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CropWatch No. 2003-12, May 23, 2003

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CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

UNIVERSITY OF
Nebraska
Lincoln

No. 2003-12
May 23, 2003

Sowing soybeans late? Consider these factors

Rains in May have slowed down soybean planting in most of Nebraska. As of May 25, only 45% of the state's soybeans were planted relative to 90% on average (Nebraska Agricultural Statistics Service). Some farmers have planted all of their soybean crop while others are probably just beginning to plant. More rain is in the forecast. Considering these conditions, two questions come to mind:

1. How late can soybeans be planted without serious yield penalties and
2. When should producers think about changing varieties?

To address the first question, thankfully soybeans, in contrast to corn, tolerate a relatively wide range of planting dates. Optimum planting dates for Nebraska and most of the northern states range from early to mid May. Yields in most cases appear to decline rapidly in June. Yields in mid to late June are often quite low; however, there

can be a lot of variation from year to year!

Golden Harvest researchers near Waterloo (Agronomy Up Front Management Guide, January 2003), found that in two years (2000 and 2002) their two early planting dates yielded more than the latest planting date while in 2001 mid- and late-planted soybeans yielded more than early planted soybeans. Their planting dates ranged from April 16 to May 9, for the first date; May 16

to 25 for the second date; and June 19-20 for the third planting date. Yields were around 50 bushels per acre. They also found that soybean maturity was delayed about one day for every 2.5-day delay in planting date.

We know that planting date affects the size of plant attained before flowering begins. Indeterminate soybeans planted early in May

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Stripe rust developing rapidly

Stripe rust is now present in winter wheat in Nebraska and is developing rapidly on susceptible varieties such as 2137. Fungicide treatment is suggested if you have 2137 or any other susceptible variety, especially if it is grown under irrigation. Also consider treating seed production fields and potentially high yielding grain production fields.

Remember that some varieties have a level of resistance to stripe rust and may not need to be treated. The May 23 *CropWatch* included a table that listed my stripe rust ratings of varieties in the 2001 Keith and Perkins county variety trials. Check that list to see how the varieties you're growing rate in terms of stripe rust severity.

Since wheat in most of the state is fully headed or close to heading, Tilt or Stratego cannot be used. They can only be applied up to flag leaf/preboot stage which is Feekes Stage 9 and we are well past that

Irrigation recommended for western wheat.

See story, page 115.

stage. Fungicide options for headed wheat include Headline (BASF), Quadris (Syngenta) and PropiMax (Dow). Headline applied at the 6 oz rate is equivalent to Tilt in cost. At the 9 oz rate it would be equal to Quadris in cost. Dow's PropiMax is the same active ingredient as is in Tilt which is propiconazole.

Dow recently receive a Section 24c from the Nebraska Department of Agriculture to apply PropiMax up to Growth Stage 10.5 (fully headed but not flowering). There is a 40-day preharvest interval between treatment and harvest for PropiMax. Nebraska's EPA SLA Number for the Section 24c for PropiMax is NE-030002.

John Watkins
Extension Plant Pathologist

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Updates

Cutworms feeding in western fields

Cutworms continue to feed on various crops in western Nebraska, including chicory, sugarbeets and corn. Earlier this spring, sugarbeet acres were treated when large overwintering army cutworms were feeding on young plants.

Recently, early instar cutworms (small) have been found feeding on these crops in some areas. These cutworms are the climbing type that 'graze' on crops, usually causing

limited damage unless populations are too extreme and cause defoliation that is too extensive for very small plants. Growers are urged to watch establishing fields for these cutworms. Significant damage will only develop if small plants are threatened with heavy cutworm populations.

**Gary Hein, Extension Entomologist
Panhandle REC**

Resistant Russian wheat aphid alert

Entomologists in Colorado have reported the presence of a new strain of Russian wheat aphid that has overcome the resistance available in commercial resistant lines such as Halt, Prairie Red, Prowers 99, Yumar. This new strain can cause damage to resistant lines similar to Russian wheat aphid

damage to susceptible varieties, including severe leaf striping and leaf curling.

The extent of the spread of this aphid is not known, but if Russian wheat aphid damage is seen in resistant lines and the presence of this Russian wheat aphid is suspected, please contact Gary Hein at the Panhandle Research and Extension Center in Scottsbluff at 308-632-1369 so this development can be documented.

**Gary Hein, Extension Entomologist
Panhandle REC**

Field/crop updates

Ralph Anderson, Extension Educator in Buffalo County: We have had several days of clear weather which allowed producers to return to the fields and finish planting. We have 80-90% of crop land planted with mostly beans and milo left to go. Most of the corn crop is up and growing rapidly. Some soybeans are up and others are struggling with crusting, but most should make it this week.

