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Host Suitability in Soybean Cultivars for the Reniform Nematode, 1999 Tests[1]

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Abstract: Two hundred twenty-six soybean cultivars were tested in greenhouse pot experiments during summer 1999 to determine their suitability as hosts for the reniform nematode, *Rotylenchulus reniformis*. The cultivars included new entries into the Arkansas and Mississippi soybean variety testing programs and entries submitted by extension nematologists from Auburn University and Louisiana State University. Also included in the *R. reniformis* tests were the resistant cultivars Forrest and Hartwig, the susceptible control Braxton, and fallow infested soil that served as controls. Total number of eggs + nematodes extracted from the soil and roots per pot, reproductive indices (Pf/Pi) based on the number of nematodes extracted from the soil and roots/initial inoculum level, calculated for each cultivar, and the ratio of the Pf/Pi of each cultivar to the Pf/Pi of Forrest are reported. Cultivars with reproduction not significantly different from Forrest were not suitable hosts, whereas those with greater reproductive indices were considered suitable hosts. One of the 12 cultivars of the relative maturity group (RMG) ≤4.4 was not a suitable host. For the 4.5 to 4.9 RMG, 24 of 72 cultivars were not suitable hosts, whereas 9 of 41 cultivars in RMG 5.0 to 5.4 were not suitable hosts. In the 5.5 to 5.9 RMG cultivars, 11 of 66 were not suitable hosts; for the 6.0 or greater RMG, 11 of 35 were not suitable hosts. These data will be useful in the selection of soybean cultivars to use in rotation with cotton or other susceptible crops to help control the reniform nematode.

Key words: Glycine max, nematode, reniform nematode, reproductive index, rotation, *Rotylenchulus reniformis*, soybean.

In 1998, all 282 cultivars and lines entered in the Arkansas and Mississippi soybean variety testing programs were screened for resistance to reniform nematode (*Rotylenchulus reniformis* Lindford and Oliveira, 1940) and 93 of the cultivars were classed as resistant (Robbins et al., 1999). Tests previous to 1998 by various authors reporting reniform nematode resistance in soybean, the history of the spread of reniform nematodes on soybean, the relationship of reniform resistance in soybean to that of soybean cyst nematode (*Heterodera glycines*), and effect on seed yield were discussed and summarized (Robbins et al., 1999).

The soybean cultivars and lines entered in the 1999 Arkansas and Mississippi soybean variety testing programs, as well as several submitted by extension nematologists from Auburn University and Louisiana State University, were tested in a greenhouse pot study to determine the reproductive capacity of *R. reniformis*. The objective of the study was to identify current soybean cultivars that have reniform nematode resistance comparable with that of the reniform-resistant standard cultivar Forrest. Soybean cultivars with resistance to *R. reniformis* would be useful for rotation with cotton or other susceptible crops in reniform nematode-infested fields.

Materials and Methods

The soybean cultivars and lines tested were from both private and public sources in the relative maturity groups (RMG): 4.4 or earlier, 4.5 to 4.9, 5.0 to 5.4, 5.5 to 5.9, and 6.0 or later. Seeds of all cultivars were germinated in vermiculite and transplanted into 10-cm-diam. clay pots containing 500 cm^3 of pasteurized fine sandy loam soil (ca. 91% sand, 5% silt, 4% clay, <1% O.M.). Inoculum was obtained by washing the soil from the roots of the susceptible cultivar Braxton grown in the greenhouse for at least 10 weeks, suspending the nematodes in

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water, and pouring the nematode solution through nested 841- and 38-µm-pore sieves. The material on the 38-µm-pore sieve was placed on a tissue in a Baermann funnel. All vermiform stages of *R. reniformis* were collected after 16 hours, and a total of 3,540 nematodes were injected with an autopipet into three 2.5-cm-deep holes made in the soil in each pot containing a single seedling in the dicotyledonary stage. All pots were inoculated the same day. Pots were arranged in a randomized complete-block design, each block containing all maturity groups, with five replications per treatment. Soybean cultivars Forrest and Hartwig were included as resistant controls and Braxton as a susceptible control. Reniform nematode-infested fallow soil was included as a survival baseline control in the absence of a host. The experiment was conducted in a greenhouse with the ambient temperature maintained at 28 to 34 °C. All test pots were watered twice daily (8 a.m. and 4 p.m.) and fertilized each week with 20-20-20 (N-P-K) fertilizer.

