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Figure 1. The various sized bins on this farm allow for storing different moisture contents. Wetter, more dense grain works well in the smaller bins so that more airflow per bushel can be delivered. Drier grains where aeration is the primary need store well in the larger bins. If the grain is wetter, drying grain in layers can help increase airflow per bushel. (Photo by Paul Jasa)

Natural Air Drying of Binned Soybeans

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Original story by Tom Dorn, former Nebraska Extension Educator

Reviewed and updated by [Paul Jasa, Extension Engineer](#)

If you're looking at storing soybeans harvested at over 13% moisture, you'll want to dry them to 13%, the recommended level for longer term storage.

The time to dry soybeans, or any grain, depends on a number of variables:

- The initial moisture content, %
- The desired moisture content, %
- The average ambient air properties — temperature and relative humidity
- Airflow through the bin — cubic feet per minute per bushel
- Whether the incoming air is heated

Also see

- [Soybean Dry-Down in the Field](#)
- [Plan Harvest to Deliver Soybeans at the Optimum Moisture — 13%](#)
- [Equipment Adjustments for Harvesting Soybeans at 13%-15% Moisture](#)

A grain drying program was used to estimate the time it would take to dry soybeans (see *Table 1*). It estimated the days to dry soybeans in a grain bin using natural air and 1 cubic foot per minute per bushel of grain in the bin. When drying in the bin, avoid using the stirator as it can damage soybeans.

As you can see in *Table 1*, weather conditions are a huge factor in how long it takes to dry grain.

Table 1. Days required to dry soybeans to 13% moisture with 1 cfm/bushel airflow, using natural air drying. Assumes exhaust air has 85 % relative humidity.

AIR TEMPERATURE*		INITIAL MOISTURE (%)				
60°F	14	15	16	17	18	19
RELATIVE HUMIDITY		DRYING TIME (DAYS)**				
60%	4.6	9.2	14.0	18.9	23.9	29.0
50%	3.4	6.9	10.5	14.1	17.8	21.7
40%	2.7	5.4	8.2	11.1	14.1	17.1
30%	2.2	4.4	6.7	9.1	11.5	14.0

AIR TEMPERATURE		INITIAL MOISTURE (%)				
50°F	14	15	16	17	18	19
RELATIVE HUMIDITY		DRYING TIME (DAYS)				
60%	6.0	12.1	18.3	24.7	31.3	38.0
50%	4.3	8.7	13.2	17.8	22.5	27.4
40%	3.4	6.8	10.3	13.9	17.6	21.4
30%	2.8	5.6	8.4	11.4	14.4	17.5
AIR TEMPERATURE		INITIAL MOISTURE (%)				
40°F	14	15	16	17	18	19
RELATIVE HUMIDITY		DRYING TIME (DAYS)				
60%	6.7	13.5	20.5	27.7	35.0	42.5
50%	4.9	10.0	15.1	20.4	25.9	31.4
40%	3.9	8.0	12.1	16.3	20.7	25.1
30%	3.3	6.6	10.0	13.5	17.1	20.8

*The temperatures indicated — 40°F, 50°F, and 60°F — are the average of the high and low for the day.

** Drying time is proportional to airflow. To estimate drying time for airflow values other than 1 cfm/bu, divide the drying time in the table by the cfm/bu for your bin. For example, if your airflow is 1.25 cfm/bu and the estimate in the table is 10 days, your estimated drying time would be 10 days/1.25 = 8 days.

Tags:

Grain Storage

Harvest

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CROPWATCH

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