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Check the probabilities for your area

Dry conditions expected through spring

Eastern Nebraska and western Iowa continue to be at the center of a severe drought (see map), according to the national Drought Monitor. Drought conditions continue to plague a large section of the Corn Belt and southern gulf coast.

The Drought Monitor (http://enso.unl.edu/monitor/monitor.html) is a new tool which classifies drought severity based on a combination of six criteria:

- standardized precipitation index,
- US Geological Service stream flow conditions,
- satellite vegetation health index,
- crop moisture index,
- Climate Prediction Center soil moisture model output, and
- USDA top soil moisture conditions.

The variety of information used for this monitor make it more efficient than previous tools at tracking the onset and severity of drought.

How dry is it? Soil recharge is minimal to nonexistent in many areas and fall precipitation was just 20-40% of normal.

Precipitation shortfalls across Nebraska have steadily increased since mid September, with all districts reporting below normal precipitation from Sept. 15, 1999 to Jan. 21, 2000. Precipitation has averaged 20-40% of normal and departures are averaging 4 inches across central Nebraska to nearly 8 inches across the northeastern corner of the state.

Portions of central, southeast, and northeast Nebraska have experienced below normal precipitation since early August. The combination (Continued on page 221)

Much of eastern Nebraska is now in a severe drought, according to the U.S. Drought Monitor, Jan. 20 (Watch for further updates at http://enso.unl.edu/monitor/monitor.html)
Noel Mues, Extension Educator in Furnas County: Generally, I make try to write down when my rain gauge records measurable precipitation. The only moisture recorded since mid-August was 0.35 inches in late November. Drought conditions are making it particularly bad for farmers pondering their options with winter wheat because of poor stands. Some wheat stands are spotty and many continuous fields show more bare ground than growing wheat. Root and crown rot will, likely, be a problem when wheat breaks dormancy this spring. In terms of how dry it is, it's surprising we haven't had more grass fires. The snow we received Jan. 23 barely covered the ground — hardly enough to break the drought cycle.

Paul Hay, Extension Educator in Gage County: The first crop of 2000 is already in trouble. Talk to your insurance company early about potential settlement on problem wheat fields. Thin wheat means extra weeds, potential for chinch bug development, marginal yields and returns. Chinch bugs will move to wheat fields immediately after three days of 70°F. This will likely occur by mid-April. Delaying the decision on the potential of a wheat field could easily begin the next disaster of soil moisture depletion, and chinch bugs waiting for the corn and/or milo seedlings to emerge.

Selection of crops, varieties, seeding rates, insurance coverage, and financial planning to deal with a potentially short crop are all important tasks for this winter. The tight financial situation for most farm operations in the past two years makes this planning even more vital.

With row crops, minimize the loss of surface moisture by reducing or eliminating tillage passes. Every tillage pass in a dry season will reduce corn and milo yields by 7 bushels per acre. Looking back at a loss of 21 bushels per acre from discing, field cultivating, and row-crop cultivating, next September will do little good at the bin or the bank.

Visit the Rural Routes Web site at ruralroutes.unl.edu for more information on farm/ranch issues and on-line ag marketing discussions.
nation of spring planting delays and late maturing crops left soil moisture reserves depleted at the end of the 1999 growing season.

Continuous monitoring by soil moisture probe sensors at 17 of the 47 Automated Weather Data Network stations indicate that recharge has averaged 1-2 inches across the state since mid September. Most of the moisture is within the top 18 inches of the profile.

January precipitation continues to follow the trend established late last summer. As of Jan. 21, statewide precipitation, weighted by area, is less than 10% of normal for the month. Average January precipitation is 0.40-0.60 inches at most locations. Usually below normal precipitation in January is of little concern, except this year it is the fifth consecutive below normal month.

When this period is put in a historical perspective, we can see just how unusual events of last five months have been. For all districts east of the Panhandle, this is the driest Sept. 1-Jan. 11 period for more than a century. (Remember this analysis was performed on area weighted data, so there will be slight deviations from this trend at individual stations.)

In addition, forecasts favor a continuation of dry conditions though spring. Long-lead outlooks are indicating a tendency toward drier than normal conditions across Nebraska for February to June. The highest probabilities for below normal precipitation occur from March to May.

