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Available storage decreased

Got grain? Need storage? Plan it now

Early communication and planning will be essential to successful management of your grain storage options this year.

Deciding whether to sell or to store your grain on-farm or off-farm will depend on a variety of factors, many of which will be addressed by Extension specialists in this and the next issue of Crop Watch.

Contact your local Farm Service Agency (FSA) Office concerning any commodity loan or loan deficiency payment programs before committing to a storage plan. The type of FSA program can dictate the type of grain storage and sale.

Similarly, begin talking with your grain elevator now about any changes in its policies this year.

"You need to know exactly how the elevator is going to handle the situation this year," said Randy Klein, director of market development with the Nebraska Corn Board. "Don't wait or make assumptions that your elevator will be handling grain storage and sales as it always has."

Assess each of your options and make sure you have something lined up," Klein said

This harvest presents the greatest need for storage in a decade, according to Scott Keller, ag statistician with the Nebraska Agricultural Statistics Service.

Based on the previous quarter's grain stock surveys and 1998 production forecasts, Keller esti-

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Scout corn fields weekly for stalk rot; harvest first

Stalk rot in corn is more widespread than usual this year and, in many cases, may affect plans for harvest, drydown and storage.

The increased occurrence of stalk rot can be attributed to several very discrete weather periods and a summer where high humidity levels were prevalent. A cold wet period in June, followed by a hot, dry period and hot wet period created environments perfect for the onset of several types of stalk rot
diseases.

These climate patterns also contributed to an increased outbreak of gray leaf spot, which weakened plants and further predisposed them to stalk rot.

The most obvious symptoms of stalk rot are collapsed stems and fallen plants; however, stalk rot can significantly reduce yield even if plants remain standing.

Stalk rot damages or destroys the pith of the stalk, limiting translocation of nutrients to the (Continued on page 193)
mates that "Nebraska's total grain storage needs will be about 200 million bushels higher than they were last year."

The state has 1.68 billion bushels of storage on-farm and in licensed commercial facilities.

Keller estimates that storage needs will be the highest since the 1986-88 period; however, storage capacity has decreased considerably since then.

"That's the catch. In the last 10 years we've lost about 250 million bushels of licensed off-farm storage and about 200 million bushels of on-farm storage," Keller said. "So even though storage needs this fall will be about 200 million bushels less than the 1986-88 period, we've lost 400-500 million bushels of capacity to store grain."

Much of this storage was lost when on-farm units were converted to other uses and commercial units and elevators in bad repair were torn down but not replaced.

"Some of this shortfall will be made up with temporary structures and ground storage at elevators, but finding a safe home for all the new crop grain is going to take awhile," Keller said.

Lisa Jasa
Crop Watch Editor

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With record-breaking yields expected, railcars short, and many producers still storing last year’s crop on-farm, there may not be as many outlets for grain this fall. Even if there are outlets, most producers will be reluctant to sell at the current low prices and may consider storing their grain until markets improve.

Producers need to check their usual storage or marketing outlets now. Many elevators may only take grain for storage from their regular customers and, if they have room, cash buying from others. Some are imposing a “dumping fee” in order to minimize their market risks regardless of when the grain is sold. Others are nearly full and looking at temporary storage, either on the ground or in other buildings on their facilities.

Likewise, producers may be considering temporary storage and looking at their options. Grain must be properly conditioned before storage and aerated in storage to protect grain quality. Unlike elevators, most producers do not have the equipment to handle temporary storage of grain or the mass of good quality grain to blend with any grain which may go out of condition. These facility and management costs are often difficult to recover without a major increase in price, especially in the short-term.

Producers considering using existing farm buildings for grain storage need to check with the building manufacturer for any warnings, updates, or options for converting the buildings for grain storage. Most buildings do not have sufficient wall structure to support the sidewall pressures from grain. Usually, minimal problems are experienced if the grain depth at the walls is less than two feet. Temporary grain walls or bin rings may be used to support the grain for deeper storage depths, protecting the existing walls. Even then, it’s necessary to anchor these structures to the floor or making them self-supporting to prevent movement and/or failure if the grain depth exceeds four feet.

