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EVALUATION OF REGIONAL COTTON BREEDERS STRAINS GROWN IN ROOT-KNOT INFESTED SOILS

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Abstract

The root-knot nematode is the most widely distributed nematode that affects cotton. In 2004, twenty-four entries from the regional breeder strain test were evaluated for root-knot resistance at the Red River Research Station in Bossier City, Louisiana. None of the entries were as resistant to root-knot nematodes as the check varieties Acala NemX and Stoneville LA 887. Three entries, Acala NemX, Stoneville LA 887, and LA 433287-016 produced significantly lower root gall ratings than other entries.

Introduction

The root-knot nematode (*Meloidogyne incognita* [Kofoid & White] Chitwood) is one of the most prevalent nematodes in the United States and causes substantial yield losses in cotton each year. Most commercial cultivars that are planted are susceptible to damage from root-knot nematodes. This study was conducted to evaluate strains from the 2004 regional breeder strain test for root-knot nematode resistance.

Materials and Methods

The field study was conducted at the LSU Agricultural Center, Red River Research Station in Bossier City, Louisiana. The soil type is a Caplis very fine sandy loam heavily infested with root-knot nematodes. To ensure a high population of root-knot nematodes in the soil, cotton is rotated annually with kenaf. The experimental design was a randomized complete block with four replications. The experimental plots were one row, 45 feet long, spaced 3.33 feet apart. Plots were planted on May 25 and evaluations were made on 18 November 2004. Root gall ratings were taken on fifteen randomly selected plants. The evaluations were made by using root gall ratings on a scale of 0-5 where 0 = no root galling and 5 = severe root galling.

Results

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Three entries, Acala NemX, Stoneville LA 887 (the resistant checks) and LA 433287-016 had lower gall ratings than the other entries. Gall ratings for Acala NemX, Stoneville LA 887, and LA 433287-016 were 1.2, 1.7, and 1.8, respectively.

Table 1. Root-knot ratings of 2004 Regional Breeders Strains Test entries.

Acala Nemx	1.3
Stoneville LA 887	1.7
LA 433287-016	1.8
NC 03AZ04	2.6
LA 98404028	2.8
Ark 9409-40-08	3.1
NC 03AZ01	3.3
NC 03AZ07	3.3

NC 03AZ15	3.4
LA 1407072	3.4
NC 03AZ09	3.5
LA 1110035	3.6
Ark 9314-24-16	3.6
Ark 9304-39-07	3.6
Deltapine DeltaPEARL	3.8
Ark 9406-15-04	3.8
Ark 9304-39-15	4.0
DES 816	4.0
Ark 9304-39-02	4.0
LA 1407117	4.0
98D-99ne	4.1
Ark 9315-33-21	4.1
Stoneville ST 474	4.2
PSC 355	4.3
DES 810	4.4
LA 1110001	4.4
FiberMax FM 958	4.6
	LSD (0.05) = 0.732
	C.V. (%) = 14.8

*Root-knot nematode gall ratings on a scale of 0-5; 0 = no root galling; 5 = severe galling.