

Is Low Test Weight A Cause For Concern?

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The 2010 Illinois corn crop continues to race to the end, with 13 percent of the crop listed as mature by August 22, and growing degree-day accumulations since May 1 running 250 to 300 above normal. With the present weather, the crop will dry down rapidly after it reaches black layer. Harvest is starting in a few areas.

One concern I heard expressed recently is that some early-harvested corn was coming in with test weights in the low 50s instead of the 56 or higher that we often associate with ideal weather. With the early harvest following a very warm grain-filling period in July and August this year, many people seem concerned that low test weights indicate that a lot of yield has been lost, and that otherwise things are “not as good as they could have been.”

Test weight low enough to trigger dockage is, of course, a concern. In many cases, kernels will seem sound (unlike kernels from many fields in 2009), even where test weights are 3 or 4 pounds below the standard 56 pounds per bushel. What do low test weights mean in such a case?

First, we need to be careful to separate test weight from low kernel weight. If yields are high, then it's possible that kernel weights are normal, even if test weights aren't. The two are often related, in that kernels that don't fill very fully tend also to be misshapen, so they fit together poorly; the result is low “bulk density,” which is what test weight officially measures. But these factors are not in lockstep; yields can be very high and test weights not very high.

That's because test weight is a complex measurement, including factors like slipperiness of the seedcoat, kernel shape, endosperm density, and even such things as size of the embryo.

In 2009, starch filled very slowly, and in some cases it didn't fill to the maximum extent before freezing ended the process. That's not likely in 2010, except perhaps in some areas where dry weather could bring an early end to grain-fill. It is possible, though, that the rapid filling in 2010 resulted in slightly lower density of starch “packing” into the endosperm (the starchy part of the kernel) than normal. That directly lowers test weight, and may in many cases result in lower kernel weights (grain yield) than would have been the case otherwise.

For the same reason, endosperm quality may not be quite as high as usual this year. This could affect usefulness as, for example, food-grade corn. On the plus side, grain will dry down well in the field, and we are not likely to see the high-temperature drying problems – stress cracks, foreign material – that we saw in 2009.

Test weight affects pressure plate readings on yield monitors, so it will be important to calibrate monitors for this year's conditions. But instead of focusing on how much yield might have been lost, focus on the big picture: yield per acre is the product of kernel number and kernel weight, and it is not tightly linked to test weight. High yields are the only meaningful measure of the growing season, and if kernels are basically sound but test weights are several pounds below normal, we have little to complain about.

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