

Have you assessed your corn stand for uniformity?

Corn is up and producers should evaluate their stands for uniformity of emergence and plant spacing. Uniform emergence and spacing is the first step in maximizing yield potential. The ultimate goal is to have every seed emerge on the same day with no skips or doubles.

Uniformity of Emergence

Corn may emerge unevenly due to non-uniform moisture in the seed zone, planting depth, crusting, or crop residue.



What to look for in the field

Are all corn plants at the same leaf stage, or are some 2 or more leaf stages behind the others? If some plants are lagging behind it could indicate a problem with emergence.

How will non-uniform emergence affect yield?

Competition from larger, early emerging plants will decrease the yield of smaller, later emerging plants. Research conducted in Ontario (Liu et al. 2004) found a 4% yield reduction when 1/6 of the plants had a 2 leaf stage delay, and a 8% yield reduction when 1/6 of the plants had a 4 leaf stage delay. A survey of corn fields in North Dakota found that averaged over all field locations, the most variable row yielded 9 bu/acre less than the least variable row. Emergence date, not skips or doubles, contributed most to variability (Ransom 2015).

Uniformity of Plant Spacing

Planting at high speeds with a poorly adjusted planter may cause uneven plant spacing. Yield losses may occur from non-uniform plant spacing, although there have been mixed results in research studies.

A study conducted on 96 farms across 10 states and 2 provinces found that a standard deviation of 2" is the best spacing uniformity a farmer can expect to obtain under normal conditions. They concluded that the expected yield loss due to non-uniform plant spacing is approximately 4 bu/inch of standard deviation improvement (Doerge and Hall 2000). More information on calculating yield loss from non-uniform plant spacing can be found in a previous Crop Chatter post: <http://cropchatter.com/tag/stand-establishment/>

Planting Considerations

Prior to planting corn, ensure that the planter is level, the opening discs are aligned, and the seed packing wheels are properly adjusted. Check the field to ensure that residue is evenly spread and that the field is not too rough. When starting a field check seed depth placement to ensure that placement is even and that the depth is set correctly. During planting, adjust speed for the field conditions. If conditions are poor, planting at a higher speed can cause the planter to bounce and may result in seed depth misplacement.

References

Doerge, T. and T. Hall. 2000. The value of planter calibration using the MeterMax System. Crop Insights 10(23):1-4. Pioneer Hi-Bred International.

Liu, W., M. Tollenaar, G. Stewart, and W. Deen. 2004. Response of corn grain yield to spatial and temporal variability in emergence. Crop Science. 44:847-854.

Ransom, J. 2015. Evaluating emergence uniformity in corn. Crop and Pest Report. North Dakota State University. Available at: <https://www.ag.ndsu.edu/cpr/plant-science/evaluating-emergence-uniformity-in-corn-06-04-15>