

### Corn Seed Size

- Corn seed is sized as small, medium, and large. Additionally, the shapes of corn seeds are referred to as rounds and flats. The size and shape are determined by where the seed is produced on the ear.
- The size and shape of a corn seed does not affect its genetic yield potential. Corn yield potential is determined by the product's genetics and can be dramatically affected by management practices and environmental conditions during the growing season.

#### **Is there a difference in germination across corn seed sizes?<sup>1,2,3</sup>**

A study was conducted by the University of Wisconsin using small rounds, small flats, large rounds, and large flats of two hybrids with two tillage systems (no-till and conventional tillage) and two planting dates (early and late). Under early planting with soil crusting and no-till conditions, the emergence of small rounds ranged from 5 to 15% lower than that of small flats or large rounds. While the no-till system resulted in slower emergence that delayed early growth and silking, which resulted in reduced grain yield, seed size was irrelevant and did not have an impact on the final yield. In another study conducted by the University of Guelph, results showed that under ideal conditions seed size did not influence emergence; however, plants from small seed tended to have a shorter final height.

#### **Does seed size influence seedling vigor?<sup>3,4</sup>**

Generally, vigor of seedlings from large flat kernels (from the middle of the ear) exceeds the vigor of seedlings from small (from ear tip) and large (from ear base) round kernels. Seedlings from larger seeds have higher weights and are consequently larger. These differences in vigor and size are particularly important if planting is occurring at deeper than normal planting depths. While smaller seeds may have less vigorous plants in the vegetative stages, by the beginning of the reproductive stages the differences are negligible.

#### **What are the advantages and disadvantages of different corn seed sizes?<sup>5</sup>**

While larger seeds may have the advantage over small seeds when planted early in colder soil temperatures, smaller seeds can germinate faster in dry soils because they need less water to initiate germination.

#### **Does seed size impact final yield potential?<sup>5,6</sup>**

The research suggests that seed size does *not* impact final yield when plant populations are the same. Therefore, the most important aspect of obtaining the highest yield potential of a given corn product is achieving the optimal plant population for that product, not selecting the seed size that is planted.

# Corn Seed Size

## Sources:

- <sup>1</sup>Graven, L.M. and Carter, P.R. 1990. Seed size/shape and tillage system effect on corn growth and grain yield. Journal of Production, Agriculture, 3:445-452.
- <sup>2</sup>Hunter, R.B. and Kannenberg, L.W. 1972. Effects of seed size on emergence, grain yield, and plant height in corn. Canadian Journal of Plant Science, 52:252-256. <https://cdnsiencepub.com/doi/pdf/10.4141/cjps72-040>
- <sup>3</sup>El-Abady, M.I. 2015. Influence of maize seed size/shape, planted at different depths and temperatures on seed emergence and seedling vigor. Research Journal of Seed Science. 8:1-11. <http://docsdrive.com/pdfs/academicjournals/rjss/2015/1-11.pdf>
- <sup>4</sup>Peterson, J.M., Perdomo, J.A., and Burris, J.S. 1995. Influence of kernel position, mechanical damage and controlled deterioration on estimates of hybrid maize seed quality. Seed Science and Technology. 23:647-657.
- <sup>5</sup>Elmore, R. and Abendroth, L. 2005. Do corn kernel size and shape really matter? University of Nebraska Extension. Crop Watch, 2005-5:47. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1290&context=cropwatch>
- <sup>6</sup>Chaudhry, A.U. and Ullah, M.I. 2001. Influence of seed size on yield, yield components and quality of three maize genotypes. OnLine Journal of Biological Sciences. 1: 150-151. <https://scialert.net/fulltext/fulltextpdf.php?pdf=ansinet/jbs/2001/150-151.pdf>

## 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 environmental conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on their growing environment.

The recommendations in this material are based upon trial observations and feedback received from a limited number of growers and growing environments. These recommendations should be considered as one reference point and should not be substituted for the professional opinion of agronomists, entomologists or other relevant experts evaluating specific conditions.

Bayer and Bayer Cross are registered trademarks of Bayer Group. All other trademarks are the property of their respective owners. ©2023 Bayer Group. All rights reserved. 1214\_110452.