A lot of the alfalfa first cutting is complete but getting the hay baled has been a challenge. This week did provide a window for harvest for producers who were finished planting. Some early wheat is heading, but much of it is still in the joint stage. The wheat crop is looking good but only the combine can really tell yields. Some rust has been reported.

Farm Mediation Clinics

The Nebraska Department of Agriculture farm mediation program will be conducting clinics throughout the state in June:

Alliance - June 5

Norfolk - June 6

Grand Island - June 10

Beatrice - June 10

North Platte - June 17

Lexington - (date not set)

Ainsworth - June 27

Norfolk - June 30

The clinics offer individual and confidential information and education on farm finances; the laws, regulations and policies governing Farm Services Agency (FSA); debt restructuring and other legal options; and how the mediation program can help work with lenders to find an agreeable and workable solution. Contact the Farm Hotline (1-800-464-0258) to make an appointment and to learn the specific clinic schedule and location for a given town.

The NDA contact for the Farm Mediation program is Marian Beethe, available at 402-471-6890 or by email at marianjb@agr.state.ne.us

CROP WATCH



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

Late soybeans

(Continued from page 111)

and later in June are usually shorter and have fewer nodes. May 10 and May 20 planting dates provide enough time of development for adequate vegetative growth with the indeterminate soybeans and provide good yield potential. Normally planting after June 1 results in lower yields due to reduction in the vegetative size of the plants.

Planting date data from Iowa State University (Keith Whigham, Extension soybean specialist) is shown in *Figure 1*. Maximum yields occurred on May 23, April 28, and May 7 at the North, Ames, and South locations, respectively. I combined data from all three locations to obtain a rough idea of yield expectations for several planting dates. These estimates are shown in *Table 1*. About 8% of yield potential is lost by planting May 30 and about 12% is lost by planting on June 5.

The answer to the second question – When should we think about changing varieties? -- is not as clear as that of the first. In a normal year, planting the latest adapted varieties early in the planting season followed by early- to mid-season adapted varieties during mid-May through early June is best. Now, with the wet May we've experienced, as we get into June, it may be best to plant only mid-season adapted varieties, including with double crop situations. Mid-season adapted varieties will provide greater height and node numbers than shorter-season varieties when planted late and will have reduced risk of late-season frost injury compared to long-season varieties.

The data from Iowa clarifies this general recommendation a bit. Maturity groups of the varieties grown at each of the ISU locations are shown in *Table 2*. The 'North,' 'Ames,' and 'South' Iowa locations would appear to apply well to

(Continued on page 114)

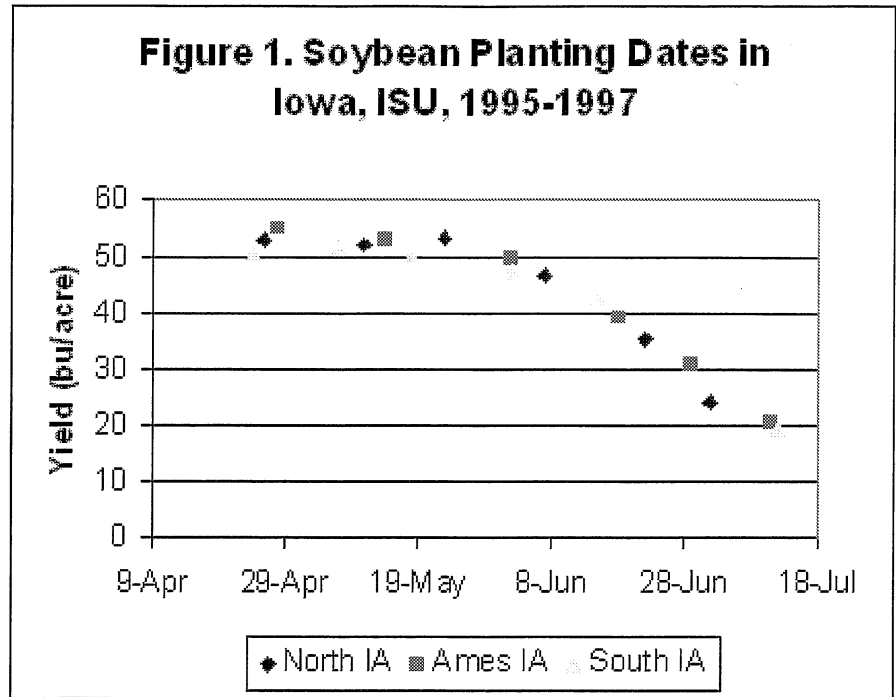


Table 1. Yield estimates in bushels and percent of maximum yield for various planting dates in Iowa. (Iowa State University)

Date	Yield (bu/a)	Yield % of Maximum)
May 8	53.3	100
May 30	49.3	92
June 5	46.8	88
June 10	44.2	83
June 15	41.3	77
June 20	38.0	71

Table 2. Maturity groups of soybean varieties included in ISU planting date study.