Care must be taken when loading and unloading these temporary storage areas in existing buildings. Grain should be con-

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Grain outlet
(Continued from page 191)

veyed in to or out of the center of the pile in order to avoid non-uniform loading on the sidewalls, especially when using bin rings. An unloading auger tube, an aeration duct, and a plastic liner should be in place before filling these areas. Remember to position the walls, tubes, and ducts for easy access so that they do not interfere with other activities (see figure). Next week’s Crop Watch will feature more information about on-farm storage.

Pile grain outdoors only as a last resort. Even with proper site preparation and aeration, this should only be used for short-term storage. The potential for rodent, insect, or bird damage is highest when there is no building to help protect the grain. Tarps or plastic covers help keep the rain off the pile but actually make it more difficult to manage temperature and moisture condensation. A smooth topped pile, with no valleys or ridges, sheds most of the rain; however, drainage must be away from the pile in all directions and a plastic liner needs to be in place below the pile to reduce moisture migration from below.

Livestock producers are an outlet for grain in temporary storage and may have other emergency options available such as silos, bunkers, or ag-bags. Grain can be fed in the short-term before much grain quality is loss or it may be sealed airtight and stored longer term as “silage”.

To be best prepared, producers need to accurately estimate potential yields and then assess their storage and marketing options. There is little time before harvest to build storage facilities, but enough time to check the neighborhood for unused grain storage. With more producers raising soybeans (having about one-third the grain mass of corn), there is a possibility that some producers

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Stalk rot (Continued from page 189)

ear and possibly contributing to reduced yield and kernel weight.

Stalk rot is a family of corn diseases caused by several species of bacteria and fungi. The most striking early external symptom of stalk rot is premature plant death. Leaves and diseased stalks suddenly turn dull and grayish green. The disease ultimately destroys a major portion of the pith tissue. The remaining strands of vascular bundles within the intact stalk are usually light brown or bleached. In advanced stages of deterioration the stalks become spongy and soft. A wind velocity of less than 20 mph will cause the stalk to break or lodge. Fusarium stalk rot is the most common in Nebraska and is expected to be widespread this year. Other stalk rots identified in Nebraska are anthracnose and diplodia.

Fusarium stalk rot. Over 75% of field corn plants can be infected with Fusarium stalk rot, although damage often may be late enough in the season that it doesn’t cause significant yield loss. Fusarium, which can be distinguished by a reddish-pink discoloration of the stalk, survives on corn residue on or in the soil. It infects the plant after being splashed onto the leaves, washed down the sheath and infecting the nodes.

Diplodia stalk rot. Diplodia, which is distinguished by brown stalk discoloration and dry rot in the lower two internodes, is less common than Fusarium in Nebraska. With this disease, the pith tissue is usually shredded and black spore-forming structures (pycnidia) can be found embedded in the lower stalk surface. Diplodia survives in corn residue or in the soil.

Anthracnose stalk rot. In central and northeast Nebraska, many fields have been severely damaged by anthracnose; stalk rot and top dieback of large areas within fields have been observed. Anthracnose, which is less common in Nebraska, affects the stalk, leaves and ears. Top dieback is common with anthracnose and may be confused with early drydown. Anthracnose can be distinguished by black discoloration on the inside of the stalk as well as on the surface.

Scouting and management. Be vigilant and scout fields every 7-14 days from now until harvest to assess the degree of stalk rot present. Randomly select 20-50 plants in each field and squeeze the lower 2-4 internodes. If the stalk is crushable, examine the plant more carefully to try to determine the extent of damage and the type of stalk rot (see photos). A hollow shell of a stalk that collapses easily indicates advanced stalk rot. If 25% of the plants have stalk rot, consider harvesting the field as soon as possible after maturity. Stalk rot will continue developing throughout the field until harvest so it’s important to harvest before

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Economics of grain storage

Promise of a good crop and low prices at harvest has increased the interest in storage. Many elevators are requiring that 20% or more of the grain be sold upon delivery or be placed under a deferred pricing contract so they can move the grain. Commercial storage rates are expected to be two to three cents or more per bushel where available, and farm storage rental charges may approach commercial rates.

Deciding whether to use storage, if available, and what to pay for storage depends on several factors, including: handling capacity at harvest, convenience of available facilities, and any anticipated increase in prices.

