# ALTERED PLANT GROWTH AND MATURITY CAUSED BY COLUMBIA LANCE NEMATODE

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The effects of Columbia lance (*Hoplolaimus columbus*) nematode on the growth and maturity of cotton (*Gossypium hirsutum*) were measured at two locations in Barnwell County, South Carolina in 1996. Each location was a Dothan loamy sand. The Belton location was naturally infested at-planting with 29 and the Youngblood location with 13 Columbia lance per 100 ml of soil. Stoneville's LA 887 was planted in plots with rows either 50 or 100 feet long on 38 inch centers. Each experiment consisted of paired plots with 4 rows non-treated and 4 rows treated with 6 gal/A 1,3-dichloropropene (Telone II). All Telone II treatments were applied in furrow two weeks prior to planting. Planting dates for the Belton and Youngblood locations were May 16 and May 28, respectively. Nematicide treatment suppressed Columbia lance nematode population levels up to 90%. Plant mapping was conducted at midseason and again at harvest. The primary objective was to determine the actual mechanism of yield losses in cotton due to Columbia lance nematode. Yields were determined by both machine picking the center two rows of each plot and by hand picking 10-ft sections of row per plot.

Machine picked yields demonstrated yield losses of approximately 16% in both fields. The 10-ft sections were picked weekly for 4 weeks. Hand-picked sequential harvesting illustrated final yield losses of 17.5% and 15.3% at the Belton and Youngblood locations, respectively. Maturity was delayed by 32% in nematode-infected plants at the first picking date. A greater percentage of lint was picked during the last two harvests for infected versus non-infected plants, indicating a nematode-induced delay in harvest maturity. Plant mapping showed there were more total bolls (12 and 7) on the treated plants than the non-treated plants (10 and 6) at the Belton and Youngblood locations, respectively. The non-treated plants had the first fruiting branches at higher nodal positions than the treated plants. Therefore, the non-treated plants maintained vegetative growth longer and were slightly delayed compared to the treated plants. Nematodes reduced midseason plant heights approximately 50%. Even where nematode densities are relatively low or environmental conditions are very favorable for high yields, Columbia lance nematode can create economically significant yield losses by subtle effects on boll maturity, rather than gross reductions in plant height, fruiting sites, or fruit retention. It is unlikely that resistance to Columbia lance nematode will be found. However, understanding the mechanisms of yield loss will allow better management decisions in varietal selection, nutrient and growth regulator programs, timing of defoliation, and planting dates for cotton grown in nematode-infested fields.

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