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Assessing stands, estimating wheat yields

Thin wheat stands, a result of dry conditions last fall, have producers and decision makers wondering what to do with their wheat this spring. What they really need to know is what kind of yield they can expect from their stand. With this knowledge, they can put the pencil to the economics and predict if it is in their best interest to tear up their wheat and plant a summer crop or leave the wheat alone.

In the January 28, 2000 issue of Crop Watch, a table was presented to help estimate winter wheat yield potential. This table relied on several assumptions that may not always be true, but were required to make a yield estimate at such an early date. These assumptions included:

1) that every wheat plant develops about five heads, and
2) that each head develops about 22 kernels.

In addition to that table, two formulas can be used to help predict wheat yields later in the season. Each relies on a number of assumptions that may not be accurate for every season or situation. Added to this uncertainty is wheat’s ability to compensate for changes in the environment. Use of either formula prior to grain development will require the use of estimates, such as the average number of kernels/ head. Using such estimates may result in a less accurate yield prediction. Despite these potential errors, these formulas provide a reasonable estimate for potential grain yield in Nebraska winter wheat.

Formula 1

Formula 1 was developed over a five-year period (1994-1998) as part of the Nebraska Wheat Quality Tour. These tours have been conducted near May 1, prior to head emergence in most of the state. Factors such as heavy weed/disease/insect infestations or an inadequate soil moisture profile observed at the time of the tour may suggest fewer final heads and a lower yield potential than indicated by the formula. In addition, the formula becomes unreliable in situations of extremely low or extremely high tiller counts or in years when crop development as of (Continued on page 23)

Consider chinch bug potential when replanting after wheat

As the time for planting corn and grain sorghum nears, many growers in the High Plains states are considering planting these grains into drought damaged wheat fields. When considering their options, they also may want to consider any potential for increased chinch bug damage in their area.

Dry weather, poor wheat stands, and planting corn or sorghum into volunteer wheat can contribute to increased damage from chinch bugs. Chinch bug populations and damage reports have increased over the past three years with heavy damage occurring in portions of some fields in 1999.

The good news is that fall 1999 and spring 2000 overwintering chinch bug numbers have been extremely low in our field samples, averaging less than 1 chinch bug per square foot. The bad news is that warm, dry winters normally assure high survival of the chinch bugs that make it to overwintering sites. Based on this information we do not expect widespread severe problems in 2000, but heavy damage may occur in scattered fields.

The best way to reduce potential chinch bug damage is to avoid planting corn or sorghum in volun-(Continued on page 22)
Bob Caldwell, Roger Elmore, Bob Klein, and Drew Lyon, Extension agronomists: Winter wheat planted into fallow in the Panhandle and west central Nebraska, for the most part, looks good. Winter wheat planted after a crop harvested last fall is rated from poor to fair. Some of this wheat just recently emerged and will tiller less (see Is Emerging Winter Wheat Vernalized on page 23). Most of this continuously cropped land is short of subsoil moisture.

Weed control will be important in these less competitive wheat stands. Some areas in the state have recently received moisture. The Panhandle has received several wet snows in the last two weeks, which should be a tremendous help to the winter wheat crop. Wheat in eastern Nebraska is progressing well, but it will soon need additional precipitation to continue its development. Fertilizer applications are currently being made on some wheat fields.

Ray Weed, Extension educator in Kimball-Banner counties: Wheat is entering spring in good condition. There is minimal crown and root disease damage on hilltops, partly because of good moisture last fall at establishment last fall. There are small army cutworms in the wheat. Right now they aren’t very active because of the cold, wet weather but it is important to monitor. Also, the effects of wheat streak mosaic virus are minimal now because the wheat hasn’t had much growth. As the weather warms and the wheat grows, we will see more symptoms.

Gary Zoubek, Extension educator in Hamilton County: Up until the snow over the weekend, producers have been shredding stalks, applying anhydrous ammonia and other field operations. Producers report that things were working great! My rain gauge had 1.10", and the moisture was welcome.