For additional monthly and seasonal forecasts, check out the Web site at www.cpc.ncep.noaa.gov

To assess the probability of receiving precipitation during the spring and growing season, precipitation probabilities and effective precipitation probabilities can be viewed in Tables 1-4. These data are for district averages and individual stations may vary by + or - 5%.

Table 1. January - April precipitation probabilities at the 10, 30, 50, 70, and 90 percent levels. Data compiled from cooperative network stations with at least 100 years of climate records.

<table>
<thead>
<tr>
<th>District</th>
<th>10%</th>
<th>30%</th>
<th>50%</th>
<th>70%</th>
<th>90%</th>
</tr>
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<tbody>
<tr>
<td>Northwest</td>
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<td>3.77</td>
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<td>North Central</td>
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<td>Northeast</td>
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<td>South Central</td>
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<td>6.92</td>
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</table>

Table 2. January - April effective precipitation (effective rate calculated at 70%).

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Table 3. May - September precipitation.

<table>
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<th>District</th>
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<td>22.67</td>
<td>18.95</td>
<td>16.52</td>
<td>13.72</td>
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</tbody>
</table>

Table 4. May - September effective precipitation.

<table>
<thead>
<tr>
<th>District</th>
<th>10%</th>
<th>30%</th>
<th>50%</th>
<th>70%</th>
<th>90%</th>
</tr>
</thead>
<tbody>
<tr>
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<td>8.56</td>
<td>7.50</td>
<td>6.06</td>
<td>4.75</td>
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<tr>
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<td>6.59</td>
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<td>8.08</td>
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<tr>
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<td>10.61</td>
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<tr>
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<td>6.15</td>
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<td>Southeast</td>
<td>18.41</td>
<td>15.87</td>
<td>13.26</td>
<td>11.56</td>
<td>9.60</td>
</tr>
</tbody>
</table>

(Continued on page 222)
Consider forecasts in crop selection

Crops differ in their ability to tolerate drought. This ability is affected by seeding rates, crop residue, weed amount and species, tillage and cultivation.

**Corn.** When comparing corn, grain sorghum, and soybean, corn is least able to withstand prolonged moisture deficiency. Corn will continue to grow physiologically until available water is not sufficient for growth, then firing will occur.

Under drought stress, corn may produce tassels, but silking may not occur or silking may be delayed enough that fertilization does not occur or silking may not occur at all. Under these conditions, grain will not be produced even if rain does occur. However, if rain does occur before the plants die, additional plant growth may result, and forage yields could be increased.

Drought stressed corn needs to be observed closely. If forage is needed, delay harvesting until the plants have started to die and will no longer benefit from rain. Check nitrate level of stalks before grazing or feeding.

**Sorghum.** This crop withstands considerable drought stress. Sorghum leaves will "roll" and the plant will essentially become dormant until rain occurs or the plants are completely dried by hot winds. This period of drought stress can last for several weeks before the plants die. After rain, growth will resume or new tillers may form. Any moisture that a sorghum crop receives after a drought period will give additional dry matter production unless the crop is dead. Grain production, however, may be delayed enough that the crop may not mature before frost. If severe drought stress occurs during flowering, fertilization may be sporadic and grain yields may be reduced even if rains occur later.

**Soybean.** Soybeans have generally been considered as a poor dry-weather crop, but they can withstand more drought stress than corn. Somewhat like sorghum, soybean will stop growth when under moisture stress. If plants are still alive and receive moisture, growth will resume. After drought stress, if rains are adequate in August and September and the season is long enough, soybean will provide a good seed yield. Soybeans do need moisture from the pod fill through the seed fill stage.

**Soil Moisture and Residue Levels.** Use a soil moisture probe, soil probe or spade to determine the amount of soil moisture. Consider the soil moisture level and crop residue level when selecting your crop and determining your seeding rate. Table 1 suggests plant populations for three crop residue and sub-soil moisture levels for grain sorghum and corn.

Table 1 lists suggested seeding rates for dryland grain sorghum, corn and soybean under different moisture and crop residue conditions at planting.

