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

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New products for 2001

Selecting the right seed treatments

Optimum crop stand is one of the important factors necessary for maximum crop yields. During germination and seedling establishment, pests and environmental factors can reduce stands, acting either alone or in combination. While little can be done about weather conditions, good basic agronomic methods can reduce the risk of loss, particularly from disease and insect pests. If necessary, seed treatments can be applied to provide an economical means to add protection.

Seed treatments are often crop specific, although some can be used on more than one crop. Often a seed treatment is a combination of two or more fungicides/insecticides.

When should you consider using seed treatments?
1) When germination may be delayed due to adverse soil conditions such as wet and cool or dry soils.
2) To protect new seedlings in fields with a history of seedling diseases or insect problems.
3) In seed production fields.
4) When planting at low and precise populations.
5) Fields with increased residue.

What seed treatments do not do
1) Increase plants stands. They only help protect what you plant.
2) Protect against poor germination due to mechanical damage to seed, poor storage, or genetic differences.
3) Give season long protection. Many only last as long as it takes for the plants to emerge or germinate.
4) Protect against all diseases or insects.

Seed attacking insects
The soil insect complex represents a concern to all field crops. Some early season damage to crop seeds and seedlings occurs every year in Nebraska. Potential pests include wireworms, seedcorn maggots, and white grubs.

The severity and area affected will vary greatly, and are dependent on species involved, previous vegetation, and weather conditions. Traditionally, insecticides and seed treatments have been used to manage these insects. While effective when applied properly, unnecessary insurance treatments reduce the farmer's net return. Only wireworm activity can be assessed prior to planting; using monitoring traps can help improve management.

Wireworms feed on the seeds and roots of corn, sorghum, small grains, grasses, soybeans, dry beans, sugarbeets, potatoes, and various other root crops. Wireworm feeding may reduce seed germination or

Understand grain production contracts before you sign on the dotted line

Specialty grains such as high oil corn, white wheat or nato soybeans offer entrepreneurial farmers a special niche market. These identity preserved, speciality grains, however, represent a significant change and different level of risk than with commodity-driven production.

Before making such a change, producers should consider a number of factors (see article in Sept. 29 issue), most importantly, whether a market or production contract are available for the product.

Grain production contracts are an integral part of farming for these markets. To help farmers learn how to evaluate these contracts, the Consumer Protection Division of the Nebraska Department of Justice has
Keith Glewen, Extension educator in Saunders County:
Harvest of corn and soybeans is nearing completion here. Based on
the growing conditions many
growers are pleased with the crop
yields. Most of the dryland corn
yields have been in the 120-140
bushel per acre range. Most soybean
yields are in the 35-45 bushel range.
Of course you can find dryland
yields lower than these and some
yields above this range.

Many growers, however, are
miffed about their irrigated soybean
yields not being much better in some
fields than their dryland yields. We
have been growing soybeans for
many years in this county and I’m
convinced that we still don’t have a
good understanding of the relation­
ship between soil moisture and yield.

A few corn fields have been
disked, however, I think many
producers are waiting for soil
moisture conditions to improve
before they go at their annual ritual.

Gary Hall, Extension Educator
in Phelps and Gosper counties:
Harvest is on the downhill side with
yields better than expected but still
low overall. Wheat that was planted
has had rain and emergence is good.
For the crop to survive the winter
more rain will be needed since the
plants are only emerged and mois­
ture was gone quickly.

Jennifer Chaky, coordinator of
the NU Plant and Pest Diagnostic
Clinic: The following diseases were
diagnosed in the Diagnostic Clinic
Sept 27 - Oct 10: corn - gray leaf spot
(Keith County), MCMV (Kearney
County), and Stewart’s wilt (Keith
County).

Paul Hay, Extension Educator in
Gage County: Producers here are
planting wheat, with the vast
majority planting no-till into bean,
milo or corn stubble. We are planting
as many acres as last year, if not
more. Surprisingly, some of the
earlier planted wheat is already up.

