## REPLACING A VARIETY LEGEND: EVALUATING NEW VARIETIES FOR PERFORMANCE Guy D. Collins University of Georgia Tifton, GA Jared R. Whitaker University of Georgia Statesboro, GA

## Abstract

Cotton variety selection has become increasingly more important across the Southeast U.S. due to the loss of DP 555 BR<sup>®</sup> in 2010. Prior to 2010, DP 555 BR<sup>®</sup> was planted to approximately 85 % of the cotton acreage in Georgia, due to its consistent and widespread performance across a broad range of environments. During the years when DP 555 BR<sup>®</sup> dominated the acreage in this region, variety selection was largely ignored or received little attention, as DP 555 BR<sup>®</sup> frequently outperformed many or most other varieties.

Until 2010, the Official Variety Testing Program (OVT) was the predominant source of variety performance information for cotton in Georgia. This program provided(es) growers with valuable performance information for a large number of varieties, including experimental varieties for potential release in future seasons. The primary advantages of this program include: significantly reduced natural field variability for a more accurate assessment of variety performance, the inclusion of a larger number of varieties that can be tested in a single replicated experiment, and the grouping and subsequent management of varieties that are similar in terms of maturity (separate early and late maturity trials are typically conducted.

Beginning in 2010, the UGA Uniform Cotton Variety Performance Evaluation Program was established to supplement OVT for the purposes of ensuring replication of large-plot on-farm cotton variety trials, as well as consistency among variety entries across these trials. The primary advantages of this program include: replicated evaluation of a select list of varieties (chosen by industry and UGA agronomists) consistently across a very broad range of environments, evaluation of varieties under grower management, improved accuracy of lint percentage when ginned and thus realistic yield data, and the ability to more accurately assess variety stability characteristics.

In addition to the establishment of this program, variety performance and stability can now be evaluated in a slightly different manner than in prior years. Due to the broad range of environments included in the program, growers can now observe how the performance of any particular variety is influenced by a particular environment. When DP 555 BR<sup>®</sup> left the marketplace, it was unlikely that another single variety would perform consistently well across all environments tested. Within this program, it is clear that some varieties perform better than others in dryland lower-yield environments, whereas other varieties may be better performers in higher yield environments, allowing growers to determine how certain varieties should be positioned. Additionally, stability (frequency of superior performance) of varieties can also be quantified with more accuracy. Varieties that perform consistently well in some or most environments, indicate a higher level of stability associated with that variety. Varieties that consistently perform well in this program also suggest that they are not only stable across many yield environments, but are also stable across growers' management strategies.