Paul C Hay, Extension Educator: Dryland crop producers should remember that a bushel in the bin to sell is the goal, rather than crop insurance collections. The plan for the “drought” year should include seed, fertilizer, and management choices for a good year. Measures to keep available moisture and reduce

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Chinch bugs
(Continued from Page 21)

tear wheat or next to wheat if possible. If you are going to plant corn or sorghum directly into a field with volunteer wheat, destroy all volunteer wheat before planting.

In 1999, sorghum planted in a field with widely scattered volunteer wheat plants was heavily damaged by chinch bugs. The longer the interval between destruction of the wheat and planting of corn or sorghum, the less chance there is for chinch bug survival and damage.

Consult University of Nebraska extension publication, the 2000 Guide for Weed Management in Nebraska, EC00-130, for herbicide recommendations for destroying wheat. If you need to leave strips of wheat in the field for crop insurance requirements, avoid planting corn or sorghum next to the strips.

ZB Mayo
Extension Entomologist

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Is emerging winter wheat vernalized?

We have received several calls over the past few weeks concerning winter wheat that has just recently emerged. The question has been: “Will this wheat produce any grain?”

Wheat emerging in the last few weeks probably germinated many weeks ago. The vernalization process begins as soon as germination begins. Therefore, recently emerged wheat has probably experienced sufficient cold to permit vernalization and subsequent head formation. This late emerging wheat, however, will not develop many tillers this spring. This will result in fewer heads per plant and lower grain yields than wheat that emerged last fall.

Recently emerged wheat also is likely to mature a couple weeks later than wheat that emerged last fall. This will potentially expose the recently emerged wheat to greater heat stress during grain fill, resulting in reduced yields and test weights compared to fall-emerged wheat. The good news is that the recently emerged wheat will thicken up wheat stands, providing greater protection against soil erosion, increased competition with weeds and some additional yield potential. It will probably yield 30%-50% less than wheat that emerged last fall.

Drew Lyon, Extension Dryland Cropping Systems Specialist, Panhandle REC

In 1999 Nebraska ranked sixth nationally in winter wheat production. The nation’s top five producers were: Kansas, Oklahoma, Texas, Washington, and Colorado. Nebraska produced 86,400,000 bushels of winter wheat in 1999.

Estimating wheat yields (Continued from page 21)

<table>
<thead>
<tr>
<th>Table 1. Calculating wheat yield</th>
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</thead>
<tbody>
<tr>
<td><strong>Parameter</strong></td>
</tr>
<tr>
<td><strong>Head number</strong></td>
</tr>
<tr>
<td><strong>Head weight</strong></td>
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</tbody>
</table>

May 1 is well ahead or behind normal. For later season yield estimates, yield predictions can be made by omitting the heads/foot conversion and substituting actual head counts.

1. Count the number of heads (may count tillers to estimate heads) per foot of row in at least five sites within the field and calculate an average number of heads per foot for the selected field (sites should be representative of the field).

2. If tillers were used to estimate the number of heads, use Table 1. Select the formula that represents the area of the state where the counts are being made.

3. Measure the distance in inches between the rows.

4. Use your findings from Steps 2 and 3 in the following formula. Use the average head weight from Table 1.

   Yield (bu/acre) = [(No. of heads/ft x Head weight) ÷ Row space (inches)] x 19.213

Formula 2

Formula 2 is used by many hail adjusters in the state. If not all the parameters in the formula are known, some assumptions can be made.

1. Count the number of heads (may count tillers to estimate heads) per foot of row in at least five sites within the field and calculate an average number of heads per foot for the selected field (sites should be representative of the field).

2. Determine the average number of kernels/head (the product of the number of spikelets per head multiplied by the number of kernels per spikelet) from at least five heads at each of the five sites. On average, winter wheat in Nebraska contains 30 kernels/head. This average number of kernels/head should probably be reduced for poor quality wheat -- how far is a matter of speculation.

3. Measure the distance in inches between the rows.

4. Use your findings from Steps 1 through 3 in the following formula.

   Yield (bu/acre) = [(No. of heads/ft x No. of spikelets/head x No. of kernels/spikelet) ÷ Row space (inches)] x 0.48

Drew Lyon
Extension Dryland Cropping Systems Specialist
Army cutworms reported in winter wheat, alfalfa

This winter’s mild weather has resulted in early army cutworm activity again this year. Reports of cutworms, some economic, have been received from several locations in western Nebraska. Growers need to be diligent in monitoring their winter wheat and alfalfa fields as they green up this spring.