We’ll need additional moisture to
establish the seedlings and ensure
they’ll make it through winter
without dehydrating.

Corn and sorghum yields are
actually quite good, considering the
situation this year. Dryland corn
and milo are near normal to slightly
below normal for most planting
dates. Anything planted toward the
end of the planting season is suffer­ing
more.

Soybean yields, however, are
well below average to near disaster
levels. Southern Gage County from
5-20 bushels per acre while yields in
the northern half are ranging from 10
to 25 bushels per acre.

The difference in comparable
yields between soybean, sorghum
and corn this year really illustrates
how important it is for these crops to
get moisture at their critical time.
Corn and sorghum benefitted from
two good rains in June, one an inch
and the other two inches. Together
they made a profound difference.

Soybeans, however, did not
receive rain during the critical pod
fill stage in August. You can put
your crop in the best environment,
but if you don’t get a rain in August,
you won’t get a bean yield.

Nebraska Agricultural Statistics
Service: Corn harvest was about
66% complete Monday, compared to
28% last year and 20% on average.
Some standing grain in North
Central counties was still at 20%
moisture, causing producers to focus
on soybeans.

Soybean harvest jumped to 66%
complete, compared with 53% last
year and 40% average. Moisture
levels were often well below stan­
dard.
## Seed treatments (Continued from page 211)

<table>
<thead>
<tr>
<th>Product name</th>
<th>Common name</th>
<th>Rate</th>
<th>Application methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agrox DL Plus</td>
<td>15% captan + 15% diazinon + 25% lindane</td>
<td>3.6 oz/cwt</td>
<td>Planter box</td>
</tr>
<tr>
<td>Agrox Premiere</td>
<td>Captan + diazinon + lindane + metalaxyl</td>
<td>3.6 oz/cwt</td>
<td>Planter box</td>
</tr>
<tr>
<td>Assault*</td>
<td>25% permethrin</td>
<td>2.0 oz/cwt</td>
<td>Slurry</td>
</tr>
<tr>
<td>Barracuda*</td>
<td>25% permethrin</td>
<td>2.0 oz/cwt</td>
<td>Slurry</td>
</tr>
<tr>
<td>Enhance Plus</td>
<td>20% carboxin + 35% maneb + 18.75% lindane</td>
<td>3 oz/bu</td>
<td>Planter box</td>
</tr>
</tbody>
</table>

Suppression of seed corn maggot.

**Gammasan**  
32.8% captan + 16.6% lindane  
Suppression of seed corn maggot.

**Germate Plus**  
14% carboxin + 15% diazinon + 25% lindane  
2 oz/bu, or 1.5 oz/42 lb  
Planter box

**Kernel Guard**  
14.7% captan + 15% diazinon + 25% lindane  
2 oz/bu, or 1.5 oz/42 lb  
Planter box

**Kernel Guard Supreme**  
10.4% permethrin + 14% carboxin  
1.5 oz/42 lb  
Planter box

**Manebe-Lindane**  
50% maneb + 18.75% lindane  
3 oz/bu  
Planter box

**Nugro-Isotox F**  
12.5% captan + 25% lindane  
3 oz/bu  
Planter box

**Raze***  
26.8% tefluthrin  
3 fl oz/cwt  
Slurry

**Sorghum Guard Wireworm only**  
32.5% captan + 16.6% lindane  
8 oz/cwt  
Planter box

*For use only by commercial seed treaters

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Produce weak seedlings. Wireworms eat the germ of the seeds or hollow them out completely, leaving only the seed coat. Larvae boring into the underground (mesocotyl) portion of the stem cause seedlings to die or become stunted. Seed treatments will reduce damage to seed, but will not protect emerged plant parts. Under heavy infestations of wireworms a granular soil insecticide may be necessary. Bait stations may be used to assess levels of wireworm infestation before planting. (See *Insects That Attack Seeds and Seedlings of Field Crops*, NebGuide G91-1023, for how to construct and use wireworm bait stations.)