North	Ames	South
1.4	1.9	2.2
1.7	2.0	2.5
1.9	2.2	2.8
2.0	2.5	3.2
2.2	2.8	3.5
2.5	3.2	4.1

Table 3. Highest yielding maturity group (M.G.) at various planting dates for the three Iowa locations. ISU, 1995-1997.

North		Ames		South	
Date	M.G.	Date	M.G.	Date	M.G.
April 26	2.5	April 28	2.2	April 24	2.8
May 11	2.5	May 14	2.8	May 7	2.8
May 23	2.5	June 2	2.2	May 18	3.2
June 7	2.5	June 18	2.2	June 2	2.8

Pasture survey: young grasshopper numbers building

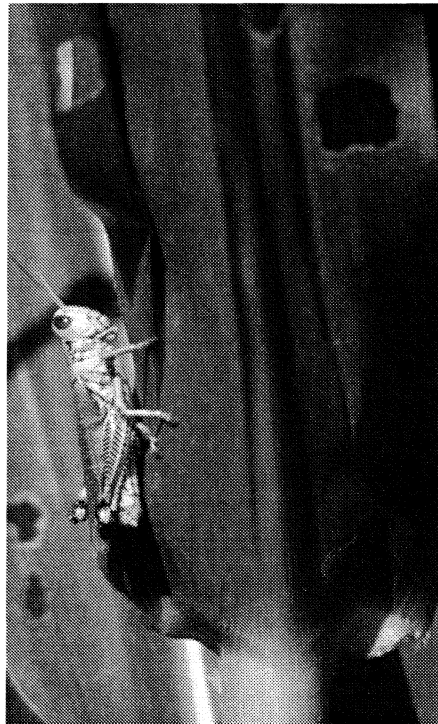
The number of young grasshoppers continues to increase in pastures and areas adjacent to cropland.

NU Cooperative Extension personnel have surveyed a number of areas in the state for the presence of grasshoppers. In the Dawson and Custer county areas a large number of overwintering, spring feeding grasshoppers have been observed in rangeland. The ranchers in this area are putting together blocks of land for treatment. There also have been reports of other areas in the state with numerous grasshoppers. In the Howard and Valley county areas, there have been reports of both spring feeding and recently hatched summer feeding grasshoppers.

Rangeland areas apparently have the greater infestation. There have been a few hatches in areas adjacent to cropland, but the numbers are low. This is also the case for the Adams, Webster, and Kearney county areas where there is a mixture of grass feeding and general feeding grasshoppers in pastures and areas around cropland.

Recent rainfall has probably helped reduce the number of early hatching summer feeding grasshoppers, but there are still a large number that have not hatched yet. Some species do not begin to hatch until early June. There are also a number of species with a lengthy hatching period. Some species begin to hatch in mid-May and will continue to hatch until the end of July.

This is particularly true for the crop damaging species and for one of the most damaging pasture feeding grasshoppers. The largeheaded grasshopper is an important pasture feeding species that generally starts hatching in



Later season grasshopper feeding in corn in 2002.

early June and continues to hatch until mid-July. Two of the most important crop feeding grasshoppers, the differential grasshopper and the redlegged grasshopper, are also later hatching species. They usually start to hatch in early June and continue to hatch until late July.

These extended and late hatching periods suggest the need for continued scouting for grasshoppers in pastures and areas adjacent to cropland. It is important to identify hatching beds and begin to assess the number of grasshoppers present. These observations will be used in the next few weeks as control decisions will need to be made starting in mid-June.

**Ron Seymour, Extension Educator
in Adams County**
**Gary Hein, Extension Entomologist,
Panhandle REC**
**Jack Campbell
Extension Entomologist
West Central REC**

Late soybeans

(Continued from page 113)

northeast, south central, and southeast Nebraska environments, respectively. The highest yielding maturity group at each planting date is shown in *Table 3*.

At the Northern Iowa site the fullest season varieties (M.G. 2.5) yielded the most (numerically) regardless of the planting date; however, yields of all maturity groups were similar when planted in June or July. At the two other sites, the mid-season varieties consistently yielded more than the full season varieties regardless of the planting date.

So, the bottom line is that the general recommendation of using mid-season adapted varieties for June plantings is still valid. Never stray from planting the recommended maturity group for the area no matter how late the planting date. This includes varieties that we intend for full-season production as well as those for double-crop production.

**Roger Elmore, Extension
Cropping Systems Specialist
South Central Ag Lab**

Market Journal to focus on pests, crop protection

Stripe rust in wheat, grasshoppers, and limited moisture will be among the topics to be discussed on the June 6 Market Journal. The 30-minute Cooperative Extension broadcast will be divided into three segments: John Watkins, Extension plant pathologist, will talk about striped rust and other plant diseases likely to affect Nebraska crops this year; Jerry Volesky, Extension range specialist, will discuss grazing management and cutting of native meadows; and Jack Campbell, Extension entomologist, will offer an assessment of Nebraska's grasshopper situation. Contact your local Extension Office for how to access the show.

