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# FUMIGANTS FOR RENIFORM NEMATODE MANAGEMENT IN LOUISIANA

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## Abstract

Six trials were conducted during 1999-2001 to evaluate the effectiveness of Telone II against reniform nematode. Telone II was applied as a preplant fumigant at the rate of 3.0 gallons per acre. Temik 15% at 3.5-4.0 pounds per acre is the producer standard and was compared alone or in combination with the Telone. Telone II had significantly higher yields than the Temik 15%G alone in four of the six locations. The greatest differences in yield between Telone II combined with Temik 15%G and Temik 15%G alone were during 1999-2000 (difference of 347 pounds). Differences were only 39 pounds of seed cotton at the two locations tested during 2001 primarily because of boll rot injury. A rate study of Telone at three locations showed an average of 1540, 1943, 1903, and 2080 pounds of seed cotton for the 0, 1.5-1.8, 3.0, and 5.0-6.0 rates of Telone II.

## Introduction

Populations of reniform nematode have been extremely high in many cotton fields in Louisiana during the past 5-10 years (Overstreet and McGawley, 1999). Although crop rotation can be very effective in reducing some of these high populations, many cotton producers are simply locked in to almost continuous cotton production. The standard applications of nematicides such as Temik 15%G at 3.5-5.0 lbs/a works well most of the time against most reniform populations (Overstreet and McGawley, 2000). Fumigants such as Telone have only recently been evaluated in Louisiana (Overstreet et al., 2001). The purpose of this study was to evaluate the effectiveness of a preplant fumigant such as Telone II when combined with the standard rate of Temik 15%G.

## Material and Methods

Six trials were conducted from 1999-2001 at three locations in Louisiana and one in southern Mississippi. Temik 15%G at 3.5-4.0 pounds per acre was compared against Telone II at 3 gallon per acre. Rate studies of Telone II at 0, 1.5-1.8, 3.0, and 5.0-6.0 gallons per acre were conducted at three of the locations. Telone was applied as a preplant fumigant beneath the row from 8-12 inches approximately 10-14 days before planting. Temik 15%G was applied at the time of planting. Nematode samples were collected three times (at planting, midseason, and at harvest).

Figures 1-4 show population development of reniform nematode at several of the locations. Telone did reduce populations at either the time of planting or midseason at one or more locations. However, there were no long term effects from using Telone and levels remained high after harvest in most of the tests. Yield differences (Table 1) were significant between Temik 15%G alone or when combined with Telone II at four of the six locations. The Whitehall location experienced severe boll rot during 2001 and may have affected any differences between treatments. The difference between treatments was greater during 1999 and 2000 averaging 347 pounds of seed cotton more for the Telone treatment. Boll rots were severe in 2000 and differences averaged only 39 pounds of seed cotton more for Telone. The rate study of Telone did show some interesting trends (Table 2). Yields were much high when even the lowest rates of Telone were used. Yields did appear to go up with increasing rates of Telone. The addition of Telone to the producer standard of Temik 15%G does appear to give a higher yield most of the time and could be beneficial against high levels of the reniform nematode. Since only a limited number of rate studies have been conducted, it may be to early to pin down the best rate. However, any Telone rate evaluated in these studies did provide an increase over the Temik 15%G rate alone.

## References

Overstreet, C. and E. C. McGawley. 1999 Evidence for spread by reniform nematode in Louisiana during the past 20 years. Nematropica 29:127-128

Overstreet, C. and E.C. McGawley. 2000. Management options for reniform nematode in cotton production for Louisiana. Nematropica 30:.142-143.

Overstreet, C., E.C. McGawley, and G.W. Lawrence. 2001. Telone II for the management of the reniform nematode in cotton during 1999-2000 in northern Louisiana and southern Mississippi. Phytopathology 91:S140.

Table 1. Cotton yield of Temik 15%G alone or in combination with Telone II at six locations in Louisiana during 1999-2001.

| | Seed cotton in pounds/acre | | |
|---|---|---|---|
| **Location/year** | **Telone II at 3.0 gal and Temik 15%G at 3.5-4.0 lb** | **Temik 15%G at 3.5-4.0 lb** | **P value** |
| Shackelford 1999 | 2119 | 1609 | 0.01 |
| Shackelford 2000 | 2083 | 1742 | 0.004 |
| Lafoe 2000 | 1598 | 1166 | 0.0006 |
| Guedon 2000 | 2595 | 2492 | NS |
| Shackelford 2001 | 1975 | 1863 | 0.03 |
| Whitehall 2001 | 2663 | 2754 | NS |

Average of 3 or 4 replications at each site.