Seedcorn maggots attack the seeds of many crops before or just at germination, preventing germination by killing the newly emerging coleoptile. Using a seed treatment can prevent damage from seedcorn maggots.

White grubs feed on roots deeper in the soil. Crop emergence may appear normal in the beginning. Later the stand becomes thin or patchy. Roots of crops are usually chewed off cleanly.

### Types of seed treatments

Seed treatments are available as planter box treatments, which the farmer can apply, or commercially applied slurries. The advantage of slurries is that there should be no dust associated with the treatment; however, they will cost more than planter box treatments. Insecticides used for seed treatments in crops include diazinon, lindane, imidacloprid, permethrin, chlorpyrifos, and tefluthrin.

### Seed treatments for corn

See the table for a list of some products available for seed protection. This table does not include every available product. Check with your local agricultural chemical dealer for additional products. Remember most seed treatments protect only the seed and may not protect the seedling after germination.

### New seed treatments for 2001

Some new seed treatments have come to the market and go beyond the traditional early season protection role. Not only do they protect against early season insects such as wireworms and seedcorn maggots, but they also are labeled for use against other pests such as flea beetles and corn rootworms. Gaucho and Prescribe are new products for 2001 that will be available for corn. The active ingredient in both is imidacloprid, a systemic insecticide that has been used in other crops such as sorghum. The imidacloprid rate for corn has been increased to provide suppression of corn rootworms. "Suppression" is a category that roughly translates to "you may not get the kind of control you want".

ProShield is a tefluthrin-based seed treatment also labeled for control of corn rootworms. It was used in some fields in 2000. As these new products are tested and used in (Continued on page 212)
Seed treatments (Continued from page 211)

the field, we will get a better idea of how these new seed treatments compare to other corn rootworm standards like planting time insecticides. As with all products, it is necessary for growers to assess their individual situations before selecting a control method. Winter Cooperative Extension meetings such as the Crop Protection Clinics are good places to get 2000 testing results.

Insecticide seed treatments for soybean

Insect problems are not as severe as with corn, although stand reductions have been observed from seedcorn maggot damage. This is partially due to wireworms preferring grass species for food, later planting than corn allowing for faster germination, higher seeding rates, and better compensation for reduced stands. Seed treatments are available for soybeans.

Problems associated with seed treatments

Like any other agricultural chemicals, seed treatments must be used according to the label. These materials are toxic and must be handled with care. Always read the label before buying and before using. Do not use insecticide-treated seed for any other purpose than planting.

Some problems reported are:
1) These products by themselves may themselves cause reduced germination under adverse environmental conditions or over-application. Problems in Illinois in 1996 were attributed to using higher rates than the label specifies. Mix only the amount necessary and do not mix too far ahead of application. Avoid leaving treated seed to sit under hot conditions. Germination of poor quality seed also may be affected.
2) Some farmers (and the University of Missouri) believe dry seed treatments may not perform satisfactorily in planters with air-metering devices. Consider using slurry-treated seed instead.
3) Dry materials may cause problems with population monitors. Clean electric eye population monitors as often as necessary, depending on environmental conditions.

Keith Jarvi, Integrated Pest Management Extension Assistant Northeast REC

Market Journal targets carbon sequestration, family issues

Each month Doug Jose, NU Extension ag economist, hosts Market Journal, bringing together experts from across the state to address pertinent topics of risk management and ag marketing. Guest speakers on the Oct. 16 broadcast will address two topics: "Carbon sequestration – the issues, the market, and a farmer’s perspective” and "How to make family issues into family opportunities.” Returning speakers will address the climate and ag markets.

The videoconference will be downlinked live to 18 Cooperative Extension offices and also will be available live on ruralroutes.unl.edu from 8 p.m. to 9:30 p.m. CDT Monday, Oct. 16. For more information about the nearest meeting site, contact your local Cooperative Extension Office.

