# SEEDLING VIGOR INFLUENCE ON SEASONAL GROWTH AND LINT YIELD

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## Abstract

Low temperature stress was observed in many areas of the cotton belt in 1997 due to an extremely cold and wet spring. Non-freezing cold stress has been documented to reduce plant vigor, stands, and enzyme activities, and to adversely affect water relations, nighttime starch utilization, and photosynthetic activity in seedlings; therefore low seedling vigor is commonly associated with yield reduction. This study examined the relationship between seedling vigor, plant growth, and lint yield for 25 Sure-Grow conventional strains, 5 Sure-Grow varieties, and 4 competitor check varieties in 17 yield performance trials planted at 9 sites in the Southeastern US in 1997. All trials were planted from late-April to late-May, and experienced varying degrees of cold stress until late-June. Uniform rates of Temik and Ridomil PC were applied in-furrow at all sites. Stand counts and visual seedling vigor ratings were recorded at 2- to 4-true-leaf stages. Plots were subsequently hand-thinned to a uniform, locally-recommended stand. Plant stand, seedling vigor, plant growth at first-square stage, and lint yields differed significantly among cultivars and strains. However, seedling vigor was not associated with lint yield, relative maturity, node of first fruiting branch, plant height at first-square stage, total mainstem nodes at first-square stage, or height-to-node ratio at first-square stage. Significant, but negative relationships were found between seedling vigor and lint percent, boll size, and the number of fruiting branches at first-square stage. Plant stand was the only factor that was significantly and positively associated with seedling vigor. These data support the findings of Bauer and Bradow (1996), which stated that emergence rate and seedling size are not good indicators of relative cultivar performance. Possible explanations for the lack of a significant association between lint yield and seedling vigor in our trials include: 1) any differences in seedling vigor were overwhelmed by the extremely cold and wet conditions in the spring of 1997; 2) the hand-thinning of plots could have removed any differences in seedling vigor that might have otherwise translated into lint yield differences; and 3) the growing environments during bloom and boll development periods were more influential on lint yield than that during emergence and seedling development.

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