After 9 weeks (June 29–August 30), the number of reniform nematode eggs and vermiform stages in egg masses on the roots and the numbers of vermiform nematodes in the soil of each pot were determined. The eggs and vermiform nematodes in the egg masses on roots were extracted with a 0.525% sodium hypochlorite solution (Hussey and Barker, 1973), and numbers were recorded. To calculate the final reniform nematode soil population (Pf), a 100-cm^3 aliquot of well-mixed soil from each pot was suspended in water and poured through nested 841- and 38-µm-pore sieves to remove plant debris and extract the nematodes. Nematodes caught on the 38-µm-pore sieve were separated from soil with sucrose centrifugal-flotation (Jenkins, 1964), counted, and multiplied by 5 to give the number per pot. The total number of reniform nematode eggs and vermiform nematodes per pot was calculated by adding the number from the soil to the number from the roots. A reproductive index (RI), defined as the number of eggs + vermiform nematodes at test termination/initial inoculation level, was calculated for each cultivar. In addition, the relative reproduction on each cultivar in relation to the reproduction on the standard cultivar Forrest (reproduction on the cultivar/reproduction on Forrest) was calculated.

Data used to calculate the ratio of repro-

TABLE 1. Reproduction of *Rotylenchulus reniformis* on 11 selected soybean cultivars in relative maturity group ≤4.4.

Cultivar[a]	Final population per pot[b]	Reproductive index (Pf/Pi)[c]	Ratio of cultivar reproduction to Forrest[d]
Forrest (Check)	3,736	1.06	1.00
Pioneer Variety 94B45	42,398	11.98	11.35
DEKALB CX 444 CRR	44,366	12.53	11.87
Southern States Coop RT 3975	50,611	14.30	13.54
Southern States Coop RTExp88401N	55,952	15.81	14.97
Southern States FFR 447	57,744	16.31	15.45
Wilfarm WF Exp 400RR	65,663	18.55	17.57
Wilfarm WF Exp 429RR	66,880	18.89	17.90
Southern States Coop HT 381 STS	70,791	20.00	18.94
Southern States FFR 439	71,364	20.16	19.90
Wilfarm WF Exp 419	75,188	21.24	20.12
Asgrow Seed AG 4402	97,927	27.66	26.21
Novartis Seeds NK S 38-L5	125,176	35.36	33.50
Braxton (Check)	132,549	37.44	35.47

[a] Forrest = resistant check; Braxton = susceptible check. Five replications per entry.
[b] Final population of eggs from roots and vermiform nematodes from 500 cm^3 soil in pots inoculated with 3,540 vermiform nematodes.
[c] Reproductive Index = final population/initial population (Pf/Pi).
[d] Ratio of cultivar reproduction to Forrest values from transformed data ($\log_{10}$ [x + 1]). Values ≥11.52 are significantly greater ($P \leq 0.05$) than Forrest.

TABLE 2. Reproduction of *Rotylenchulus reniformis* on 72 selected soybean cultivars in relative maturity group 4.5–4.9.