First priority should be given to storage that facilitates harvest, i.e. that avoids having to shut the combine down because of handling problems. A limited amount of convenient storage on the farm will be worth more than commercial storage involving a long haul and long waiting lines; however, remember that on-farm storage will require an additional in and out and loading and unloading with added labor and equipment costs and grain handling losses. Drying is an additional consideration and drying facilities will be required if wet corn will be held for any length of time.

On-farm drying can be cheaper, but don’t expect to save money with farm drying without good management. Natural air drying of 20% moisture corn will typically require 0.3 to 0.7 KWH per bushel in central Nebraska. A batch-in-bin system will require about 0.1 gallon of propane (including equivalent electricity required for fans) to dry a bushel of 20% moisture corn (0.02 gal/point/bu). Trying to dry over 20% moisture corn with a natural air drying in central Nebraska can be expected to have some spoilage and drying may not be completed until spring. Also, be aware of the cost of overdrying and handling losses.

Consider for example the following comparison using 0.5 percent on-farm handling losses and $1 per gallon propane:

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<td>0.5%/bu</td>
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<tr>
<td>Drying cost</td>
<td>3.4 cents/bu/pt</td>
<td>2 cents/bu/pt</td>
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The above differences appear to leave plenty of room for savings with on-farm drying; however, add maintenance and repair costs for the dryer (some estimates are 3 cents per bushel), the additional labor, handling and hauling costs (perhaps 2 cents or more above hauling direct to market), and ownership (depreciation and interest) or rental cost of the facility.

Finally, recognize the farm drying system will have additional costs if there is any spoilage or excess drying.

When considering on-farm storage rental rates, remember that use of a facility at harvest probably effectively precludes anyone else using it that year. As a result, farm storage is often rented for the year (expiring prior to the next harvest). A recent survey of Iowa rental rates reported rates of one to three cents per bushel per month and 9-18 cents per bushel per year. A minimum charge, for example for three months, could be specified with additional use at a monthly rate above three months.

If storage is being considered to take advantage of anticipated market price increases, don’t forget to include interest on the value of the grain and to recognize the added risks of losses from spoilage, theft, etc., and excess drying that may be required to keep the grain in good condition.

Roger Selley
Extension Farm Management Specialist

See page 197 and also the next issue of Crop Watch for more information on assessing costs of different options.
Clean bins, treat grain to avoid insect losses

To keep stored grain in good condition for at least a year, it's important to properly prepare bins for storage, provide good temperature and air flow management, and monitor the grain throughout the period.

While no grain bin can be protected indefinitely from insect infestation, economic losses can be prevented with:
1. Clean harvesting equipment;
2. Proper bin preparation,
3. Management of the grain environment, and
4. Monitoring for insects throughout the storage period.

Remove all traces of old grain from combines, truck beds, grain carts, augers, and any other equipment used for harvesting, transporting, and handling grain. Even small amounts of moldy or insect infested grain left in equipment can contaminate a bin of new grain. Adjust combines according to the manufacturer’s specifications to minimize grain damage and to maximize removal of fines and other foreign material. Many common grain insects are secondary feeders, feeding only on broken or cracked kernels and other material, not sound grain.

Check the bin site and remove any items or debris that would interfere with safe, unobstructed movement around the bin. Remove any spilled grain and mow the site to reduce the chances of insect or rodent infestation. If necessary, regrade the site so that water readily drains away from bin foundations. Inspect bins and foundations for structural problems. Uneven settlement of foundations can cause gaps between the foundation and bottom edge of the bin. This can result in grain spills and provide entry points for water, insects, and rodents. If perforated floors are used, a gap between the foundation and bin will allow air that would normally be forced through the bin to escape from the bin. Small gaps in bins can be filled with a high quality caulking compound. If deterioration is extensive, the mastic seal may need to be replaced. Be sure that all anchor bolts are tight and not damaged. Repair or replace any other deteriorated bin components.

Remove old grain with brooms and vacuum cleaners. Avoid placing new grain on top of old grain. Also, clean bins not being used for storage this year to keep insects from developing in them and then migrating to nearby bins.

If long-term storage (over 10 months) is planned, consider treating the cleaned bin with protective insecticides two to three weeks before new grain is added. Apply the spray to the point of runoff to as many surfaces as possible, especially joints, seams, cracks, ledges, and corners, including outside the bin at the foundation and near doors, ducts, and fans.

