Written by Jim Hoorman Wednesday, December 04, 2013 9:00 PM -

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The following article is condensed version written by Purdue and Iowa State University.

Managing Dry Grain in Storage AED 20. More dried grain goes out of condition because grain temperatures are not controlled than for any other reason. Improper control of temperature causes moisture to move or migrate from one part of the grain mass to another, where the moisture can accumulate and cause grain spoilage problems. Optimal moisture rates for wheat, oats and barley storage are 14 percent moisture for grain stored up to six months or 13 percent for more than six months storage. For corn storage, allow no more than 15.5 percent moisture if sold by spring, 14 percent for six-12 months storage and 13 percent if greater than one year. For soybean storage, allow no more than 14 percent moisture if sold by spring, 12 percent for six-12 months storage and 11 percent if greater than one year.

Usually two or three cooling cycles are needed to cool or warm the grain to the desired storage temperatures. In Ohio and most parts of the Midwest, aerate grain to cool to 35-40 F for winter storage. Start an aeration cycle when the average daily temperature, (high day temperature + low night temperature) / 2, is 10-15 F cooler than the grain. Operate aeration fans long enough to cool all grain or spoilage may occur. About 150 hr. (nearly a week) are needed for each cycle to cool grain in the fall assuming a fan capacity of 1/10 a cfm/bu. However, about two weeks after the cycle is completed, outside temperatures will have dropped another 10-15 degrees so repeat the aeration cycle.

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With low airflow rates (less than 1/5 cfm/bu), you can largely ignore outdoor humidity. Cooling the grain is important. Farmers are advised to keep the fan running even if outdoor air has high humidity for a day or two. Any rewetting during these wet periods helps offset the unwanted drying during previous good weather periods. Many operators with airflow rates of 1/10th cfm/bu operate the fan continuously from the time the initial fill is placed in the bin at harvest, until outside air temperatures of 35-40 F have prevailed for at least one-two weeks.

With higher airflow rates (more than 1/4 cfm/bu), each cooling cycle is short enough that aeration can be delayed a day or two to avoid warm, high humidity air conditions. But if there are any signs of heating or hot spots, no matter what the season or the weather, run the fan continuously until no heating can be detected.

Making sure all grain has cooled is especially important during the last aeration cycle. With a suction system, unload some of the grain and check the temperature of the first few gallons to check the bottom grain. Check the next few gallons to check the critical center mass. If any temperatures are higher than the air temperature, run the aeration fan until all grain is cooled.

Freezing grain slightly decreases the potential for spoilage but is not needed for grain that is properly dried, aerated and managed. Because of possible problems, freezing grain is not encouraged. Condensation during aeration can be a problem in grain cooled well below freezing. It may be difficult to warm grain in the spring without condensation immediately freezing into ice. Frozen chunks of grain block aeration warming cycles and grain unloading. In the winter, operate aeration fans in frozen grain only with relatively dry air that is as colder than the grain.

In the spring, start warming grain as soon as the average daily air temperatures are about 10 degrees warmer than the grain to avoid excessive condensation and freezing. High airflow aeration for warming grain is advantageous because faster warming reduces the need for aerating in undesirable (particularly high humidity) weather.

Observe dry grain in storage weekly during the critical fall and spring months when outside air temperatures are changing rapidly, and during the summer. Check at least every two weeks during the winter. Establish a regular day of the week and time of the day to check grain. For more information, go to this website: extension.purdue.edu/extmedia/AED/AED-20.html.

Temperature control is important for grain storage

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The Putnam County Extension Office will be offering a Soil Health & Cover Crop Workshop from 9 a.m.-4 p.m. Tuesday. Cost is \$30 and registration is required. Call the Extension office 419-523-6294 for details by Monday.