

## Ear Drop Issues in Corn

Dry weather and other stress factors can lead to premature ear drop. Scouting fields and planning for a timely harvest can help minimize preharvest losses.

### Causes of Ear Drop

Weather stress can be a key factor of ear drop issues. Generally, the problem is most severe when extreme high temperatures occur at R1 (silking). These conditions can result in a weak shank attachment. Plants can recover from the initial stress at early R1 and produce normal grain on the upper part of the ear. Physically, this produces more weight on the ear tip than the weakened shank can support. The result can be ear drop shortly before normal harvest would occur.

Drought stress and premature plant death may affect shank strength and can result in brittle tissue where the ear attaches to the stalk<sup>1</sup>. Ear shanks can be cannibalized for carbohydrates by the ear just like the main stalk. This can lead to shank deterioration and ear drop. Fungal infections, which develop more quickly at higher temperatures, also lead to shank deterioration. Insects, such as European corn borer, can tunnel into the shank, and weaken it (Figure 1).

Ear drop problems can vary by planting date, soil type, hybrid, and other agronomic factors. Therefore, problems with specific hybrids will not occur every year and are affected by factors other than genetics alone.



**Figure 1.** Insects can tunnel into and through the shank, increasing the risk for ear drop.

### Minimizing Losses

Growers should scout fields and look for weak shank attachment problems. What can be seen from the side of the road may not be indicative of the situation throughout the field.

Problem fields should be harvested immediately. Growers should run the corn head as high as possible while adjusting ground and header

**Table 1.** Length of row (feet) equivalent to 1/100 acre for measuring ear losses.

Row Width (inches)	Number of Rows Harvested			
	4	6	8	12
20	65	44	33	22
30	44	29	22	15
38	34	23	17	12

Source: M. Hanna. 2008. Profitable corn harvesting. PM 574. Iowa State University Extension.

speed for maximum ear retention. Operating the corn head higher than normal and leaving some lodged plants often results in more yield than trying to get every plant into the header. Running the header high can help minimize the loss of ears flying out of the header as corn is harvested. If loss is significant, plans should be made to reduce the amount of potential volunteer corn the following season. Planting corn with traits such as Genuity® SmartStax® technology can help reduce the risk of ear drop by providing protection from insects, like the European corn borer, that can tunnel into and weaken the ear shank.

### Measuring Preharvest Loss

When combining, the first step to estimate preharvest loss is to measure the required row length behind the combine. The length of corn rows equivalent to 1/100 acre will vary with row width and number of rows covered by the corn head (Table 1). Collect the whole and broken ears in these rows. Each full-size ear (about 3/4 lb) represents approximately 1 bushel per acre loss and three 1/2-lb ears represents 2 bushels per acre<sup>2</sup>.

Sources: <sup>1</sup>Drought-stressed corn needs timely harvest to avoid stalk lodging, ear drop. 2011. Corn and Soybean Digest. [Online] <http://cornandsoybeandigest.com>. (Verified 9/20/11); <sup>2</sup>C. Shay et al. 1993. Measuring and reducing corn harvest losses. G1290. Dept of Agriculture Engineering, University of Missouri Extension.

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