

Aeration Dynamics - Cooling for Long-term Grain Storage

By Bill Casady

If you have been following the SLAM strategy this fall, then you know that we are ready to address 'A' – aeration. Having sanitized (S) bins and loaded (L) bins with quality grain, some of that grain went into bins at some pretty warm temperatures. I know some of my grain went into the bin at between 70 degrees to about 98.6 degrees and at various moisture contents, but all fairly dry.

Yield monitor information for loads throughout the day has provided me with an excellent chance for recording just what was going into bins. Grain moisture for corn varies very little throughout the day, but temperatures can change by 20 to 30 degrees. Early morning corn was running toward the lower end of the temperature scale at about 70 degrees while midday and afternoon corn registered temperatures well above 90 degrees.

Those layers of slightly wetter and cooler corn layered with warmer drier

corn are both a potential problem and a blessing. The drier warmer corn contains some built in heat for drying the wetter grain, while the wetter cooler corn provides the ability to cool the warmer grain. While warm moist grain is a haven for fungi, running the fans to redistribute moisture and to cool the grain can leave a relatively uniform grain mass with excellent storage properties.

As the weather finally turns more "fall-like", whole bins are ready for cooling with aeration. Aeration for cooling should be performed by monitoring grain temperatures if possible. Short of a fully instrumented bin, aeration can be monitored by measuring the temperature of the air at the top of the grain mass. Initial temperature readings should be recorded at startup. Run fans continuously until a temperature drop of about 10 to 15 degrees has occurred. Repeat as need several weeks later until grain is cooled to 35 to 40 degrees.

It is important to take advantage of the earliest cool weather to extend the life of stored grain. Warm grain has a shorter shelf life (see table of equilibrium moisture contents) and some of that life will be used quickly until grain is cooled. Assuming moisture content is already approximately correct for long term storage, run fans continuously during cooler weather to cool the grain. However, if you have harvested some drier than market moisture content grain, you may wish to run fans selectively from about dusk until dawn to cool the grain. Very little or no increase in moisture content will occur, but the grain will cool to more acceptable levels quickly.

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