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Maize bred for drought closes yield gap

July 26, 2022



Carla Gho (left) of Corteva Agriscience and Mark Cooper of the Queensland Alliance for Agriculture and Food Innovation during in AQUAmax(R) field trials in Viluco, Chile. Photo by Charlie Messina.

Reduced yields due to limited water is ubiquitous and expected to increase with climate change. Historically, maize yield gains under well-watered conditions have outpaced gains under drought conditions. This observation, and the analyses of yields at a regional scale, led to the notion that maize is becoming increasingly susceptible to water deficit.

In a recent article in *Crop Science*, researchers examined this question using multi-year studies from two consecutive cohorts of maize hybrids bred for improved drought tolerance. These hybrids, released by the AQUAmax program, were evaluated under well-watered, moderate, and severe stress conditions under various plant densities and compared with a control.

The team found that both yield and yield under stress were better for the hybrid maize and that the gap between the two yield types was also narrower for the hybrid maize. Improved genetics underpins this performance. The authors report that these findings contrast with results from other recent studies in which the hybrid contributions were not appropriately accounted for. Reliable evaluations of crop performance in water-limited environments should be based on combinations of comprehensive experimental and on-farm data that correctly identify the genetic and agronomic management contributions to yield, yield stability, and yield gap reductions.

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Messina, C., Ciampitti, I.A., Berning, D., Bubeck, D., Hammer, G., & Cooper, M. (2022). Sustained improvement in tolerance to water deficit accompanies maize yield increase in temperate environments. *Crop Science.* **https://doi.org/10.1002/csc2.20781** (in press)

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