As cutworms increase in size so will their appetite for leaves. If wheat grows slowly due to cool weather or moisture stress, significant cutworm damage will be more likely. However, considering the poor potential wheat price situation, treatments for this insect should be evaluated very carefully! Economic army cutworm levels do not occur as often in winter wheat as they do in alfalfa.

The army cutworm spends the winter as a partially grown larvae and usually is a threat to wheat and alfalfa at and shortly after these crops break dormancy. Later in the year cutworms can threaten row crops, such as sugar beets, as they look for additional food. These cutworms will remain a threat to emerging crops until the larvae mature in May.

Monitor alfalfa and wheat fields in early spring. Larvae will be found buried in the soil less than 1-2 inches deep or under clods in wheat fields. They feed mainly at night and may be found on the plants on some cloudy days.

Base treatment decisions on the numbers of cutworms present, the amount of damage, and the ability of the plant to outgrow the damage. In poorly growing wheat two or more cutworms per square foot may warrant treatment. In healthy wheat the threshold is four or more per square foot. Consider the plant’s ability to outgrow defoliation damage as well as the numbers of cutworms present. Because of the low commodity prices expected for wheat, these thresholds can be increased since more damage (or cutworm feeding) would need to occur to offset the potential lower economic return.

More information on the army cutworm is available in the NebGuide, Management of the Army Cutworm and Pale Western Cutworm (G1145). The pyrethroid, Warrior T, would likely provide the best control of army cutworms in wheat, with Lorsban 4E-SG also giving adequate control.

Gary Hein
Extension Entomologist
Panhandle REC

Workshops target the latest in wheat production

Winter wheat is the foundation of most dryland cropping systems in western Nebraska. It also plays an important role under many center pivots. That’s why this year’s University of Nebraska Crop Management Workshop will target wheat.

In-depth instruction and hands-on training on wheat production will be offered at two workshops this June at the High Plains Ag Lab near Sidney.

The 2000 Crop Management Workshop: Focus on Wheat is a field-oriented workshop on the management of wheat production, including the diagnosis of wheat production problems in the central High Plains. University of Nebraska Extension specialists will host the workshop at two times: June 26-27 and June 29-30.

Topics will include:
- Wheat growth and development, staging plants
- Varieties, planting dates, planting rates, seed selection
- Herbicide injury and weed management
- Disease and insect identification and management
- Irrigation management
- Calibration: spraying and seeding
- Nutrient management
- Environmental injury to wheat and management options
- Critical evaluation of wheat seeders

NU Extension instructors will include: Jurg Blumenthal, soil fertility specialist; Gary Hein, entomologist; John Smith, machinery systems engineer; Karen DeBoer, Educator; David Baltensperger, crop breeding specialist; Drew Lyon, dryland crops specialist; Gail Wicks, weed specialist; John Watkins, plant pathologist; Dean Yonts, irrigation engineer; Bob Harveson, plant pathologist; and Bob Klein, cropping systems specialist.

Nebraska Certified Crop Advisor credits have been applied for in the following areas: nutrient management (1 hour), soil and water management (1 hour), integrated pest management (4.5 hours), crop production (6 hours).

Registration cost is $185 before May 1 and $210 after May 1. Registration includes 1 3/4-day workshop, lunches, breaks and handouts. Enrollment is limited.

To register or request further information about the workshop, write to the Crop Management Workshop, NU Panhandle REC, 4502 Avenue I, Scottsbluff, NE 69361-4939 or call Drew Lyon at the Panhandle Research and Extension Center at (308) 632-1266.

Drew Lyon, Dryland Cropping Systems Specialist Panhandle REC
Videoconferences to address effects of drought, options

Despite recent rains or snowfall across much of the state, predictions of an unusually dry production season may necessitate changes in production or grazing plans. To help farmers and ranchers identify their options and plan alternative strategies, three University of Nebraska videoconferences will be conducted in the next month.

The topics are: dryland production, March 28, irrigated production, April 4, and livestock production, April 17. Each session will begin at 8 p.m. (CT) and be available at local sites as well as by Web broadcast on www.ianr.unl.edu/ruralroutes. NU Cooperative Extension specialists and researchers will address issues that are pertinent and timely to today's farmers and ranchers.

