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Getting the most from drought-stressed crops

This year some producers may benefit from using a drought-stressed grain crop for livestock forage. Several factors should be considered in making this decision:

- the potential grain yield and quality;
- harvest cost for grain vs forage;
- the value of the crop residue left in the field if harvested for grain vs. the cost of removing for hay or silage;
- the forage value; and
- livestock safety, including pesticide label restrictions.

The yield and grain quality of a drought-stressed field is often difficult to predict. Low test weight, excess foreign matter, and aflatoxin may be a problem with corn. Small seed size and green beans are problems with soybeans. Also, stalk rot is always a concern with moisture stress. These problems can lead to higher harvest losses and dockage.

Crop residue has a nutrient value and will catch snow, reduce evaporation, increase infiltration, and improve soil tilth. The nutrient value ranges form $15 to $25 per acre, and moisture conservation can usually make a 5-10 bushel-per-acre difference in corn or milo yields the next year if the crop is no-tilled. Grazing will preserve much of this value. Haying or silage will remove all of this value.

Sometimes it is easiest to determine the value of the crop for grazing, haying, or making silage and then determine the needed grain yield to break even adjusting for harvest costs. The value of the crop for cattle feed if grazed, hayed or ensiled depends on yield, the price of alternative forages, and cost of utilization as forage. Also consider the long-term benefit of not damaging the native pastures by over-grazing. Pesticide label restrictions also need to be taken into account. Many pesticides used on grain crops do not have labels that allow for forage and/or they require long waiting periods. Consult the product label before haying or grazing. Guidelines for estimating forage yield from drought stressed corn are:

1. Each foot of height is equal to 600 lb/acre dry matter
2. Each five bushels/acre of grain will equal 600 lbs/acre dry matter (for both corn and grain sorghum).

Drought stressed soybeans that have reached 18-24 inches will produce 1,300 to 1,800 lb/acre dry matter.

Using these yield estimates and assuming silage at 30% dry matter, hay at 88% dry matter (12% moisture) and grazing at 75% utilization for corn and sorghum and 90% for soybeans, the following production would be realized:

**Silage/hay**

- Corn (6 feet tall, no grain) = 3,600 lbs DM/30%DM = 12,000 lbs/2,000 lbs/ton = 6 tons/acre silage
- Soybeans (18-24 inches tall) = 1,300 lbs DM/88%DM to 1,800 lbs DM/88%DM = 0.7-1 ton/acre hay or 1,477 to 2,046 lbs silage = 2-3 tons silage/acre
- Sorghum (30 bu/acre grain) = 6 tons/acre silage

Achieving the right moisture content is key to making good silage. The crop may need to be wilted or water added to achieve the ideal 60-70% moisture. If the crop is too dry, chopping extra fine, packing well while adding water, wetting the top 2-3 feet of the completed pile and

(Continued on page 173)
Andy Christiansen, Extension educator in Hamilton County: Conditions are quite variable here. Some pivot corners, both corn and soybeans, have been seriously damaged by drought. I was in a dryland corn field that had very few ears, very poor pollination and quite a lot of smut; yield was estimated at 20 bushels or less. A nearby field had about a 50-bushel potential, with one to three western bean cutworm larvae still feeding on nearly every ear. Grey leaf spot is heavy at the ear leaf on many fields.

Terry Gompert, Extension educator in Knox County: Dry conditions are developing across the county. Corn and soybean yields will be greatly reduced on about 70% of the cropped land.

Gary Hall, Extension educator in Phelps and Gosper counties: Dry weather is taking its toll on dryland crops here. Much of the dryland corn is drying down and some producers are harvesting it for feed. Irrigation continues as it has from early spring without many breaks due to rain. Irrigated crops look good but have been stressed by high temperatures.

Ron Seymour, Extension educator in Adams County: Irrigated crops are in good condition. Dryland crops are showing moisture stress and beginning to burn due to recent high temperatures. Soil moisture condition is deteriorating.

Corn: Plants are in the soft dough to hard dough stages. Most fields that were checked had some level of spider mite infestation. European corn borer infestations have been minimal.

Gray leaf spot is showing up in a few fields.

Soybeans: Pod are continuing to fill in all fields. Bean leaf beetle numbers are moderate.

Sorghum: Most fields have completed pollination with a few heads in the milk stage. Greenbugs were found on a few plants but a high number of colonies had predator and parasite activity reducing their populations.

Steve Melvin: Extension educator in Nuckolls and Thayer counties: Dryland corn is burning up and plants have shut down, although development was pretty far along in some areas. Test weight may be low. Some corn is being chopped for silage, but some is already too dry for silage. With soybeans, a lot of top leaves have died and plants are dying down.