**Robert N. Klein,** Extension Cropping Systems Specialist

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**Table 1. Suggested planting populations for moisture and residue conditions at planting on silt loam soils in Nebraska. Even distribution of residue is assumed.**

<table>
<thead>
<tr>
<th>Area</th>
<th>Grain sorghum</th>
<th>Mid-season corn</th>
<th>Short-season corn</th>
<th>Soybean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>40,000</td>
<td>8,000</td>
<td>9,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Central</td>
<td>50,000</td>
<td>12,000</td>
<td>13,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Eastern</td>
<td>60,000</td>
<td>16,000</td>
<td>17,000</td>
<td>150,000</td>
</tr>
</tbody>
</table>

With 2000 lb/A wheat residue or 4000 lb corn/sorghum or 55% residue cover and 2 ft of sub-soil moisture. (In western area your best option will probably be to fallow and plant winter wheat in the fall.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Grain sorghum</th>
<th>Mid-season corn</th>
<th>Short-season corn</th>
<th>Soybean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>40,000</td>
<td>10,000</td>
<td>11,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Central</td>
<td>50,000</td>
<td>14,000</td>
<td>15,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Eastern</td>
<td>60,000</td>
<td>18,000</td>
<td>19,000</td>
<td>150,000</td>
</tr>
</tbody>
</table>

3500 lb/A wheat residue or 7000 lb corn/sorghum or 90% residue cover and 4 ft of sub-soil moisture

<table>
<thead>
<tr>
<th>Area</th>
<th>Grain sorghum</th>
<th>Mid-season corn</th>
<th>Short-season corn</th>
<th>Soybean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>40,000</td>
<td>11,000</td>
<td>12,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Central</td>
<td>50,000</td>
<td>15,000</td>
<td>16,000</td>
<td>150,000</td>
</tr>
<tr>
<td>Eastern</td>
<td>60,000</td>
<td>20,000</td>
<td>21,000</td>
<td>150,000</td>
</tr>
</tbody>
</table>

5000 lb/A wheat residue or 100% residue cover and 6 ft of sub-soil moisture

1. 100 lbs of residue are produced for each bushel of winter wheat and 50 lbs of residue are produced for each bushel of corn or sorghum produced.
2. For continuous no-till, the residue could be a combination of the winter wheat residue and corn or grain sorghum residue.
3. Requires equipment that can plant or drill through residues.
4. Long season corn or grain sorghum hybrids are not recommended. If used, reduce plant population.
5. Watch grain sorghum maturity. Cool wet soils slow plant emergence and development.
6. In dryland seeding rate studies of grain sorghum across Kansas and Nebraska with wet or dry conditions, early or late planting, 40,000 plants produced the highest yield.
NU winter meetings offer depth, training

The Integrated Crop Management Winter Programs offer a variety of educational and training opportunities. Programs will be held at the University of Nebraska Agricultural Research and Development Center near Mead and in Grand Island, Norfolk, and Lincoln. One-day workshops will have approximately six hours of training and will run from 9 a.m. to 4 p.m. CCA-CEUs will likely be available.

Participants in last year’s meetings said they expected to increase profits by at least $7 per acre because of information at the meetings. Please call or check the Web site for further details regarding classes and registration.

Drought forecast (Continued from page 221)

within the district.

Table 1 indicates the probabilities of receiving the indicated precipitation values at the 10, 30, 50, 70 and 90 percent levels for January to April, while Table 3 is for May to September. These data indicate the likelihood of receiving a stated amount of precipitation within a particular district from January through April. For example, in the east central district there is only a 10% likelihood of receiving 9.85 inches, a 50% likelihood of receiving 5.65 inches, and a 90% likelihood of receiving 3 inches.

Table 2 is adjusted to reflect the average effective infiltration rate of precipitation (January to April) based on soil moisture modeling in the early 1990s. Tables 3 and 4 are for May to September. The average effective rate is about 70%, which means about 70% of the precipitation enters the soil profile. This can vary depending on soil type and precipitation intensity. Sandy soils will have a higher infiltration rate, while clay soils will have a lower infiltration rate.

According to Table 1, precipitation will be less than 2-6 inches (location dependent) this spring. Recharge would be less than 1.5-4 inches in addition to the 1-2 inches currently stored in most soil profiles. In the best scenario, the total soil moisture recharge from the fall and spring would be 2.5-3.5 inches across western Nebraska. In eastern Nebraska it would probably be 5-6 inches.

Sandy soils can hold 5-6 inches of available water in a five-foot profile at field capacity, while silt loams generally hold about 10 inches in the same profile. If these dry conditions persist, soils across the state would be at or below 50% of capacity by early May. Typically, stress conditions begin to appear when available soil moisture is below 50%.

