BETWEEN THE ROWS

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Background

In late summer and early fall many corn growers evaluate fields and make yield estimates either for corn storage or for marketing purposes. Under normal growing conditions, yield estimates can provide reasonable production information. However, heat and drought conditions over much of the Midwest have impacted performance. The timing of weather conditions at various stages of growth has resulted in highly variable crop appearance and likely major differences in yield. Obtaining a reasonable yield estimate under drought conditions may require increased sampling and more samples throughout a field.

Using estimates on a whole field basis

When conducting whole field yield estimates, the Yield Component Method is commonly used and is calculated by multiplying average harvestable ears per acre (HEA), times average k/ear (AKE), divided by number of kernels per bushel (KPB). Or simply HEA X AKE / KPB = estimated yield in bu/ac. This yield estimate is determined by actual field samples to collect data on average harvestable ears per acre and number of kernels per ear. The third component is the number of kernels per bushel, and typically 90,000 k/bu is used as an average.

Wyffels research has developed a factor for k/bu for each hybrid (listed on the chart below). This factor has been updated with 2011 data and newly released hybrids listed. Not all hybrids have yield factor data available. Products from the same genetic family may use the same yield factor. This factor can vary based on the growing conditions each year. Hot and dry conditions can cause smaller kernel size and increase the number of kernels per bushel.

However, when seed set is scattered on the ear, the kernel size may increase thereby decreasing the number of kernels per bushel. In fields that were negatively impacted by the heat and drought or have reduced stands, more samples will be needed to ensure reasonable representation of the entire field. This yield estimate is best done at least 2 weeks after pollination at the R3 (milk stage) and beyond.

Taking Samples

Use the following protocol to ensure more accurate estimates.

1. Measure 1/1000th of an acre in one row (17'5" for 30-inch rows) and count the number of harvestable ears present.
2. Count every 5th ear for number of kernels around and number of kernels long to determine average number of k/ear. For example, 16 kernels around and 34 kernels long = 544 k/ear.
3. Count at least 3-5 ears in each harvestable ear count, and do several counts across the field to fairly represent all the conditions present. At least 10 locations or more may be needed to be sampled in a field when variable conditions exist.
4. Average the harvestable ear count and the number of k/ear and multiply the number of harvestable ears times the number of k/ear to obtain number of kernels per 1/1000th acre.
5. Divide the result by 90.0 (representing 90,000 k/bu) to calculate the estimated yield. 90,000 is an average that many growers use. For specific hybrids, use the factor listed below in the calculation.

This yield calculation uses actual harvestable ear counts, so low stand counts are accounted for in the estimation.

If the field also has evidence of root lodging, some additional calculation may be necessary to account for additional yield loss. Root lodging can reduce yields, but the stage of growth has an impact on the amount of actual loss. Root lodging at early vegetative growth stages (before V10-V12) may cause yield reductions of 0-5%. When root lodging occurs at R1 and beyond, yield reductions range from 10-30%. The actual yield lost by root lodging is impacted by weather conditions and other agronomic factors that occur after damage is present.

Stalk lodging can also cause yield loss and some estimates indicate about 1/3 of stalk lodged plants may be lost at harvest. Some of these losses may occur after a yield estimate is made. You may want to account for this possibility in your estimate.

Summary

Estimating yield under drought conditions can be difficult and variable. Increase the number of ear samples obtained and thoroughly cover the field to obtain your best estimate.

YIELD FACTOR

Hybrid	Factor	Hybrid	Factor
W1687	74.0*	W6526	86.9
W1831	80.3	W6871	75.0
W1917	75.1	W6917	64.9*
W1941	85.1	W6927	82.6
W2681	87.0	W7071	70.9
W2757	82.1	W7147	73.5
W3127	77.6	W7213	84.2
W4179	83.2	W7477	76.4
W4267	75.3	W7800	71.3
W5077	81.8	W7997	73.8
W5281	90.1	W8437	86.6
W6267	81.9	W8681	80.3
W6440	86.8		

* = limited data, subject to change

WYFFELS HYBRIDS