

**COTTON ROOT HEALTH WORK GROUP:
USE OF STABILITY ANALYSIS
TO EVALUATE BELTWISE DATA BASE**

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Abstract

Seedling disease can have a significant impact on the development of a healthy cotton root system and in turn influence overall plant productivity. The objectives of the Cotton Root Health work Group are to evaluate the influence of seedling disease on the health of the cotton root system and to determine the impact of root health on yield and productivity. Seven locations representing diverse environments across the Cotton Belt and utilizing several different disciplines are being used in the study. Core treatments ranging from no seed treatment to commercial seed treatment with in-furrow applications of TSX and Temik in various combinations were established at each location. Evaluations of stand counts, root and hypocotyl disease indices, root growth and distribution, fruiting, yield and fiber quality were conducted according to pre-established protocol. Stability analysis was utilized to analyze the information from the seven locations over three growing seasons. This approach allowed for a visual inspection of treatment x environment interactions and analysis of treatment differences across a wide range of environments.

The results from three growing seasons indicated a significantly lower population density for the black seed control across all environments when compared to the other

treatments with in-furrow fungicide added. Skip index was also higher for the control compared to the other treatments. The analysis of the root growth data taken at the four-node stage indicated a significantly higher root distribution at the 0-10 cm depth across all environments suggesting a healthier root system at this stage. There were no differences between treatments for both root and hypocotyl disease indices. There was also no significant differences in lint yield between the treatments across all environments suggesting that the indeterminate growth habit of cotton coupled with the observations that a critical population density was not reached resulted in no differences in yield due to plant compensation in fruiting. Further analysis of fruit habit and root distribution is being conducted.