Returning speakers include:
• Al Dutcher, state climatologist, with a climate update
• Roy Smith, Nebraska farmer, with an analysis of the corn and soybean markets
• Lynn Lutgen, NU Extension agricultural economist, with an analysis of the wheat market.

Guest speakers include:
• Don Hutchens of the Nebraska Corn Board on this year’s Nebraska Corn Harvest Tour.
• Don Walters, NU soils professor, on “Carbon Sequestration – the Issues for Farmers.”
• David Dukes, farmer, Bedford, Iowa, “Carbon Management – a Farmer’s Viewpoint”
• Jerry Skees, a professor of agricultural economics at the University of Kentucky, on “Establishing a Market for Carbon.
• Sue Schlichtemeier-Nutzman, private training consultant, and Jane McClure of the UNL Employee Assistance Program on “Making Family Issues, Family Opportunities.”

Market Journal is directed to the state’s farmers and includes information on reducing grain risk management and increasing profits as well as practical farm management information. It is produced by the Institute of Agriculture and Natural Resources. It receives support from the Nebraska Feed and Grain Association; Nebraska Soybean Board; Nebraska Corn Board; and USDA Risk Management Agency.
No-till yields well in a drought year

No-till and other conservation tillage systems have long been promoted for soil and water conservation. While profitability increases because of reduced fuel, labor, and machinery expenses, producers have not always seen an immediate increase in productivity. It takes time for the soil structure to heal itself after years of tillage. Given adequate and timely rains, almost any well managed tillage system will produce a reasonable crop. In dry years, however, producers cannot afford to give up the soil moisture lost with tillage. (See the September 29, 2000 issue of Crop Watch for a story on the negative aspects of tillage.)

The 2000 yields from a tillage system study on the University of Nebraska Rogers Memorial Farm (10 miles east of Lincoln) are shown in the table. With the drought conditions this year, no-till was the hands down winner. The drought began in southeast Nebraska in late July of 1999, affecting grain fill some last year. This farm received about 18.7 inches of rain since last harvest -- 4.9 inches before planting and 13.8 inches during the growing season. In August, there were about 10 days over 95°F and less than 1.5 inches of rain during grain fill, a time when daily evaportranspiration rates can be over .33 inch per day.

These research plots were established in 1981 to evaluate six tillage systems in a soybean/grain sorghum rotation using the same tillage system year after year. The data from these plots and the experiences gained in the management required to make no-till and reduced tillage systems successful have provided valuable information. These dryland production plots have been maintained ever since, showing with proper management, no-till is the most profitable tillage system over time.

Paul Jasa
Extension Engineer

<table>
<thead>
<tr>
<th>Tillage system</th>
<th>Soybeans</th>
<th>Grain sorghum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall plow, disk, disk</td>
<td>23.2</td>
<td>61.2</td>
</tr>
<tr>
<td>Fall chisel, disk</td>
<td>36.2</td>
<td>76.2</td>
</tr>
<tr>
<td>Disk, disk</td>
<td>36.1</td>
<td>78.4</td>
</tr>
<tr>
<td>Disk</td>
<td>41.8</td>
<td>74.0</td>
</tr>
<tr>
<td>No-till with cultivation</td>
<td>43.8</td>
<td>107.7</td>
</tr>
<tr>
<td>No-till without cultivation</td>
<td>47.7</td>
<td>121.4</td>
</tr>
</tbody>
</table>

*Full plot harvest with a combine and weigh wagon; corrected for moisture.

Check yield trials before ordering seed

University of Nebraska researchers have started posting results from this year's variety trials for corn, grain sorghum, soybeans and wheat to the Department of Agronomy and Horticulture web site at http://www.ianr.unl.edu/ianr/agronomy/varitest2.htm. Results from additional trials will be added as harvest is completed. Results for each crop also will be published and available from Cooperative Extension offices.

