



Farm Views

Grain storage information on the web

Low export demand, transportation problems and tight commercial storage space, combined with a better than normal yield for many dryland crops in eastern Nebraska, has resulted in grain stocks that exceed the available storage space in some areas. Even where on-farm storage is available, grain may need to be held on the farm longer than usual until grain can be pushed through the "pipeline" and on to domestic and foreign markets. This grain must be kept in good condition, free of molds, insect damage, etc.

The University of Nebraska has a large number of NebGuides and extension circulars on grain storage, aeration, drying and insect management. In addition, extension specialists have responded to the emergency nature of the situation this year by developing a number of information sheets on grain storage. These deal with converting existing structures to hold grain, piling grain outside as a last resort, engineering aeration systems, calculating bushels in non-standard grain storage situations, etc.

I have created a web page containing all the grain storage information from the University of Nebraska, as well as selected publications from other Midwestern universities. It can be found on the Lancaster County Extension Nebraska Production Agriculture web pages under crops. Most of this information can be downloaded by clicking on the reference indicated. The direct address of the grain storage page is: <http://www.ianr.unl.edu/ianr/lanco/ag/crops/storage.htm>. (TD)

Pesticide container recycling a success

During June-September over the past four years, the Pesticide Container Recycling program has been coordinated by extension staff in Lancaster County for a 10-county area in southeast Nebraska. Public pesticide container collection days were organized in 1998 for 15 sites in cooperation with participating agribusiness firms (mostly co-ops). Two semi-trailers have been purchased with funds from the project. These trailers were pulled from site to site by the participating businesses and used to store the containers until they could be processed into chips and hauled to a recycling plant. Each site provided financial support to cover the time and travel expense of a technician who was present to host the public collection days and to inspect the containers for cleanliness. An additional three sites collected pesticide containers throughout the growing season under the supervision of their own personnel.

A contractor working with the Agricultural Pesticide Manufacturers Association processed the containers into small chips to reduce the volume, making it feasible to haul them to a recycling plant where they are used to make items such as: parking lot tire bumpers, speed bumps, pallets for use by the pesticide industry, etc.

From June to September, over 29,000 properly rinsed pesticide containers were collected in this recycling program—bringing the total to about 87,000 containers over the four-year period. Based on average container weight, about 31 tons of plastic have been diverted from landfills and recycled into other products. This program reduces waste, but more importantly, prevents pollution by recycling containers that cannot be recycled any other way. (TD)



Holding wet corn with aeration

Corn is a perishable commodity with a limited shelf life that depends on the moisture content and temperature of the corn. Shelf life is the length of time good quality, aerated, shelled corn can be stored before losing one-half percent of dry matter. With this amount of dry matter decomposition, it is assumed that the corn loses some quality, but maintains its market grade.

To illustrate this point, consider aerated corn at 18 percent moisture content and 70° F. This corn has a shelf life of approximately 31 days.

At that same temperature, aerated corn at 24 percent moisture content only has a shelf life of approximately 6 days. Clearly, the limited shelf life of high moisture content corn precludes extended storage.

Here we discuss temporary storage, or holding, of wet corn with aeration. The recommendations in NebGuide G87-862, Holding Wet Corn with Aeration, should allow for storage until the corn can be dried (and then held for longer periods), or removed from the bin for feeding or other purposes. We define wet corn as 16 percent or higher moisture content.

When holding wet corn, aeration is required. The temperature of the corn mass will not remain constant because biological activity of the corn releases heat that increases corn temperature. The higher corn temperature, in turn, increases biological activity, which can rapidly lead to corn deterioration. Aeration systems are needed to offset this temperature rise and to adjust the corn temperature to ambient temperatures. Without aeration, wet corn cannot be held.

Successfully holding wet corn requires an understanding of aeration systems and the effects of corn moisture, temperature and damage levels on shelf life of the corn.

