

IMPACT OF NEMATICIDES ON COTTON PRODUCTION IN RENIFORM INFESTED FIELDS

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Abstract

Fall and spring fumigation rates of Telone II were compared to Temik 15G at planting for their effectiveness against reniform nematodes (*Rotylenchulus reniformis*) over a two-year period. The two nematicides increased yield over the untreated check both years. Yields in Telone treated plots were significantly higher than Temik treated plots. Temik's failure to properly activate under extremely dry conditions at planting in 1999 and 2000 growing seasons could account for the nematicide's poor performance.

Introduction

Telone II has been shown to be an effective nematicide when applied under proper soil conditions. Telone II is most effective when applied to drier soil at warmer temperatures. In Alabama, these conditions are more prevalent in the fall than in the early spring. Telone is often not effective when it is injected in cold, saturated soils. The purpose of this experiment is to compare Telone fumigation in the fall to Telone fumigation in the spring and to a Temik at plant application for their effectiveness in increasing cotton yields in fields heavily infested with reniform nematodes.

Methods

A cotton field heavily infested with reniform nematodes (*Rotylenchulus reniformis*) near Huxford, AL, was selected for the test. Treatments were arranged in a randomized complete block design and replicated five times. Plots were four rows wide and 70 feet long. The entire field, a loam consisting of 49% sand, 34% silt, and 17% clay, was disked and subsoiled on 16 Nov. 1998. After diskings, two rates of Telone II (three and five gallons per acre, respectively) were injected in assigned plots. The following spring, a Telone (three gallons per acre) application was made on 11 May 1999. Temik was applied in-furrow when cotton (*DPL-655BG/RR*) was planted on 22 May 1999. Nematode samples were pulled on 1 Nov. 1998, 10 Feb. 1999, 11 May 1999, 22 Jul. 1999, and 21 Oct. 1999. The two center rows were harvested from each plot on 21 Oct. 1999. The same test was repeated in the fall 1999/2000 growing season. The Telone fall application rates, three and five gallons per acre respectively, were applied to assigned plots on 16 Nov. 1999 and the spring rate (three gallons per acre) was applied 4 Apr. 2000. A prolonged drought in the spring of 2000 delayed planting until 29 May 2000. Therefore, Temik 15G and Di-Syston 15G were applied late and to very dry soils. Nematode soil samples were taken on 5 Oct. 1999, 18 Apr. 2000, 25 Jul. 2000, and 7 Nov. 2000. Plots were harvested on 7 Nov. 2000.

Results and Discussion

In 1999, both Telone and Temik treated plots produced higher yields than the untreated plots (Table 1). Telone fall and spring applications outperformed Temik by a slight margin. No significant differences were observed between fall application and spring application of Telone. Temik did not perform as well as expected in 1999 or 2000 (Table 1). In the 1999 season, the fact that Temik was applied to a rather dry soil on 21 May and may not have been activated properly could account for its poor performance. The field remained dry until 2 Jun. The untreated plot yielded reasonably well – indicating that growing conditions for cotton for

the remainder of the 1999 season were rather good. Without undue stress on the cotton, reniform damage was most likely kept at a minimum. In the 2000 season, yields were reduced overall due to extremely dry conditions that persisted throughout the entire growing season. Also, cotton was planted extremely late (31 May 2000). Temik was not activated properly as a result of extremely dry conditions that persisted at planting and for several weeks after planting. More tests need to be conducted under better growing conditions to determine the actual effectiveness of fall and spring Telone rates as well as Temik 15G at planting for improving cotton yields in fields heavily infested with reniform nematodes.

References

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Table 1. Fall and spring fumigation impact on cotton yield in reniform infested fields (1999 and 2000).

Treatment	rate/ acre	Time	Yield (lb/acre)	
			1999	2000
Telone	3 gal.	fall	2312 ^a	1711 ^a
Telone	5 gal.	fall	2313 ^a	1666 ^a
Telone	3 gal.	spring	2193 ^a	1663 ^a
Temik	7 lb.	At-plant	2095 ^{ab}	1110 ^b
Di-Syston	7 lb.	At-plant	1961 ^b	1077 ^b
LSD(.05)			205	344

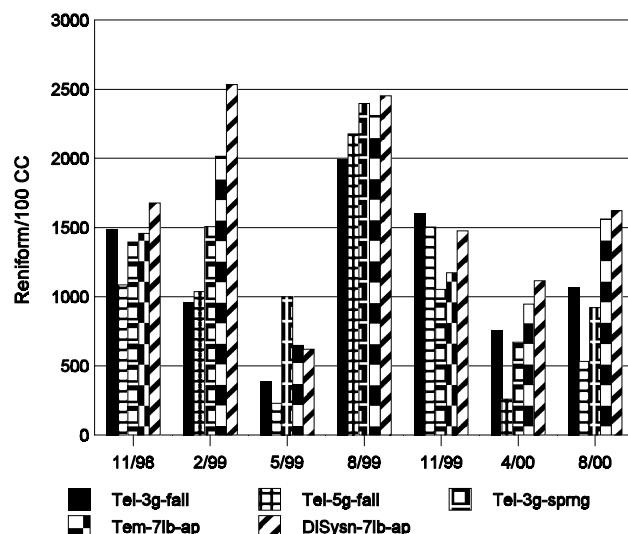


Figure 1. Reniform population response to various nematicide treatments.