Typically a corn crop requires 25 inches to produce adequate yields. Assuming a soil in east central Nebraska can recharge to 6 inches, then 19 inches of effective precipitation will be needed to obtain adequate yields. Table 3 indicates that at the 50% probability level 18.75 inches of precipitation can be expected from May to September in the south central district; however this does not consider precipitation effectiveness. According to Table 4, there is approximately a 10% probability of receiving about 19 inches of effective precipitation.

View tables 1-4 within the context of risk assessment. They don’t consider the distribution pattern within the analysis periods; however, they do offer a perspective of historical precipitation trends across the state. Indirectly, they indicate that soil moisture recharge is a critical component of dryland yields in Nebraska, since growing season precipitation is not sufficient, on average, to meet crop demands.

Soil moisture recharge has been virtually nonexistent since the end of the 1999 growing season. The risks for yield reduction due to the lack of adequate soil moisture recharge are increasing as we near the spring planting season. If dry conditions continue into March and April, there is little if any chance that producers will obtain average to above average yields on dryland corn and soybeans this production season.

Al Dutcher
State Climatologist
Agricultural Meteorology
Avoid tillage; plant for moisture, good seed-to-soil contact

If current dry soil conditions persist to planting, avoid tillage to save valuable soil moisture. Too often the soil will dry to the depth of tillage. Tillage also destroys soil structure and residue cover, making the soil prone to crusting and reducing its ability to capture valuable rainfall.

**Plant for moisture.** With dry soil, it will be even more important to closely monitor and maintain a consistent planting depth. Consider planting corn and grain sorghum 1/2 inch deeper than you might normally. Plant about about 2 1/2 inches for corn and at least 2 inches for grain sorghum. This will reduce the chance of the seed zone drying out in the planter slot. Soybeans are normally planted 1.5 to 2 inches deep. Don’t plant soybeans deeper than 2 inches.

**Plant deep enough to avoid “rootless corn syndrome”**. The nodal roots on shallow planted corn will try forming at or near the soil surface, which may be hot and dry. If the nodal roots do not form properly the corn plant will not be stabilized and will fall over. Planting two or more inches deep should allow for the nodal roots to form deeper where the soil is more likely to be moist and cooler.

**Don’t use residue movers with no-till or ridge planting.** The more residue that can be left over the row, the more mulch there will be to reduce drying of the seed zone. The mulch also reduces crusting and/or washing out the seed when the rains do come. Planting through a dry layer of soil on top of the row makes it easier to close the seed-vee. Pushing away the dry layer may give a moister seed-vee, but as the soil dries, the seed-vee may open, drying out the seed zone. Make sure the planter is set slightly “tail down” to get better seed-to-soil contact.

**Add weight and downpressure springs to the planter to ensure that the openers penetrate the residue and the dry soil.** This is especially true on drills. To calculate the amount of weight needed, multiply the manufacturer’s downpressure claims by the number of rows, and add weight to achieve the total.

Add at least 300 pounds per row on planters for good penetration in dry soils. Typically, drills weigh less so add 400 pounds per row. As the heavy duty springs transfer the weight to the planting unit, they lift the weight off the drive wheels. Add weight to keep the wheels in firm contact with the soil. This is especially needed on ridge planters to help keep the planter on the row and on drills where there are a lot of openers. For example, a six-row planter times 300 pounds is 1800 pounds needed weight. The toolbar may not weigh 1800 pounds and additional will be required. On drills, for example, multiply 24 openers by 400 pounds for 9600 pounds, definitely requiring more weight.

**Use early preplant herbicides.** Don’t let the weeds get started or get ahead of you. In many years rain in early April can activate the herbicide, providing good early season weed control. By late April or after planting, the chances of rainfall diminish and weeds can get a start. Tillage will incorporate the herbicide but it will dry the soil and also incorporate residue. In most cases the early application will eliminate the need for a burndown herbicide. If rain needed for activation is delayed, a burndown herbicide can be used at planting or a postemergence product can be used later to kill weeds that got started before the residual herbicide was activated.

Paul Jasa  
Extension Engineer

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**Winter wheat update**

It’s the same story across the state. Good late summer rains were followed by a very dry fall. Winter wheat seeded near the optimum time and into fallowed ground looks good. These plants had good emergence and time to develop a root system that can tap into good soil moisture below six inches.

