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2003 NEW YORK STATE SOYBEAN VARIETY YIELD TESTS

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SOYBEAN VARIETY YIELD TESTS IN 2003

Introduction

The annual testing of soybean varieties was conducted at four locations in New York in 2003. Roundup Ready varieties in Maturity Groups 0 and I were tested at two locations in Northern New York, the Miner Institute in Clinton Co. and a nearby poultry farm. We changed the location in Northern New York from Sacketts Harbor in Jefferson Co. to the poultry farm because excessively wet conditions prevented a May planting at Sacketts Harbor. Roundup Ready varieties in Maturity Groups I and II were planted at two locations in central/western New York, the Aurora Research Farm in Cayuga Co. and a hill farm near Groveland Station in Livingston Co. We planted on the hill farm in Livingston Co. because excessively wet conditions prevented a May planting at a lower elevation site. All seed companies that are known to be distributing soybeans in New York were invited to enter their selections in the tests for a fee.

We planted Group 0 and Group I entries in a single test in Northern New York because there were only three entries in each maturity group. Each individual plot in the Northern New York tests consisted of four 20-ft. rows spaced 14 inches apart. We planted Group I and Group II entries in separate tests at Aurora and Groveland Station. At both sites, we planted the single Group 0 entry in the Group I tests. Each individual plot at Aurora and Groveland Station consisted of ten 20-ft. rows paced 7 inches apart. Each entry was planted at a seeding rate of about 225,000 seeds/acre in four replications at Aurora and Groveland Station and in five replications in Northern New York. A randomized complete block experimental design was used for all tests. We used 3 pints/acre of Roundup Ultra about 6 weeks after planting for weed control at all sites. All varieties at Aurora and Groveland Station were monitored for aphids on a weekly basis from late July through early September. Ratings (0=0, 1=1-10, 2=11-100, 3=100+) were taken on individual plants for a 45 second count. All varieties at all sites were monitored for phenological development beginning in early September.

Yields were determined by harvesting an 18-foot section of the two center rows of each plot in Northern New York and the seven center rows of each plot at Aurora and Groveland Station with a Hege small plot combine. Plant height and lodging scores were taken at harvest. All sites were harvested in mid-October except for the Groveland Station site, which was harvested in early November. All soybeans were cleaned with a small clipper seed cleaner and tested for moisture. All yields were adjusted to 13% moisture. We used the ANOVA test to determine significance for yield, height, aphid ratings, and lodging. All means were separated by Fisher's protected LSD (0.05) when significance occurred.

Aurora and Groveland Station

Both sites were exceptionally wet in May (Table 1). Nevertheless, the Aurora site was planted on 19 May and the Groveland Station site was planted on 29 May. Aphid feeding was first observed at Aurora in mid-July and peaked in August (Tables 2

and 3). August was also dry at Aurora. Aphid feeding and the dry August conditions undoubtedly reduced yields at Aurora in 2003. Nevertheless, Group I varieties averaged 57 bu/acre and Group II varieties averaged 55 bu/acre at Aurora (Tables 2 and 3). Although aphid numbers were low and August conditions were wet at Groveland Station, Group I varieties averaged only 42 bu/acre and Group II varieties averaged only 36 bu/acre. Soybean varieties in both maturity groups averaged about 14 inches less in height at Groveland Station compared with Aurora. The reduced growth at Groveland Station, especially early in the season, may indicate that some soil compaction could have occurred during land preparation in May. Also, six of the 14 Group II varieties did not attain physiological maturity before a killing frost (3 October) at the Groveland Station site, which further reduced average yields of Group II varieties.

All Group I varieties yielded statistically the same at both sites (Tables 2 and 3). SG1919 (Seedway) and S1918-4 (Stine), which also yielded the highest in 2002, had a 3 to 5 bu/acre numerical advantage when averaged across sites. AG2703 (Asgrow), AG2105 (Asgrow), S2640-4 (Stine), AG2705 (Asgrow), S24-K4 (NK), SG2405 (Seedway), DKB28-52 (DeKalb), and SG2709 (Seedway) yielded statistically the same in the Group II test at Aurora. AG2705, S24-K4, and AG2105 also yielded well in New York in 2002. At the Groveland Station site, however, only AG2105, DKB23-51, AG2703, and S24-K4 yielded among the highest along with RR Renwick (Hyland) in the Group II test. S2640-4, AG2705, SG2405, SG2709, and DKB28-52 did not attain physiological maturity before the first frost at Groveland Station, which probably reduced their yield somewhat. AG2703 and RR Razor were among the varieties with the lowest aphid ratings at both sites, but differences among varieties were not great.

