
COMBINE SETTINGS FOR A DROUGHT-STRICKEN CORN CROP

Considerations for Drought-Stressed Grain

Drought-stressed corn is often shorter with smaller kernels leading some to question if grain harvest is an option. If possible, the silage value of a corn crop should be compared to grain market prices. Harvest for grain is often the case when there is not a local silage market and harvest is too late and dry for proper ensiling. Take care to preserve fragile kernels and keep loads clean while saving as much harvestable grain as possible.

Feeding Adequate Material Flow

Adjusting combines can help keep a steady flow of smaller corn stalks and ears coming into the combine. Try these adjustments to help create a consistent, greater load entering the combine:

- Larger cornhead to gather more corn rows. Row spacing on cornhead should match the planted row spacing. A cornhead spacing difference of two inches from planted row spacing could lead to a bushel per acre harvest loss.¹
- Gathering chain lugs should extend at least ¼ inch beyond deck plates, and chain speed controlled to guide stalks into rolls without uprooting plants.^{1,2,3,4} Very dry or lodged crops may benefit from using timed opposing chain lugs to aggressively gather plant material and butt-shelled kernels into cornheads.⁴
- Snapping roll openings narrower to accommodate thinner stalks.⁵
- Average conditions require deck plates to have spacing of 1 ¼ inches in the front and 1 3/8 inches in the back.¹ Small ears would likely wedge and cause shelling losses at this standard. Adjust these narrower while keeping plate spacing 1/8 to 3/16 inch tighter at the front than the rear.^{2,3}
- Lowered cornhead would typically be recommended for drought-stressed corn as ear placement may be lower on the plant depending on drought pattern.⁵ However, if drought-weakened shanks cause dropped ears, operating with a higher cornhead would be recommended to keep ears from flying out from the gathering points. Cornhead can be angled with snouts closer to the ground to accommodate lodged plants.
- Increase ground speed and operate at full throttle.^{2,3} Combines perform best operating at maximum capacity. Greater ground speeds are needed to keep machinery at capacity when operating over a drought stressed crop.

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Threshing and Cleaning

Prevent grain from being lost out of the back of the machine. To account for spongy cobs and small kernels, do some preharvest research. Hand shell an average size cob from the field to measure cob diameter and kernel size. Use this information to make adjustments to retain grain through threshing and chaff separating.

- Use smaller sieve openings for smaller kernels.
- Slow fan speed. Fan speeds too low could increase foreign material remaining in grain loads. Aim for chaffer and sieve adjustments to minimize grain lost in tailings.
- Unthreshed grain loss should be corrected by adjusting concave clearance first. Then try increasing cylinder or rotor speed as necessary.³ Cobs should be broken in half or pie-shaped segments. Strive for more ear-on-ear shelling and less kernel-to-metal contact.

Consider allowing 0.2 percent of kernels to remain unthreshed.² An occasional kernel remaining on cobs might be the compromise between unshelled grain and excessive kernel damage.

Harvest Timing

Stalk rots and dropped ears can be common as drought leads to weakened stalks and ear shanks, respectively. Prioritize harvest order with fields showing symptoms of stalk and ear rots as well as dropped ears. Ear rots can cause lighter kernels with toxins, which can influence storage and testing.

Safety and Fire Hazard

Uneven flow of corn stalks and leaves can lead to grain damage or combine plugs. Keep safety in mind when plugs occur. Disengage power and shut off engine if leaving the operator's station to manage plugs or make adjustments. Keep two fire extinguishers, a small one for inside the cab and a 20-pound unit at ground level.¹ Dry conditions at harvest lead to increased dust, dirt, and debris settling on hot surfaces of machinery and increasing fire risk.



Figure 1. A variety of cobs could be gathered by combines in drought-stressed fields. Adjustments should favor keeping combines operating at a full load to support ear on ear shelling.

Sources:

- ¹ Hanna, M. 2008. Profitable corn harvesting. Iowa State University. PM574.
- ² Sassenrath, G., Pedreira, B., Haag, L. 2022. Adjusting combine settings for corn harvest efficiency. Kansas State University Extension.
- ³ 2018. Combine adjustments. University of Wisconsin, Madison. <http://corn.agronomy.wisc.edu/Management/L036.aspx>
- ⁴ Humburg, D. 2019. Combine adjustments to reduce harvest losses. Ch. 37. South Dakota State University.
- ⁵ Keller, J. 2012. Gleaner. DakotaFarmer. <https://www.farmprogress.com/corn/3-tips-harvesting-drought-stricken-corn/>.

Legal Statements

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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