Wheat planted after the optimum time or after a summer crop has not fared as well. These wheat fields have generally poor stands and the plants that did emerge are just hanging on waiting for the next little bit of moisture. If late winter snows or early spring rains do not materialize, this wheat could be in trouble.

In the Panhandle, wheat seeded with a hoe drill, where dry surface soil is moved to the side to form ridges, is looking much better than wheat surface seeded with a disk drill. However, the lack of moisture this fall and winter has resulted in the ridges remaining loose and susceptible to blowing. Strong winds and blowing soil could bury this wheat. While it’s too early to write off your wheat, growers with poor stands should consider what they will do if moisture conditions don’t improve soon.

Drew Lyon, Extension Dryland Crops Specialist
Bt corn hybrids: Deciding what’s right for your operation

By now everyone has heard of Bt corn hybrids and many of the issues surrounding their production and use. Although a full discussion of the issues is beyond the scope of this article, we would like to briefly cover some of the economic factors a grower should be aware of when considering Bt corn seed. A broader discussion of other economic, agronomic, and environmental issues is presented in NebFact 409, Choosing a Bt Transgenic Corn Hybrid, which is available from your local Cooperative Extension Office.

Current Bt corn hybrids are effective at controlling European corn borer (ECB). The problem is, however, that when you buy Bt corn seed you are in effect deciding to treat for an insect that may or may not occur in economically damaging numbers six to ten months later. You are buying an insurance policy against possible ECB damage. Whichever the case, the cost for this technology (technology fee or premium) is about $10 an acre (dependent on plant population and specific Bt Hybrid).

An economic return on the Bt investment (technology fee) is not guaranteed. You must have ECB laying eggs in your Bt field in order to realize an economic return. To regain the initial investment, the potential ECB population must be large enough that the yield loss they could cause is at least equal to the added cost of the Bt corn seed. This is illustrated in Table 1. Under conditions specified in this scenario (see Table 1 footnote), one ECB larva per plant would be required to assure an economic return on your Bt investment (technology fee). Of course, this will vary according to the specifics of your operation. Use the equation provided in the footnote of Table 1 to estimate your potential economic return.

Direct comparisons of the net economic gain of using Bt corn versus scouting and using conventional insecticides can be made for specific ECB infestation scenarios. To do this use the equation in Table 1 and/or treatment guidelines presented in Extension publications available through your local Cooperative Extension office or the Web at http://www.ianr.unl.edu/pubs/. NebFacts 98-364 and 98-365 cover first and second generation European corn borer. Remember, the economic value of Bt corn will depend on the actual European corn borer pressure, as will its relative advantage/disadvantage over production of non-Bt corn.

Ideally, the decision to use Bt corn should be based on an assessment of past ECB pressure and economic impact. Generally, a grower who experiences economically damaging populations of ECB seven or more years out of ten should consider planting Bt corn. Conversely, a grower who experiences economically damaging populations of ECB three or less years out of ten should consider relying on scouting and using economic thresholds. The final decision depends on the grower’s ability to accept risk, particularly when economically damaging

(Continued on page 226)

Table 1. Potential economic profit or loss ($/acre) of Bt corn based on expected yield, expected control, and ECB density. Modified from Rice and Pilcher (1998, Potential Benefits and Limitations of Transgenic Bt Corn for the Management of the European Corn Borer (Lepidoptera: Crambidae), American Entomologist, Summer Volume, 1998, pp. 75-78).

<table>
<thead>
<tr>
<th>Yield bu/acre</th>
<th>Percent control</th>
<th>Corn borers per plant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>125</td>
<td>98</td>
<td>- $10.00</td>
</tr>
<tr>
<td>125</td>
<td>86</td>
<td>- $10.00</td>
</tr>
<tr>
<td>150</td>
<td>98</td>
<td>- $10.00</td>
</tr>
<tr>
<td>150</td>
<td>86</td>
<td>- $10.00</td>
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<tr>
<td>175</td>
<td>98</td>
<td>- $10.00</td>
</tr>
<tr>
<td>175</td>
<td>86</td>
<td>- $10.00</td>
</tr>
</tbody>
</table>
Farmers reduce insecticide use with Bt corn

CONCORD, Neb. — Nebraska farmers led a six-state region in decreasing use of European corn borer insecticide in 1998 after planting Bt corn, according to a survey.

