Variation in Marginal Bract Trichome Density in Upland Cotton

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Elimination or reduction of trichomes around the margins of bracts should improve the cleaning efficiency of cotton (*Gossypium hirsutum* L.) lint. The objective of the study was to establish sampling protocols for measuring marginal bract trichome density by examining variation over fruiting positions of the cotton plant, sampling time, cultivars, and environments. To determine variation of bract and leaf trichome density, plants of six contrasting cultivars in two environments were evaluated. To determine variation in bract trichome density over time, bracts of three contrasting cultivars were sampled from three canopy sites on three dates from two years. To determine variation in bract trichome density over cultivars and environments, bracts were evaluated for multiple cultivars at multiple sites over four years. Bract trichome density tended to increase as leaf trichome density increased and to decline with canopy age. Significant interactions involving sympodial position indicated that bracts should be sampled from the same position. The first-position is suggested. Interactions involving nodes became non-significant by dropping the highest and lowest nodes. Bract trichome density declined with older canopy sites and later sample dates, but variation among cultivars was relatively consistent over locations and years. Although cultivars varied significantly, none of the cultivars had glabrous bracts. A significant cultivar by location interaction in one year became non-significant by dropping a highly stressed location. These data indicate that bract samples should be collected from full-sized, mid-canopy, first-position bolls soon after flowering ceases and that bract trichome density can be adequately characterized by sampling bracts at one test site.

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