Some grain sorghum looks pretty good, although heading has been delayed in some fields and some fields have burned up. Pastures are essentially gone and cattle producers are looking for feed. There’s even burning back at the edges of some furrow irrigated fields.

Curt Alderson, Extension educator for Pierce and Madison counties: No noticable precipitation for six weeks; crops in drought conditions. Corn silage is being harvested from dryland fields. Producers are contemplating chopping soybeans. Some millet hay has tested high for nitrates, and corn silage is now being tested. Early weaning is being recommended and may start after silage harvest. Some producers will be completely done chopping by September.
Drought-stressed crops (Continued from page 169)

repacking usually works well. Considerable water may be required. Material containing 45% moisture requires adding 100 gallons of water per ton for 60% moisture silage.

Grazing

1 AUM = feed consumed by a 1,000 lb animal grazing one month
Corn and sorghum: 75% utilization x 3,600 lbs per acre / 680 lbs per AUM = 4 AUM per acre
Soybeans: 90% utilization x 1,500 lbs per acre / 680 lbs per AUM = 2 AUM per acre

The dollar value of silage standing in the field is about $12 per ton when alfalfa is $60 per ton and an AUM of pasture should be worth at least $20. Based on this, corn and sorghum could be worth $72 per acre standing in the field for silage and $80 per acre for grazing not including grazing costs. Soybeans would be worth $42 to $60 per acre for hay with a 0.7 to 1 ton per acre yield at $60 per ton.

High nitrates are always a concern in drought-stressed corn and sorghum, but are rarely a problem with soybean. Hay or silage should be sampled and the nitrate level checked. Leaving a 12-18 inch stubble will avoid most nitrate problems. Grazing will usually be safe if the animals do not eat the lower part of the stalk. See NebGuides, Nitrate in Livestock Feeding and Prussic Acid Poisoning (grazing sorghum).

The 75% utilization can only be obtained by strip grazing the field, giving a two day supply of feed at a time. Offering more days of grazing at a time will result in more trampling losses and substantially reduced utilization and carrying capacity. If grazing is allowed in an area for two or more weeks, the utilization rate could drop to 20-25%. One method of strip grazing is to use a shredder to make a path for an electric fence.

Loan deficiency payments

Farm program participants are eligible for loan deficiency payments (LDPs) on harvested grain as long as the producer still holds title to the crop. Soybean growers need not be farm program participants to receive an LDP for soybeans. Eligible crops harvested for silage or hay also can qualify for an LDP. (The crop must be mechanically harvested; grazed crops do not qualify). A grain yield will have to be determined for an eligible crop harvested as silage or hay. Contact your FSA office to inform them of your plans. Discuss the procedures for applying for the LDP and establishing a grain yield. Potential yield may be established through a multi-peril crop insurance appraisal, unharvested field strips, or through comparison with yields from nearby fields. Also, the LDP will have to be taken on a day prior to delivering for sale or feeding the hay or silage to livestock.

Multi-peril crop insurance

Multiperil insurance covers any perils of nature including drought. Multiperil insurance is based on a yield or revenue guarantee and as long as the crop is harvested for grain, any loss is based on the actual crop harvested. If the producer wants to plant a substitute crop or graze or harvest the crop for hay or silage, the insurance adjuster should be contacted for information on how to proceed. Both parties need to agree on the appraised amount of production or strips of the original crop will have to be left to be maintained following normal practices and harvested to establish the grain yield for loss determination. If a loss is anticipated under multiperil, the producer should inform the insurance agent at least 15 days prior to harvest to allow for crop inspection. A producer wanting to do something with the field right away should contact the agent to get clear instructions on what may be required. Leaving test strips would allow for some of the field to be harvested before the adjuster visits, and finishing afterward. Before entering the field with farm equipment, be sure to get the proper instructions from the agent.

Steve Melvin, Extension Educator
Drought Information
Roger Selley, Extension Economist
South Central REC, Clay Center

Making silage from dry corn

Hot weather the past two weeks moved corn along faster than anyone expected, drying it earlier and necessitating adjustments when making silage. Moisture content at chopping is the most critical factor influencing corn silage fermentation. Wet silage will run or seep, carrying away valuable nutrients. It often has a sour, smelly, unpalatable fermentation. Dry silage often heats and molds, lowering energy and protein digestibility. This occurs because dry silage is difficult to pack and more oxygen remains imbedded inside the silage.

Many corn fields currently are too dry for making the best silage. Adding water to increase moisture content is next to impossible. It takes about 7 gallons of water for each ton of silage to raise moisture content just one point. To increase moisture content of just 10 tons of silage from 55% to 65% moisture, it would take about 700 gallons of water.

