

January 2017

Watch Your Grain: You May Have a Hotspot



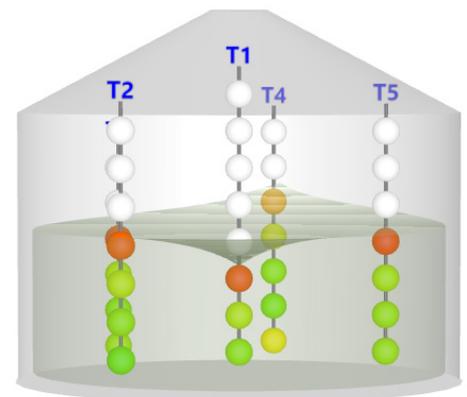
YOU may have dried and cooled your grain for safe winter storage. However, the spoilage risk for stored grain is always present. If the stored grain is exposed to extreme initial storage conditions such as high moisture and/or temperature for a significant period before drying, or if the grain contains a high percentage of fines, broken and immature kernels, the spoilage risk is even greater. During the winter months we often pay less attention to our stored commodities, thinking that our grain is safer during winter months. However, grain temperature may rise significantly due to heat generated by the respiration of grain. The respiration also produces moisture, which accumulates on the surface of the

grain, and often results in mold growth. Mold growth further accelerates the heating and moisture accumulation leading to sprouting, crusting, germination loss, significant grain spoilage, and mycotoxin development.

Often in winter months, fluctuating weather causes condensation inside the bin headspace and grain near the top surface absorbs the condensed moisture. Due to this excessive grain moisture, mold may develop in the top layers of the grain as the headspace starts to warm with rise in ambient temperature. Grain crusting, sprouting, and mold are often visible on the top surface of the grain, which is mostly a result of headspace condensation.

Monitor the grain

OPI grain monitoring systems (OPI Blue and Integris Pro) allow you to monitor your grain temperature and moisture continuously. Pay attention to temperature rise or rate of change (ROC) alarms, which indicate hotspot development and mold growth, if there are any. Take appropriate action by aerating the grain bin immediately and cool the grain to 35-40°F (2-4°C) temperature. Avoid fan operation below freezing temperature, which may cause additional condensation and may freeze the exhaust vents. A grain bin with a hotspot should be carefully monitored, even after the grain has been cooled, as hotspots sometimes redevelop in the same zone. If the hotspot cannot be cooled by aeration, significant spoilage may have already occurred, or will occur; so attempts should be made to unload and remove the affected portion of grain.



OPI Blue, OPI's remote grain monitoring system, detects hot spots in your grain and alerts you to take action.

Fan Operation for Maintenance Air

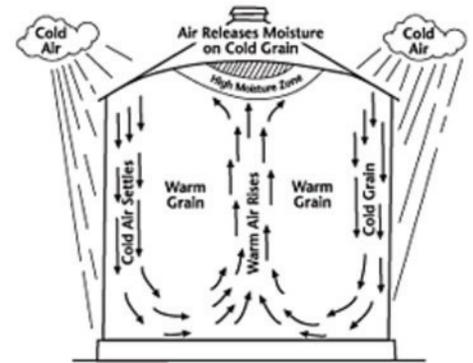
Grain is a poor heat conductor, so it is possible that local hotspots developing in locations, which are far from the temperature and moisture cable sensors, may not have been recorded by the sensors in its initial stage of development. Turn the aeration fan on for a couple of hours every two weeks when ambient temperatures are above freezing but not too warm. Fan operation will push the air through the potential hotspot and the warmed air temperature would be recorded by the sensors immediately above the locally developed hotspots. This would help in preventing the hotspot from further spreading and affecting

the larger grain mass by aerating the grain. Temperature rise of 5-10°F (2-5°C) per week and/or moisture increase of over 0.5% are strong indicators of hotspot development and mold activity in the stored grain.

Inspect the Bin

If the bins are not equipped with temperature/moisture cables, or if you suspect mold activity as indicated by rate of change (ROC) or temperature rise alarm, you can inspect the bin through the bin roof inspection hatch, and smell musty or moldy odor, or feel that warmer air is blown out of the bin while the fan is running. Use appropriate action to prevent the spoilage from scaling up further

and affecting a larger grain mass. We do not recommend entering the bin if hotspot, crusting, or mold development is suspected in a grain bin. Always follow the farm and bin safety protocols when entering a bin to avoid grain entrapment, especially since a high number of fatalities have been reported from bins with spoiled and crusted grain.



Fall and winter moisture migration.



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