

**THE RELATIONSHIP BETWEEN DISEASE INCIDENCE, DEFOLIATION AND YIELD IN CULTIVARS
INFESTED WITH VERTICILLIUM WILT**

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Abstract

Historically cotton cultivars planted in verticillium wilt trials on the Texas High Plains have been ranked based on yield and percent wilt incidence. It has been noted that in some years the percentages of early incidence are relatively low, but later in the season severe defoliation is observed. The purpose of this study was to assess the relationship between incidence, defoliation and yield to determine which method of rating cultivars had the best correlation with yield; and to determine if an optimal date for taking ratings exists. Thirty-two cotton cultivars were planted in a randomized block design (4X32) in a field known to contain *Verticillium dahliae*. Wilt incidence ratings were taken for each plant in each plot on August 7th and 26th. Symptom severity ratings were taken on each plot on August 27th, and September 15th and 30th. Symptom severity ratings were based on a 0 to 3 scale. Plots within each plot were rated based on the percentage of foliar symptoms and/or defoliation. Yield data was collected using a two row plot harvester. Data from the trial was analyzed using proc mixed (SAS). Based on Pearson correlation coefficients the most statistically significant relationship between defoliation ratings and yield existed on August 27th ($r = -.49$). However, a more significant relationship existed between yield and wilt incidence ratings taken on August 26th ($r = -.8$). Data from similar trials has not been analyzed at this time. In 2010 we will continue to analyze and interpret data from other trials and it is our intention to conduct another field study. As the relationship between defoliation and yield was less significant as the season progressed we hope to begin taking ratings at an earlier date.