An email service is available to send the tables every time they are updated. To subscribe sign up for the corn, sorghum, soybean or wheat update list at http://ianrwww.unl.edu/ianr/agronomy/colists.htm.
Adjusting for late-seeded winter wheat

Management practices need to be modified when winter wheat is planted after the optimum seeding date for your area. (See Aug. 18 and Sept. 1 newsletters.) Late seeded winter wheat does not produce as many tillers, therefore narrow rows and higher seeding rates are suggested.

With dryland fields use 7 ½ inch rows. With irrigated fields, 6-inch rows usually produce the top yields in late seeded winter wheat.

Recommended seeding rates are 1.35 million seed per acre (90 lbs for a seed size of 15,000 seeds per pound) for dryland and 1.8 million seed per acre (120 lbs) for the same seed size for irrigated fields. Adjust the pounds of seed for the seed size being used. Increasing the irrigated seeding rate to 2.5 million seeds will probably help reduce soil erosion, but usually does not increase winter wheat grain yield. For the maximum benefit in reducing soil erosion, seeding should be perpendicular to the prevailing wind.

For those who use a hoe drill and only have a wide row spacing such as 14 inch, the question comes up about cross seeding. The effect of this on both yield and soil erosion has not been researched because of the difficulty of studying such practices in small plot research. If one cross seeds, the final pass should be perpendicular to the prevailing wind. The disadvantage of cross seeding is that two passes are required and this also tends to pulverize the soil and could increase soil erosion. Disc drills in fields which have been tilled also will have some of the same problem. A disc drill used in no-till will not have any of these negatives, except for having to make two trips. Narrow-row seeders are preferred if available.

Fertility

Nitrogen. Nitrogen needs to be available at seeding in an ample amount near the seedling roots.

Remember that nitrogen will not be available soon enough from recently harvested soybeans to benefit the winter wheat. Do not take this year’s soybeans into account when calculating nitrogen fertilizer needs.

Phosphorus. On late-seeded wheat it is recommended that row or seed-applied phosphorus fertilizer be used. This will give a much better result for late-planted wheat than either broadcast or dual-injected fertilizer. Because late planted wheat has limited rooting development, it’s necessary to place the phosphorus close to the seed. (See figure)

Bob Klein, Extension Cropping Systems Specialist
Dave Baltensperger, Extension Crop Breeding Specialist

Crop modeling workshop Dec. 4-8

More farmers than ever before are using computers and the Web to access crop models for site-specific farm management. Industry professionals, researchers and students are invited to learn more about this growing technology at the third annual Crop Modeling for Environment-Specific Management conference, Dec. 4 - 8 at the Clifford Hardin Nebraska Center for Continuing Education, 33rd and Holdrege streets in Lincoln.

This five-day, hands-on workshop features university and industry experts, including Mohamed Fayad, J.D. Edwards Professor of Software Engineering in the Department of Computer Science and Engineering at the University of Nebraska–Lincoln; Laj Ahuja, Liwang Ma and Kenneth Rojas, USDA/ARS scientists at Great Plains System Research Unit, Fort Collins, CO; Bill Batchelor, co-developer of PCYield software; and Joe Ritchie, author of the CERES family of crop models.

For more information contact Academic Conferences and Professional Programs at the University of Nebraska–Lincoln, (402) 472-2844 or visit the web site at [http://dcs.unl.edu/acpp/cropmodel](http://dcs.unl.edu/acpp/cropmodel).
Grain contracts
(Continued from page 209)

published a Grain Production Contract Checklist. The checklist is divided into four main areas:

1) experts to consult;
2) production issues;
3) payment and delivery issues; and
4) other legal issues.

The publication encourages producers to carefully consider and seek answers for the questions in the checklist that apply to their farming operation. “No checklist can raise every relevant question, and conversely, this checklist may raise questions that are not relevant to each producer,” according to its introduction.

