

GRAIN STORAGE MANAGEMENT

Spring Aeration and Drying Tips

Spring is here. Is your grain protected?

With spring comes warmer days and cooler nights. The fluctuation in temperature can wreak havoc inside your bins, putting your stored grain at risk. **#DidYouKnow** more stored grain goes out of condition or spoils due to a lack of temperature control than for any other reason? Depending on the region you're in within North America, we can get the most severe temperature fluctuations from one season to the next. The transition between these extremes can happen rapidly or gradually, putting stored grain at risk. Temperature fluctuation causes moisture migration.

As outside temperatures begin to rise in springtime, it's important to monitor the temperature and moisture levels inside your bin. Moisture migration happens inside the bin when the difference in grain temperature and the outside air is the most extreme. In spring, as the air's ambient temperature outside the bin starts to warm up, the walls inside the bin will also warm up, which then warms the adjacent grain. At this point, the warm air creates a moisture current that moves upward through the grain on the outside perimeter of the grain mass.

As this air warms up and starts to move, it will pick up moisture from the grain and carry it upwards. As the moistened air nears the top of the bin, it moves toward the center where it encounters cooler grain temperatures. This air cools down and starts to move downwards, towards the center of the bin, laden with the moisture it accumulated during the upwards cycle along the bin wall. During this part of the cycle, the air starts to release this moisture.

The lower the air migrates in the bin, the more moisture it will give off. High humidity due to condensation of cooling air occurs at the bottom center of the bin. This is where you can expect grain spoilage to occur. If the grain is to be stored in the bin for any length of time, it's important to control grain temperature. In this situation, it's recommended to raise the grain temperature in the bin to approximately 10° C. In our article "Keeping Your Grain Cool", we shared safe storage charts for different commodity types. You can find charts online as well. You should reference these charts to determine ideal temperatures and compare it to the length of time you can store the grain at its' current moisture and temperature levels.

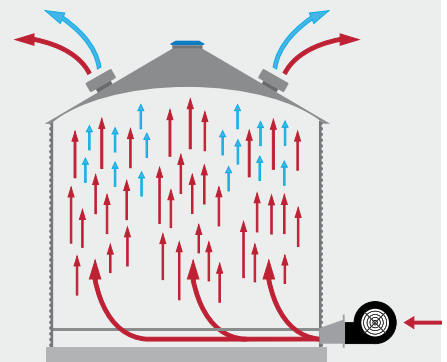
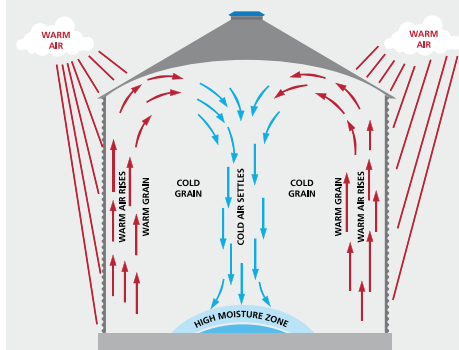
Aeration (warming) at this point should be accomplished with .05 to .1 CFM/BU, and only until the desired, uniform temperature is achieved throughout the bin. From this point forward going into warmer temperatures, the temperature of the grain should be monitored throughout late spring and summer and controlled accordingly using aeration.

Proper aeration inside grain bins, minimizes the effects of moisture migration and maximizes the benefits of temperature control within your bin.

In circumstances where you need to warm grain to finish drying in springtime conditions, temperatures should be brought up gradually. This will help preserve the quality of the grain kernel. Once the grain has adequately dried, the grain should be cooled again and stored at approximately 10° C.

Remember - monitoring moisture and temperature conditions in your bin and having an aeration system in place to help regulate these conditions, is key to successful grain storage.

This diagrams show spring moisture migration in a bin without aeration versus with aeration..



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