A more practical solution may be to blend a wetter feed, like fresh alfalfa or forage sorghum, or green soybeans with dry corn. It can be tricky to get the right combination, but it can produce excellent silage.

Your main goal is to minimize oxygen in the silage. Be sure to chop fine and pack tightly to reduce trapped oxygen, and cover dry silage with plastic to prevent outside air from seeping in.

Bruce Anderson
Extension Forage Specialist
Estimating the value of corn silage

What is damaged corn worth as silage? That depends on what you compare it to. In the following examples, three commonly used comparisons are described:

1. Alfalfa hay
2. “Normal” corn silage
3. Nutrient value based on soybean meal and corn grain

Each comparison is more appropriate under specific feeding conditions described in each section. Also,valuations assume corn grain yields are less than 10 bushels per acre. Higher yields may result in higher silage values.

Alfalfa hay

When corn is harvested as silage and used instead of hay as the basic feed for cattle over winter (for example, overwintering stock cows), it often can be compared to alfalfa hay on a strict pound for pound dry matter basis.

Table 1 shows the per ton values of drought damaged corn standing in the field assuming various dry matter contents of the resulting green chop.

### Armyworms

(Continued from page 169)

Entomologist, South Central REC

Dave Keith
Extension Entomologist

Bob Wright, Extension Entomologist, South Central REC

Table 1. Estimated value of damaged corn standing in the field to be chopped for silage.

<table>
<thead>
<tr>
<th>Dry matter content in one ton of green chop</th>
<th>Value of alfalfa hay ($ per ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
</tr>
<tr>
<td>20% (400#)</td>
<td>2.59</td>
</tr>
<tr>
<td>25% (500#)</td>
<td>4.45</td>
</tr>
<tr>
<td>30% (600#)</td>
<td>6.30</td>
</tr>
<tr>
<td>35% (700#)</td>
<td>8.15</td>
</tr>
</tbody>
</table>

and different hay prices. It also assumes a pound of damaged corn silage dry matter has the same feeding value as a pound of alfalfa hay dry matter. Costs for storage (depreciation, interest, repairs, taxes, and insurance) in a bunker silo were set at $1 per ton of silage and custom chopping and hauling and packing costs were $4 per ton of green chop. It was assumed that there was a 17.5% loss in tonnage during storage.

The values in Table 1 were calculated using the following procedure and formulas:

1. Calculate value per ton of usable silage based on alfalfa hay price and dry matter content of green chop.

   \[
   \text{Value of usable silage per ton = } \frac{\text{lsb DM per ton of green chop} \times \text{alfalfa price}}{1780} \\
   \text{(1780 is the number of pounds of dry matter in one ton of alfalfa hay at 89\% DM)}
   \]

2. Subtract $1/ton for fixed storage costs. Assumes a $10 investment per ton and fixed costs amounting to 10% of the investment each year.

3. Divide answer in #2 by 1.212 to adjust for 17.5% weight loss during storage.

   \[
   1.212 = (1.0 / (1.0 - 0.175))
   \]

4. Subtract $4/ton from No. 3 answer for chopping, hauling, and packing costs.

5. The equation for Steps 1 to 4 are:

   \[
   \text{Value per ton of standing corn = } \frac{\text{[(Value of usable silage per ton - $1) / 1.212] - $4}}{}
   \]

   For example, green chop contains 30% dry matter (70% moisture or 600 lb DM/ton) and alfalfa hay is worth $50/ton. Value of usable silage = 600 x $50/1780 = $16.85.

   \[
   \text{Value per ton of standing corn = } \frac{\text{[($16.85 - $1) / 1.212] - $4}}{}
   \]

### Damaged vs “normal” corn silage

This may be the most common method, especially if corn silage is used typically and relative amounts of protein and energy are important in ration formulation (for example, growing rations in a feedlot).

In a series of studies at the Northeast Research and Extension Center near Concord and in similar studies in other states, drought damaged silage made from corn producing 10 bushels corn/acre or less has generally provided a feed value between 75% and 95% of that of “normal” corn silage, averaging about 85%.

To determine value of damaged corn silage, first determine the price of “normal” corn silage (assume 65% moisture). Historically in Nebraska, the per-ton value of corn silage taken from the silo has been about 10 times the current price of a bushel of corn. For example, if corn is $2/bushel,
normal silage is worth about $20/ton. Since drought silage averages about 85% of the feeding value of normal silage, it would be worth $17/ton taken from the silo.