Tom Hunt, University of Nebraska entomologist at the Haskell Agricultural Laboratory here, said that result was expected, as reduced insecticide use is one of the advantages to planting Bt corn.

Iowa State University conducted the survey in cooperation with entomologists in Iowa, Nebraska, Minnesota, Kansas, Illinois and Pennsylvania. The survey questioned 2,000 farmers who planted Bt corn in 1996, 3,334 farmers in 1997 and 1,967 farmers in 1998, the first three years it was commercially available.

The greatest reduction was by Nebraska farmers in 1998, Hunt said. That year 50 percent of respondents who planted Bt corn decreased conventional insecticide use. The actual number of Nebraska farmers surveyed is unavailable, Hunt said. Throughout all six states, 26 percent — 511 of the farmers surveyed — said they reduced insecticide use in 1998.

Bacillus thuringiensis corn is genetically engineered to produce a protein that is toxic to the European corn borer and a few other insects. Typically, two generations of corn borers can damage fields in Nebraska, but after eating Bt corn, susceptible insects die. Thus Bt reduces the need for conventional insecticides, which in turn reduces the use of insecticides in the environment, Hunt added.

One survey question asked whether conventional European corn borer insecticides increased, decreased or stayed the same during the years producers used Bt corn. The study also found that farmers in the six states reduced insecticide use 13 percent in 1996 and 19 percent in 1997.

European corn borer populations were high in 1997, after which they greatly declined, or "crashed," due to natural conditions and before Bt corn was widely planted, Hunt said. Their numbers were still down in 1999. The continued low numbers could be due to the natural population cycle, or suppression from Bt corn.

"We really can't tell," Hunt said. "That's a question we'll look at."

Survey results aren't clear how to interpret this reduction of insecticide use. "Does it mean they planted more Bt acres? Or does it mean they used less insecticide on non-Bt corn? We really don't know," Hunt said, adding that even so, "the numbers are promising."

While planting Bt reduces the need for using traditional pesticides, Hunt said a possible drawback of planting too many Bt acres is that insect resistance might develop. The federal government has issued guidelines for farmers to limit the amount of Bt corn they can plant, so resistance is less likely to occur.

Other Nebraska-specific findings include:

- Of the Nebraska farmers surveyed, 81 percent said their primary reason for planting Bt corn was to prevent yield loss from European corn borer; and 42 percent wanted to eliminate the need for using conventional insecticides to control the insect. (Producers could choose more than one reason.)
- In the five years before Bt corn was commercially available, 50 percent of the Nebraska producers surveyed used insecticides to minimize yield losses to first generation European corn borer; 37 percent used insecticides to minimize yield losses from the second generation. Twenty-seven percent said they did nothing to control the insect.
- After three years of experience using Bt corn hybrids, 32 percent of Nebraska producers surveyed said European corn borers caused more yield loss than they previously had thought; 34 percent said yield loss was what they expected; and 15 percent said yield loss was less than expected.

Cheryl Alberts
IANR News Writer

Bt factors (Continued from page 225)

populations of ECB are expected four to six years out of ten. If the decision is made to not grow Bt hybrids, field scouting should be a part of your management plan. Either hire a consultant or have someone in the farm operation trained in scouting procedures. If Bt hybrids are planted, scouting is still necessary. Refuge acres will require scouting and Bt cornfields should be monitored to assess efficacy and the possible development of resistance. Keep good records of ECB pressure for future use in pest management decision making.

Of course, there are a variety of other economic, agronomic, environmental, and marketing issues that growers should be aware of when considering planting Bt corn. Information concerning many of these issues can be obtained at your local Cooperative Extension Office, the UNL Entomology Website (http://www.ianr.unl.edu/ianr/entomol/entdept.htm), your local grain handler, and commodity organizations.

Tom Hunt, Extension Entomology Specialist, Northeast REC
Bob Wright, Extension Entomology Specialist, South Central REC
Assessing winter wheat stands

After the state's winter wheat has had an opportunity to green up this spring, producers will be assessing their stands to see whether the crop should stay, be replaced with another crop or if the field should be fallowed and planted back to wheat in the fall. The sooner the assessment is made the better, since the wheat will be using valuable soil moisture each day.

One way to estimate wheat yield potential is to use the table below. A general rule is that every plant has approximately five heads and each head averages about 22 seeds. Late planted wheat and wheat seeds that do not germinate until later because of dry conditions, will tiller less and hence have fewer heads. For this example, we assume an average of 16,000 seeds per pound.