Northern New York

Soybean yields were exceptionally high in Clinton Co. in 2003 because of moist conditions in August, above-average GDD from July through September, and limited aphid feeding (Table 1). Group 0 varieties averaged 72 bu/acre at both sites and Group I varieties (excluding S2640-4) averaged 80 bu/ace at Chazy and 81 bu/acre on the poultry farm (Tables 6 and 7).

The three Group I varieties, RR Razor (Hyland), DKB09-52 (DeKalb), and AG0801 (Asgrow) yielded statistically the same at both sites (Tables 6 and 7). The three varieties in the Group I tests, S1918-4 (Stine), S1613-4 (Stine), and S2640-4 (Stine) yielded statistically the same at Chazy but S2640-4, a Group II variety, yielded 15 to 20 bushels/acre less at the poultry farm. S2640-4 did not attain physiological maturity before a killing frost (3 October) at the poultry farm, which undoubtedly reduced its yield.

CONCLUSION

Soybean yields averaged 35 bu/acre in New York in 2003, despite June planting dates by many farmers, pockets of heavy aphid infestation, and dry August conditions in central/western New York. Yields at our four test sites averaged the highest since

1998. Group 0 and Group I varieties in both Clinton Co. trials in Northern New York yielded spectacularly high with yields in the 70 to 80 bu/acre range. Group I and Group II varieties at the Aurora site, where aphid infestation was relatively high, generally showed similar levels of susceptibility to aphid feeding with all varieties yielding in the 50 to 60 bu/acre range. Group I and Group II varieties at a high elevation site in Livingston Co., where aphid infestation was low and August conditions were moist, showed less growth than expected perhaps because of some soil compaction during land preparation in the wet month of May.

Table 1. Monthly precipitation and growing degree days (GDD) at Aurora, Groveland Station, and Chazy during the 2003 growing season.

	PRECIPITATION			GDD (86-50°F)		
Month	Aurora	Grove. Stn.†	Chazy‡	Aurora	Grove. Stn.	Chazy
	----------in.----------			----------°F----------		
May	4.34	3.99	4.46	251	252	299
June	3.14	3.85	3.42	458	436	441
July	5.68	3.88	2.59	642	595	611
August	1.65	4.43	4.64	678	621	673
Sept.	3.95	3.94	3.45	412	373	426
Total	18.76	20.09	18.56	2441	2277	2450

† Precipitation and GDD from Hemlock, NY.
‡ June and July precipitation and July GDD from Plattsburg, NY.

Table 2. Yield, height, lodging, aphid rating, and date of physiological maturity of medium (Group I) maturing Roundup Ready soybean varieties at Aurora, NY in 2003.

VARIETY	COMPANY	YIELD	HEIGHT	LODGING †	APHIDS ‡	MATURITY
		bu/acre	cm.	score	rating	date
SG1919	Seedway	59	84	1.0	2.93	9/21
S19-V2	Syngenta (NK)	57	83	1.0	2.85	9/18
S1918-4	Stine	57	82	1.0	2.93	9/19
S1613-4	Stine	54	82	1.0	2.93	9/17
Avg.		57	83	1.0	2.91	
LSD 0.05		NS	NS	NS	NS	
RR Razor ‡	Hyland	50	89	1.0	2.70	9/10

† Lodging score is on a 1 to 5 scale with 1.0 being no lodging.
‡ Aphid rating on 15 August, the peak date (0=0, 1=1-10, 2=11-100, 3=100+).
‡ RR Razor is a Group 0 variety.

Table 3. Yield, height, lodging, aphid rating, and date of physiological maturity of late (Group II) maturing Roundup Ready soybean varieties at Aurora, NY in 2003.

VARIETY	COMPANY	YIELD	HEIGHT	LODGING †	APHIDS ‡	MATURITY
		bu/acre	cm.	score	rating	date
AG2703	Asgrow	60	101	1.0	2.75	9/25
AG2105	Asgrow	59	92	1.0	2.83	9/22
S2640-4	Stine	58	96	1.0	3.05	9/26
AG2705	Asgrow	58	106	1.8	2.93	9/26
S24-K4	Syngenta (NK)	57	104	1.3	2.88	9/21
SG2405	Seedway	56	96	1.1	2.93	9/22
DKB28-52	DeKalb	55	97	1.0	2.98	9/25
SG2709	Seedway	55	98	1.6	2.90	9/28
RR Rodney	Hyland	54	94	1.0	3.02	9/21
DKB23-51	DeKalb	54	97	1.0	2.93	9/22
RR Renwick	Hyland	54	98	1.4	2.70	9/22
AG2106	Asgrow	53	84	1.0	2.80	9/22
S20-F4	Syngenta (NK)	52	100	1.6	2.93	9/20
DKB20-52	DeKalb	50	84	1.2	3.00	9/21
Avg.		55	95	1.1	2.90	
LSD 0.05		6	7	NS	0.29	

† Lodging score is on a 1 to 5 scale with 1.0 being no lodging.
‡ Aphid rating on 15 August, the peak date (0=0, 1=1-10, 2=11-100, 3=100+).