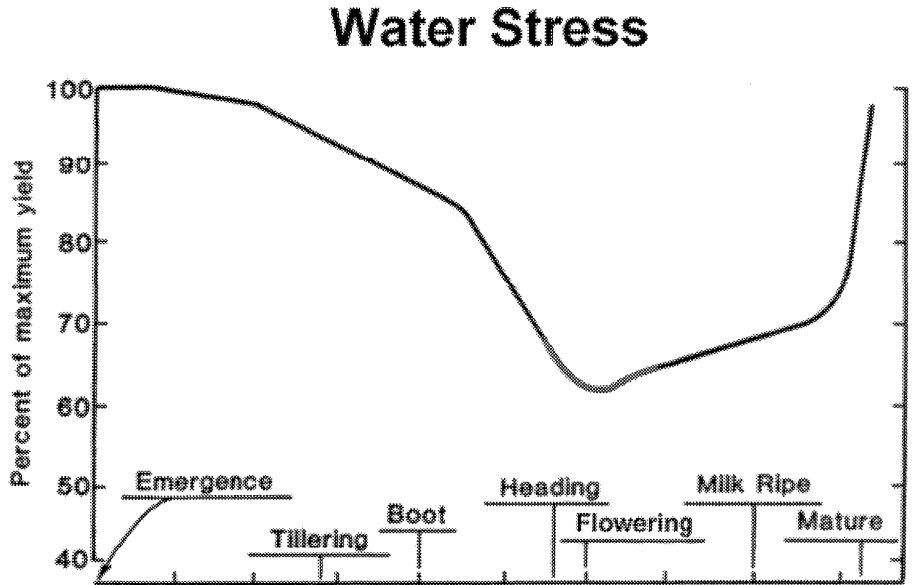
Western NE winter wheat crop getting thirsty; irrigation recommended to avoid yield loss

Winter wheat in western and southwest Nebraska seems to have escaped major damage from last week's low temperatures, but now faces stress from limited subsoil moisture. With temperatures in the 80-90s this week and wheat using 0.30-0.40 inch of water a day, irrigation is likely warranted for most fields.

While frost damage was not readily apparent this week, if wheat pollen was affected, problems in head development should become apparent in the next week. Basal stem stress usually does not appear until near maturity and typically presents itself as unusually high levels of lodging. This symptom will likely become more visible near harvest in cold spots in some fields.

A greater concern at this point is that while wheat stands in many areas are thick and appear almost lush, the winter wheat in western Nebraska may be reaching a critical juncture — many fields have used up stored soil moisture and unless they receive rain during the next 10 days, yields will be dramatically reduced. Those areas that missed the last thunderstorm already are starting to show stress which may increase with continued warm temperatures.

In the Panhandle winter moisture was not excessive and many areas are still at or below average rainfall. A medium textured soil can only hold 1.50-2.0 inches of water per foot. Wheat will start showing stress when about 60% of this water has been depleted. Producers can calculate how much stored soil water they gained through the winter, how much precipitation they received this spring, and determine if there is any stored moisture remaining and whether irrigation may be necessary. In many areas



This graphic from the Kansas State University Cooperative Extension Web site on wheat production illustrates the impact on yield from water stress at various points of development. As Nebraska's wheat enters the heading and flowering stages, it is most vulnerable to potential yield loss from water stress (http://www.oznet.ksu.edu/pr_aawf/june/water_use.htm).

irrigation is likely warranted to avoid plant stress.

Wheat water use

Winter wheat in Nebraska uses 18 inches of water on average per season. Conditions affecting water use by wheat include climatic conditions, variety, fertility, stand, crop residue, and others.

Following are some general guidelines as to how much water wheat typically needs at various growth stages:

- 3.5 inches - emergence to spring growth
- 3.5 inches - spring growth to jointing
- 2.0 inches - jointing to boot
- 2.0 inches - boot to flower
- 3.0 inches - flower to milk
- 1.5 inches - milk to dough
- 2.5 inches - dough to maturity

The figure (above) indicates that if a drought occurs, wheat would suffer the greatest yield loss during flowering.

Within the water used by wheat, it usually responds to water at 5-6 bushels per acre per inch of water but may vary from 2 to 6 bushels per acre. This figure applies after the minimum 4 or more inches of water required for plant establishment. This depends on everything else being adequate or not affecting production, including stand, fertility, disease, insects, and weeds.