To adjust price back to green chop, account for losses during storage. If losses are assumed to be about 17.5%, as in the first example, then green chop price should be 82.5% of normal corn silage ($14.02/ton). To carry price back even further to standing in the field, harvest costs ($4/ton) must be subtracted ($10.02).

Table 2 provides some of these values based on corn price. (Determine value of damaged corn by multiplying the values in Table 2 by 0.85.)

<table>
<thead>
<tr>
<th>Corn price $/bu (CnPr)</th>
<th>Standing in field [CnPr x 8.25] - $4</th>
<th>Green chop CnPr x 8.25</th>
<th>Fed out of silo CnPr x 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50</td>
<td>8.38</td>
<td>12.38</td>
<td>15.00</td>
</tr>
<tr>
<td>2.00</td>
<td>12.50</td>
<td>16.50</td>
<td>20.00</td>
</tr>
<tr>
<td>2.50</td>
<td>16.62</td>
<td>20.62</td>
<td>25.00</td>
</tr>
</tbody>
</table>

Table 3. Soybean meal multipliers

<table>
<thead>
<tr>
<th>Price of corn $/bu</th>
<th>Price of soybean meal ($/ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>175 200</td>
</tr>
<tr>
<td>1.50</td>
<td>1.78 1.86</td>
</tr>
<tr>
<td>1.75</td>
<td>1.63 1.73</td>
</tr>
<tr>
<td>2.00</td>
<td>1.48 1.60</td>
</tr>
<tr>
<td>2.25</td>
<td>1.34 1.47</td>
</tr>
</tbody>
</table>

Table 4. Corn multipliers

<table>
<thead>
<tr>
<th>Price of corn $/bu</th>
<th>Price of soybean meal ($/ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>175 200</td>
</tr>
<tr>
<td>1.50</td>
<td>20.2 15.5 10.8</td>
</tr>
<tr>
<td>1.75</td>
<td>24.9 20.8 16.6</td>
</tr>
<tr>
<td>2.00</td>
<td>28.2 24.5 20.8</td>
</tr>
<tr>
<td>2.25</td>
<td>30.7 27.4 24.1</td>
</tr>
</tbody>
</table>

Table 5. Comparison of three methods to value corn-damaged silage ($/ton)

<table>
<thead>
<tr>
<th></th>
<th>Alfalfa hay</th>
<th>“Normal” silage</th>
<th>Corn plus SBM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taken from silo</td>
<td>20.22</td>
<td>17.00</td>
<td>18.23</td>
</tr>
<tr>
<td>Green chop</td>
<td>16.68</td>
<td>14.02</td>
<td>15.04</td>
</tr>
<tr>
<td>Standing in field</td>
<td>11.86</td>
<td>10.62</td>
<td>11.04</td>
</tr>
</tbody>
</table>

$18.23 \times 0.825 = $15.04/ton \text{(Value of green chop)}

$15.04 - $4.00 = $11.04/ton \text{(Value standing in the field)}

Summary

Feeding plans and alternative feeds influence the value of damaged corn used as silage. The examples compare corn silage to alfalfa hay, “normal” silage, and corn grain plus soybean meal. Table 5 provides a comparison of these methods, assuming corn silage at 30% DM, 10.5% CP, 64% TDN and alfalfa at $60/ton, corn grain at $2/bu, and SBM at $175/ton.

References


How much is drought damaged corn worth as silage. Drought Fact Sheet No. 6.

Drought Corn Silage by Terry Mader.

Estimating the Value of Standing Corn for Corn Silage by Gary Frank (University of Wisconsin web page).

Bruce Anderson
Extension Forage Specialist
Doug Jose, Extension Farm Management Specialist
Terry Mader, Extension Beef Specialist, Northeast REC, Norfolk
Nebraska’s winter wheat:
Reviewing 2000, planning for 2001

The 1999-2000 winter wheat crop experienced many extremes. Some areas like the Panhandle had extremely good soil moisture conditions at planting. Other areas, such as southeast Nebraska where winter wheat is planted after another crop, had extremely dry soil conditions and seed didn’t germinate until January or February. Even with this year’s crop one to two weeks ahead of normal, the filling period occurred during a heat wave. In many areas, high temperatures coupled with a lack of soil moisture greatly reduced yields.

Given circumstances this year and the existing dry soil profile, let’s consider some of the best management practices to implement for next year.

Seed bed preparation
First, seed bed preparation is of utmost importance. Try to provide a firm moist seed bed at planting. Disc drills in a loose seed bed almost always guarantee root and ground rot. Hoe drills can reach firm moist soil better and hoe drills with wider row spacing are preferred under dry conditions because they build a bigger furrow and plant deeper. With wider rows you give up crop competitiveness and may have more problems with weeds.

