

SPATIAL YIELD DISTRIBUTION IN COTTON FOLLOWING EARLY-SEASON SQUARE LOSS

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Abstract

A better understanding of cotton compensatory growth after loss of early season squares requires an assessment of the actual patterns of spatial yield distribution in damaged and undamaged plants. Studies were conducted in Tift Co. GA to determine if spatial yield distribution or yield components are altered in cotton in response to removal of early season squares. Beginning with the second week of squaring, squares were removed by hand for one, two, or three consecutive weeks. The contribution to total yield from each fruiting position was determined at crop maturity. The lowest level of square removal resulted in no differences in spatial yield distribution. As the intensity of early season square removal increased, however, the probability of harvesting a mature boll decreased in the lower canopy but increased in the upper canopy. Removal of squares resulted in fewer first sympodial position fruit but more third sympodial position fruit at harvest. Thus, early season removal of squares resulted in additional seed cotton production on more apical and distal fruiting positions. These modifications in spatial yield distribution adequately replaced those squares removed early in the season because total seed cotton yield was not different among the treatments at crop maturity. Complete results from this study are published in Crop Science 41:1800-1808. Subsequent studies have investigated spatial yield distribution in response to square loss due to tarnished plant bug injury. These trials were conducted in 6x6x12 feet cages infested with adult tarnished plant bugs collected from alfalfa. Treatments included exposure to high populations of tarnished plant bugs for one, two, or three consecutive weeks and an insect-free control. Results from cage studies suggest that plant responses in terms of compensation to plant bug injury were similar to those observed when squares were hand removed.