According to his analysis, this winter's temperatures in northern Nebraska should be slightly above normal with near normal temperatures in the southern half of the state.

"Precipitation should be on the dry side for northern and western portions of Nebraska. However, there could be above average precipitation in the southeastern section of the state," Hu said.

His analysis also indicates the dry summers Nebraska has experienced in recent years should continue, possibly for the next five to seven years. Fall and winter precipitation patterns in the next few years also should be drier, he said.

"Not all those years and not all seasons in each year of the next five to seven years will be dry. There will be wet years, but a majority of those years will be on the dry side," Hu said.

Model indicates dry winter followed by dry summers may be likely.

Hu said he has a high degree of confidence in his predictions. They are based on advanced analysis of historical precipitation data collected at weather stations statewide and from Kansas, Missouri, Illinois, Iowa, Colorado and Wyoming. These states' weather patterns can strongly influence what happens in Nebraska and help support and amplify the historical data that Hu analyzes.

"Sophisticated data analyses and computer modeling greatly improves the accuracy of predicting weather trends and anomaly patterns. I think it's one of the best methods to predict local rainfall and I give it a confidence rating of better than 70%," Hu said.

His statistical analyses indicate that precipitation patterns follow 18- to 23-year cycles. This pattern accurately reflects Nebraska's intensive drought periods during the 1930s, 1950s and late 1970s. This pattern shows a 10-year wet period ending in the late 1990s, followed by the current extended dry pattern.

"Those extended patterns form from an overall trend that can be examined on a year-to-year basis," Hu said, explaining that not all years in the extended dry period will be dry. "We will have some periods of wet weather within the current (dry) pattern ... but overall, in the dry phase of the cycle, precipitation will be below normal."

More information on Hu's analysis is available at the Precipitation and Temperature Predictions for Nebraska Web site at *http://snrs.unl.edu/climate/prediction/index.html.*

Steven W. Ress, Communications Coordinator, UNL Water Center

Water concerns can affect 2003 crop selection

Water availability is a major concern for farmers as they decide what crops to plant in 2003, a University of Nebraska cropping system specialist said.

With conditions in most of the state ranging from abnormally dry to exceptional drought and no way of predicting next year's soil moisture levels, farmers should consider when and how much water their crops will need, said Bob Klein, a cropping specialist at NU's West Central Research and Extension Center at North Platte.

"The catch to selecting 2003 crops will be water availability," he said. "If water levels are limited, it may not be a good idea to plant all acres to corn or soybeans. But even with water concerns, it's still important to select the highest producing and better performing hybrids and varieties because there isn't much difference between water use."

Most reservoirs are at extremely low levels and soil moisture is nearly depleted in many areas. If producers get water from an irrigation district, they also need to think about when their crops will need water.

"Yields will be limited if crops need water before or after it's available," he said. "This is why it's also a good idea to talk to crop insurance agents to check on coverage. Crop insurance agents can determine the coverage you will have on your irrigated acres. Producers may have to switch their plans if water delivery time and amount are not based on their needs."

With limited water supplies and limited irrigation systems, some farmers may want to consider planting a portion of their acres to winter wheat, Klein said. For example, if a pivot can only apply enough water on two-thirds of the field to keep up with corn's water

(Continued on page 219)

Timely fall herbicide treatments effective

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

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

With fall herbicide applications, some weather related factors will need to be heeded. Soil moisture must be adequate to support active growth. In drought stressed plants herbicide absorption and translocation can be greatly reduced. With a drought stress situation it is more cost effective to forego treatment until more favorable conditions exist next season.

Questions often arise regarding the impact of frost on weed response to herbicides. Frost does not automatically signal the end of the season for applying foliar active herbicides. Many of our most serious biennial and perennial weeds are quite frost tolerant. The key is to examine the foliage. Healthy green foliage indicates active growth and favorable conditions for treatment. If the foliage has become discolored due to low temperatures, the herbicide effect will be reduced. With leafy spurge the key is to break the stem and check for the presence of the white latex like substance. Bob Masters, formerly at UNL with the Agricultural Research Service, determined that the presence of latex indicated a plant actively growing and responsive to herbicide.

Some plants may actually become more susceptible to herbicides after a frost. Bob Wilson, Extension weeds specialist at the Panhandle Research and Extension Center in Scottsbluff, recorded an increase in Canada thistle control with treatments applied after a frost. Again the key is to examine the foliage to make certain there has been no low temperature damage.

For specific herbicide treatment recommendations for many weeds, check the *Troublesome Weeds* section of the "Guide for Weed Management in Nebraska", EC130, available at Extension Offices and on the Web at *http://www.ianr.unl.edu/pubs/fieldcrops/ec02130.pdf*

Alex Martin
Extension Weeds Specialist

Crop selection

(Continued from page 218)

use, producers could plant one-third of the field to wheat.

"If the wheat is taken to harvest and weeds are controlled in the fall, this helps build up soil moisture for the next crop, usually corn or grain sorghum," he said.

Crop growers in southern Nebraska could consider planting sorghum.

"Sorghum can be beneficial because it uses less water and also waits for water better than corn," Klein said. "The key is to check with crop insurance agents and a Farm Service Agency before making changes."

No-till or reduced-till farming also is important this year, Klein said.