Compare varieties
University of Nebraska wheat variety trial results are available on the Web at http://www.ianr.unl.edu/ianr/agronomy/varietest2.htm or in a booklet available from your local Cooperative Extension Office. (The latest version is due out in early September.)

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Planting date
Plant wheat as close as possible to the suggested planting date for your area (see Figure 1). Earlier seedings are more subject to root and crown rot and many other diseases and insects such as wheat streak mosaic and Hessian fly. If you seed more than a week to 10 days after the recommended seeding date, use row-applied starter fertilizer. This is important even if your soil tests very high in phosphorus. Also, since less tillering occurs with later plantings it is usually beneficial to increase seeding rates. Plan to seed at about 1.4 million seeds dryland and 2.0 million seeds under irrigated conditions. Narrow rows are preferred for late seedings – 7½ inches for dryland and 6 inches or less for irrigated.

Dry soil
Do you seed or wait? Most recommend that once you get close to the suggested seeding date (or past the suggested seeding date if seeding after another crop) you should seed as soon as possible. There are several reasons for this:

Like the oldtime farmers say: seed won’t grow in the bag or bin;
If it does start raining, you may be kept out of the field for some time, delaying your seeding even more;
Even under dry conditions, you’ll usually get a partial stand which can help with soil erosion; and for crop insurance you must seed by the date established for your area.

As with all situations there are exceptions to the rule. For example, if your seed bed is very very loose and you can’t do a good job of placing seed in the soil, your best option would be to wait until after a rain to get firmer soil.

Variety selection
Choosing the best variety for your soils and operation is one of your most important decisions. Selecting the wrong variety can negate all the other right decisions you make. For most producers it’s best to plant several complementary varieties with varying strengths and weakness to be better prepared for whatever Mother Nature throws your way. (See Variety Trial results, page 176.) In 1999-2000 there were two variety trials, one in Furnas County and one in Perkins County, where winter wheat was seeded no-

(Continued on page 175)
Winter wheat in 2001  (Continued from page 174)

till after field corn and after popcorn respectively. While this was the first year this was done, it appears that many of the wheat varieties respond differently to these conditions. Producers seeding in these conditions should examine this data closely before selecting their wheat varieties.

Fertilization

In most fields, the two nutrients that winter wheat responds to are nitrogen and phosphorus. Many methods may be used to apply fertilizer. Anhydrous ammonia continues to be the lowest cost form of nitrogen. The only way to get a good idea of your nitrogen fertilizer requirement is to take soil samples at least down to three feet to test for residual nitrate. A topsoil sample 6 to 8 inches deep is needed to assess the phosphorous level. Be careful when applying fertilizer. Do not loosen the seed bed. Avoid applying anhydrous ammonia with shanks after mid-June since it is difficult to firm a seed bed in dry years. Anhydrous ammonia can be applied until shortly before planting when an applicator like a rod weeder is used. Dual injection -- applying nitrogen and phosphorous together -- has become a popular option. Phosphorus can be applied broadcast or in the row. See Table 1 for suggested rates using the Bray or sodium bicarbonate tests. As mentioned earlier, if seeding late be sure to use row-applied starter fertilizer. Suggestions for nitrogen rates are included in Table 2.

Nitrogen. For each bushel of wheat, 2 pounds of nitrogen is needed. This amount may be provided by residual nitrate in the soil profile (which can be determined by soil sampling and analysis), soil organic matter, manure and organic material, legumes, irrigation water, or fertilizer.

Zinc. For winter wheat, soil zinc levels need to be below 0.5 ppm (DTPA Test) to expect a response from zinc. With a soil low in zinc and the crop producers applying 10-34-0 adding one pound of zinc per acre should be adequate. Sources of zinc include zinc oxide, zinc sulfate, and zinc-ammonia complexes.

Sulfur. Sandy soils with irrigation are the most likely to respond to sulfur. On irrigated sandy soils check the water and the soil for sulfur. Most fine textured soils have adequate organic matter and/or residual sulfate sulfur deeper in the soil. Do not apply ammonium thiosulfate (12-0-0-26S) in the row because it can severely injure wheat seedlings. Sulfur in the sulfate form does not cause injury.

Chloride. Research conducted in Nebraska failed to show a response from adding potassium chloride even though 14 out of 22 locations were classified as low in soil chloride concentrations.

Weed management

If a producer has been having problems with downy brome, his best option is crop rotation. The herbicide Maverick was introduced in 1999 for downy brome control in winter wheat. It should be applied shortly after the downy brome emerges and before it tillers in the fall. It has been very effective especially if a rain occurs after application. Producers should check their fields shortly after wheat emergence to see if they have a downy brome problem and if so, herbicide application should be timely. Preemergence and late post applications have not been nearly as effective as the early post applications. Timing is everything.

