

**PLANT GROWTH AND YIELD OF COLUMBIA  
LANCE NEMATODE-INFECTED COTTON**

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**Abstract**

Columbia lance nematode (*Hoplolaimus columbus*) (CLN) is the most important nematode on cotton in South Carolina. Traditional agronomic control practices, i.e., crop rotation, and the use of resistant or tolerant cultivars, are effective in preventing yield losses due to CLN. No form of resistance to CLN has been found in cotton or soybean. However, tolerance is an effective management tool in soybean. The objective of this study was to document the mechanisms of CLN-induced yield loss. This will aid in the selection of tolerant cultivars or production practices that minimize yield losses. In 1996 and 1997, experiments were conducted at two locations, the Edisto Research and Education Center and the Youngblood Farm. Each experiment was arranged in a randomized complete block design with 8 to 12 replications. Plots were 50- to 80-feet long on 38-inch centers and were either non-treated or treated with a nematicide. Treatment involved a single at-plant application of 6 gal/A of 1,3-dichloropropene (Telone II). Nematicide treatment resulted in a significant reduction in CLN population densities of at least 75% for both locations and years combined. Furthermore, despite above average reproduction, season-long suppression of CLN was observed in Telone-treated plots. At harvest, CLN densities in the treated plots were 32% of the non-treated. In spite of the low CLN population densities at planting in the non-treated plots, significant yield reductions were recorded. In 1996, machine picked yields were 794 and 821 lbs lint/A in non-treated plots and 952 and 984 lbs lint/A in treated plots at Edisto R.E.C. and Youngblood Farm, respectively. In 1997, yields were 539 and 378 lbs lint/A in non-treated plots and 708 and 495 lbs lint/A in treated plots at Edisto R.E.C. and Youngblood Farm, respectively. Thus, even where nematode population densities are relatively low and field and environmental conditions are favorable for high yields, CLN effects on cotton may be subtle and lack observable symptoms. By understanding which plant parameters are effected by CLN, we can further aid in the development of more productive management schemes involving varietal selection, timing of defoliation, and planting dates, and can aid the plant breeder in the potential development of tolerant cultivars.