Cultivar[a]	Final population per pot[b]	Reproductive index (Pf/Pi)[c]	Ratio of cultivar reproduction to Forrest[d]
Forrest (Check)	3,736	1.06	1.00
Delta Grow 4850RR	20,522	5.80	5.49
Hartz Variety H4998 RR (L)	24,521	6.93	6.56
AgriPro Seeds AP 4510RR	31,704	8.96	8.48
Unisouth Genetics USG 7499RR	35,781	10.11	9.58
FFR Seeds FFR RT 517	45,940	12.98	12.29
FFR Seeds FFR 514	46,336	13.09	12.40
Riverside 490	49,410	13.96	13.22
Manokin	50,413	14.24	13.49
Asgrow Seed AG 4902	54,921	15.51	14.70
AgriPro AP 4602RR	56,552	15.98	15.13
Asgrow Seed AG 4602	57,062	16.12	15.27
Hornbeck Seed HBK R4660	61,396	17.34	16.43
Hornbeck Seed HBK 4890	62,812	17.74	16.81
Progeny Ag. Products EK XP4910	63,064	17.81	16.88
Asgrow Seed AG 4702	63,260	17.87	16.93
FFR Seeds FFR HT 4985	63,412	17.91	16.97
Deltapine Seed DP 4690RR	64,636	18.26	17.30
Unisouth Genetics USG 7478nRR	64,688	18.27	17.31
Terra International Terra TS 466RR	65,099	18.39	17.42
Hartz Variety H 4994	65,792	18.59	17.61
R95-3235 (U of AR)	66,443	18.77	17.78
Terral Seed TVS 4589 RR	68,464	19.34	18.32
FFR Seeds FFR 495	68,464	19.34	18.32
Terral Seed TVX4881	68,844	19.45	18.42
Terral Seed TV 4890 RR	69,428	19.61	18.58
UAP Midsouth Dyna-Gro 3468NRR	69,672	19.68	18.64
AgriPro Seeds AP 4888 RR	69,779	19.71	18.67
Hartz Variety H 4998RR (M)	70,560	19.93	18.88
Deltapine Seed DP 4909	72,858	20.58	19.50
Asgrow Seed AG 4901	73,128	20.66	19.57
AgriPro Seeds APX 94546	73,369	20.73	19.63
Wilfarm WF Exp 470	74,456	21.03	19.93
Terra International Terra RVS 499	74,850	21.14	20.03
Hartz Variety H4994RR	75,248	21.26	20.14
Delta King Seed XTJ974	75,572	21.35	20.22
MFA Inc. MFA Morsoy RT 4809	75,608	21.36	20.23
Triumph Seed TR 4718RR	75,736	21.39	20.27
Genesis Ag. Ltd. M473RR	78,772	22.25	21.08
Cache River Valley Seed Dixie X4803	79,032	22.33	21.15
Terral Seed TVX 4787 RR	80,488	22.74	21.54
Hyperformer AP 4880	82,619	23.34	22.11
Terral Seed TV4975	83,640	23.63	22.38
Progeny Ag. Products EK XP4700RR	83,984	23.72	22.47
Terral Seed TVX 4787RR	84,636	23.91	22.65
Wilfarm WF 480 RR	85,392	24.12	22.85
Terra International TS 490	86,368	24.40	23.11
Delta King Seed XTJ784	86,854	24.54	23.24
Willcross 2467	87,800	24.80	23.50
Deltapine Seed DPX 8S47RR	89,320	25.23	23.90
Pioneer Variety 9492	89,352	25.24	23.91
Asgrow Seed AG 4601	93,648	26.45	25.06
Cache River Valley Seed Dixie X4888	94,048	26.57	25.17
Hornbeck HBK 4891	95,036	26.85	25.43
Unisouth Genetics USG 7489RR	95,864	27.08	25.65
AgriPro Seed AP 4882	97,436	27.52	26.07
Hartz Variety H 4994RR	98,876	27.93	26.46

TABLE 2. *Continued*

Cultivar[a]	Final population per pot[b]	Reproductive index (Pf/Pi)[c]	Ratio of cultivar reproduction to Forrest[d]
Delta King Seed DK XT J894 RR	101,196	28.59	27.08
DT 97-4318 (USDA)	101,916	28.79	27.27
Deltapine Seed DP 4750RR	103,016	29.10	27.57
Delta King Seed XTJ584RR	103,816	29.33	27.78
Delta King Seed XTJ894RR	103,900	29.35	27.80
Hornbeck Seed HBK R4855	104,492	29.52	27.96
DT 97-4290 (USDA)	112,616	31.81	30.14
Cache River Valley Seed Dixie X4883	114,608	32.38	30.67
Terra International TS 4979RR	125,264	35.39	33.52
Pioneer Variety 9482	126,528	35.74	33.86
Braxton (Check)	132,549	37.44	35.47
Unisouth Genetics USG 7499	145,694	41.16	38.99
Sure-Grow Seed SG 498RR	158,056	44.65	42.30
Delta King Seed XTJ684	177,372	50.11	59.30
Md92-5769 (U of MD)	179,552	50.72	48.05
Progeny Ag. Products EK XP4900	201,168	56.83	53.83
Hornbeck Seed HBK 4890	264,903	74.83	70.89

[a] Forrest = resistant check; Braxton = susceptible check. Five replications per entry.
[b] Final population of eggs from roots and vermiform nematodes from 500 cm^3 soil in pots inoculated with 3,540 vermiform nematodes.
[c] Reproductive Index = final population/initial population (Pf/Pi).
[d] Ratio of cultivar reproduction to Forrest values from transformed data ($\log_{10}$ [x + 1]). Values ≥18.44 are significantly greater ($P \leq 0.05$) than Forrest.