To use the table count the number of plants per foot of row (use at least 5 feet of row) in at least five sites within the field and calculate the average number of plants per foot of row. If the stands are uneven, for example the stand is better or worse in the wheel tracks, make sure your percentage of samples in these areas are the same as the portion of the area they make up in the field.

Next, find your row spacing and the average number of plants/foot of row in the table. This is just an estimate of yield potential, assuming the plants are healthy, moisture is adequate, and weed control and fertility meet crop requirements. Don't forget about herbicide carryover from Ally, Tordon, Amber or other herbicides that may affect recropping options. If not already applied, delay herbicide application until you decide about destroying the crop. Herbicide and fertilizer combinations may increase the potential for crop injury, over either applied alone, especially to wheat under stress.

Winterkill can be a very localized event, so select sample areas carefully and don’t try to extrapolate results too widely. If winterkill is a problem, carefully consider your alternatives and visit with the appropriate agencies before destroying your crop.

Bob Klein, Exten. Cropping Systems Specialist, West Central REC

Table 1. Estimated winter wheat yield potential

<table>
<thead>
<tr>
<th>Row spacing (inches)</th>
<th>Number of plants/foot of row</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1</td>
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<tr>
<td>6</td>
<td>10</td>
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<td>7.5</td>
<td>8</td>
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<td>9</td>
<td>7</td>
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<td>10</td>
<td>6</td>
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<td>12</td>
<td>5</td>
</tr>
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<td>14</td>
<td>4</td>
</tr>
</tbody>
</table>

Testing dormant wheat for life

To determine if wheat plants are alive before active growth begins in the spring:
1. Remove the top three inches of soil containing the plant crown.
2. Thaw the samples and warm to room temperature.
3. Remove soil from the roots and wash with cool water to remove attached soil.
4. Cut off fall growth to within 1 inch above the crown and roots below the crown.
5. Rinse the crowns with cool water.
6. Place 10 wet crowns in a labeled plastic bag, inflate the bag and tie shut.
7. Place the bags in a lighted room, but not in direct sunlight.
8. Check the crowns in two days, rinse with cool water and reinflate the bag.
9. After four days, the crown should show about two inches of new growth.
10. Plants that are not growing after six days should be considered dead when estimating survival.
11. Some plants may grow poorly and develop molds. Molds live on dead or injured plants.
Weed Management Guide released

The 2000 Guide for Weed Management in Nebraska, formerly known as the Guide for Herbicide Use in Nebraska, is available. The new name reflects several content areas which were added this year.

As more people begin to adopt integrated weed management practices, the guide is more thoroughly addressing these practices. A new section, "Integrated Weed Management" by Steve Knezevic, Integrated Weed Management Specialist, Northeast Research and Extension Center, has been added. This section details various topics of integrated weed management including a figure highlighting correct field scouting techniques.

Robert Klein, Extension Crop Systems Specialist, West Central Research and Extension Center, added a section on herbicide compatibility. This section was designed to help producers determine the compatibility of various herbicides via the "jar test". Coupled with a guide for cleaning the sprayer added by Klein last year, users have a valuable reference for mixing herbicides and proper spray tank cleaning reagents.

Also new is a section on crop growth stages. This section describes and includes illustrations of crops at different growth stages. Many producers have asked for greater clarification with respect to crop growth stage and herbicide application timing. These images should help clarify some label interpretations.

As with any publication of this magnitude, a few errors occurred and we would like to share them with you.

- On page 24, the recrop interval for Liberty ATZ should read 6-24 months.
- On page 40, the efficacy values of Authority for ALS and Triazine resistant kochia should be 9.
- On page 46, Axiom should be applied at 7 - 13 oz/a.
- On page 54, under Broadleaf Control, Ally should have a rate of 0.10 oz/a and Amber should have a rate of 0.28 - 0.35 oz/a.

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To buy the 2000 Guide For Weed Management in Nebraska, contact your local Cooperative Extension Office or call Jeff Rawlinson at 402-472-1544. The cost is $2 per copy. Contact Rawlinson to buy proceedings from 2000 Crop Protection Clinics at $5 each.

Jeff Rawlinson
Extension Technologist
Alex Martin
Extension Specialist

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