Malathion, methoxychlor, Tempo, and Reldan (sorghum only) can be used for treating bin surfaces. Tempo and methoxychlor should not be applied directly to the grain. Reldan can only be used if sorghum is to be stored. As with all pesticides, read and follow label directions during handling, mixing, and application.

To reduce the incidence of insects and molds, cool and dry the grain immediately after combining. Deterioration of grain quality occurs rapidly at higher moisture and temperatures. For example, grain held continuously at 75°F and 25% moisture content will deteriorate more in four days than 15% moisture grain held at 60°F would in 250 days. Warm, moist grain is more prone to insect and mold problems.

As grain is being augered into storage, apply a liquid or dust grain protectant if the grain is to be stored for 10 months or more. Use either premium grade malathion (corn and sorghum), Actellic (corn and sorghum), or Reldan (sorghum only). Soybeans experience few insect problems and need not be treated as it enters the bin. Power spray applicators are preferred over gravity drip applicators because they provide more uniform coverage, giving better insect control.

Treating when grain temperature is above 90°F and grain moisture is above the recommended level for long-term storage will increase the breakdown rate and limit insecticide effectiveness. If grain must be treated when it is warm, it should be cooled with an aeration system as soon as possible. Operation of the aeration system will not remove the protectant from the grain.

After the grain has been leveled in the bin, topdress the surface with both Dipel (corn, soybeans or sorghum) and malathion (corn or sorghum), or Actellic (corn or sorghum), or Reldan (sorghum only). Dipel works against Indian moths while malathion is needed for beetle control. Actellic and Reldan control both insects. Do not treat soybeans with malathion, Actellic, or Reldan. If Indian meal moths have been a problem in the past, use Vapona resin strips (one strip per 1,000 cubic feet of air space) in the bin above the grain.

Inspect grain at least once a month in winter and every two weeks in the summer.

If problems are detected, they need to be evaluated and corrected as soon as possible. This may include cooling with aeration, further drying, or fumigation for insect control.
Let cattle harvest standing corn

Grazing may be a good economic alternative to combining this year for diversified farms with corn and cattle.

Recent experiences by pioneering Nebraskans have demonstrated that acceptable gains can be produced inexpensively. Grazing has been successful from early September through February. Daily gains of yearling steers have ranged from nearly two pounds per day when the standing corn was the only thing available to over 2.5 pounds when supplemented daily with one pound of a 40% protein concentrate.

The biggest advantages, though, are in cost savings. By grazing corn instead of combining and then feeding it in a feedlot, producers save the cost of grain harvest, drying, transportation, storage, handling, and feed processing. Yardage expenses and manure hauling also are eliminated.

Cross-fencing is a must to minimize trampling and waste. Cattle should be given access to no more than a two-day supply of fresh corn at a time. To determine how much area this might be, use an initial stocking rate equal to two animal unit days of grazing per bushel of expected grain yield. For example, 500 lb yearling steers are equal to about 0.6 animal units. Consequently, 250 of these steers equal 150 animal units and will require the amount of area in the field that will produce about 75 bushels of grain potential daily. Increase or decrease the area allotted with each new grazing strip based on observations of animals.

Bruce Anderson
Extension Forage Specialist

If field storage sounds good, consider the ramifications first

Q: With some new corn hybrids having stronger stalks, is it feasible to leave the corn in the field and harvest it next spring when prices are better?

A: Lenis Nelson, Extension crop variety and seed development specialist: Any decision to delay harvesting the 1998 crop is based on two premises:

1. The price of corn will be higher next spring.
2. The price rise will more than compensate for lost crop.

A producer considering field storage as an option, should further consider some of the following caveats:

It's true that the health of the stalk will determine how rapidly the crop begins to deteriorate; however snow, wind and climate as well as hybrid characteristics can affect stalk durability. There have been reports of up to 50% loss from fields which had to be left until spring for harvest.

Even with considerable stalk breakage, a picker may be able to glean attached ears; however, if the ears break free from the stalk, the only other likely option is grazing.

