## STAND COUNTS AND VARIETY PERFORMANCE IN OKLAHOMA LARGE PLOT TRIALS

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## **Abstract**

Seedling vigor is one of the most important agronomic characteristics of cotton varieties, particularly in the southwest where moisture is often limiting and a there is a narrow window for optimal stand establishment. However, it has been reported that yield is not impacted across a wide range of plant populations (Adams et al., 2019; Bednarz et al., 2000), which brings into question how to value of stand establishment among other agronomic properties. The objective of this study was to quantify stand establishment across multiple varieties and determine if stand establishment was advantageous in regard to lint yield.

Locations consisted of large plot on-farm Replicated Agronomic Cotton Evaluation (RACE) Trials in southwestern Oklahoma. Four locations were evaluated, including dryland trials in Greer and Tillman counties and irrigated trials in Jackson and Tillman counties. At each location nine or ten varieties were planted in three randomized replications. After emergence stands counts were taking in each plot by counting all emerged plants within 20 linear feet (ten feet of two adjacent rows). These stand counts were converted into plants per acre and then divided by the seeding rate to determine percent establishment. The trials were harvested with the producer's equipment and module weights were collected through the use of a Western Forage Systems portable platform scale.

There were no instances of differences in stand establishment across varieties within any of the four locations. However, there were large numerical differences, and the lack of statistical separation is likely due to the high degree of variability. Differences in lint yield resulting from variety were present and each location and, not surprisingly, did not follow the trends observed in stand establishment. It is likely that the method utilized for quantifying stand establishment in this study does not take into account a large enough area of the plot to accurately reflect plant population or trends among varieties. For future research, a utilizing aerial imagery or another technique that can sample a larger area would be a more appropriate method for determining the relationship between stand establishment and lint yield within variety evaluations.

## **References**

Adams, C., S. Thapa, and E. Kimura. 2019. Determination of a plant population density threshold for optimizing cotton lint yield: A synthesis. Field Crops Research 230: 11-16.

Bednarz, C.W., D.C. Bridges, and S.M. Brown. 2000. Analysis of cotton yield stability across population densities. Agronomy Journal 92: 128-135.