duction on each cultivar to the reproduction on the resistant standard (Forrest) were transformed by $\log_{10}$ (X + 1) and analyzed as a randomized complete-block design using analyses of variance. Cultivar means were separated using a protected LSD at $P = 0.05$, where appropriate. Cultivars were considered significantly better hosts than Forrest if their means were significantly larger than $\log_{10}$ (2) ≅ 0.301. Means were transformed back to the original scale for presentation. All statistical analyses were carried out using SAS version 7 (SAS Institute, Cary, NC) (Tables 1–5).

RESULTS

All cultivars supported some reniform nematode reproduction. Mean survival of reniform nematode in the infested fallow pots was 1,122 or 30% of the number found on Forrest. The mean total of eggs + vermiform nematodes and the RI (in parentheses) of the resistant control cultivars Forrest and Hartwig were 3,736 (1.08) and 3,348 (0.97), respectively, and for the susceptible control cultivar Braxton were 132,549 (38.42). Relative reproduction as a ratio of the reproduction on Forrest was used to determine host suitability. Of the 12 cultivars in RMG 4.4 or earlier, only Pioneer Variety 94B45 was not a suitable host (not different from Forrest); the remaining 11 cultivars were suitable hosts (Table 1). Of the 72 cultivars in RMG 4.5 to 4.9, 24 were not suitable hosts (Table 2). The 41 in RMG 5.0 to 5.4 included nine that were not suitable hosts (Table 3). Eleven of 66 cultivars in RMG 5.5–5.9 were not suitable hosts (Table 4). Among the 35 cultivars with an RMG of 6.0 or greater, 11 were not suitable hosts (Table 5). In all cultivars tested, only UAP Midsouth Dyna-Gro 3682 and Deltapine Seed Dp 7375 RR supported numerically less reniform nematode reproduction than Forrest (Table 5).

Hartz 4998 RR and Hartz 5000 RR were inadvertently included twice. Both cultivars were from different sources (H 4998 RR from Mississippi and Louisiana [Table 2], H 5000 RR from Louisiana and Arkansas

TABLE 3. Reproduction of *Rotylenchulus reniformis* on 41 selected soybean cultivars in relative maturity group 5.0–5.4.

Cultivar[a]	Final population per pot[b]	Reproductive index (Pf/Pi)[c]	Ratio of cultivar reproduction to Forrest[d]
Forrest (Check)	3,736	1.06	1.00
Unisouth Genetics USG 7539	6,729	1.90	1.80
Hartz Variety HX 5062087 RR	7,512	2.12	2.01
Hartz Variety H 5000 RR (A)	25,926	7.32	6.94
UAP Midsouth Dyna-Gro 3541NRR	29,443	8.32	7.88
Willcross 2549NRR	35,512	10.03	9.50
Willcross 2549N	37,337	10.55	9.99
Unisouth Genetics USG 7547RR	39,768	11.23	10.64
Unisouth Genetics USG 7548nRR	44,085	12.45	11.80
Terral Seed TV5486RR	47,544	13.43	12.72
Unisouth Genetics USG 7509RR	49,756	14.06	13.32
Genesis Ag. Ltd. M541RR	51,339	14.50	13.74
AgriPro Seed APX 9519RR	53,247	15.04	14.25
TN 4-94 (U of TN)	53,784	15.19	14.39
Novartis Seeds X9952	57,181	16.15	15.30
Asgrow Seed AG 5401	61,172	17.28	16.37
Hartz Variety HX5061870RR	62,176	17.56	16.64
Cache River Valley Seed Dixie X5888	65,621	18.54	17.56
TN 95-53 (U of TN)	71,691	20.25	19.19
Delta Grow Seed 5550RR	71,833	20.29	19.22
FFR Seed FFR RT5485	72,168	20.39	19.31
Pioneer Variety 95B32	72,836	20.58	19.49
Terra International Seed Terra TS 520	83,040	23.46	22.22
UAP Midsouth UAPX 0005RR	83,568	23.61	22.36
Progeny Ag. Products EK XP 5000RR	84,260	23.80	22.55
MFA Incorp. MFA Morsoy 5389SCN	89,296	25.22	23.90
Willcross 2520 RRN	90,672	25.61	24.27
Terra International Seed Terra TS520	91,688	25.90	24.54
Novartis Seeds S51-T1	96,000	27.12	25.69
Progeny Ag. Products EK XP 5400	98,600	27.85	26.39
Asgrow Seed AG 5001	99,608	28.14	26.66
Progeny Ag. Products EK XP 5120N	104,068	29.40	27.85
Asgrow Seed A5404	111,888	31.61	29.94
Pioneer Variety 95B41	120,784	34.12	40.28
Hutcheson	123,296	34.83	33.00
Hartz Variety H5088RR	125,840	35.55	33.68
Essex RSV4 (VPI)	127,680	36.07	34.17
Unisouth Genetics USG 7528RR	131,400	37.16	35.16
Braxton (Check)	132,549	37.44	35.47
Hartz Variety H5000RR (L)	132,552	37.44	35.47
Pioneer Variety 95B33	136,848	38.66	36.62
TN 96-68 (U of TN)	160,368	45.30	42.92
Cache River Valley Seed Dixie X5151	166,064	46.91	44.44