The Grain Production Contract Checklist is based on one developed by the Iowa Attorney General’s Office. Before signing any specialty grain production contract on the dotted line, use the checklist to evaluate all the issues. To order a copy, call the Nebraska Department of Justice Office at (402) 471-2682 or write

Nebraska Department of Justice
Consumer Protection Division
2115 State Capitol
Lincoln, NE 68509-8920

The publication was developed in cooperation with the Nebraska Corn Board, Nebraska Corn Growers Association and the Nebraska Department of Agriculture.

On-line pubs
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Notes from the Contract Checklist . . .

Following are some of the questions from the Grain Production Contract Checklist (see story, page 209).

Legal relationships

What legal relationship does the contract create between you and the contractor? The legal relationship involved will determine your rights and duties under the contract and will have important tax consequences.

Is it a landlord/tenant relationship, employer/employee relationship, independent contractor, partnership, joint venture, agency?

Does the contract refer to a “bailment”? A bailment requires the producer to exercise due care toward the goods held.

Do other parties have to approve the contract, such as your landlord, lender, or spouse?

Can the contract be assigned or transferred by you or by the contractor to other parties? This may have important tax consequences.

If the contractor is from another state, does the contract specify the state law that governs? Is this choice of law fair? Does the contract permit re-negotiation or nullification of the contract if the laws governing production contracts are changed.

Farm programs

How will the contract affect your eligibility for farm program payments?

To be eligible for USDA programs, you must have a “beneficial interest” in the commodity. This is determined by looking at the contractual terms regarding title, risk of loss, and payment.

Is the crop considered a program crop for purposes of payment or base retention?

How will this affect your established farm program yield?

Insurance

Are you required to buy multi-peril, hail, or other crop insurance?

What about liability insurance for risks such as herbicide drift?

Can you get federal crop insurance for the crops involved? If so, can you use your actual production history or will other yield determinations be used?

Production

Do you have to find substitute supplies to fulfill the contract if you have a shortfall?

Are you responsible if the shortfall is due to an “Act of God”?

Are you responsible if the shortfall is due to production decisions you did not make such as fertility or pest programs?

Under the Uniform Commercial Code, it is easier to be excused for a breach of contract because of impracticability (such as bad weather) if the contract involves the output of particular tracts of land. Does this contract list the fields on which the crops are to be grown?

How much crop residue is left from this crop and how does that impact your conservation compliance plan?

Ownership

Who owns the crop?

Usually the party with title of ownership bears the risk of loss.

Does the contract modify this rule?

Who bears the risk of loss of the crop in the field, in storage, or in transport?

Credentials

Is the contractor bonded for this type of obligation?

If you have concerns about getting paid under the contract, will the contractor provide you with a financial statement? A list of producers the contractor has contracted with in the past?

If the contractor is a subsidiary company, does the contract make the parent company responsible for payment if the contractor defaults?
Cool, aerate grain for successful storage

Corn and other grains matured and dried down early in 2000 allowing producers to save drying costs; however, a grain storage management program may be especially important this year to maintain grain quality.

A comprehensive management program to maintain grain quality includes:

1) making sure that the grain going into storage is dry, clean, cool, and in good condition;
2) regularly inspecting the grain to locate temperature, moisture, or insect problems; and
3) aerating the grain to maintain uniform temperature and moisture conditions, prevent localized hot spot development, and to cool existing or developing hot spots.

The storage life of grain depends on moisture and temperature. Grain dried well in the field this year and may have been harvested at what is normally considered a safe storage moisture. Chances are, however, grain that was harvested in September and early October did not leave the combine at safe temperatures for long-term storage.

To understand the importance of both grain moisture content and temperature on safe storage times, consider the results of experiments conducted with corn held at a constant temperature and moisture level in the laboratory. At 15% moisture, the shelf life (time grain can be held before losing 1/2% of the dry matter) decreased from 414 days at 55 degrees, to 206 days at 65 degrees to 115 days at 75 degrees. Storage times at higher moisture contents are greatly reduced from those at 15%. For example: the shelf life of corn at 55 degrees is reduced from 414 days at 15% to 133 days at 17%.

