

**CURRENT RESEARCH WITH
ROTYLENCHULUS RENIFORMIS IN LOUISIANA:
MICROPLOT AND FIELD**

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Abstract

Both field and microplot studies have been conducted to determine the importance of reniform nematode as a pest to cotton. Surveys conducted throughout the state showed reniform as one of the most important nematodes occurring on cotton. Microplot studies showed differences in fecundity and pathogenicity among several isolates of reniform nematode. Field studies were undertaken to evaluate both cultivars or nematicides against reniform nematode.

Introduction

Reniform nematode has only recently been recognized as a serious pest in Louisiana on cotton. During the mid-to-late 1980s' incidence and damage were beginning to show up throughout the cotton growing regions of Louisiana. By the 1990s' reniform nematode was considered to be more widespread than root-knot nematode in cotton. Reniform nematode has proven itself to be highly damaging pest that requires careful management to avoid serious losses. Both microplot and field studies have been initiated to determine distribution, pathogenicity, fecundity, and management on cotton.

Discussion

Microplot

A microplot study was initiated in 1996 to evaluate reproduction and pathogenicity of isolates of reniform nematode from several states including Louisiana, Texas, Mississippi, Arkansas, and Hawaii. The Louisiana, Arkansas, and Mississippi isolates were fairly similar, having high reproduction and being more pathogenic than either the Texas or Hawaii isolates on cotton. Another microplot study was initiated in 1997 to evaluate the influence of typical nematodes found in cotton field excluding reniform and root-knot nematodes on cotton development. The nematodes used in this study were obtained from the survey conducted during 1994-95 and included stunt, spiral, lance, lesion, and stubby-root.. A reduction in root and shoot growth was observed only at the highest inoculum level.

Field

Surveys to determine nematode distributions were conducted in 1994 and 1995 from 200 producer fields in 20 parishes. Reniform nematode was present in 57% of the fields and was much more prevalent than root-knot nematode (27%). The only other nematode that had a higher frequency of distribution than reniform was spiral (*Helicotylenchus* sp.) which was found in 67% of the fields. Incidence of reniform nematode was high in 9 of the 20 parishes where the nematode was present in 80% or more of the fields surveyed.

A field trial was conducted to evaluate rates and application methodology of two nematicides (Temik 15%G and Nematicur 15%G). The treatments included Temik 15%G at 3.5 lbs/a and 7.0 lbs/a infurrow or 7.0 lbs/a in a four inch band and Nematicur at 6.5 lbs/a infurrow and 6.5 and 10 lbs/a in a four inch band. None of the treatments prevented the development of high populations of reniform nematode by the end of the growing season with population ranges of 14,000-20,000 per pint of soil. The highest yielding treatment was Temik 15%G at 7.0 lbs/a in the narrow band (295 lbs of lint over the untreated check or 19.5% increase). All the remaining treatments were numerically higher than the untreated check but not statistically significant. Temik 15%G at 3.5 lbs/a is the current standard used by most producers for nematode management. In a total of 38 field trials conducted during the past 15 years in reniform infested fields, Temik 15%G at 3.5 lbs/a averaged 2216 pounds of lint compared with 1983 pounds for the untreated control. (10.5% increase). Although the standard rate of Temik has provided a substantial increase for producers, higher rates or different methods of application may result in increased production when reniform nematode is a problem. A study to evaluate reproduction of reniform nematode on the five most popular varieties is conducted annually in a reniform infested field. Although there are significant differences noted among varieties with reproduction, all are considered susceptible.

Summary

Reniform nematode is clearly spreading rapidly throughout Louisiana and will probably infest an even higher percentage of the acreage. Differences in pathogenicity and fecundity of reniform nematode have been shown among isolates of this nematode from several states. Management strategies may require more fine-tuning in the future as this nematode is better characterized. This will become more critical with the development of commercial varieties that have resistance against this nematode.

References

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