Winter annual broadleaves. In the fall check your fields for winter annual broadleaf weeds such as field pennycress. Timely spraying is necessary to save moisture and nutrients for the winter wheat crop. For more information on weed management, see the 2000 Guide For Weed Management In Nebraska, EC130.

Bob Klein, Extension Cropping Systems Specialist
West Central REC, North Platte

<table>
<thead>
<tr>
<th>Soil Test P</th>
<th>Row-applied Phosphorus</th>
<th>Broadcast Phosphorus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bray 1P ppm</td>
<td>NaHCO₃ ppm</td>
<td>lb/A</td>
</tr>
<tr>
<td>0-5</td>
<td>0-3</td>
<td>40</td>
</tr>
<tr>
<td>6-15</td>
<td>4-7</td>
<td>30</td>
</tr>
<tr>
<td>15-25</td>
<td>8-14</td>
<td>20</td>
</tr>
<tr>
<td>&gt;25</td>
<td>&gt;15</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NO₃-N lb/A - 3 ft</th>
<th>Yield goal, bu/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>(From soil tests)</td>
<td></td>
</tr>
<tr>
<td>10-30</td>
<td>60</td>
</tr>
<tr>
<td>30-50</td>
<td>90</td>
</tr>
<tr>
<td>50-70</td>
<td>70</td>
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<tr>
<td>70-90</td>
<td>50</td>
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<tr>
<td>90-110</td>
<td>30</td>
</tr>
<tr>
<td>110-130</td>
<td>40</td>
</tr>
<tr>
<td>130-150</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 1. Phosphorus rates for winter wheat seeded at optimum date.

Table 2. Nitrogen fertilizer rates for winter wheat.
Weed control after winter wheat

Many farmers are now using split treatments for weed control after winter wheat harvest. The first treatment is applied soon after harvest when conditions are good for a translocated non-residual herbicide such as Roundup Ultra or Touchdown to control weeds. Dicamba and/or 2,4-D may be added to these treatments, depending on the weeds present. About five to seven days after a rain, conditions should be good for weed control. Split treatments provide the crop producer with more options later. If ample moisture occurs before wheat planting, continuous winter wheat may be doable. In addition, split treatments can provide excellent control of volunteer winter wheat and other winter annual grasses later.

Most producers will opt for a spring planted crop such as corn, grain sorghum, proso millet, or sunflower. A second herbicide treatment in the fall is usually needed to control volunteer winter wheat, downy brome and any other weeds present. For crops where atrazine is not labeled, the second application is usually the same as the first. These treatments also may be needed in the fall and usually at least once or more in the spring depending on weed pressure and rainfall.

For crops where atrazine is labeled the second application in September should contain at least ½ lb/A of atrazine and possibly Gramoxone Extra or crop oil concentrate, depending on the amount and size of volunteer winter wheat, downy brome or jointed goatgrass present. The atrazine rate varies with soil and rainfall patterns. In southwest Nebraska use 2 lb/A of atrazine for most soils and crops, but in the Panhandle, ½ lb/A is often the maximum in one season. Be careful not to exceed the label rate for atrazine with the two combined treatments.

The timing of this second application is critical. Early applied atrazine is not nearly as effective against volunteer wheat. See Table 1.

It is best to apply the fall treatment early enough so that all volunteer winter wheat is dead before the new winter wheat emerges. This will help control winter wheat diseases such as wheat streak mosaic.

Bob Klein, Extension Cropping Systems Specialist
West Central REC, North Platte

Preseason wheat picks and trial results

Selecting a wheat variety can be likened to predicting a football champion, well at least in Nebraska. Dave Baltensperger, NU Extension crop breeding specialist, suggests examining the results of several years of wheat variety trials and looking for those varieties that consistently rank in the top 10 for your production area. There will be variances from year to year, but if a variety is consistently a top producer, it’s likely a winner. A variety listed at the top in the preseason poll may not necessarily be the top producer next year, he said, but it's likely to be in the top 5.

Based on several years of data, Baltensperger’s preseason pick for the top five varieties for the Panhandle production area are: Alliance, 2137, Niobrara, Akron, and Halt. Millennium did relatively well across the state in its first year, he said.