The March 28 Dryland Crop Production Session will cover tillage, soil structure, crop selection and rotation, plant population, weed management and soil fertility, and include weather updates. Extension presenters will include: Bob Klein and Lenis Nelson, agronomists, Mark Svoboda, climate specialist, Paul Jasa, engineer, John Watkins, plant pathologist, Fred Roeth, weed specialist, and Achim Dobermann, soil fertility specialist.

The April 4 Irrigated Crop Session will provide an overall view of water use for irrigated crops, uniform plant stands, replenishing soil water, effective weed control options, herbicides, and sprinkler and surface irrigation options.

The April 17 Livestock, Range and Forage Session will discuss use of forage resources, livestock inventory, culling strategies, early weaning and economics.

Following speaker presentations, there will be time for questions and answers. Contact your local Cooperative Extension Office for information about the closest viewing site and related presentations. Following is a preliminary list of participating Extension offices and contacts, (please call for details):

- Agricultural Research and Development Center, near Mead, Keith Glewen
  - Box Butte County, Tony Merrigan
  - Boone County, Steve Pritchard
  - Burt County, John Wilson
  - Clay County, Steve Johnson
  - Cuming County, Larry Howard
  - Custer County, Troy Walz
  - Douglas County, Omaha, Steve Mlynarek
  - Frontier and Curtis counties, Del Hemsath
  - Gage County, Paul Hay
  - Hall County at College Park, Tom Drudik
  - Harlan County, Tony Anderson
  - Holt and Boyd counties, Ralph Kulm
  - Lincoln County, North Platte, Steve Gramlich
  - Madison County, Chris Carlson
  - Otoe County, Steve Zimmers
  - Phelps County, Holdrege, Gary Hall
  - Saline County, Randy Pryor
  - Scottsbluff County, Cheryl Burkhart-Kriesel
  - Sioux County, Jenny Nixon
  - York County, York, Gary Zoubek

Field updates

(Continued from page 22)

rising fuel bills by no-till applications could be beneficial.

Terry Gomperl, Extension educator in Knox County: Drought concerns continue. Alfalfa is greening up and there is enough moisture for first cutting. Winter damage is not obvious. Timely rains are needed to produce the second and third cuttings.

The pastures have greened, but were nipped by the frost, reducing some potential production. The pastures were grazed close last fall and are warming up faster and growing more rapidly then normal.

Wheat Web sites offer latest findings and recommendations

A University of Nebraska Web site – the Wheat Production Handbook – includes the latest Cooperative Extension information on wheat production in Nebraska. The site, located at http://www.ianr.unl.edu/ianr/phrec/wheatbk.htm, is arranged in a logical sequence to pursue your practical production questions – from choosing a variety and fertilizer program to controlling weeds to marketing the crop. We are continually conducting research, reviewing research in other states, and developing recommendations regarding wheat production, updating the site as new information is available.

Another site provides information on management and production of hard white wheat. It is available at http://www.ianr.unl.edu/ianr/phrec/hww.htm. This site discusses why interest in hard white wheat is growing, how production differs from hard red winter wheat, compares available varieties and lists sources for hard white wheat seed.

Visit these sites and feel free to contact Drew Lyon if you have suggestions for improvement. Email dlyon1@unl.edu or write to Lyon at the Panhandle Research and Extension Center, 4502 Avenue I, Scottsbluff, NE 69361-4939.

Drew Lyon, Extension Dryland Cropping Systems Specialist, Panhandle REC

Current and historical NU variety test results are available on the Web at: http://www.ianr.unl.edu/agronomy/variest2.htm
Seed treatments for soybeans — when to use, what to choose

With the predicted dry spring conditions, should soybean seed be treated? If climate predictions were always correct and dry conditions were uniform, the answer would be “probably not.” Unfortunately, weather predictions are rarely 100% accurate and the situation can vary significantly from one area to another. The current recommendation on soybean seed treatments for controlling fungi causing stand emergence problems is to plant treated seeds in fields with a history of such problems. Seedling diseases such as damping off and seed rot are the most common soybean disease problem in Nebraska. In some situations, large areas of a field or even entire fields are replanted due to early season fungal problems. This is especially true when cool, wet weather early in the growing season creates favorable conditions for infection by soilborne pathogens that attack developing soybean plants. If conditions turn wet in May to early June when most soybeans are planted, the fungal pathogens involved in damping off will surely be active.

