DETERMINATION OF OPTIMUM DATA SETS TO EMPLOY FOR CHOOSING COTTON CULTIVARS

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Abstract

The objective of this research is to evaluate the predictive consistency and location heterogeneity of cotton cultivar trials conducted in Arkansas during 2005-2008. Predictive consistency indicates the ability of realized yields in one year to determine yields in a subsequent year. Location heterogeneity evaluates the importance of yield differences among variety trial sites in determining optimal varieties for specified geographical regions in Arkansas. Lint yield and fiber data were extracted for cultivars evaluated at irrigated test sites of the 2003 through 2008 Arkansas Cotton Variety Tests**.** Results indicate that test yields in previous years are statistically significant predictors of yield rankings. Test results in the previous year are more reliable as yield predictors than test results two years previous to the base year. Since seed available for a test year are derived from seed stock available the previous year, results may indicate improved seed consistency in successive years. Investigation of yields at four test locations indicates that test sites have unique characteristics that determine yield rankings. Yields at specific test locations are not good predictors of yields at other test locations. Thus, it is important that variety trials are conducted in locations representative of all cotton production areas of Arkansas. Producers should make variety selections based on test results at locations with characteristics most similar to their farms. In contrast, analysis of Q-scores suggests that fiber quality does not vary due to geographical location.