

**SEEDLING VIGOR INFLUENCE ON SEASONAL  
GROWTH AND LINT YIELD:**

**TWO-YEAR RESULTS**

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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. We reported last year that seedling vigor was not significantly associated with lint yield; however, stand counts were positively associated with lint yield. In 1998, we recorded stand counts, seedling vigor ratings (visual, 1=poor; 5=excellent) and plant measurements at first square for 29 field trials from Texas to North Carolina; combined with the measurements taken in 1997, our observations totaled over 2,200. In 1998, lint yield was again positively associated with stand counts; seedling vigor was positively related to lint yield in 1998, but combined analysis of the two years indicated a cubic relationship which was difficult to interpret. Plant measurements taken at first square (plant height, height-to-node ratio) were highly associated with lint yields in both years. In a separate set of trials, winter-grown seed exhibiting severe dormancy and poor seedling vigor were compared with domestically-grown seed of superior quality and vigor. These data indicated a more distinct relationship between lint yield and stand counts, as well as seedling vigor; however, the seedling vigor relationship with lint yield was, again, cubic. This cubic relationship, however, was nearly linear between seedling vigor ratings of 2 and 5, indicating that when greater differences in seedling vigor were observed, we were more likely to find a corresponding difference in lint yield. Overall, however, our data indicated that seedling vigor ratings were not good predictors of lint yield; similarly, nodes of first fruiting branch were not associated with lint yield. Plant height, total nodes, and height-to-node ratio at first square were

more highly related to lint yield; however, it is likely that the environmental and biological factors during flowering and boll development are more influential on lint yield than the factors we quantified at emergence and first square.