Table 2. Cotton yield comparing rates of Telone II at three locations in 2000-2001.

| | Locations | | | |
|---|---|---|---|---|
| **Telone Rate (gal)** | **LaFoe 00'** | **Shackelford 00'** | **Shackelford 01'** | **Avg.** |
| 0 | 1120 | 1671 | 1828 | 1540 |
| 1.5-1.8 | 1876 | 2008 | 1945 | 1943 |
| 3.0 | 1658 | 2050 | 2003 | 1903 |
| 5.0-6.0 | 2022 | 2137 | - | 2080 |
| *LSD 5%* | 211 | 139 | 126 | |

Average of 4 replications at each site.

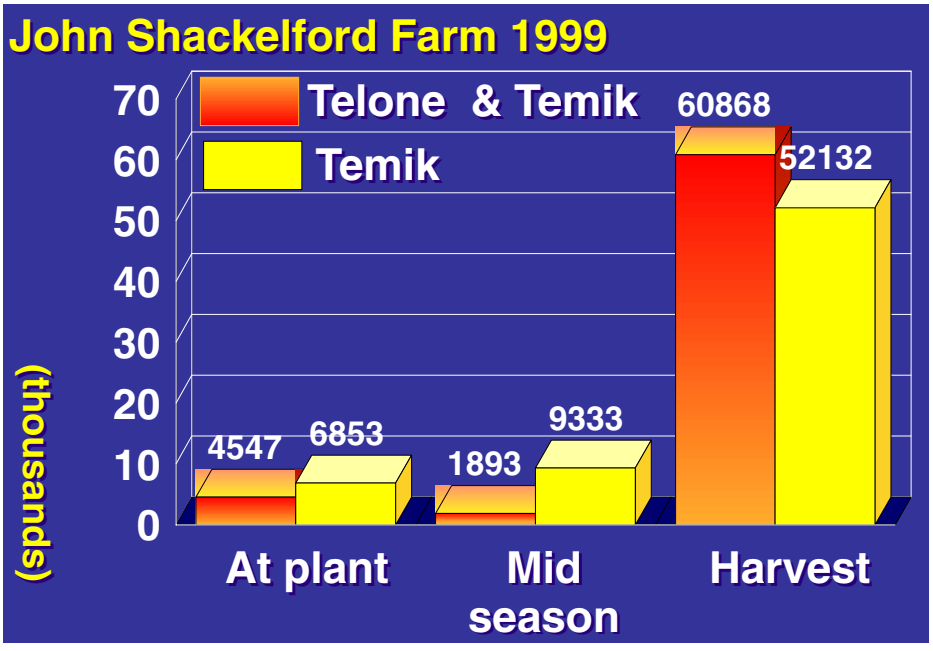


Figure 1. Populations of reniform nematode after treatment with Telone at the Shackelford farm in 1999.

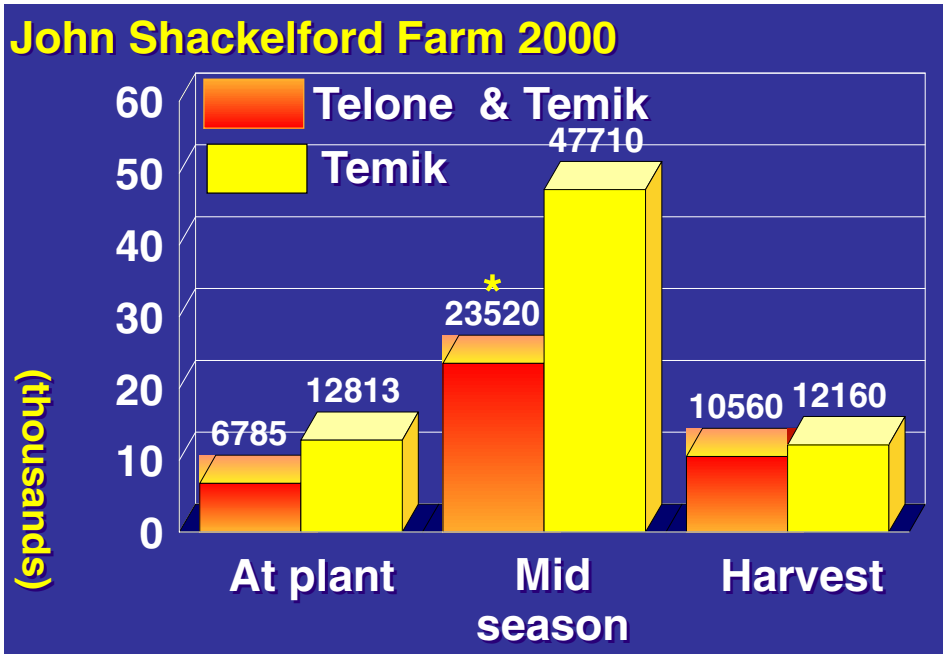


Figure 2. Populations of reniform nematode after treatment with Telone at the Shackelford farm in 2000.

