

**INFLUENCE OF SEASONAL PATTERNS OF
FLOWER REMOVAL ON COTTON GROWTH
AND DEVELOPMENT**

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Abstract

The development of a cotton (*Gossypium hirsutum* L.) crop is a full-season process involving a complex balance between vegetative and reproductive development. However, previous fruit removal studies have seldom examined the effects of flower removal during late anthesis. Therefore, the objective of this study was to determine how the loss of flowers during different stages of anthesis (early-, mid-, and late-season) alters subsequent boll development, fiber development, and fiber properties. Additional objectives were to determine the effects of these treatments on the delay of yield attainment and their effect on yield components.

Field studies were conducted in 1991 and 1992 using two cotton cultivars (DPL 50 and 90) at Clayton, NC. Flower removal treatments in 1991 consisted of: (1) no removal; (2) first week flowers; (3) first and second week flowers; (4) first, second, and third week flowers; (5) third and fourth week flowers; (6) fourth week and later flowers; (7) fifth week and later flowers; and (8) all flowers. In 1992, treatments (2), (5), and (8) were deleted and a sixth week and later removal treatments was added. Flowers (white and red) were removed on a M-W-F schedule according to treatment criteria. Treatments were arranged in a randomized complete block design with four replications. Stratified hand-harvests and 50 boll samples were collected from one middle row of each four row plot.

Early removal treatments (third week & earlier removals) resulted in no significant reductions in total yield, but caused a delay in boll development. Later flower removals (fourth week & later) significantly reduced total yields compared to the early-season flower removals and the no removal. Larger bolls resulted from treatments that had the largest negative effect on yield, and were positively correlated with micronaire. Data indicate that late-season flowers are necessary for maximal yield attainment. Early loss of fruit can be tolerated if conditions allow for bolls to develop and mature at positions further out on sympodial branches and at fruiting sites higher on the mainstem.