Table I can be used to estimate the shelf life of aerated corn based on the moisture content and temperature of the corn. Shelf life data is not valid for corn held without aeration. Un-aerated corn may deteriorate three times faster than indicated by the shelf life data in Table I.

These storage times are not always accurate predictions of the point at which mold growth becomes visible on individual corn kernels. Visible mold

growth may occur sooner than expected when the corn is held at conditions where the shelf life is less than one month. If corn is to be fed to gestating or lactating sows, a more vigorous inspection routine is recommended. (For more details, see NebGuide G94-1199, Management to Maintain Stored Grain Quality.)

An area of possible confusion is that the shelf life data was determined for aerated corn maintained at a constant temperature over the entire storage period. In practice, corn is not aerated while held in the truck, and the temperature changes from harvest temperature to storage temperature.

Corn deterioration is a cumulative process and remaining shelf life progressively decreases during each storage interval. The amount of decrease depends on the corn moisture and temperature for a storage interval. To use Table I, you need to accumulate the percentages to determine the safe storage period. (TD)

Source: Holding Wet Corn with Aeration G87-862, by David Jones and Robert Grisso, UNL

Table 1. Shelf life (days for aerated, shelled corn. These values also may be used to estimate allowable storage times for other grains.

Corn Temp. °F	Corn Moisture Contents (Wet Basis)							
	16%	18%	20%	22%	24%	26%	28%	30%
30	939*	648*	321*	190*	127*	94*	74	61
35	626*	432*	214*	126*	85	62	49	40
40	418*	288*	142*	84	56	41	32	27
45	279*	192*	95	56	37	27	21	18
50	186*	128	63	37	25	18	14	12
55	123*	85	42	25	16	12	9	8
60	81	56	28	17	11	8	7	5
65	61	42	21	13	8	6	5	4
70	45	31	16	9	6	5	4	3
75	33	23	12	7	5	4	3	2

* Under Nebraska weather conditions, corn temperatures cannot be maintained at these levels for the indicated length of time. Shaded area: Corn held at these temperatures and moisture contents require frequent inspection and continuous aeration.

Farm finances tight? Fertilize with biosolids and save \$\$

One way to save inputs in your farming operation is to decrease your fertilizer bill by using biosolids. The following example will show you the economic benefit of using biosolids.

Farmer A is interested in using biosolids to fertilize a 80-acre field. His 1999 crop will be corn. After soil sampling (no cost to Farmer A), the biosolids rate is determined to be 40-45 cubic yards/acre. This rate will provide all the nitrogen needs for his next corn crop. We estimate that 3500 cubic yards will be needed for this 80-acre field. After Farmer A has applied the biosolids properly, he can receive up to \$0.65 per cubic yards to help defray his cost of applying the biosolids. This is \$2275.

There is one problem. Farmer A has a tractor and loader, but no spreader. He decides to rent a spreader from the city of Lincoln Biosolids Program. It will cost him \$0.25 per cubic yard (\$875) to spread the 3500 cubic yards of biosolids. It will be subtracted from the \$2275 payment. Farmer A will receive \$1400 plus get all of his nitrogen (N) fertilizer at no cost. In addition, Farmer A's soil tests show that this field is low in phosphorus (P) and zinc (Zn). Because biosolids have significant amounts of P and Zn, he won't have to purchase extra fertilizers.

One more benefit, studies by the University of Nebraska have shown that there is an average 5% yield advantage by using

biosolids compared with equivalent amounts of commercial N, P and ZN fertilizers.

This is a typical first year scenario of some of the economic benefits of using biosolids from the City of Lincoln. There will also be a second-year residual of about 65-70 lbs N per acre that will become available for the second cropping year after an application. If Farmer A decides to plant grain sorghum, he can reduce his fertilizer bill in the year 2000, as well.

How can you take advantage of this terrific fertilizer value? Contact Barb Ogg at the Lancaster County Extension Office, 441-7180, as soon as you can. Applications for next year's fields are due January 15. (BPO)