Field history is a key component in deciding whether to use a fungicide seed treatment. Most problem fields will have a history of seedling emergence or post-emergence problems. However, the distribution of the outbreak within a field can be altered significantly in a wet year and have a substantial impact on the stand. In a dry year, as is being predicted, this pattern may be reduced in size and have little or no impact on the field’s yield.

The most common fungi involved in seedling diseases in Nebraska are species of Fusarium, Phytophthora, Pythium, and Rhizoctonia. All four are capable of killing soybean seedlings or at least causing damage sufficient enough that it affects the ability of the plant to achieve its full yield potential. Diagnostic characteristics of common soybean seedling diseases are described in Damping Off, Root Rots, and Vascular Disorders of Soybean, NU Cooperative Extension Circular EC99-1877.

If conditions turn wet in May to early June when most soybeans are planted, the fungal pathogens involved in damping off will surely be active.

Seed treatment fungicides are available in a variety of formulations. Some products are labeled for commercial use in slurry- and mist-type seed treaters. Other products are labeled for on-farm application and are commonly referred to as hopper-box or planter-box treatments. With any seed treatment product, good seed coverage is required for the maximum benefit. To achieve proper seed coverage with an on-farm application, most seed treatment companies recommend adding half of the seed to the planter-box and then adding half of the seed treatment product. These should be mixed thoroughly before adding the remaining seed and fungicide. All should be mixed thoroughly again. Good coverage also can be obtained by mixing the seed and treatment in a suitable container before adding seed to the planter-box. (A large bucket or barrel works great.) Always read and follow label directions before making any chemical application.

Many compounds are currently available to use as seed treatment fungicides. Fungicides used as protectants (contacts) are effective only on the seed surface, while systemic fungicides are absorbed by the emerging seedling and inhibit or kill the fungus inside host plant tissues. Contacts usually have shorter residual activity than systemic fungicides. Contact fungicides used for soybean seed treatment include: captan, fludioxonil, PCNB, and thiram.

Systemic fungicides used for soybean seed treatment include: carboxin, mefenoxam, metalaxyl, and thiabendazole. For a list of seed-applied fungicides, their active ingredients, and the fungi they are effective against, see Cooperative Extension publication Seed Treatment Fungicides for Soybeans (NF00-411) which will be available in early April at local Cooperative extension offices.

Some seed treatment fungicides are not compatible with Rhizobium inoculants. Always check the label for compatibility and unless otherwise labeled, if seed is treated with a fungicide, apply inoculants in-furrow rather than on the seed. Many products require that seed be planted within four hours of inoculation with liquid based Rhizobium inoculants.

Early soybean planting has recently become a topic of discussion among many growers. With early planting it is essential that a good seed treatment be used to protect the seed.

Loren J. Giesler
Extension Plant Pathologist
Early planted soybeans offer machinery management options

Producers have long realized that when planting after a certain date, yield potential declines. With that in mind, they have purchased larger planters to cover their ground in a more timely fashion and have started planting earlier to avoid the penalties associated with late planting. Some have selected varieties with different maturities to spread both the planting and harvest workloads. Others have expanded their crop rotations to lengthen their planting and harvest seasons. This allows more land to be farmed with smaller equipment as the workload is spread across several crops.

With the traditional corn/soybean rotation, producers plant corn before soybeans for maximum corn yields. Soybeans can be planted later and still maintain fairly good yield potential. However, late planted soybeans may not have adequate rainfall or soil moisture during August for the important pod fill period, the main determinant of yield. In addition, an early fall frost can hurt late planted soybean yields by not allowing the later pods to fill. These factors have led to considerable interest in early planted soybeans.