Most soils can store 1 to 2 inches of available soil water per foot. Wheat can, if rooted down, extract water to a 6-foot depth if moisture is available. Soil water levels in dryland wheat can be depleted by up to 75-80% of the available water level without serious potential yield

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Factors to consider when selling CRP land

The Conservation Reserve Program (CRP) has been an integral part of the USDA farm program since the 1985 farm bill. Under CRP provisions, highly erodible land or riparian land along streams and rivers is planted to permanent cover (forages and/or trees) and is not harvested while the contract is in force. In exchange, the landowner receives annual payments for the life of the contract. (Exemptions to the ban on haying and grazing forages have been granted in some disaster situations, usually with a reduction in government payments).

CRP sign-up extended

The USDA has extended sign-up for the Conservation Reserve Program (CRP) from May 30 to June 13. Current participants with contracts expiring this fall on about 1.5 million acres can make new contract offers which, if accepted, will become effective on Oct. 1. All other contracts awarded under this sign-up will become effective either at the beginning of the next fiscal year, Oct. 1, 2003, or the following year, Oct. 1, 2004, whichever the producer chooses.

FSA will evaluate and rank eligible CRP offers using the Environmental Benefits Index (EBI), a ranking of environmental benefits to be gained from enrolling the land in CRP. Decisions on the EBI cutoff will be made by the Secretary after the sign-up ends and after FSA analyzes the EBI numbers of all the offers. Those who would have met previous sign-up EBI thresholds are not guaranteed a new contract.

Aside from the general sign-up, the CRP continuous sign-up program is available on an ongoing basis for working lands. FSA has reserved 2 million acres for the continuous sign-up program.

Recognize that the government has made a large investment in every tract of land that is enrolled in the CRP. Each site has required expert technical assistance to determine eligibility under the rules, seeding recommendations, follow-up assistance and monitoring. The largest up-front expense was the cost-share funding to establish the permanent cover. Considering the investment, it is understandable that the government would want the contract to stay in force for the full term. The law stipulates severe penalties for cases when the owner does not comply with the rules or intentionally breaks the contract.

If a participant fails to carry out the terms and conditions of a CRP contract, CCC may terminate the CRP contract and the participant would forfeit further payments under the contract, refund all payments previously received, plus interest; and pay liquidated damages as specified in the contract. If the Deputy Administrator determines such failure does not warrant termination of such contract, relief from the provisions may be authorized. Also, CCC may reduce a demand for a refund under this section to the extent CCC determines that such relief would be appropriate and will not deter accomplishment of program goals. (For the exact wording of the law, see the Federal Register on-line: 24830 Federal Register / Vol. 68, No. 89 / Thursday, May 8, 2003 / Rules and Regulations <http://www.fsa.usda.gov/dafp/cepd/CRP%20Final%20050803.pdf>.)

These issues can become particularly sticky when land currently enrolled in CRP is sold. If the new owner does not become the successor of the contract, who is responsible for the penalties outlined above? If a participant transfers all or part of the right and interest in land subject to a CRP

contract and the new owner or operator does not become a successor to the contract within 60 days, or such other time as the Deputy Administrator determines to be appropriate, the contract shall be terminated and the *original participant* [emphasis added]:

(1) Forfeits all rights to any future payments for that acreage;

(2) Shall refund all previous payments received under the contract by the participant or prior participants, plus interest, except as otherwise specified by the Deputy Administrator.

Clearly, if the new owner fails to become a successor to the contract within the 60-day limit, the *original participant* is responsible and may be required to refund *all* previous payments, plus any interest received.

What implications does this have for selling CRP land?

According to Dr. David Aiken, NU Extension Water and Ag Law Specialist, "If the new buyer does not intend to continue in the CRP contract, the original participant (the seller or their representative) should consider the penalties when setting the price of the land. One way to protect the seller would be to make the sale of the land conditional on the buyer's acceptance by FSA for CRP participation. If the buyer isn't accepted by FSA, then the sale does not go through".

Greg Chewakin, Lancaster County FSA executive director, agrees that making the sale contingent on acceptance of the new owner into the program is sound advice. He added, "Once the new owner is named the successor of the CRP contract, it is the new owner, not the former owner, who will be liable for future issues of noncompliance of the contract rules".

Tom Dorn
Extension Educator
Lancaster County

Recent rains benefit ticks, feeding flies

While recent rains bring welcome relief for crop and range land, they also create an environment that can lead to increased problems with ticks, stable flies and mosquitoes. Entomologists recommend taking precautions when you expect to be in areas where these pests are likely to be numerous, especially since some tick and mosquitoes can carry life-threatening viruses.

Following is information on surviving ticks and stable flies. For more extensive information, see the *AgNews* section of *CropWatch* on-line this week. For more information about battling the summer onslaught of mosquitoes see the May 16 *CropWatch*, available on-line at http://cropwatch.unl.edu/archives/2003/crop03-10.htm#West_Nile

Ticks

The wet spring and subsequent vegetation growth enhances survival of immature, or seed, ticks. When weather warms, tick larvae climb on vegetation and wait for a human or animal to brush the vegetation so they can hop on and have a blood meal.

