Grain Temperature and Moisture Migration

Harvest is done and hopefully you were able to get all your crops off the field and into clean bins. To minimize the risk of post-harvest losses, storage at the proper moisture content and temperature is crucial. If the temperature inside the bin is not properly controlled, moisture will move or migrate from one part of the grain mass to another, where the moisture can accumulate and cause grain spoilage problems.

The most critical time for moisture migration problems occurs when warm grain is stored in cold winter temperatures. When the air temperature cools down in fall, the grain along the bin wall cools more quickly than the rest of the grain. This temperature difference causes air moving down the bin wall and toward the centre of the bin. As the air moves through the grain it becomes warmer and begins to pick up moisture from the grain. When the warm moist air gets to the cool upper surface, condensation occurs (Figure 2).

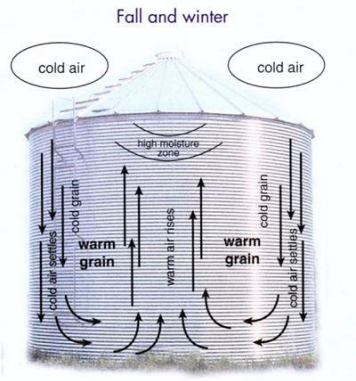

Figure 2.

In the spring the problem is reversed. Warming air on the outside of the bin causes moisture to move up and into the bin. Condensation then occurs on the bottom of the bin (Figure 3).

Figure 3.

The most common and effective way to control Temperature and moisture variations in the bin are aeration systems (fans) which force air through the grain and create a cooling or warming zone (Figure 4).

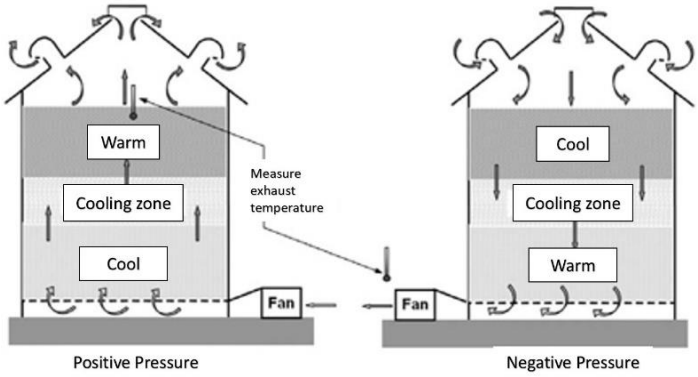

Figure 4.

Grain should be cooled as quickly as possible so start the fan as soon as the grain is in the bin. Check the grain temperature and turn off the fan when it is less than 5°C above the outside temperature. Check the grain periodically for condensation or heating. Continue cooling until the entire volume of grain is close to O°C.

If you keep the grain over the summer, a series of warming stages should begin in April. Continue until the grain temperature is about 10°C.

By June the grain temperature should be 10°C. Check the grain periodically and run the fan during cool, fair weather when the outside temperature is lower than the grain temperature. 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.

If you are interested in aeration solutions, Ray Agro can provide you with the products you need. Call Matt for more information 780-963-2078 at ext. 25.

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