

**COTTON ROOT AND SHOOT GROWTH
ON A SHARKEY CLAY FOLLOWING
EARLY SQUARE LOSS
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Abstract

The effect of early square loss on cotton yield has been reported to be variable and range from yield increases to severe decreases. It is possible that the response to early square loss is highly dependent upon the soil type and the subsequent environmental conditions, particularly when irrigation is not available. A non-irrigated field study was initiated near St. Joseph, LA at the Northeast Research Station in 1997 to investigate the effect of early square loss on cotton growth and yield on Sharkey clay. Cotton 'DPL NUCOTN 33b' was planted on Sharkey clay on 3 May, 1997 into 40 in rows. Experimental design was a randomized complete block with four replications with plots four rows by 40 ft. in length. Four treatments were established by hand removing 0, 1, 2, or 4 first position squares from each plant in the middle two rows of each plot twice before first flower. Plants in the middle two rows were handthinned to a uniform density of 2.6 per row foot. Plots were aggressively protected from insect damage using the appropriate insecticides as needed throughout the fruiting period. At first flower, first position square shed ranged from 14-41%. Yield was only significantly reduced by the treatment that lost 41% of early first position squares. Variables that were not affected by treatment include plant height, main-stem nodes, diffusive resistance, transpiration, and days to NAWF = 5.0. In addition, leaf area, leaf area index, and shoot dry weight were not affected by square removal. However, root length was greater with increasing square removal between 36 and 60 in. deep. Thus on Sharkey clay, differences in early square shed had little affect on above ground growth and maturity, but a positive affect on root growth at the lower depths measured. Yield was less sensitive to square loss in this environment than in previous studies conducted on silt loam soils, possibly from increased water and nutrient uptake deep in the soil profile.