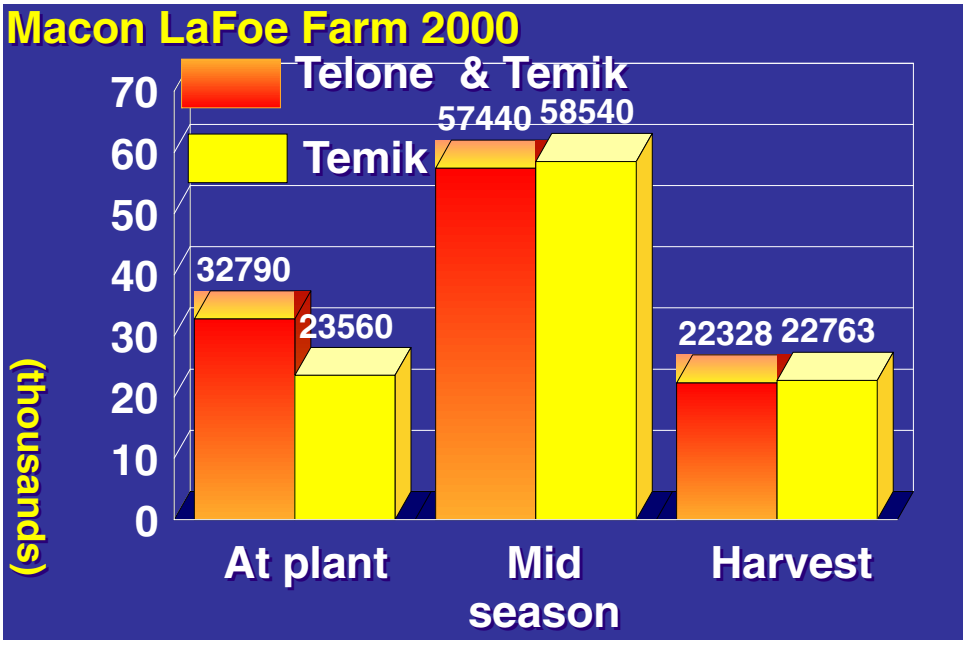


Figure 3. Populations of reniform nematode after treatment with Telone at the LaFoe farm in 2000.

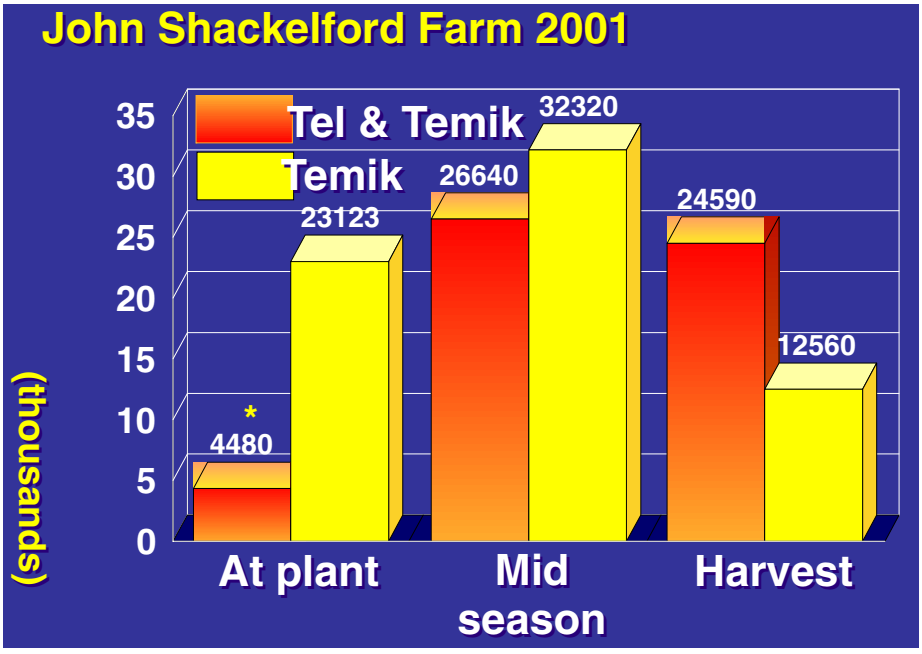


Figure 4. Populations of reniform nematode after treatment with Telone at the Shackelford farm in 2001.