A rule of thumb is that for each 10 degree increase in temperature, storage time is cut in half when held at a given moisture content. Another rule of thumb would be safe storage times are one-third as long at a given temperature when moisture content increases from 15% to 17%.

Aeration systems designed for temperature management of stored grain should not be confused with grain drying systems. Low airflow rates, typically between 0.10 and 0.20 cubic feet of air per minute per bushel (cfm/bu), are adequate for aeration but airflow rates of 1.5 cfm/bu or higher are required for drying. Therefore, grain placed into storage equipped with an aeration fan intended only for controlling the temperature must already be at the proper moisture content for storage (15.5% for corn if marketed by June, 14% if held up to one year, and 13% if held over one year; about 2 points lower for soybeans).

The primary objectives of aeration are to keep the grain at a seasonally cool temperature and to maintain uniform grain mass temperatures, preferably with no more than a 10F difference in temperature from one part of the bin to another. These objectives can generally be achieved by keeping grain temperatures within 10F to 20F of the average outside air temperature.

It is important to understand how cooling occurs in a bin (the same principles apply for warming grain). A cooling zone is established and moved through the grain in the same direction as the airflow. The rate at which the cooling zone moves is directly related to the total volume of air moved through the grain or a function of both the airflow rate (cfm/bu) and the number of hours the fan is operated.

When changing grain temperatures during the fall and spring, run the fan continuously until the cooling or warming zone has been moved completely through the grain. The amount of time actually required to change the temperature of a specific bin of grain can only be determined by monitoring cooling or warming zone progress. Monitoring is especially important in facilities where airflow distribution is nonuniform due to such factors as duct placement or fines concentrations. Move at least one (preferably two) cooling zone(s) through the grain to remove field or dryer heat. Therefore, move one cooling zone per month through the grain until it is cooled to between 30F and 40F. Not only will this help prevent moisture migration due to uneven temperatures within the grain mass but will effectively prevent insect activity in the grain. Most insect activity stops at temperatures below about 55F.

Check the grain temperature and condition every two weeks and as needed to monitor cooling zone progress. The initial cooling is important. Do not skimp on fan operation. Turn the fans on as soon as grain covers the perforated floor or aeration ducts, and operate them continuously until all the grain has been cooled to the prevailing outside temperature. Since cooling is the primary concern, especially if the grain has come from a dryer, do not turn the fans off during rainy or humid weather. Failing to get the grain properly cooled can cause more problems than the small amount of re-wetting that occurs from running the fan on a humid day.

For more information, ask your Cooperative Extension Office for Aeration of Stored Grain, NebGuide 692A, and Holding Wet Corn with Aeration, G87-862A.

Ralph Anderson, Extension Educator, Buffalo County
Tom Dorn, Extension Educator
Lancaster County
Understanding convection currents in grain bins

We all learned in grade school that heat rises and cold moves downward. When the heat rises, it carries moisture with it and that moisture condenses where it encounters a cooler condition. That’s what we see when a thunderhead cloud forms.

Though not visible or as dramatic, the same thing can happen in grain bins when the outside air temperature cools down, especially if the grain is not properly cooled (see figure). Warm air in the center of the bin within the warm grain rises, carrying moisture with it. Cool air along the sides of the bin sinks and a convection current is formed. When the warm, moist air in the center of the bin encounters the cool grain on top of the bin, condensation occurs. With this heat and moisture, biological and insect activity can begin below the surface of the grain in the middle of the bin causing spoilage.

In spring when the air temperature outside the bin is higher than the grain temperature, a reverse convection current will occur. The cool air moves down the center of the grain mass and the warm air rises along the sides with the condensation forming near the bin walls. Producers who often note “some spoiled grain” on top of their bins need to improve their grain temperature management. Cool the grain in the fall to reduce condensation and spoilage in the center, and warm the grain in the spring to reduce condensation and spoilage near the bin walls.