[a] Forrest = resistant check; Braxton = susceptible check. Five replications per entry.
[b] Final population of eggs from roots and vermiform nematodes from 500 cm^3 soil in pots inoculated with 3,540 vermiform nematodes.
[c] Reproductive Index = final population/initial population (Pf/Pi).
[d] Ratio of cultivar reproduction to Forrest values from transformed data ($\log_{10}$ [x + 1]). Values ≥12.92 are significantly greater ($P \leq 0.05$) than Forrest.

[Table 3]), and they gave mixed reactions—one as a non-suitable host and the other as a suitable host. The RI of H 4998 RR from Louisiana varied from 1.78 to 11.59 (mean = 6.93), whereas that from Mississippi varied from 11.71 to 32.49 (mean = 19.93). The RI of H 5000 RR from Arkansas varied from 0.12 to 25.82 (mean = 7.32), whereas that from Louisiana varied from 5.49 to 77.68 (mean = 37.44).

TABLE 4. Reproduction of *Rotylenchulus reniformis* on 66 selected soybean cultivars in relative maturity group 5.5–5.9.

Cultivar[a]	Final population per pot[b]	Reproductive index (Pf/Pi)[c]	Ratio of cultivar reproduction to Forrest[d]
Forrest (Check)	3,736	1.06	1.00
UAP Midsouth UAPX 0055RR	6,108	1.73	1.64
Deltapine Seed DP 5644RR	15,744	4.45	4.21
AgriPro Seeds AP 569RR/N	32,252	9.11	8.63
AgriPro Seeds APX 9563	32,911	9.30	8.81
Deltapine DP 5806 RR	33,808	9.55	9.05
Unisouth Genetics USG 7577RR	34,553	9.76	9.05
DEKALB Seeds CX556CRR	37,466	10.58	10.03
Terra International Seed TS556	41,860	11.83	11.20
Unisouth Genetics USG 7557RR	44,490	12.57	11.91
Cache River Valley Seed Dixie X5757	47,008	13.28	12.58
Terra International Seed TS556RR	51,264	14.48	13.72
R95-798 (U of AR)	56,760	16.03	15.19
AgriPro Seed AP588RR	57,217	16.16	15.31
Wilfarm WF590RR	57,622	16.28	15.42
R95-2210 (U of AR)	57,832	16.34	15.48
Terral Seed TVX 5794RR	58,038	16.40	15.53
Willcross 2590 RRNSTS	59,020	16.67	15.79
Delta King Seed XTJ675RR	60,320	17.04	16.14
Asgrow Seed AG 5602	65,068	18.38	17.41
Deltapine Seed DPX 5915RR	67,951	19.20	18.18
Willcross 2580 RRN	68,032	19.22	18.21
DEKALB Seed CX 550 RR	68,200	19.27	18.25
DT96-6840 (USDA-ARS)	68,376	19.32	18.30
Delta King Seed XTJ665RR	68,600	19.38	18.36
Hornbeck Seed HBK 5990	69,162	19.54	18.51
Hornbeck Seed HBK R5920	72,377	20.45	19.37
Wilfarm WF590RR	72,835	20.57	19.49
DT96-16809 (USDA-ARS)	74,032	20.91	19.81
FFR Seed FFR 594	74,640	21.08	19.97
Terra International TS 5879RR	77,272	21.83	20.68
Delta King Seed 5580	77,992	22.03	20.87
Asgrow Seed AG 5802	78,168	22.08	20.92
Progeny Ag. Products EK XP 5700	82,504	23.31	22.08
Terral Seed TV5666RR	84,268	23.80	22.55
Novartis Seeds X9955R	86,372	24.40	23.11
Progeny Ag. Products EK XP 5600	87,680	24.77	23.46
Terra International TS558	87,828	24.81	23.50
Hartz Variety HX560167RR	88,168	24.91	23.60
V92-0254 (VPI)	88,688	25.05	23.73
Unisouth Genetics USG 599nRR	92,628	26.17	24.79
Asgrow Seed A5959	94,960	26.82	25.41
Cache River Valley Seed Dixie X5799	96,780	27.34	25.90
Asgrow Seed AG 5701	98,672	27.87	26.41
Pioneer Variety 95B53	99,455	28.09	27.96
Deltapine Seed DP 5960 RR	100,376	28.35	26.86
Progeny Ag. Products EK XP 5900RR	100,680	28.44	26.94
DEKALB Seed CX580CRR	103,512	29.24	27.70
Deltapine Seed DP 5960RR	103,725	29.30	27.76
Pioneer Variety 95B95	104,464	29.51	27.96
Hartz Variety H5855	104,468	29.51	27.96
Delta Grow Seed 5950RR	105,596	29.83	28.26
Asgrow Seed AG 5901	106,668	30.13	28.55
UAP Midsouth UAPX 0085RR	107,080	30.25	28.66
Novartis Seeds x9857R	113,888	32.17	30.48
TN 96-58 (U of TN)	114,101	32.23	30.54
Asgrow Seed AG 5801	114,372	32.31	30.61

