

# THE PERFORMANCE OF SEVERAL COMMERCIAL COTTON CULTIVARS OVER THREE YEARS IN A RENIFORM NEMATODE INFESTED FIELD

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## Abstract

A variety/nematicide study was conducted on a field infested with reniform nematodes over a three year period, 1994-1996. Due to the recent influx of new varieties only 10 varieties were maintained through the study. The nematicide temik (aldicarb) significantly increased yield across all varieties every year of the study. The study also indicated that there was consistency in varietal performance in a reniform infested soil.

## Introduction

In just the last five years the reniform nematode, *Rotylenchulus reniformis*, has become a major yield limiting factor for many growers in Arkansas. Statistics indicate that in some counties as much as 30% of cotton fields have some level of reniform nematode. However, what the statistics do not show is that often that 30% relates to 90-100% infestation of fields for some cotton growers. Many growers do not even realize they have the problem but realize that their yields are declining. Others are aware of the problem but are having marginal success for suppression. In an effort to support these growers a three year study was conducted to determine differences in tolerance to the reniform nematode.

## Materials and Methods

The study was conducted on a typical grower field in Jefferson County, AR, from 1994 through 1996, known to be infested with reniform nematode. Twenty of the top yielding varieties were utilized. The test design was a randomized complete split block design with variety as the main plot and temik (aldicarb) at a rate of 1.05 lb ai per acre or disyston (disulfoton) at a rate of 0.975 lb ai per acre as the subplot. Due to the recent influx of new varieties made commercially available to growers, only ten varieties were used in all three years of the study. Only those 10 varieties are discussed in this presentation. Nematode samples were collected from all main plots at planting and from all subplots at midseason and harvest. Plots were machine picked and weights recorded.

## Results

Results indicated that the use of temik (aldicarb) at a rate of 7.0 lb/acre (1.05 lb ai) always resulted in a significant yield advantage over disyston when averaged across all varieties. The increase in yield response varied from as low as 44 lb of lint cotton in 1996 to a high of 96 lb in 1994. There was considerable variation of performance in yield by the 10 varieties in the three years of the study. Analysis of the data indicated a year-by-year interaction. Although the performance of the varieties was extremely variable each of the three years some varieties performed consistently better than others. The cultivars: SureGrow 501, Stoneville 132, Stoneville LA887, and Hartz 1244 consistently yielded in the top five each year. Conversely, Hartz 1380, DPL 20, DPL 51, and DPL 5415 consistently yielded in the bottom five of the 10 varieties observed each year of the study. Nematode counts at planting and harvest were not significantly different between varieties or the subplot (temik or disyston) the three years of the study.

## Discussion

These data indicate that some varieties do appear to tolerate reniform nematode better than others. Also, in a reniform infested soil the use of an efficacious nematicide, such as temik should be used. The increasing problem of reniform nematodes coupled with the continual introduction of new varieties, will continue to make varietal screening for tolerance to reniform nematode a priority.