Table 4. Yield, height, lodging, aphid rating, and date of physiological maturity of medium (Group I) maturing Roundup Ready soybean varieties at Groveland Station, NY in 2003.

VARIETY	COMPANY	YIELD	HEIGHT	LODGING †	APHIDS ‡	MATURITY
		bu/acre	cm.	score	rating	date
SG1919	Seedway	45	72	1.0	1.70	9/27
S1918-4	Stine	44	70	1.0	1.75	9/26
S1613-4	Stine	40	68	1.0	1.45	9/25
S19-V2	Syngenta (NK)	39	66	1.0	1.53	9/26
Avg.		42	69	1.0	1.61	
LSD 0.05		NS	NS	NS	NS	
RR Razor ‡		25	69	1.0	1.28	9/18

† Lodging score is on a 1 to 5 scale with 1.0 being no lodging.
‡ Aphid rating on 15 August, the peak date (0=0, 1=1-10, 2=11-100, 3=100+).
‡ RR Razor is a Group 0 variety.

Table 5. Yield, height, lodging, aphid rating, and date of physiological maturity of late (Group II) maturing Roundup Ready soybean varieties at Groveland Station, NY in 2003.

VARIETY	COMPANY	YIELD	HEIGHT	LODGING †	APHIDS ‡	MATURITY ‡
		bu/acre	cm.	score	rating	date
AG2105	Asgrow	46	76	1.0	1.37	9/27
DKB23-51	DeKalb	45	66	1.0	1.60	9/28
RR Renwick	Hyland	39	81	1.0	1.75	9/28
AG2703	Asgrow	39	68	1.0	1.20	7.5
S24-K4	Syngenta	38	73	1.0	1.53	9/27
S2640-4	Stine	36	63	1.0	1.40	7.3
SG2405	Seedway	36	70	1.0	1.38	7.8
SG2709	Seedway	36	71	1.0	1.57	7.0
DKB28-52	DeKalb	35	77	1.0	1.43	7.2
AG2705	Asgrow	35	78	1.0	1.32	7.2
RR Rodney	Hyland	32	74	1.0	1.43	9/28
S20-F4	Syngenta	32	73	1.0	1.13	9/26
AG2106	Asgrow	31	68	1.0	1.48	9/28
DKB20-52	DeKalb	25	61	1.0	1.45	9/27
Avg.		36	71	1.0	1.43	
LSD 0.05		9	9	NS	0.42	

† Lodging score is on a 1 to 5 scale with 1.0 being no lodging.
‡ Aphid rating on 15 August, the peak date (0=0, 1=1-10, 2=11-100, 3=100+).
‡ Date of physiological maturity and stage of growth on 10/3, the date of the first frost..

Table 6. Yield, height, lodging, and date of physiological maturity of medium (Group 0) and late (Group I) maturing Roundup Ready soybean varieties at Chazy, NY in 2003.

VARIETY	COMPANY	YIELD	HEIGHT	LODGING †	MATURITY
		bu/acre	cm.	score	date
			GROUP 0		
RR Razor	Hyland	74	96	1.0	9/17
AG0801	Asgrow	73	101	1.0	9/20
DKB09-52	DeKalb	69	96	1.0	9/18
Avg.		72	98	1.0	
			GROUP I		
S1918-4	Stine	81	92	1.0	9/25
S1613-4	Stine	79	90	1.0	9/23
S2640-4	Stine	77	100	1.0	9/28
Avg.		79	94	1.0	
LSD 0.05		6	4	NS	

† Lodging score is on a 1 to 5 scale with 1.0 being no lodging.

Table 7. Yield, height, lodging, and date of physiological maturity of medium (Group 0) and late (Group I) maturing Roundup Ready soybean varieties at Clinton, NY in 2003.

VARIETY	COMPANY	YIELD	HEIGHT	LODGING †	MATURITY ‡
		bu/acre	in.	score	date
			GROUP 0		
RR Razor	Hyland	73	94	1.0	9/20
DKB09-52	DeKalb	72	102	1.0	9/22
AG0801	Asgrow	72	105	1.0	9/20
Avg.		72	100	1.0	
			GROUP I		
S1918-4	Stine	83	100	1.0	9/29
S1613-4	Stine	79	100	1.0	9/27
S2640-4	Stine	63	108	1.0	7.2
Avg.		75	103	1.0	
LSD 0.05		11	5	NS	

† Lodging score is on a 1 to 5 scale with 1.0 being no lodging.
‡ Date of physiological maturity and stage of growth on 10/3, the date of the first frost.