

SUPPRESSION OF RENIFORM AND ROOT-KNOT NEMATODE WITH TEMIK AND VYDATE

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Abstract

A reniform nematode study was conducted to determine the effect of various rates of temik (aldicarb) with and without vydate (oxamyl) for nematode suppression. Results indicated none of the treatments were significantly better than the untreated check. A root-knot study with various timings and rates of vydate also indicated no significant differences among treatments although all treatments except one were numerically greater than the untreated check. The results of the root-knot study were similar to a study conducted in 1995 where two applications of vydate applied at second true leaf and a week later was significantly greater than the untreated check.

Introduction

Surveys conducted in Arkansas in the years 1986-1988 indicated only two counties and 1% of all cotton fields with reniform nematode infestations. Since 1992, documented reniform nematode incidence has increased dramatically with significant acreage in seven counties now known to have the pest. Prior to 1997 all counties identified with reniform nematode were in southeast Arkansas. A survey conducted in Poinsett County in northeast Arkansas last fall indicated the presence of reniform nematode. With the increase in the survey effort to determine the range of reniform nematode the incidence of root-knot nematode has also increased. As part of an educational program for growers with nematode problems, studies were conducted to determine the efficacy of temik (aldicarb) and vydate (oxamyl) for suppression of reniform and root-knot nematode.

Materials and Methods

Reniform Study

The study was conducted on a typical grower field in Jefferson County, AR, known to be infested with reniform nematode. The field was planted using the cultivar SG 125 on 10 May 1997 with a randomized complete strip-split plot design with aldicarb (Temik) as the main plot at rates of 0, 3.5, 5.0, and 7.0 lbs of product per acre (0, 0.5, 0.6, and 1.05 lbs ai per acre, respectively). Plot size was ca. 1.15 acres. Gaucho seed treatment was used for thrips control in the untreated check. The sub-plot consisted of vydate (oxamyl)

applied at match head square, 23 June, and again 7 d later, 30 June, at a rate of 0.25 lb ai per acre with a standard tractor mounted sprayer at a rate of 10 gal per acre. Nematode counts were taken at planting, 10 d post second vydate application, 10 July, and at harvest. Plots were machine picked, 3 Nov., weighed with a boll buggy and subsamples were ginned with a table top gin.

Root-Knot Study

The cultivar STV 474 was planted in a typical grower field with temik (aldicarb) applied to all plots at planting at a rate of 4.0 lbs of product (0.6 lb ai) per acre. A randomized complete block design was utilized with 5 replications. Treatments included: 1) Untreated check; Vydate applied at third true leaf at 0.25 pt/ A followed by 0.5 pt/ A 7 d later and 1.0 pt/A 14 d later; 3) Vydate applied at 0.5 pt/A at third true leaf and 7 d later; 4) Vydate at 0.5 pt/A applied at match head square and 7 d later, and; 5) Vydate at 1.0 pt/A at match head square and 7 d later. Treatments were made with a CO₂ backpack with a volume of 7.5 gallons per acre. Nematode counts were taken at planting and midseason. Plots were hand harvested 28 Oct., and subsamples were ginned on a table top gin.

Results and Discussion

Reniform Study

Results indicated no significant differences among all main treatments regardless of whether vydate was applied or not (Table 1). Also, no differences were observed in nematode counts between main plots or subplots. Previous studies with temik have indicated a yield increase with the addition of temik for reniform and root-knot nematode suppression. The reason for this lack of response is puzzling. Also, vydate studies have shown a trend for higher yields in Arkansas with the addition of vydate, however, in this study no response was observed.

Root-Knot Study

Results indicated no significant yield differences among treatments (Table 2). However, all yields with the exception of the treatment with 3 applications (treatment 2) were numerically higher than the untreated check. A similar study conducted in 1995 showed similar results with the treatment of one pint applied at second true leaf and another application 7 d later having a significantly higher yield than the check (Table 3).

Table 1. Yield results of various temik rates with and without vydate.

Treatment	Lbs of lint/ A.		Difference
	Vydate	No Vydate	
Gaucho	850 a	848 a	-2
3.5 lb Temik	818 a	845 a	+27
5.0 lb Temik	833 a	831 a	+2
7.0 lb Temik	875 a	862 a	-13

Means within a column followed by the same letter are not significant LSD (0.05)=76 lb.

Table 2. Yield results of vydate treatment for root-knot nematode suppression, 1997.

Treatment	Yield (lbs lint/A)
1. Untreated check	1521
2. Vydate 0.25 pt 3 TL fb 0.5 pt 7 d later 1.0 pt 14 d later	1333
3. Vydate 0.5 pt 3 TL fb 0.5 pt 7 d later	1672
4. Vydate 0.5 pt MHS fb pt 7 d later	1587
5. Vydate 1.0 pt MHS fb 1.0 pt 7 d later	1588

Means within the column are not significantly different LSD (0.05)= 601 lb.

Table 3. Yield results of vydate treatment for root-knot nematode suppression, 1995.

Treatment	Yield (lbs lint/A)
1. Untreated check	827 b
2. Vydate 0.25 pt 2 TL fb 0.5 pt 7 d later 1.0 pt 14 d later	912 ab
3. Vydate 1.0 pt 2 TL fb 1.0pt 7 d later	1052 a
4. Vydate 1.0 pt MHS fb 1.0 pt 7 d later	900 ab

Means within a column followed by the same letter are not significantly different, LSD (0.05)=202 lb.