

## Harvesting, Drying, and Storing the 2011 Corn Crop

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High temperatures and lack of rain this past summer have taken a toll on a portion of Indiana's 2011 corn crop. Some regions of the state are reporting that corn is more susceptible to lodging than usual and there are also reports of poor kernel fill and small kernels. Higher moistures and poor kernel development can mean lighter test weight corn and/or grain storage challenges for some farmers and elevators. More detailed information on drying low test weight corn and properly managing foreign material can be found on this website under the Extension Publications tab on the left side of the screen (for example, see GQFS-27 found under Extension Publications, Grain Drying, Conditioning and Aeration). Below is a summary of basic principles along with some references to specific publications.

Lodged corn typically means more stalk material passing through the combine and ultimately more foreign material in grain tanks. Threshing may be more aggressive in attempts to remove poorly developed kernels from cobs which can result in higher percentages of damaged or broken kernels and also pieces of cob in the grain. Low test weight corn is often more susceptible to kernel breakage during harvesting and handling than is high test weight corn. For more information on combine adjustment there is a link posted on this website under the News and Information link to "Corn Harvest – Minimizing Foreign Material in the Combine's Grain Tank". It is the first link under the heading "Informative Articles and PDF Publications from Previous Years".

The presence of broken kernels, stalks, and cobs in a bin can restrict airflow. Even with state of the art grain spreaders, broken kernels and foreign material tends to accumulate in the center of bins. This will reduce airflow in the center of the bin. Ideally grain should be cooled to at least 50 degrees Fahrenheit or cooler to control insects and mold growth. If the grain in the center of the bin is not cooled thoroughly mold and insects can begin to grow there and eventually spread to other regions of the bin. Bins should be cored after they are filled in order to remove the accumulation of broken kernels and foreign material. Coring can be accomplished by removing several loads of grain from the bin. It will also help to level the top of the grain mass. Air finds the path of least resistance and the coring and leveling should eliminate or reduce the higher airflow resistance in the center of the bin. Therefore, the bin will be aerated more evenly.

To help reduce the amount of broken kernels, cobs, and stalks the grower should make sure their combine is set properly and adjusted regularly as crop conditions change. Screening equipment should be used to remove as many of the broken kernels and as much of the plant material as possible from the grain before it is placed into storage. Even if great care is taken to properly set combines and clean the grain, bins should still be cored in order to ensure even airflow.

Besides creating airflow problems in the grain mass, broken and damaged kernels can act as an excellent host for mold and insect growth. Special attention should also be paid to the drying process to mitigate additional kernel damage. Low test weight kernels and kernels damaged during harvest are more likely to be further damaged when dried. Managers using high temperature dryers need to be especially careful since these systems are particularly hard on kernels. Extreme swings in kernel temperature like those that can occur during high temperature drying and rapid cooling can increase the extent and severity of kernel stress cracking which will eventually lead to increased breakage. The kernel temperature of corn in high temperature dryers should not exceed 140 degrees. Samples should be taken throughout the day to monitor for cracking and breakage and dryer temperature should be closely monitored and lowered if these types of kernel damage are found