WITHIN-BOLL YIELD COMPONENTS OF HIGH YIELDING COTTON CULTIVARS

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Abstract

Cotton (*Gossypium hirsutum* L.) within-boll yield components have changed throughout the last thirty years of cultivar development. The question arises, how do within-boll yield components differ in contemporary high yielding cultivars? Nine commercially available cotton cultivars were over seeded and hand thinned to 10.8 plants m^{-2} in 2001, 2002 and 2003. Prior to machine harvest, plants from 6 m of one row were removed from each plot and hand harvested by fruiting position. After hand harvest, seed cotton from each fruiting position was ginned separately. Boll number, lint mass, seed number, seed mass, seed surface area and fiber properties were determined for each fruiting position. These data were then used for within-boll yield component calculations. One of the top yielding cultivars in this investigation (DPL 33 B), characterized by a smaller seed mass, produced greater total seed surface area per unit of land area, but lower lint mass and fiber number per unit of seed surface area. The other two top yielding cultivars in this investigation (DPL 491 and STV 4892 BR), characterized by a larger seed mass, produced lower total seed surface area per unit of land area, but greater lint mass and fiber number per unit of seed surface area. These data indicate fiber number and lint mass per unit of seed surface area are linked to seed size, which should be considered when selecting for increased lint mass or fiber number per unit of seed surface area.