When selecting which winter wheat varieties to plant, look at several years of yield and production data. University of Nebraska variety trial results are available on the Web (http://www.ianr.unl.edu/ianr/agronomy/varitest2.htm) or in a publication available from your local Cooperative Extension Office. (The latest version is due out in early September.) Be sure to check the parentage of varieties being considered and select varieties which are complimentary and from different parentage and well suited to the local soil and climate. For example, Alliance, 2137 and Halt have three unique sets of parents and compliment each other’s strengths and weaknesses. For example, in eastern Nebraska producers look for resistance to foliar diseases while in western Nebraska, they seek resistance to wheat streak mosaic and crown and root rot.

In reviewing the results from this year’s variety trials, Lennis Nelson, Extension Crop Variety and Seed Production Specialist, noted that the hybrid wheat varieties had

(Continued on page 177)
Irrigating soybeans now provides best return in yield

Don’t stop irrigating soybeans now, just as they’re in seed fill. Although soybeans generally require about two inches less water than corn per season, they will use about one inch more between the start of pod development and maturity. Unlike corn, the most sensitive stage for water stress for soybeans is now.

During vegetative growth stages, water stress could reduce soybean yield potential by 15% to 20%. A similar period of water stress at the start of pod development will reduce yield by nearly 40%, and if the stress period is during seed fill, yield could be reduced by 45%. Irrigating now, during pod development and seed fill will provide farmers the best return on their irrigation investment.

The decision to irrigate should always be based on the average soil moisture in a three foot root depth. Generally, irrigate to maintain soil moisture above 50% of available water capacity right up to maturity. Resources are available on the Web and at your local Cooperative Extension Office on these topics.

Dick DeLoughery, Extension Water Quality Education Coordinator
Bill Kranz, Extension Irrigation Specialist, Northeast REC, Norfolk

Wheat selection (Continued from page 176)

a good yield record in the west and that some recent releases such as Culver did well further east.

The white wheat variety Trego had a good yield at several locations. Unfortunately, white wheat varieties will present some problems in eastern Nebraska due to sprouting in the head if the weather is wet at harvest, he said.

Top wheat producers in 2000

Wheat variety tests have been conducted in several Nebraska counties. The following varieties yielded well and would be recommended for next year. Varieties followed by a (W) are white wheats. The remainder are hard red winter wheats.

<table>
<thead>
<tr>
<th>County</th>
<th>Variety</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast</td>
<td>AgriPro</td>
<td>58.0</td>
</tr>
<tr>
<td>--</td>
<td>Hondo</td>
<td></td>
</tr>
<tr>
<td>--</td>
<td>Culver</td>
<td>58.0</td>
</tr>
<tr>
<td>--</td>
<td>Millennium</td>
<td>57.0</td>
</tr>
<tr>
<td>--</td>
<td>Wesley</td>
<td>56</td>
</tr>
<tr>
<td>South Central</td>
<td>Niobrara</td>
<td>64.0</td>
</tr>
<tr>
<td>--</td>
<td>Culver</td>
<td>63.0</td>
</tr>
<tr>
<td>West Central fallow</td>
<td>Ogallala</td>
<td>62.0</td>
</tr>
<tr>
<td>--</td>
<td>Alliance</td>
<td>57.0</td>
</tr>
<tr>
<td>--</td>
<td>Jagger</td>
<td>57.0</td>
</tr>
<tr>
<td>--</td>
<td>Niobrara</td>
<td>56.0</td>
</tr>
<tr>
<td>--</td>
<td>Trego (W)</td>
<td>56.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County</th>
<th>Variety</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Central no-till</td>
<td>AgriPro</td>
<td>41.0</td>
</tr>
<tr>
<td>--</td>
<td>Thunderbolt</td>
<td></td>
</tr>
<tr>
<td>--</td>
<td>Trego (W)</td>
<td>38.0</td>
</tr>
<tr>
<td>--</td>
<td>2137</td>
<td>36.0</td>
</tr>
</tbody>
</table>

Risk management on Market Journal

Risk management in changing times will be the topic for next Monday’s Market Journal videoconference. The broadcast and interactive question and answer period will be held by Doug Jose, NU Ag Economist, and available at almost 20 county extension offices and live on the Web. The broadcast will be 8-9:30 p.m. CDT Aug. 21.

Speakers this week will include:
• Alan Baquet, director, UNL South Central Research and Extension Center, “Risk management priorities in changing times.”
• Dennis Richters, farmer, Utica, “A process to take emotion out of risky decisions.”
• Franklin Choutka of North Central Crop Insurance Company, “The new crop insurance subsidies and wheat insurance.”
• Rosemary Harter, farm partner and market educator, “Building confidence to implement a marketing plan.”
• Dave Aiken, NU Ag law specialist, “Renewal of verbal lease agreements.”
• Lynn Lutgen, NU Extension ag economist, analysis of wheat markets and wheat acreage report.
• Roy Smith, farmer and marketer, analysis of corn and soybean markets; discussion of acreage reports; pricing decisions for the next month.
• Al Dutcher, NU state climatologist, climate update.