Farther east in the Corn Belt, most producers plant their corn and drill their soybeans at the same time for better yields of both crops. This requires both a planter and a drill and the higher soybean yields usually justify the added machinery and labor costs. However, many soybean producers do not have a drill and use their corn planter to plant their soybeans, after their corn is planted. In some years where planting is delayed or for producers who are undersized on their planter, soybean planting may be finished as late as mid-June. Depending on the later summer rainfall and the first frost date, their yield potential is at risk on these late planted soybeans.

As a machinery management decision and to spread production risks, some producers are planting some soybeans before planting corn. While there are concerns about cold soils with early planting, many producers report that soybeans can actually handle cold soil stress better than corn. These producers start planting soybeans a week or two before their normal corn planting dates. Then they finish planting soybeans after their corn.

Planting too early, however, has risks involved with late spring frosts and seedling diseases because of slow crop emergence. By using no-till and seed-applied fungicides, these risks can be minimized (see story on soybean seed treatments, page 26). The soybeans are no-till planted into cold, wet soil with plenty of residue cover. Residue movers are not used so as to leave as much residue protecting the seed as possible. The seed is planted about 1 3/4 to 2 inches deep so the it won’t germinate as readily if there is an early warm spell. Tilled soils tend to warm up too fast early in the spring and a frost could kill them. Under no-till conditions, when the soil warms up enough for the seeds to germinate, the threat of a killing frost is usually past. The residue acts as insulation and provides some protection from frost.

Research conducted in 1999 at the Rogers Memorial Farm, 10 miles east of Lincoln, evaluated the potential of early planting soybeans. A planter was used to no-till soybeans into soybean residue and a drill to no-till into corn residue. The yields from the five planting dates, shown in the table, showed a yield penalty for later planting in 1999. There was very little rainfall in July and no rain in August during the pod fill period, especially affecting the later planted soybeans. The early planted soybeans were further along in maturity and less affected by the dry conditions.

The stands and emergence for all planting dates were good with the excellent growing conditions early in the season. Both the March 4 and March 28 planting dates began emerging April 16, after the last killing frost. The June-planted soybeans were approximately 1 foot taller at harvest because of warmer growing conditions during their early vegetative growth. This study is being repeated in 2000 with six planting dates ranging from early March to mid-June to further evaluate planting dates and the associated risks or benefits.

While March planting dates looked good in 1999, producers should not plant their soybeans too early. Early planted soybeans still have risks involved with late spring frosts and replanting may be necessary. In addition, the potential for bean leaf beetle feeding must be considered as later planting dates are a cultural practice to avoid seedling damage.

For machinery management purposes, planting some soybeans a week or two before corn makes sense for the producers who typi-

<table>
<thead>
<tr>
<th>Date</th>
<th>30&quot; Rows Soybean Residue</th>
<th>7.5&quot; Drill Corn Residue</th>
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<tr>
<td>March 4</td>
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<td>52.3</td>
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<td>June 4</td>
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(Continued on page 28)
Before planting GMOs or non-GMOs, consider all the factors and costs

The continuing GMO issue is a clear sign that consumer preferences and traceability of product are increasing factors affecting the current grain markets. Grain suppliers to food manufacturers are being increasingly pressured for assurances of the genetic composition of the grains purchased. For this reason, producers are considering production of non-GMO grains.

The Identity Preserved System is one method of assuring the end-user of the genetic make-up of the grain, regardless of whether it is GMO or non-GMO, and can be important to marketing these crops. Such a system is available through the Nebraska Crop Improvement Association. Several factors need to be considered, however, before committing to the Identity Preserved system.

First, is there a market or contract available that will pay a premium for the extra time and effort to segregate the grain. Will the additional premium pay for or is the end user willing to pay for an unbiased third party Identity Preserved program? Who will pay for the DNA testing? PCR tests may cost as high as $400. Contracts must be examined very carefully. Producers should not sign anything that states the crop is 100% non-GMO, due to liability and breach of contract issues. Rather the contract should state the steps to be used to assure the grain is not contaminated.

Tolerance levels need to be known, and you need to know if those levels are attainable. Since 30-50% of U.S. corn is GMO-based, trace amounts of cross-pollination are inevitable and it will be difficult to impossible to guarantee that the crop is 100% non-GMO. The seed corn industry has maintained a 99% purity in its hybrid seed corn for many years using standardized purity and isolation distance put in place by the Association of Official Seed Certification Agencies.

