

RENIFORM NEMATODE REPRODUCTION ON SOYBEAN IN TESTS CONDUCTED IN 2001

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Introduction

In 1994 Robbins, et al. reported on reproduction of the reniform nematode on 30 soybean cultivars. In 1996 Robbins & Rakes reported on 16 soybean cultivars, 45 germplasm lines, 2 cultivars (Hartwig, Cordell) with resistance from PI's 437654 and 90763, respectively, and the differentials used in the soybean cyst nematodes race determination tests. In 1999 Robbins et al. reported on 282 soybean lines from the Arkansas and Mississippi Soybean Variety Testing programs. In 2000 Robbins et al. reported on 226 cultivars from the Arkansas and Mississippi Soybean Variety Testing programs, and varieties submitted by extension nematologists from Auburn and Louisiana State University. These papers form the basis for reniform nematode reproduction information on contemporary soybean lines.

Materials and Methods

Reproduction of reniform nematode *Rotylenchulus reniformis* on 139 soybean lines were greenhouse tested in 2001, 119 were new in the Arkansas and Mississippi Soybean Testing Programs and 20 were submitted by C. Overstreet, Louisiana State Extension Nematologist. Controls were resistant lines Forrest and Hartwig, susceptible Braxton, and fallow infested soil. A second test of 32 breeding lines and 2 varieties from Clemson University soybean breeder (E. Shipe), was performed at the same time under the same conditions. Five treatment replications were planted in sandy loam soil infested with 1,744 eggs and vermiform reniform nematodes, grown for 10 weeks in 10 cm-dia pots. Total reniform nematodes extracted from soil and roots was determined and a reproductive factor (final population (Pf) /initial inoculum level (Pi)) was calculated for each line. Also, reproduction on each line was compared to the reproduction on the resistant cultivar Forrest (Pf cultivar/Pf Forrest).

Results

Eight cultivars had less than four times the reproductive factor of Forrest (1.00), AgriPro/Garst 6612RRN (1.06), Triumph TR4810RR (2.19), Armor 56-J6 (3.25), Vigoro V462NRS (3.58), Terral TV5666RR (3.59), USG Exp570 (3.66), Pioneer 94B23 (3.75), and Delta King XTJ193RR (3.99). The reproductive factors of the remaining cultivars compared to that of Forrest ranged from 4.18 to 30.38. Eight breeding lines and the varieties Santee and Motte had less than four times the reproductive factor for Forrest (1.00) and as shown in Table 1. Statistical analysis of both tests are in progress.

Discussion

The main objective of these tests is to identify soybean varieties and breeding lines with low reniform nematode reproductive indices. These varieties may be important to use in rotation with cotton in fields with large numbers of the reniform nematode, whereas the breeding lines with low reproductive indices may be useful in the breeding of new varieties.

References

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Table 1. Reproduction of *Rotylenchulus reniformis* on 32 Breeding lines and 2 Cultivars from, the Clemson breeding program in 2001.¹

Treatment	Variety	
	Pf/Pi ²	Pf/Pi ³ Pf/Pi of Forrest
Fallow	0.43	0.16
SC95-1070	1.22	0.45
SC98-249	1.25	0.46
Hartwig	1.58	0.58
SC94-1573	1.80	0.67
SC97-259	2.10	0.78
SC95-771	2.23	0.83
SANTEE	2.31	0.86
Forrest	2.70	1.00
MOTTE	3.53	1.31
SC97-1770	4.84	1.79
SC98-353	5.96	2.21
SC98-318	8.24	3.05
SC98-1063	27.37	10.14
SC98-635	38.27	14.17
SC96-1624	47.24	17.49
SC96-1628	48.00	17.78
SC96-1574	49.22	18.23
SC98-1181	51.27	18.99
SC98-1017	51.43	19.05
SC98-469	67.86	25.13
SC98-1108	70.21	26.00
SC97-1746	76.36	28.28
SC97-1764	76.75	28.43
SC97-2010	77.65	28.76
SC98-679	78.19	28.96
SC98-1427	88.21	32.67
SC96-1476	94.85	35.13
SC95-988	100.53	37.23
SC98-1279	105.52	39.08
SC96-1688	109.28	40.47
SC96-2736	111.54	41.31
Braxton	113.68	42.10
SC98-81	121.61	45.04
SC98-888	131.36	48.65
SC98-1428	137.92	51.08
SC94-1075	151.77	56.21
SC93-1963	308.33	114.19

¹= Inoculated with 1744 vermiform reniform nematodes on July 10. The test was harvested September 10.

² = Pf/Pi = Final Reniform Population/ Initial Reniform Population (Reproductive Index).

³ = Pf/Pi/ Pf/Pi of Forrest = Reproductive Index of Variety/Reproductive index of Forrest.