Lyme disease, the best known tick-borne illness, generally is carried by the black-legged or deer tick, which is not found in Nebraska. However, the lone star tick, found occasionally in the southeast corner of the state, is a suspected carrier of Lyme disease. In Nebraska, three tick species — Rocky Mountain wood tick, American dog tick and brown dog tick — are problems for people, pets and livestock.

The American dog tick is the primary carrier of Rocky Mountain spotted fever and also can transmit anaplasmosis, an infectious disease of cattle, sheep, goats and other wild ruminants. The Rocky Mountain wood tick carries Rocky Mountain spotted fever and other diseases that can affect cattle and dogs.

People who spend time in tick-

prone areas, such as pastures, tall grass, woods, shrubbery or areas adjacent to water, should thoroughly examine their bodies afterward, paying particular attention to the head, neck and waist. Children, the elderly and people with impaired immune systems are more susceptible to tick-borne diseases.

Ticks usually require several hours of attachment and feeding before they can transmit a disease. He recommends using tweezers to remove a tick from the skin, making sure to remove the tick's mouthparts, and cleaning the area with an antiseptic.

The best time to control ticks is in the spring when they are most abundant. A residual contact insecticide can be sprayed around the perimeter of a yard to reduce tick numbers. Mowing tall grass near housing also helps control ticks. Insect repellents for people and shampoos or collars containing insecticide for pets can help keep ticks from attaching.

Stable flies

Wet conditions this spring also may increase the likelihood of increased problems for cattle and people from stable fly bites. The stable fly is about the size of a house fly, but is a blood feeder with piercing mouthparts. Its primary feeding site is around the ankles on humans, the front legs of horses and cattle and the ears of dogs.

The stable fly overwinters as slowly developing larvae in wet organic waste areas below the frost line. When temperatures warm in the spring, the larva pupates, and eventually the first adults of spring emerge.

Stable flies breed in wet, decaying organic matter, which includes manure, spilled feed and even lawn clippings. With feedlots and dairies manure should be removed from pens when feasible. Maintain pens, mounds and

drainage areas so wet manure doesn't accumulate and mow vegetation, which provides shaded shelter for flies. Avoid dumping grass clippings where they can become a breeding site and use proper mulching procedures when possible. If clippings are maintained in mulch piles, be sure to use proper mulching procedures.

Overall sanitation around animal facilities is vital during wet years to prevent high numbers of stable flies. Repellents are effective in preventing stable fly feeding on humans and medicated salve on dogs' ears will help keep stable flies from feeding on them.

Unfortunately, there are no cures for protecting range and pasture cattle from stable fly feeding. Animal sprays are short-lived because often they are washed off as cattle stand in wet vegetation or ponds. Space sprays used for confined cattle at feedlots and dairies are not practical for range cattle. Ear tags, rubbers and dust bags used as self-treatment devices for other flies such as horn flies and face flies do not protect cattle from stable flies because the products do not treat the front legs. Disposing of spilled hay will help some, but will not alleviate the problem since stable flies can travel great distances in search of a blood meal. Range and pasture do not provide stable fly breeding areas so the flies are breeding elsewhere and dispersing to the range and pasture cattle. After feeding they will need to move to an area that provides breeding media for egg deposition and larval development. Consequently, there is considerable movement of stable flies to and from range cattle. This behavior presents a major research problem, which hasn't been solved, but efforts are being directed to that end.

Jack Campbell
Extension Entomologist
West Central REC

Eastern NE groundwater levels drop

In the midst of a multi-year drought, groundwater levels dropped more than five feet at 14 monitoring sites in eastern Nebraska in the last two years, according to data from the University of Nebraska-Lincoln.

Another half of the 98 readings by UNL's Conservation and Survey Division showed two-year declines of two to five feet. Most of these declines were seen in the lower Platte River valley, the Big and Little Blue river basins and northeast Nebraska.

While recent rains have helped, it likely would take more than a year of above-average precipitation to replenish groundwater lost at that rate, said Mark Burbach, coordinator of CSD's water-level monitoring program.

These eastern Nebraska readings come from an area bounded on the west by Cedar, Wayne, Stanton and Colfax counties north of the Platte River and by Polk, Hamilton, Adams and Webster counties south of the Platte. Readings from elsewhere in Nebraska still are being gathered and will be available later this year.

"This confirms anecdotal information that not only has western Nebraska experienced significant declines, but the eastern part of the state has as well," Burbach said.

These readings are similar to declines recorded during the drought years of 1978-1981, the last period of severe, multi-year drought in the state, Burbach said.

Outside the Big and Little Blue river basins, the eastern part of the state is not known for extensive irrigation of cropland, the most demanding of water uses, but all but a few readings outside of those basins showed one- to five-foot declines for the two-year period.

As more data are gathered, CSD will release statewide water-level information this fall in a report of maps and interpretative text detailing changes since pre-development and for the last two years.

