

# **VARIATION IN MARGINAL BRACT TRICHOMES AMONG COTTON CULTIVARS**

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## **Abstract**

Smooth leaf cultivars tend to have less trash in ginned cotton than do hairy leaf cultivars. However, a large portion of trash is ginned cotton is derived from bract tissue. Marginal bract trichomes occur on both smooth and hairy leaf cultivars. Fewer trichomes on bracts should be helpful in reducing trash. The objectives of this study were to determine how bract trichomes vary over time and plant positions, to determine if they can be visually rated, and to determine variation in bract trichomes among adapted cultivars. For the first objective, bolls from the top, middle or bottom of the canopy from three contrasting (different leaf pubescence) cultivars were tagged. Number of marginal trichomes was counted from a single bract sampled from each tagged boll on three late-season dates. Significant variation was found among cultivars, plant positions, and sample dates, but no interactions were significant. Bract trichomes declined as cultivars had less leaf pubescence, as bolls matured (lower in canopy) and with time (later sampling). The absence of significant interactions suggests that bract trichomes of cultivars can be characterized by sampling on one common date and from one common plant canopy position. For the second objective, random plants from segregating populations were chosen in 2000 and 2001. Pubescence on a leaf, stem and bract of the plants were rated in the field, then counted using a stereo-microscope in the laboratory. Pubescence on leaves and stems were effectively rated each year. The effectiveness of visual rating of bracts was improved in 2001 over 2000. Trichomes on leaves, stems and bracts were significantly correlated each year, but the relatively low magnitude of the coefficients suggest some level of independence of the traits. For the third objective, leaf pubescence was rated and bract trichomes counted for certain cultivars at multiple locations of the Arkansas Cotton Variety Tests in 1999, 2000, and 2001. A significant cultivar by location interaction for bract trichomes was found in 1999 but not in 2000 or 2001. When a highly stressed, non-irrigated test site was removed from the 1999 analysis, the interaction became non-significant. This suggests that bract trichomes of cultivars can be categorized by sampling at one location, but highly stressed conditions should be avoided. Bract trichomes varied significantly among cultivars with leaf pubescence classes (smooth, intermediate, and dense leaf pubescence). It may be possible to reduce bract trichomes independently of leaf trichomes.