An important part of the segregation process is avoiding any possible contamination of the non-GMO grain. Thorough cleaning of all equipment from planting to delivery is one of the most important means of achieving this. A detailed record system is essential to

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Identity preserved grain — NCIA offers new inspection and documentation program

A growing consumer interest in the identity of grain composition and concerns over genetically engineered crops has led to the need for identity preserved programs for grain and seed. Such programs identify the presence or absence of any genetic modifications, and trace and document the crop from planting to the end user.

The Nebraska Crop Improvement Association now offers an Identity Preserved Program for both grain and seed. It is designed for growers of market grains or specialty seed where specific traits need to be documented and traced. Individualized programs are available from planting and harvest up to the verification of a grain elevator’s ability to segregate such products and maintain the identity to the end user.

This program is authorized by the Association of Official Seed Certifying Agencies (AOSCA) and is being offered in forty-two states and in several South American countries. Agencies across the United States developed standardized protocols for such identity preserved programs. The protocols outline general guidelines that each certification agency must incorporate into the individual customer programs. Before implementing a program, each agency submits information about their program to the AOSCA Identity Preserved committee for review and approval.

This dynamic program allows the crop producers of Nebraska the ability to customize and choose the parts that fit their marketing needs. It also provides the assurance of a non-biased third party inspection and documentation of the crop. The demand for this service will be driven by premiums paid for specialty crops or niche markets for either GMO or non-GMO grain.

Enrolling in this program likely is cost effective only if premiums are to be paid for delivering an identity preserved product.

For more information contact Steve Knox, field services supervisor, or Larry Prentice, quality control systems manager, Nebraska Crop Improvement Association, 267 Plant Sciences Bldg., University of Nebraska, Lincoln, NE 68583-0911; phone: (402) 472-1444.

Larry Prentice
Quality Control Systems Manager
Nebraska Crop Improvement Assn.
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be able to provide the end user with documentation of the production process. Use names, numbers, or signs to label each field, grain bin, hauling vehicle, etc. used. Document planting dates, field locations and size, inputs used, harvest date, crop yield, and bin numbers. Keep seed tags to identify the variety planted and seed source. Consider discarding at least 8 to 24 rows on all sides of each field to lessen the possibility of pollen contamination being detected in the grain.

The final verification that the grain will meet the end-user's specific standards lies in testing. If a contract includes a specific measure of tolerance, select a testing method with results that can be translated into that measure, such as a percentage. A PCR test will detect a very small amount of the protein being tested for, however the results are not easily reported in a measurable number.

Producers need to carefully evaluate the production of non-GMO grains and the potential and costs of isolating the grain. They'll need to spend extra time cleaning and segregating the crop and should consider the costs of tests and special storage. They also should have someone available who can objectively evaluate any contracts.

Steve Knox
Field Services Supervisor
Nebraska Crop Improvement Assn.

Consider irrigating alfalfa, but give tillage a second thought

Many Great Plains alfalfa growers periodically cultivate their alfalfa stands, often using a spring-tooth harrow or disk or some specialized tillage equipment. Usually it is done to control weeds like mustards and downy brome, but sometimes light tillage is used to incorporate fertilizer, smooth rough spots, or lessen compaction. Some folks claim this tillage increases production by splitting crowns into two or more plants.

Tillage generally stimulates early alfalfa growth by blackening the soil, but most research shows that if spring tillage is aggressive enough to provide useful weed control, it also damages alfalfa stands and yields. Light tillage may not harm the stands, but it also may not control the weeds.

Disadvantages to tilling alfalfa

There are disadvantages to tilling alfalfa. By cutting open the crowns, diseases can enter and start injuring the plant. These crown and root diseases usually take a while to show much damage, so if the field will be rotated to another crop in a year or two, losses will be slight if any; however, if you want to keep the stand for a longer time, diseases may start to thin your stands earlier than normal.

Consider the damage potential carefully before tilling alfalfa this spring. Spring tillage before the alfalfa greens up and when soils are dry, does little harm and little good.

Early irrigation

Alfalfa producers in areas with low precipitation and soil moisture levels may want to consider an early season irrigation.

Early spring may be the only time to build a good water reservoir for summer use.