Also, unless harvest is timely, it could delay planting of the 1999 crop. This could potentially decrease income from the 1998 crop from grain loss and from the 1999 crop due to late planting. If harvest were to last into April, there would be little opportunity for livestock to glean the field before seedbed preparation should begin. Corn which falls to the ground during winter could create an unwanted secondary crop of volunteer corn next summer. This is especially troublesome since it's likely to grow in clumps and interfere with nearly any crop grown next year.

Are you willing to bet the farm that the price will be higher next spring and that the price increase will compensate for lost crop? Either way, you may want to think about other options for having corn to sell next spring.
Assess your options

Is storing this year’s grain on-farm right?

Deciding whether to sell or store involves a number of issues. The decision to store opens up many issues such as: when to price the grain, feed it to livestock, take out a government loan on it or opt for a loan deficiency payment.

When deciding to store, costs must be calculated and compared with the farmer’s outlook on future prices and when the grain is likely to come out of storage. Costs are broken up into fixed cost and variable.

Fixed costs include such items as, depreciation, taxes, insurance, and interest on the investment. Once a facility has been built these cost occur each year until the unit has depreciated out. Variable costs are incurred only when holding grain. Variable costs that must be looked at include: utilities (electricity, propane, etc.); costs for drying, insecticides, repairs, and shrinkage; taxes, interest and insurance on grain; and any other out-of-pocket costs.

Deciding whether to use existing on-farm storage, build more, or use commercial storage is not a clear cut choice. Each person must evaluate his or her own position and decide. Following are some factors to consider:

**Advantages of on-farm storage**

1. Can avoid low harvest prices and basis
2. Avoids waiting in line at local elevator
3. Farmer can better match his grain handling capacity with his harvesting capacity
4. Can avoid large harvest time discounts such as for moisture
5. Allows for speculation on price rises
6. Increases both the marketing alternatives and the time of marketing
7. Can take depreciation on facilities
8. If available, can take advantage of government storage programs

**Disadvantages of on-farm storage**

1. Cost of purchasing and maintaining facilities
2. Extra Handling costs
3. Personal property tax on storage facilities and possibly on grain
4. Extra cost of drying grain down to low moisture necessary for long term storage
5. Risk of grain going out of condition
6. Risk of pilferage through theft, insects or rodents
7. The investment in storage may limit other more profitable investments
8. Need for more marketing skills to insure storage profits
9. Fixed costs are incurred even when bins are empty

Lynn Lutgen
Extension Marketing Specialist

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**Estimating corn maturity**

Considering the price of corn and cost of drying, leaving hybrids with good stalk quality in the field to dry makes especially good sense this year, assuming stalk rot isn’t present.

Use the table at right to help estimate corn maturity. Kernels dry down from the tip to the butt of the ear. Monitor milk lines after dent by breaking ears at mid ear. (Milk lines are obvious on kernels on the tip half of the ear.)

Research at the South Central Research and Extension Center near Clay Center has verified that no dry matter loss occurs after black layer.

Commercial drying costs have been about 3 cents/bu/point of moisture removed. If corn is dried from 25% to 15% this amounts to drying costs of 30 cents/bushel. This expense is hard to justify at the current price of corn.

Remember, however, that stalk rot is expected to be a major problem (see page 189) this year and that fields should be scouted every one to two weeks for symptoms. Those fields with stalk rot should be harvested first after the crop reaches maturity.

Roger Elmore
Extension Crops Specialist
Stalk rot  (Continued from page 193)

lodging occurs. While there are no control measures for stalk rot, the impact of the disease can be lessened next year by selecting a hybrid that is tolerant to stalk rot and has good stalk standability. It’s also beneficial to provide balanced soil fertility — avoid high nitrogen and low potassium.

Jim Stack, Extension Plant Pathologist

Grain outlets  (Continued from page 192)

may have “extra” storage to rent. Be prepared to pay for a full year of storage when renting bins because the owner of the bin usually loses the use of the bin for the full year regardless of the storage term.

For more information on grain storage, management, and marketing, contact your local Cooperative Extension Office.

Paul Jasa, Extension Engineer

GDD and Crop Water Use Data  (through 9/2)

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Growing degree days required for Type 3 maturity class for the following crops: corn, 2750; soybeans, 2450; and sorghum, 2369.