Due to budget constraints, the report has not been published for a number of years, though an annual map of groundwater-level changes in the state has been posted on the Nebraska Department of Natural Resources' Web site. CSD resumed

the report at the request of natural resources districts and others, Burbach said.

The division is part of a cooperative statewide groundwater-level monitoring program involving the U.S. Geological Survey, NRD's and other federal agencies, power and irrigation districts and municipal water systems.

CSD is part of the School of Natural Resources, which is a unit of the Institute of Agriculture and Natural Resources and the College of Arts and Sciences.

Charles Flowerday
Editor, Conservation and
Survey Division

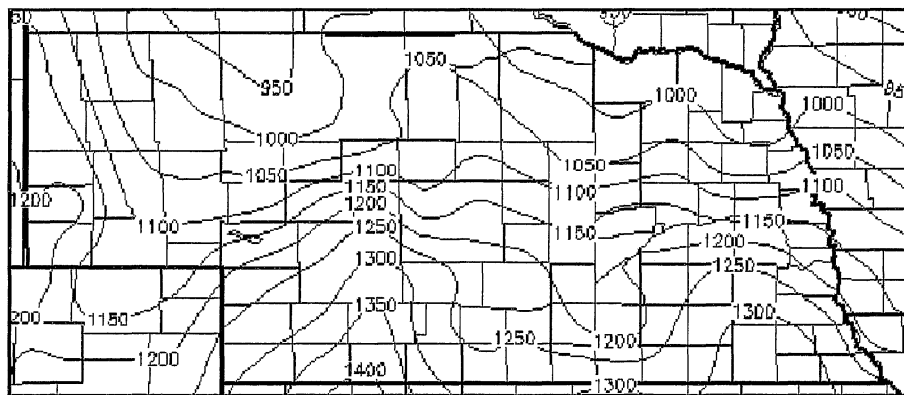
Wheat & water

(Continued from page 115)

reductions at most growth stages. However, for irrigation the recommendation would be to maintain soil water above 50% to maintain yield potential throughout the growth cycle.

If your wheat has 2 feet of soil moisture and your soil stores 1.5 inches of available water per foot you would have 3 inches of soil water. This can be depleted to a maximum of 80% before affecting yield so you can use 2.4 inches of available soil water before stress. If the wheat is now flowering you need 7 inches of water and have only about a little more than a third of the soil water you need to get the crop to maturity for maximum yield. Therefore, timely June rains are needed to maintain chances for optimum yield.

Bob Klein
Extension Crops Specialist
David Baltensperger
Extension Alternative Crops
Breeder
C. Dean Yonts
Extension Irrigation Specialist



Common stalk borer

Accumulated growing degree days as of May 28, using a 41°F base. Producers should begin scouting for common stalk borers when 1,300-1,400 growing degree days have accumulated. See full story on stalk borer management in the May 23 CropWatch. *(Map courtesy Al Dutcher, NU State Climatologist)*

Cycles of drought the norm in Nebraska; record may signal start of longer drought

Most Nebraskans understand that droughts have had a major impact on Nebraska in the past. Yet, following a series of generally "wet" years during the 1990s, many Nebraskans were surprised when drought hit the state in 2000. There was even more surprise when drought returned in 2002 and dealt the state its third driest year since 1895. UNL Agricultural Economist Roy Frederick estimated the economic impact of 2002 crop production losses at \$1.2 billion.

It is important to remember that drought years like 2000 and 2002 are a normal part of climate for the Great Plains. Moreover, time may reveal that 2000 and 2002 are part of a longer term trend of droughts, similar to what the state experienced in the 1930s, and part of this region's normal climatic cycle.

Nationally, drought was a major event in 2002 with more than 50% of the United States experiencing drought that summer. This was the greatest area of drought across the country since the mid-1950s. According to the July 23 Drought Monitor map, drought or abnormal dryness was occurring in all 50 states. The 2002 drought event was actually a continuation of a series of drought years for the Republican River Valley in southwestern Nebraska that began in 1999. Recent droughts occurred across portions of Nebraska during early 1996, 1988, 1989, and during the mid-1970s from 1974 through 1976.

A long history of droughts

So far, these recent droughts do not compare to those endured in the 1930s and 1950s, and many believe that it is unlikely that a drought of their severity will ever occur again. But just how unlikely are the droughts of the 1930s and 1950s?

"When the well is dry, we know the worth of water."

