Science Societies

Yield and Milling Quality Trade-Offs in Argentinian Flint Maize

April 4, 2024

Commercial food-grade hard endosperm maize ears (left) and regular soft maize ones (right) ha

Commercial food-grade hard endosperm maize ears (left) and regular soft maize ones (right) harvested in Zavalla, Santa Fe, Argentina. Photo by Lucas Abdala.

Argentina is one of the five largest maize (*Zea mays L.*) producers globally. The country is also an exporter of non-genetically modified organism food-grade hard endosperm maize, known as *Plata* or flint maize. Food-grade maize supply chains currently face the challenge of increasing yield while maintaining quality standards for dry milling. Even though these trade-offs are common in maize, the magnitude of these correlations can differ depending on the specific trait.

Researchers tested maize hybrids, including food-grade hybrids, to quantify the relationship between yield and grain traits known to affect dry milling with a focus on describing the genetic control of the traits that show no negative yield effects. Commercial maize hybrids showed that grain hardness was negatively correlated to

yield. Screen retention, a key trait for the milling industry that is based on the proportion of the grain's retention when sieving, showed no correlation with yield. This trait also showed a strong genetic control that can be exploited without yield penalties.

The researchers found that the trade‐off between yield and grain quality was trait dependent. These findings may help predict expected yield gaps between regular and food‐grade maize when selecting for high dry‐milling quality.

Adapted from

Abdala, L. J., Alvarez Prado, S., Donadio, P., & Borrás, L. (2024). Maize yield and dry milling grain quality trade‐offs in Argentinean flint germplasm. *Crop Science*, *64*, 149–163. https://doi.org/10.1002/csc2.21142
