

## VARIETY BLENDS FOR IMPROVED FIBER QUALITY IN TENNESSEE

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### Abstract

Tennessee cotton producers have been heavily discounted in the last several years for high micronaire and short staple cotton. Because of the short growing season, producers in Tennessee rely on early-maturing varieties to combat the potential detrimental effects of an early fall. Although the environment plays a major role in micronaire and fiber length development, some early-maturing, high-yielding varieties have shown the potential for discounts from high micronaire and/or short staple. Conversely, most varieties that exhibit good fiber quality tend to be later maturing and lower yielding. The principle for blending varieties suggests that a high-yielding, early-maturing variety could be blended with another variety that provides better fiber quality. Therefore, overall fiber quality could be improved while maintaining high yields and earliness. Previous research in North Carolina and Arkansas found that variety blending has some merit. The adoption of variety blending by several Tennessee producers prompted the initiation of this research. The objective of this study was to determine if overall fiber quality could be improved by blending early-maturing, high-yielding varieties with varieties with better fiber quality. Three high-yielding, stacked-gene varieties, PM 1218 BR, SG 215 BR and ST 4892 BR were blended with the varieties DPL 451 BR, FM 989 BR and DPL 555 BR in an experiment conducted at the West Tennessee Experiment Station in 2002. The varieties were blended in an alternating row configuration (AR) and in a 50:50 blended seed mixture (50:50). Each variety was also planted alone for comparison. All treatments were planted no-till, and with the exception of blending, managed using Tennessee extension recommendations. All plots were defoliated without a boll opener and were spindle picked twice to provide a measure of earliness. Seedcotton was ginned at the West Tennessee Experiment Station on 20 saw gin equipped with a stick machine, two incline cleaners and two lint cleaners. A sub-sample of lint from each plot was analyzed by HVI procedures at the USDA-AMS Cotton Classing Office in Memphis, TN. Data were analyzed using Proc GLM (SAS v8) and mean separation procedures were conducted using LSMEANS/PDIFF ( $p=0.05$ ). The effect of blending type (AR or 50:50) on yield or fiber quality was not significant; therefore data from each variety blend were combined. Lint yields of most variety blends were similar to or better than the "early-maturing, high yielding" pure variety. Percent first harvest of PM 1218 BR decreased when blended with all other varieties. Percent first harvest was similar for SG 215 BR and ST 4892 BR with and without their blends. Addition of DPL 555 BR in the variety blend increased gin turnout in all blends while addition of DPL 451 BR decreased turnout. With the exception of SG 215 BR blends, blended varieties tended to have slightly, though not significantly, lower micronaire than the pure variety. All blends of PM 1218 BR had significantly greater fiber length than PM 1218 BR planted alone. All other variety blends had statistically similar lengths compared to the pure variety. Overall fiber strength was increased when PM 1218 BR was blended with FM 989 BR and DPL 555 compared to PM 1218 BR alone. Overall, fiber strength was also increased when FM 989 BR was blended with SG 215 BR and ST 4892 BR. Uniformity of blends was not statistically different from any of the pure varieties. Data from one year of research suggest that blending varieties may offer a temporary solution to fiber quality problems but caveats such as maturity differences, technical service problems and ginner reluctance must be considered.