Benjamin Franklin

Soil scientist Harry Weakly with the USDA Soil Conservation Service (now NRCS) looked at tree-ring records in western Nebraska and put together a table of multiple-year droughts of five years or longer between 1200 and 1960 (Table 1). This information has been confirmed with more recent paleoclimatic studies of the Great Plains region, like Woodhouse and

Overpeck (1998). Table 1 reveals that the 1930s drought is not an unusual; in fact, the Dust Bowl years look rather tame compared to some of the previous droughts, like the 38-year drought in the late 1200s and the 26-year drought in the mid-1500s. Certainly, not every year in a multiple-year drought was dry, but the overall trend was dryness. These droughts had significant

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Table 1. Drought periods of five or more years duration at Ash Hollow, Nebraska. (C,A, Woodhouse and J. T. Overpeck, 1998. 2000 years of drought variability in the central United States. *Bulletin of the American Meteorological Society*, 79(12): 2693-2714.)

<i>First year</i>	<i>Last year</i>	<i>Duration of drought (years)</i>	<i>Years between droughts</i>
1220	1231	12	
1260	1272	13	29
1276	1313	38	3
1383	1388	6	33
1438	1455	18	16
1493	1498	6	38
1512	1529	18	13
1539	1564	26	10
1587	1605	19	23
1626	1630	5	20
1668	1675	8	38
1688	1707	20	13
1728	1732	5	21
1761	1773	13	29
1798	1803	6	26
1822	1832	11	25
1858	1866	9	25
1884	1895	12	18
1906	1913	8	10
1931	1940	10	17
1952	1957	6	11
	Average	12.8	23.9

Accessing site-specific climate data on-line

Recent budget reductions have limited some of the climate information services provided by UNL Research and Extension Centers. Some of the irrigation scheduling, precipitation, and growing degree

day products provided in the past may no longer be free.

Many of these products were generated through the High Plains Regional Climate Centers (HPRCC) On-Line Digital Climate Data

download service. HPRCC On-Line is a subscription service that provides users the ability to calculate water use requirements specific to their crops. (Extension educators qualify for free accounts that are paid in part by a grant from NU Cooperative Extension.)

Through HPRCC On-line, users can access archived digital climate data from the seven-state and develop user specific products. With this product, irrigators can choose up to 10 crop types, set emergence dates, and maturity classes based on growing degree day units. In addition, these files can be automated to deliver the information directly to your email account on a daily, weekly, or monthly basis.

All of the precipitation, soil temperature, GDD, and water use tables that appear on the *CropWatch* Web site (cropwatch.unl.edu/weather.htm) are from the HPRCC on-line system. The *CropWatch* service only represents a fraction of the available locations within the HPRCC region.

If you are interested in the HPRCC On-Line system and would like to set up an active account or if you can't remember your account information from last year, please contact Sebastien Korner at (402)-472-4364. For general help navigating HPRCC On-Line, developing irrigation scheduling routines or automated delivery programs once your account has been established, please contact either Brian Fuchs at (402) 472-6709 or Allen Dutcher at (402) 472-5206.

Allen Dutcher
State Climatologist

NU Cooperative Extension
has posted more than 1,000
publications on-line at
www.ianr.unl.edu/pubs

Cycle of drought (Continued from page 119)

impacts environmentally, and affected the Native American and European settlement patterns.

UNL researchers have studied past precipitation records to see if they might yield clues about future rainfall trends. Steve Hu, climatologist with the UNL School of Natural Resource Sciences, has found that the precipitation patterns for Nebraska summers reveal 20-year and 40- to 50-year cycles. When both of these cycles become "negative" together, as they did during the 1930s, multiple-year droughts occur across the state. Dr. Hu points out that these two cycles once again are trending toward the "negative," and he predicts that the next several years could continue to be part of the recent dry pattern that the state has been facing.

Planning for drought

Given the likelihood of continued droughts, Nebraskans need to plan not only for short-term droughts, but also for long-term droughts. The state recently revised its drought plan, first written in 1989, to include mitigation actions that the state can take when drought is not occurring so that the impacts from future droughts will be reduced. Municipalities across the state, forced into action by the 2000 and 2002 droughts, are beginning to assess their drought vulnerability and are starting to consider the process of drought planning.

Farmers and ranchers across the state also can plan for drought. Having a plan in place can help a producer make better, more timely

financial and farm management decisions, and it also will leave the producer prepared to take advantage of any state or federal assistance that might become available.

A producer's drought plan focuses on identifying critical dates and decisions that must be made. It should also highlight actions the producer can take to reduce the risk to drought. One action that producers should take is to improve their documentation of their operation. This single action, which would include improved record keeping, weather information, and taking photographs of conditions, would simplify interactions with state and federal officials, crop insurers, bankers, and others that could provide valuable assistance to the producer when needed and limit potential delays.

Additional suggested responses are available from a variety of web resources around the country, and can be found on the National Drought Mitigation Center's Web site under the section "Links to Drought Mitigation Tools for Agricultural Producers" (http://drought.unl.edu/mitigate/ag_tools.htm).

All Nebraskans need to realize that droughts, including multiple-year droughts, are normal for the state. Planning for these droughts is essential if the state is going to reduce future drought impacts and maintain the "Good Life" that makes Nebraskans proud of their state.

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