

Causes and Management of Corn Ear Drop

Corn ear drop can make harvest difficult and cost money in the form of lost time and yield. Drought stress, heat, insects, and premature frost followed by wind events and other stress factors can cause ear drop problems.¹ Variable field conditions can cause substantial differences in the occurrence of ear drop, even when the corn product, planting date, and population are the same.

Premature Ear Drop Causes.

Ear drop problems can vary by planting date, soil type, corn product, and other agronomic factors. Therefore, problems with specific corn products may not occur every year and are affected by factors other than genetics. Plants may recover from initial stress at early silking (R1 growth stage) and produce normal grain on the upper part of the ear. However, this can produce more weight on the ear tip which may weaken what the shank can be support. As a result, ear drop may occur before harvest (Figure 1). Shank strength can be reduced due to drought stress, premature plant death, and carbohydrate cannibalization which helps fill kernels. Stress caused by drought or fungal diseases that can prematurely shut the plant down leading to shank deterioration and eventual ear drop. Fungal infections, which develop more quickly at higher temperatures, can accelerate shank deterioration. A premature frost before kernel black layer can cause the ear shank to pinch instead of forming a uniform ear shank arch at maturity. Stalk boring insects like European corn borers can also contribute to ear drop if they tunnel into the ear shank and weaken it.



Figure 1. Corn field with severe ear drop.

Regardless of the cause, the ear is on the ground and the combine will not be able harvest the ear and the ultimate result is lost yield. Dropped ears left in the field can have the potential to cause issues with volunteer corn plants the following season.

Measuring Preharvest Ear Drop Loss.

A quick evaluation of a field can help estimate preharvest losses due to ear drop. Begin by measuring the required distance behind the combine. The length of corn rows equivalent to 1/100 acre will vary by row width and number of rows covered by the corn head (Table 1). Each full-size ear (about 3/4 lb each) represents about one bu/acre loss and finding three small ears (about 1/2 lb each) represents about two bu/acre loss.²

Table 1.

Row length in feet and inches to equal 1/100th of an acre for various row widths and rows to be harvested.

Row Width (inches)	Number of Rows Harvested			
	4	6	8	12
20	65' 4"	43' 7"	32' 8"	21' 10"
30	43' 7"	29' 0"	21' 10"	14' 6"
36	36' 4"	24' 4"	18' 2"	12' 1"

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

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This table is designed to convert dropped ears found in 1/100 of an acre to bushels per acre (kg/ha) lost. For example, if 15 three quarter pound ears were found in the 1/100 acre that was measured off in the field, that would represent 15 bushels per acre loss yield due to ear drop.

Minimizing Ear Drop Losses.

Growers should scout fields thoroughly before harvest to observe for percent ear drop and potential ear shank weakness. Problem fields should be harvested as soon as possible, especially after a dry growing season with a well-adjusted combine. When excessive ear drop is observed, growers should run the corn head as high as possible while adjusting ground and header speed for maximum ear retention. Operating the corn header higher than normal may reduce the loss of ears flying out of the header during harvest.²

If ear drop is considerable, plans should be made to help reduce the potential volunteer corn emergence. Crop rotation expands the herbicide options for controlling volunteer corn. Also, planting corn with trait protection against certain above-ground insects (especially European corn borer), can help reduce the risk of ear drop by providing protection against shank-boring insects.³

Grazing fields with ear drop issues can help reduce volunteer corn in the next crop.

Options to reduce the potential amount of volunteer corn are limited. Grazing cattle on corn residue after an ear drop issue may be an option but precautions need to be taken to reduce the risk of overconsumption of grain leading to acidosis in cattle. Management options to reduce the risk of acidosis in cattle include controlling the type of cow allowed to graze, providing supplements, reducing the area of the field available for grazing (fencing off paddocks in the effected field), and providing hay to the cattle prior to grazing.⁴ For additional information concerning grazing fields with substantial ear drop issues, see [Grazing Ear Dropped Corn](#).

Sources

¹ Ciampitti, I., Jardine, D., Shoup, D. and Duncan, S. 2017. Considerations for harvesting drought-stressed corn for grain. Department of Agronomy, Kansas State University https://eupdate.agronomy.ksu.edu/article_new/considerations-when-harvesting-drought-stressed-corn-for-grain-649-3.

² Hanna, M. 2008. Profitable corn harvesting. PM574 (Revised). Agriculture and Environment Extension Publications. 203. Iowa State University. https://lib.dr.iastate.edu/extension_ag_pubs/203.

³ Thomison, P. 2012. Stalk lodging and ear drop impact corn yields. C.O.R.N. Newsletter 2012-37. Agronomic Crops Network. The Ohio State University. <https://agcrops.osu.edu/newsletters/2012/37#1>.

⁴ Stewart, J. 2012. Expert: Exercise proper management when grazing corn fodder. Purdue University. <https://www.purdue.edu/newsroom/releases/2012/Q4/expert-exercise-proper-management-when-grazing-corn-fodder.html>

Web sources verified 08/30/2021.

Legal Statements

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

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