Alfalfa can develop roots more than eight feet deep, but only if surface moisture is not available but moisture is available at greater depths. Deep roots and deep moisture will make your summer irrigating much easier by providing extra moisture when plants use as much as one-half inch per day. Unfortunately, typical shallow watering during summer encourages only shallow rooting.

Early spring irrigation also tends to help warm up the soil since irrigation water usually is about 55 degrees. This will help speed early alfalfa growth.

Another advantage to creating a water reserve is that it may limit the need for irrigation after summer cutting.

Alfalfa roots need oxygen in the soil if plants are to regrow rapidly. Watering right after cutting suffocates roots, slowing regrowth. Immediate watering also stimulates shallow rooted or sprouting weeds, especially at a time when alfalfa plants are not very competitive. Both problems are solved when water is available for deep alfalfa roots while the top several inches of soil remain dry.

A goal might be to irrigate and account for precipitation so that you have eight feet of soil at field capacity for soil moisture at first cutting.

Bruce Anderson
Extension Forage Specialist

Scout now for alfalfa weevils

Alfalfa weevils may start feeding on alfalfa earlier than normal this year due to the mild winter. Weevil activity already has been reported in Kansas, and weather conditions suggest that weevils could begin feeding any time in southern Nebraska.

More adults, larvae, and fall-laid eggs may have survived than usual this year, potentially causing earlier and greater damage to alfalfa. Begin monitoring fields as soon as alfalfa is 4 to 6 inches tall.

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Historical patterns and cycles of spring and summer rainfall in Nebraska

Many factors can affect the rainfall variations in a region. Knowing the current and projected status of these factors can lead to projections of future rainfall. We have identified several such factors, including the natural variability of the local climate.

The "natural variability" describes a course that the climate would follow if it is not affected by the external forcing (e.g., global warming, volcanic effect, and solar forcing). Even though this course has been constantly modified or altered by some of the external causes in individual years, researchers have found that both the annual and summer season precipitation in Nebraska has followed a cyclic variation pattern over the last several hundreds years. The period of this variation is a little over 20 years.

The general pattern has been to have roughly 10 relatively wet years followed by 10 relatively dry periods. This pattern repeats over and over again. The figure shows how this variation proceeded since the beginning of the 20th Century. Examining this figure we can see that when this variation was in its negative phases (dry condition) during the mid 1930s, late 1950s, and late 1970s, most of those years had indeed below average rainfall. Most of the years between these dry periods were wet. This indicates that the cyclic variation of precipitation can be used to project anomalies of annual and summer season precipitation in this region.

Another interesting feature in the figure is that after the 1960s the spring season rainfall variation (the dotted line) became out-of-phase with the summer rainfall variations (the dashed line); years with drier summers had wet springs and vice versa.

Now, let us project the spring and summer season rainfall to 2005 following the cyclic variation pattern in the figure. Note that the year 2000 and the following couple of years are in a valley of the summer rainfall curve, meaning that there will be a high probability of drier than normal summers for these years; however the springs of these years will have above normal rainfall.

To be more specific, we have used a statistical method to predict the rainfall anomalies for this coming spring and summer for Nebraska. The predicted and observed rainfall for the last 50 years were compared and found to be generally consistent, particularly for the extreme years. This consistency provides confidence with this method.

The result from this method shows that the spring season (March, April, and May) rainfall for Nebraska will be normal or slightly wetter this year for the state as a whole, and the summer (June, July, and August) will be drier than normal. Interestingly, both of these predictions are consistent with the rainfall trends indicated in the figure, even though they were produced from independent methods. As a word of caution, the predictions were made for the state as a whole or as an average over the state. They show that the state on average will receive adequate rainfall in the spring and be dry this summer. Individual locations might have slightly different rainfall anomalies. When making decisions based on this information, be sure to consider local conditions. Predictions for sub-climate divisions in Nebraska have been produced and are available at http://www.ianr.unl.edu/snrs/climate/prediction.

There are other sources of forecast available and they may have offer different predictions. Whether a prediction is valid for a particular region will have to be tested. We will assess our prediction methods and prediction after the seasons pass to establish a reliable prediction method or system for the state and its sub-climate regions.

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