By properly aerating the grain to keep it within about 10°F of the average outside air temperature, these thermal convection currents and moisture migration will be minimized because there won’t be much temperature differential in the grain mass. Aeration is required for this temperature management, regardless of the moisture content of the grain. These convection currents can occur even with grain moistures below 10% or even in flat storage. Moving a temperature front through the grain with aeration about once a month should minimize these currents. Closing the roof vents and covering the fan when not in use will also reduce air movement through the grain.

Paul Jasa, Extension Engineer

Assessing forage quality after the frost

Last weekend’s frosts will affect forage crops to varying degrees. Following is information on what to expect and how grazing may be affected.

Alfalfa

First, look at the plants instead of the thermometer. Plants turning black or plants wilting and starting to dry are basically done for the year. If there is enough to economically mechanically harvest, do it as soon as possible to salvage leaves which will fall off as soon as they dry. For grazing, wait four to five days after the killing freeze to reduce bloat hazard. The higher the proportion of alfalfa that starts to dry from the freeze, the safer the grazing. If plants show few if any signs of wilting and drying, follow your management plan as if there hadn’t been a freeze.

Don’t expect much more growth but active, green plants can continue to accumulate nutrient reserves in the roots and crowns for winterizing.

Sudans and sorghums

Nitrate situation identical to millets above. Prussic acid danger (grazing only) increases for about 5 days after freeze that kills previously green plant tissue. After frozen tissue wilts and drys, danger is lower than before the freeze (but not completely absent). If freeze plus subsequent weather encourages new shoots and sucker plants to develop, these can be very hazardous if animals consume them as a high proportion of their diet.

Bruce Anderson
Extension Forage Specialist
Ag at the Crossroads 2000

Ag structure: power, prices and people

“The Future Structure of Agriculture: Power, Prices, People,” will be the focus of this year’s Agriculture at the Crossroads Conference. The forum will be 8 a.m. to 4:30 p.m. Nov. 2 at the University of Nebraska-Lincoln’s East Union.

Morning speakers will center on responses to structural changes in agriculture, particularly the livestock sector. James MacDonald of the U.S. Department of Agriculture’s Economic Research Service will identify current and predicted structural changes.

Speaking on pricing and marketing options, production options and community options will be Brian Buhr, University of Minnesota economist; Larry Bitney, UNL agricultural economist; and John Allen, UNL rural sociologist, respectively.

The luncheon speaker will be George P. Slover of the U.S. Justice Department. The afternoon session will lead off with a panel discussion on “Government Responses to the Changing Structure of Agriculture.” Breakout sessions will give conference attendees a choice of discussing “Producer Options” or “Policy Options.” Breakout session resource people will include Eugene Glock and Jamie Nygren, representing Senators Bob Kerrey and Chuck Hagel, respectively.

Conference co-sponsors are the UNL Department of Agricultural Economics and the Nebraska AgRelations Council (NAC). NAC is a non-profit, non-partisan volunteer organization dedicated to “telling Nebraska agriculture’s story,” particularly to urban residents.

Ray Supalla, UNL ag economist, is conference coordinator and moderator of the morning session; Steve Cady, NAC president and executive director of the Nebraska Pork Producers Association, will moderate the afternoon session.

Registration is $25 per person for NAC members and $30 per person for non-members. Fees include lunch. The reservation deadline is 5 p.m. Oct. 31. Make checks payable to Nebraska AgRelations Council and mail to: Nebraska AgRelations Council, 104 Ag. Communications Building, P.O. Box 830918, University of Nebraska, Lincoln, Neb. 68583-0918. For more information, call Sandy McKinnon at (402) 472-2821.

Molly Klocksin
IANR News Writer

We’re looking forward to hearing from you!
In the last issue of Crop Watch we included a readership survey to learn more about what you use most and least and what you would change in this newsletter. If you haven’t already done so, please take a few moments to share your suggestions with us, and drop it in the mail, postage-free.