TABLE 4. *Continued*

Cultivar[a]	Final population per pot[b]	Reproductive index (Pf/Pi)[c]	Ratio of cultivar reproduction to Forrest[d]
Deltapine Seed DP 5655	114,480	32.34	30.64
Deltapine Seed DPX 5718RR	116,160	32.81	31.09
Novartis Seeds S59-V6	118,288	33.41	39.55
TN 94-238 (U of TN)	126,345	35.69	33.81
Delta Grow Seed 5810	129,613	36.61	37.58
Braxton (Check)	132,549	37.44	35.47
Hornbeck Seed HBK58	142,168	40.16	38.05
TN 93-99 (U of TN)	152,456	43.07	40.50
Asgrow Seed AT 5901	160,208	45.26	42.87
Deltapine Seed DP 5989	160,488	45.34	42.95
Hartz Variety H 5999RR	222,680	62.90	59.59

[a] Forrest = resistant check; Braxton = susceptible check. Five replications per entry.
[b] Final population of eggs from roots and vermiform nematodes from 500 cm^3 soil in pots inoculated with 3,540 vermiform nematodes.
[c] Reproductive Index = final population/initial population (Pf/Pi).
[d] Ratio of cultivar reproduction to Forrest values from transformed data ($\log_{10}$ [x + 1]). Values ≥14.76 are significantly greater ($P \leq 0.05$) than Forrest.

DISCUSSION

In this study the reproduction index (Pf/Pi) was higher on the susceptible cultivar check Braxton and the fallow check than in earlier (1998) tests (Robbins et al., 1999), and the ratio of cultivar reproductive indices to the reproductive index of Forrest was much higher in this study than in 1998. Conversely, the Pf/Pi was lower for the resistant checks Forrest and Hartwig in this study than in the 1998 study. Experiment duration of the current study was approximately 2 weeks shorter than 1998, and the inoculation rate was higher. However, the reason for the variation between the two tests remains unknown.

The different reactions for the two varieties (H 4998 RR and H 5000 RR) in this test may be explained in part by their being from different seed sources and by variation in reproduction of reniform nematode on individual plants. Large variations in reniform reproduction were common in many of the cultivars tested and could be attributed to some degree to the fact that the cultivars are not selected for resistance to reniform nematode. Consequently, individual plants within cultivars may vary widely in their degree of suitability as hosts for *R. reniformis*.

