

Evaluation of Nimitz, Telone II and Non-Treated Check for root-knot nematode control in tobacco

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ABSTRACT

An on-farm research trial was conducted in 2017 to investigate the effects of Nimitz on the control of root-knot nematode (*Meloidogyne incognita*). Nimitz provided good control of root-knot nematode in comparison to Telone II as the standard treatment. Provided that Telone II is in short supply, Nimitz could be used as an alternative chemistry to control root-knot nematode in tobacco.

INTRODUCTION

Southern Root-knot nematode (*M. incognita*) is a common and devastating pathogen of tobacco that is abundant in Berrien County, GA. Root-knot nematodes cause significant damage to tobacco by producing large galls, or feeding areas from endoparasitic females, which compromises the plant's root system. Yield losses can be of significance in fields that are left untreated or in absence of a resistant variety. Telone II has been proven to be an extremely affective control method, but with supply of this fumigant becoming low, new methods of management are needed.

MATERIALS AND METHODS

Nematode identification was made using PhastSystem™. Electrophoresis of esterase patterns were made to determine species (Fig. 1).

The trial was laid out in a randomized complete block with four reps. Treatments were Nimitz applied in a 24" band on the flat bed surface at a band rate of 3.65 pints/acre (broadcast rate = 7.0 pints/acre) and incorporated with a rototiller to a depth of 8-10 inches, Telone II applied at 8.0 gallons per acre in row as beds were made, and a non-treated control. Tobacco was transplanted on April 13, 2017. Plants selected in a random pattern in the middle two rows of each four row rep were dug up and examined visually for the galling (Fig. 2) caused by root-knot nematode on June 26, 2017.



Fig 1: Electrophoresis of esterase patterns using PhastSystem™. Sample 6 showing confirmation of *M. incognita*.



Fig. 2: Root galling from *M. incognita*.

RESULTS

Treatment	Plants ¹	Root-knot Nematode Incidence ² (%)	Plot Severity ³ (%)	Gall Severity (%)	Plot Damage ⁵ (%)
CHECK	112	62.3 a	8.4 a	11.7	17.2 a
NIMITZ	121	26.4 b	1.2 ab	5.8	1.7 b
TELONE II	127	3.5 b	0.1 b	3.8	0.0 b
LSD (0.05)	ns	25.4	7.7	ns	15.4

¹ Total number of plants evaluated (~5% of the total plants in the middle two rows of each rep).

² % of plants with any level of root galling.

³ Mean % of the root system with galls for all plants evaluated.

⁴ Mean % of the root system with galls for only those plants with some galled roots.

⁵ % of plants with = or > than 20% of the root system galled. This level of galling is about where damage becomes evident.

DISCUSSION

Nimitz reduced root-knot incidence as well gall severity compared to non-treated check. Telone II was not statistically different in regards to controlling root-knot populations. Nimitz appears to have potential to compete as an efficient nematicide in tobacco production.