The web broadcast will be hosted on ruralroutes.unl.edu.

County Extension offices will host downlink sites in the following towns: Albion, Aurora, Bridgeport, Broken Bow, Brown County (Long Pine Continuing Education Center), Columbus, Concord, Hastings, Kearney, Lexington, Lincoln, McCook, Norfolk, O'Nei1, Wahoo, West Point and York. Call your local Extension Office for location details.
Soybean pod mottle virus in many fields

In recent surveys of soybean fields, bean pod mottle virus was identified in many plants. Some fields have had very high incidences of infected plants (over 70%). Also, it appears that early-planted soybeans have more infected plants and more severe symptoms than later planted soybeans. This is a concern for several reasons. Bean pod mottle virus can significantly impact crop yields (10%-55% losses have been reported). Greater yield loss occurs when plants are infected early in development. Plants with this virus also can have higher levels of Phomopsis seed infection and produce discolored seed, significantly affecting seed production. Bean pod mottle virus also is known to cause green stem conditions, which can complicate harvest. This article provides what information we have on this virus, what we are planning to investigate, and what can be done at this time.

Bean pod mottle virus is a viral disease of soybean first identified in Nebraska in 1981. Symptoms of bean pod mosaic virus are green to yellow mottling (blotchiness) of younger leaves in the upper canopy. In severe cases leaves may show puckering and distortion and plants can be stunted. The only way to confirm the presence of this virus is with serological testing (Elisa).

Generally, it is not found to be seed transmitted at very high levels if at all. It's unlikely you brought it into your field in the seed. This is in contrast to soybean mosaic virus, which can be seed transmitted at much higher levels. Our survey did not find any soybean mosaic virus, although it is known to occur in Nebraska.

So, if bean pod mottle virus didn't come with the seed, why are we seeing so much of it?

The answer to this question is related to the vector or insect which moves this virus from plant to plant. The bean leaf beetle, which is at very high populations this year, is known to vector this virus. As bean leaf beetles feed on an infected soybean plant the virus accumulates in the beetle and moves with the beetle to a non-infected plant. This virus is not spread to the offspring as beetles reproduce. Bean leaf beetles seek out the first soybeans in an area, likely accounting for why the virus is more predominant in early planted soybeans.

This still doesn't account for how the virus is introduced at the beginning of the season. NU researchers are now investigating this aspect. To date researchers have not shown that overwintering beetles could transmit the virus; therefore, the beetle must first feed on another host, most likely a perennial plant that is harboring the virus. The plant may be alfalfa, although alfalfa is not generally known to be a host plant for the bean pod mottle virus.

I have sampled more than 15 alfalfa fields and have not detected this virus. Other plants also may be involved.

So what can be done?

Varieties are not currently rated for susceptibility to this virus. We are in the process of looking for resistance to this disease in the Nebraska breeding program. It appears that if we can control early beetle populations, we can greatly reduce F1 populations as well as reduce initial infected plants in the field. Research plans are underway for the 2001 season to look at potential management options.

For now, if you have a field with a high incidence of bean pod mottle virus, please call us (402-472-2559) or send in a leaf sample consisting of 12 leaflets from 12 different plants showing symptoms of the virus. Leaf samples should be kept cool before shipping. Place them in a plastic bag -- a dry leaf will not be useful when we are identifying the virus with serological testing and we need the plant sap from the leaves. Please mark package: “Survey Samples Enclosed.” Send samples with a detailed description of the field location and an estimate of percentage of the field affected to:

Loren J. Giesler
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448 Plant Science Hall
Lincoln, NE 68583-0722
(402) 472-2559
e-mail: lgiesler1@unl.edu

This would greatly help us build a case for the severity of this problem and the need for further research on the biology and management of this disease, as there are currently many unknowns.

Loren J. Giesler
Extension Plant Pathologist

Director named for diagnostic clinic

Jennifer Chaky recently joined the NU Department of Plant Pathology as coordinator of the Plant and Pest Diagnostic Clinic.

In May Chaky received her Master's degree in plant pathology from the University of Kentucky. Her thesis research was on Colletotrichum graminicola anthracnose disease of corn through which she specifically looked at factors affecting spore germination of this fungus.

Originally from central Pennsylvania, she received her bachelor's degree in biology at Lock Haven University of Pennsylvania in May 1996. Chaky said she is enjoying work in the lab and is looking forward to meeting and talking with more of the people of Nebraska.