## USING AFIS TO ASSESS QUALITY OF INDIVIDUAL VS BLENDED BALES Gayle Davidonis USDA, ARS, SRRC New Orleans, LA

## Abstract

Cotton fiber property variability at the bale level is a composite of fiber properties contributed by individual bales. Bale average fiber properties usually do not describe the ranges of fiber properties. The objective of this study was to assess fiber property variability at the individual bale level and relate it to variability in blended bales. Cotton bales were obtained from several producers in Texas, the Mississippi Delta, and Georgia. Cultivars grown in Texas were FM 819, FM 832, FM 958, FM 966, FM 989, PM 2200, PM 2326 and PM 2800 and were obtained from one producer. Mississippi Delta cultivars were DP 491, Deltapearl, FM832, FM 966, PSC 355 and SG 747 and were obtained from several producers. Georgia cultivars were DP 491, Delta- pearl, FM 832, FM 966, PSC 355 and SG 747 and were obtained from one producer. Seven to ten bales of each cultivar were used for individual bale samples. Bales from each cultivar grown in each location were blended at the USDA facility in Clemson, SC. Three fiber samples were taken from individual and blended bales. Fiber was analyzed using the Advanced Fiber Information System (AFIS v 2.0). The mean fiber properties of individual bales were similar to the mean fiber properties in blended bales. Fiber property comparisons were done across genotypes when bales were obtained from a single producer (similar growing, harvesting and ginning conditions). In Texas, FM 819, FM 832 and FM 958 had higher mean length coefficients of variation than PM 2326, PM 2200 and PM 2800. In Georgia, DP 491 and Delta- pearl had higher mean length coefficients of variation than FM 832, FM 966, PSC 355 and SG 747. In Texas, FM 958 and FM 966 had higher theta coefficients of variation than PM 2200 and PM 2326. In Georgia, DP 491, Deltapearl, FM 832 and FM 966 had higher theta coefficients of variation than PSC 355 and SG 747. Although Texas FM cultivars had longer fiber than PM cultivars, FM 819 and FM 958 had higher short fiber percentages than PM cultivars. Georgia FM cultivars had the lower short fiber percentages than DP 491, Deltapearl, PSC 355 and SG 747. In Texas PM cultivars had higher micronafis/micronaire values than FM cultivars. In Georgia FM 966 and PSC 355 had higher micronafis/micronaire value than DP 491, Deltapearl and FM 832. In Texas, FM cultivars had perimeters ranging from 52.1 to 53.1 µm while PM cultivars had perimeters ranging from 53.9 to 56.8 µm. In Georgia, FM 832 and FM 966 had perimeters of 50.6 and 51.9 µm, respectively. Deltapearl and DP 491 had perimeters of 53.6 and 53.1 µm, respectively while PSC 355 and SG 747 had perimeters of 56.4 and 57.7 µm, respectively. Mean fiber property values may be similar across genotypes but the extent of variation within bales and within blended bales is masked without some indication of property variability. Spinning mill operations rely heavily on well defined property values. An inaccurate estimation of fiber property variability could result in blended cotton that fails to meet processing specifications.