In both this study and in the previous study (Robbins et al., 1999), more later-maturing (RMG 4.5 or later) than earlier-maturing cultivars were found that were relatively poor hosts for the reniform nematode. This may be due to the greater frequency of occurrence of the soybean breeding line Peking in the backgrounds of southern soybean cultivars. Peking, which is resistant to both the soybean cyst nematode and to the reniform nematode, has been an integral part of many southern breeding programs where soybean cyst nematode resistance was a major focus.

This study demonstrates that while the majority of soybean cultivars that are available to southern growers are good hosts for *R. reniformis*, some cultivars are available that are relatively poor hosts. In soybean fields where reniform nematode population densities are sufficently high to be of economic concern, these cultivars may limit yield suppression. In addition, the cultivars that are comparable to the resistant standard Forrest in host suitability may be of considerable value in crop rotation programs by lowering population densities for subsequent highly susceptible crops such as cotton. Limited experience in Arkansas indicates that a 2-year rotation with the soybean cultivar Accomac, which has been shown to be a poor host for the reniform nematode (Robbins et al., 1999), resulted in significant improvement in cotton performance the following year (T. L. Kirkpatrick, pers. comm.). Rotation

TABLE 5. Reproduction of *Rotylenchulus reniformis* on 35 selected soybean cultivars in relative maturity group 6.0 or greater.

Cultivar[a]	Final population per pot[b]	Reproductive index (Pf/Pi)[c]	Ratio of cultivar reproduction to Forrest[d]
UAP Midsouth Dyna-Gro 3682	1,284	0.36	0.34
Deltapine Seed Dp 7375 RR	2,599	0.73	0.70
Forrest (Check)	3,736	1.06	1.00
Boggs	7,720	2.18	2.07
Stonewall	11,498	3.25	3.08
Asgrow Seed AG 6101	29,328	8.28	7.85
Sure Grow Seed SG 678 RR	54,851	15.49	14.68
Pioneer Variety 97b61	58,843	16.62	15.75
Deltapine Seed DPX 8S62RR	59,312	16.76	15.87
Hornbeck Seed HBK XR6020	59,712	16.87	15.98
Buckshot 723	59,940	16.93	16.04
N93-1264 (U of TN)	65,513	18.51	17.53
Terra International TS 608RR	66,684	18.84	17.85
Asgrow Seed AG 6201	70,872	20.02	18.97
Terra International TS 608RR	73,934	20.89	19.79
Asgrow Seed AG 6701	74,851	21.14	20.03
Southern States Coop RT-EXP 47360N	75,424	21.31	20.18
Hartz Variety H 7550 RR	83,572	23.61	22.36
Hartz Variety H 6686 RR	91,272	25.78	24.43
Deltapine Seed DP 6200RR	92,068	26.01	24.64
R93-151 (U or AR)	92,146	26.03	24.66
Carver	94,124	26.59	25.19
Southern States Coop RT-EXP 47058N	95,308	26.92	25.51
Benning	97,950	27.67	26.21
Prichard	100,044	28.26	26.77
Hornbeck Seed HBK 79	121,240	34.25	32.44
Southern States Coop RT-EXP 47355N	121,808	34.41	40.72
Hornbeck Seed HBK 6800	127,216	36.00	34.04
Hornbeck Seed HBK X6020	127,424	36.00	34.10
Haskell	127,816	36.11	34.20
Braxton (Check)	132,549	37.44	35.47
Hartz Variety H 7152 RR	137,032	38.71	36.47
Cook	154,424	43.62	41.33
Pioneer Variety 96B21	164,496	46.47	44.02
Hornbeck Seed HBK 6600	182,200	51.47	48.76
Deltapine Seed 6880 RR	240,880	64.05	64.46
Sure Grow Seed SG 759 RR	259,720	73.37	69.50

[a] Forrest = resistant check; Braxton = susceptible check. Five replications per entry.
[b] Final population of eggs from roots and vermiform nematodes from 500 cm^3 soil in pots inoculated with 3,540 vermiform nematodes.
[c] Reproductive Index = final population/initial population (Pf/Pi).
[d] Ratio of cultivar reproduction to Forrest values from transformed data ($\log_{10}$ [x + 1]). Values ≥17.75 are significantly greater ($P \leq 0.05$) than Forrest.

with appropriate soybean cultivars in combination with the use of reniform nematode-tolerant cotton cultivars (Cook et al., 1997) may hold considerable promise for managing this nematode in southern cropping systems.

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