

COMPENSATION OF COTTON TO SQUARE REMOVAL

Ozzie Abaye, Ames Herbert, Derrick Oosterhuis,
Virginia Pitman and J. C. Maitland

Abstract

Fruiting retention is very important since yields are highly correlated with number of bolls produced. An experiment was designed to evaluate the compensation capacity of cotton at various levels of square removal using DPL 51 (an early maturing variety). Additionally, the use/effectiveness of COTMAN in tracking major phenological stages (PHS, FF, Cutout) of cotton at various rates of square removal was examined. The experiments were conducted in 1998, 1999, and 2000 at the Tidewater Agricultural Research and Extension Center in Suffolk, Virginia. Five levels of manual desquaring treatments (0%, 12-15%, 20-25%, and 30-40% of first position squares, and 20% of small bolls [1999 and 2000 only]) were used. The physiological progress of the crop was monitored using the COTMAN cotton mapping system and compared to the Target Development Curve (TDC). In 1998, cotton growth and development was affected by the square removal treatments. Forty-nine days after planting (DAP), the control treatment tracked the TDC much more closely than those treatments where squares were removed at the 20-25% and 30-40% rates. The higher square removal rate showed slow nodal development, lower apogee, and premature cutout. In 1999, similar to 1998, a significant difference in growth and development of the cotton plant among treatments was observed. Similarly to the 1998 data, square removal in excess of 30-40% resulted in lower apogee and cutout prematurely. However, in 1999, the low apogee observed for the 30-40% square removal rate was flattened after attaining the apogee indicating additional terminal growth. The effect of square removal treatment on the growth curve for 2000 was similar to 1998. Generally, the curve showed a lower apogee followed by an abrupt cutout. This might have contributed to a much lower lint yield for the 2000 growing season compared with 1998 and 1999. In 1998, total number of bolls at harvest was not affected by any of the square removal levels. Numbers ranged from 88 in the untreated control to 99 in the 20-25% removal level. Lint yields were not different among square removal treatments. Similar results were obtained for 1999 growing season. In 2000, total number of bolls at harvest was not affected by any of the square removal levels. For all the three experimental years, total boll numbers and lint yield were not affected by any of the square and boll removal levels.