

Nematocide Use for Control of Rootknot Nematodes

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ABSTRACT

Injection of Telone II in sandy loams containing more than 60 percent sand increased Pima S-6 yield 493 pounds of lint but failed to give economic response with DP 77 in second year cotton. Treatment with Vapam at two rates at the same locations did not increase yield significantly in 1987.

INTRODUCTION

The soil fumigant Vapam (metam-sodium) was selected for testing at lower rates for effectiveness in controlling rootknot nemtodes in cotton. Two rates of Vapam were injected in 20 gallons of water in second and third year cotton on sandy loam at two locations in comparison with Telone II as a standard. Vapam was injected three to five inches below the center of the eventual bed surface; Telone II was injected 8 to 10 inches below the bed center.

Earlier research has indicated that 60 percent or more sand content is commonly needed to obtain an economic return from treatment. Therefore, Laveen sandy loam and Antho sandy loam were located at BJR Ranches and H & H Ranches near Buckeye, Arizona.

Fallowing or using non-host crops in rotation are very effective controls, but growers frequently encounter economic or logistic difficulty with rotations and choose nematocide applications. The longer cotton is grown continuously, the more likely that nematode infestation levels will build, so the two sites chosen represented differing lengths of cotton cropping.

RESULTS

The Laveen sandy loam with 71% sand in second year cotton exhibited a very low level of infested roots with little or no response to nematocide use. This was on a ranch all second and third year cotton are usually treated because they observe stunting when treatment is omitted. On the Antho sandy loam with 67.4% sand and two prior years of cotton culture, injecting Telone II at a 5-gallon rate caused a very large, 493-pound increase in lint production. Vapam treatments failed to increase yield.

Observations and photographs revealed apparent stunting of Vapam plots in relation to Telone II treatments. Measurement on April 29 revealed the 12-gallon rate of Vapam caused shorter plants than the 8-gallon rate or untreated plots. However, harvest data did not show a yield reduction in this relationship. Stunting was still apparent between Telone II and other treatments at harvest on the H & H Ranch site in November. Evaluation of root infestation rates reflected a difference between Telone treatment and other treatments.

Table 1. Rootknot Nematicide Trial, BJR Ranches (Youngker), Buckeye, 1987

| Nematicide Treatment | Plant Population | Percent Turnout | Lbs Lint/A. | Cotton Quality |
|----------------------|------------------|-----------------|-------------|----------------|
| Vapam, 12 gal/A | 75,383 | 34.73 | 2086 a | 31-35-49 |
| Telone II, 5 gal/A | 69,880 | 32.34 | 2081 a | 31-35-50 |
| Untreated | 61,627 | 35.99 | 2061 a | 31-35-50 |
| Vapam, 9/3 gal/A | 72,494 | 34.36 | 2050 a | 31-35-49 |

Location - Palo Verde Rd & RID Canal Nematocide application -
 Soil: Laveen Sandy Loam - Field 15 Telone II - 3/24/87
 Mechanical: sand 71.6%, silt 18% Vapam - 3/26/87
 clay 12.4% Fertilizer -
 Previous crop - 1 year cotton 300 lbs 16-20-0 preplant
 Variety - DP77 20 gal. UN32 - 5/30/87
 Lbs Seed - 14 4 gal. UN32 - 7/12-7/22/-7/31
 Germination irrig - April 3 Irrigations - 14
 Plot size - 6 rows x 1352 ft. 4/13 (11"), 4/19, 5/15, 5/26
 Harvest 2 rows - 5 replications 6/19, 6/26, 7/5, 7/12, 7/22,
 7/31, 8/5, 8/13, 8/23, 9/1
 Every other row
 Insecticide applications -
 Single harvest-Oct 15-16, 1987

Table 2. Rootknot Nematocide Trial, Henry & Henry Ranches, Buckeye, 1987

| Nematocide Treatment | Plant Population | Plant Height Apr 29 | Lbs Lint 1st Pick | Lbs Lint 2nd Pick | Lbs Lint Per Acre |
|----------------------|------------------|---------------------|-------------------|-------------------|-------------------|
| Telone II, 5 gal/A | 30,538 | 4 3/8" | 1266 a | 114 | 1380 |
| Vapam, 12 gal/A | 29,025 | 2 7/16" | 842 b | 92 | 934 |
| Vapam, 8 gal/A | 30,676 | 3 1/4" | 813 b | 79 | 892 |
| Untreated | 30,126 | 3 .0" | 804 b | 83 | 887 |

Location: 1/4 so of Broadway & Dean Insecticide Applications - 9

Soil - Antho Sandy Loam 5/15 - .9 lbs Temik 15G

Mechanical - sand 67.4% 5/21 - 1.13 pts Guthion

silt 20.2% clay 12.4% 7/28 - 37.9 g. Disrupt Lure

Previous crop - 2 yrs cotton 1 lb Orthene

Variety - Pima S-6 8/10 - .56 pt Azodrin +

Lbs seed - 13 7.88 oz Scout

Germ. irrigation - April 12 8/22 - 1.06 pt Azodrin +

Plot size - 6 rows x 1896 ft 1 1/3 PennCapM+

Harvested 4 rows 8/29 - 1.13 pt PennCapM+

7.88 oz Scout

Nematocide applic. 3/21 9/5 - .56 pt Azodrin +

Fertilizer - 10 T. manure 1.13 pt PennCapM +

20 gal UN32 7.88 oz. Scout

Herbicide - 1 1/4 pt. Prowl 9/15 - .56 pt Guthion +

Irrigations - 7 .56 pt Azodrin

9/25 - .94 pt Azodrin +

1.04 pt Curacron

Defoliant

Oct 16 - 2.14 pts. Cotton Aid

Oct 24 - 2.2 pts. Cotton Aid

1st Pick - Nov 13-14

2nd Pick - Jan 4, 1988

Turnout - 1st Pick 37.52%

Quality - 90% grades - 4's

Staple 1 7/16 Mike - 4.0