"Every producer should consider no-till farming because the crop residue helps reduce evaporation, traps snow and increases water infiltration rates," he said. "With every tillage operation, one-third to one-half inch of soil moisture is lost. Crop residue also helps control weeds."

Producers also should plan ahead for weed problems so they can be controlled quickly to conserve moisture and reduce crop stress, he said.

Andrea Fischer
IANR News and Publishing

Oct. 10 Market Journal: Improving corn yields and tips from lenders

Next week's *Market Journal* broadcast will feature a discussion with researchers examining how to reach 300-bushel per acre corn yields (see page 220 of this week's *CropWatch*) and tips from ag lenders. The regular Market Journal sections also will be included.

Cheryl Burkhart-Kriesel, NU Cooperative Extension community development specialist, will reveal the results of a new survey of lenders working in drought-affected areas of western Nebraska, South Dakota and Wyoming. Burkhart-Kriesel says most lenders remain positive, upbeat, and eager to communicate with farmers and ranchers under financial stress.

Market Journal will be broadcast via satellite (NEBSAT 105) 8-9 p.m. Thursday, October 10, and rebroadcast 9-10 a.m. Friday, October 11, on the same satellite coordinates. Contact your local county extension educator for program availability in your area. All programs are archived on-line for later viewing at *http://marketjournal.unl.edu.*

Market Journal is presented by the University of Nebraska Cooperative Extension and NU Department of Agricultural Economics.

Pushing the upper limits of corn yields

Understanding the biological underpinnings of yield should help farmers boost yields, stay competitive, protect the environment and meet projected demand for corn.

To do that, University of Nebraska agronomists in 1999 launched the Ecological Intensification Project. The comprehensive, long-term study explores the most cost-effective, environmentally friendly ways to achieve yields usually seen only in yield contests.

"Corn average yields throughout the state are only about half of what we think the biological yield potential is in terms of genetics, climate and soils," said Achim Dobermann, an Institute of Agriculture and Natural Resources soil scientist and project coordinator.

"If we want to stay competitive in the long run, we must learn how to consistently grow these crops at 70% to 80% of their true yield potential," he said. "This will increase profitability and perhaps have positive effects on the environment if nutrient-use efficiency can be increased."

Statewide corn yields average about 150 bushels per acre. Researchers think true yield potential for eastern and central Nebraska is closer to 300 bushels per acre. During the study's first three years, the highest yields were consistently 250 to 260 bushels per acre in drip-irrigated plots.

"We can get 250 to 260 bushels per acre regardless of climatic variability among years," Dobermann said. That's less than originally expected because high nighttime temperatures during grain fill hurt yields the past two years. Plant distribution also wasn't as precise as it could be.

As part of this project, researchers are examining a multitude of yield-influencing factors, including soil fertility, carbon sequestration, nitrate leaching and soil microbial function. They're conducting similar research on soybeans.

By year's end, they'll create a map of yield potential and optimum planting dates for Nebraska using climate and research data. This map will show producers how planting date and hybrid choice influence yield potential by region.

Within three years, scientists will combine yield results with findings from an IANR soil fertility project to revise corn nutrient management recommendations, emphasizing efficiency for elevated yields.

Researchers hope to create better crop-growth models, including planting dates, crop densities and nutrient requirements, to help farmers maximize yields. Existing models underpredict yields in better growing environments such as Nebraska, said Ken Cassman, agronomy and horticulture department head and project leader.

The government someday might pay farmers for carbon sequestration on their land, he said. "If you underestimate yield, you underestimate the amount of carbon that may remain in the soil, which could cost farmers money."

Better management also has environmental benefits. Fine-tuning inputs means fewer chemicals to run off or leach into water. Cropland that traps more carbon may help reduce the buildup of carbon dioxide, a major greenhouse gas.

"Through research, we can create the most environmentally friendly production systems in the world," Cassman said. "This could lead to branding Nebraska products as environmentally friendly, which would add value. Good management could help Nebraska producers be competitive in global markets where environmental issues are increasingly important."

Producing more corn when prices are low may seem a bad idea, but higher yields could be pivotal to long-term viability for crop producers and global food security, Cassman said.

"Economists who watch global markets say U.S. corn and soybeans will remain a crucial component for food security in coming decades," he said. Thanks to excellent soils, Nebraska can more easily meet environmental standards than can competitors like Brazil where soils are poorer.

"We can't take our eyes off the ball. Right now production costs in places like Brazil are lower, but their production costs will rise faster than ours."

Higher yields through intensive management, guided by improved understanding of yield potential and input requirements, also should help farmers maximize shorter term profits, Cassman said.

Heather Corley
Former IANR Newswriter
In *Research Nebraska*, available in print and on-line at *http://ard.unl.edu/nebraska.html*

Market Journal to feature yield research

The Oct. 10 **Market Journal** broadcast will feature a discussion of this research project on improving corn yields. Achim Doberman, agronomy professor and project coordinator, and Ken Cassman, project leader and head of UNL's Department of Agronomy and Horticulture, will talk with Market Journal Host Doug Jose about the study and its likely impact. *Market Journal* is an hour-long NU Cooperative Extension video program on agricultural risk management and marketing. See page 219 of this week's *CropWatch* for broadcast times.