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SOYBEAN VARIETY YIELD TEST IN 2002

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Introduction

The annual testing of Roundup Ready varieties was conducted at four locations in New York. Entries in Maturity Groups 0 and I were tested at two locations in Northern New York: Sackets Harbor and Chazy. Entries in Maturity Groups I and II were tested at two locations in central/western New York: Aurora and Groveland Station. Also, food grade varieties, Group III varieties developed at Ohio State University, were tested at Aurora. Vinton 81, a late Group I, and PR9935, a late Group 0, were also included in the food grade test. PR9935, a non-Roundup Ready variety, was also planted on the edge (surrounded by borders) of the Group 0 test at Chazy. All seed companies that are known to be distributing soybeans in New York were invited to enter their selections in these tests at a fee.

At each location we planted all entries of the same maturity group in a separate test. Each individual plot at Chazy consisted of four 20-ft. rows spaced 14 inches apart. At Aurora, Groveland Station, and Sackets Harbor, each individual plot consisted of 10 20-ft. rows spaced 7 inches apart. Each entry was planted at a seeding rate of about 225,000 seeds/acre in four replications at each location. We used 3 pints/acre of Roundup Ultra for weed control in the Roundup Ready tests. We used preemergence herbicide applications and hand-weeding for weed control in the food grade study at Aurora.

Yields were determined by harvesting an 18-foot section of the two center rows at Chazy and the seven center rows at Aurora, Groveland Station, and Sackets Harbor with a Hege small-plot combine in October. The soybeans were then cleaned with a

small clipper seed cleaner and tested for moisture. All yields were adjusted to 13% moisture. Standard statistical analyses (ANOVA test) were then conducted on the data. All means were separated by Fisher's protected LSD (0.05).

Aurora and Groveland Station (Roundup Ready)

Both sites were exceptionally wet in April and May (Table 1). Nevertheless, we were able to plant the Aurora site on 23 May and the Groveland Station site on 28 May. July was the driest and August the second driest on record at Aurora. Consequently, yields averaged only 29 bu/acre in the Group I and Group II Roundup Ready tests (Tables 2 and 3). In contrast, the Groveland Station site received timely rains in July and August and yields averaged 53 bu/acre in the Group I and 56 bu/acre in the Group II Roundup Ready tests (Tables 4 and 5). Lodging did not occur in either test at either site.

S1918-4 (Stine) and X199 (Agway) yielded among the highest in the Group I tests at both sites, which indicates yield stability for both varieties across high and low-yielding environments. X199 (Agway) and T9936 (Hyland) yielded among the highest in the Group I test at Aurora and AG1902 (Asgrow) among the highest in the Group I test at Groveland Station. AG2705 (Asgrow), DKB25-51 (Dekalb), S24-K4 (NK), and AG2105 (Asgrow) yielded among the highest in the Group II tests at both sites, which again indicates excellent yield stability for these varieties. X200 (Agway), X214 (Agway), S2736-4 (Stine), DKB22-51 (Dekalb), and X217 (Agway) yielded among the highest in the Group II test at the dry Aurora site. DKB31-52 (Dekalb), S2736-04 (Stine), X218 (Agway), and S23-Q3 (NK) yielded among the highest in the Group II test at the non-stressed Groveland Station site.

Sackets Harbor and Chazy (Roundup Ready)

Both sites were exceptionally wet in April and May (Table 1). The Sackets Harbor site was planted on 30 May and Chazy on 23 May. July and August were exceptionally dry at Sackets Harbor. Consequently, yields averaged only 30 bu/acre in the Group 0 test and 20 bu/acre in the Group I test (Tables 6 and 7). July and August were also dry at Chazy but yields averaged 55 bu/acre in the Group 0 and 67 bu/acre in the Group I test (Tables 8 and 9) because of the deep soils at the experimental site. Lodging did not occur in either test at either site.

X216 (Agway), T0151 (Hyland), and DKB09-53 (Dekalb) yielded among the highest in the Group 0 tests, which indicates good yield stability for these varieties across high-yielding and low-yielding environments. X197 (Agway) yielded among the highest at Sackets Harbor in the Group I test. Interestingly, PR9936, a Group 0 non-Roundup Ready variety, yielded 71 bu/acre, about 15-20 bu/acre greater than the Group 0 Roundup Ready varieties in the Chazy test. PR9936 showed exceptional early-season growth, which was reflected in its 20-inch height advantage over the other varieties at harvest. S1918-4 (Stine), X211 (Agway), and AG1401 (Asgrow) yielded the same in the Group I tests at both sites.

Aurora (Food Grade)

All food grade varieties except HS96-3145 yielded the same as yields averaged only 26 bu/acre (Table 10). Again, lodging did not occur in this test because of the exceptionally dry summer conditions. Vinton 81, a late Group I variety that is grown almost exclusively by the organic soybean growers in New York, yielded as well as the

Group III varieties from Ohio. Likewise, PR9935 (Prograin), a late Group 0 food grade variety from Canada, yielded as well as the other varieties. Undoubtedly, the severe drought stress masked the yield potential differences between Group 0, I, and III varieties.

Conclusion

Roundup Ready varieties in Group 0, Group I, and Group II maturities were tested in low-yielding (droughty) and high-yielding environments in New York, which reflect the growing conditions in New York in 1999, 2001, and 2002. Some varieties yielded above-average in both environments, which indicates excellent yield stability across New York growing conditions. Other varieties yielded above-average in only the low-yielding or high-yielding environments. Food grade varieties were tested only at the low-yielding Aurora site in 2002. Despite a maturity range from Group 0 to Group III, all varieties essentially yielded the same. PR9935 (Prograin), a non-Roundup Ready late Group 0 variety, yielded the same as the Group III food grade varieties at Aurora, and showed exceptional early-season growth and a 15 to 20 bu/acre advantage compared with Roundup Ready Group 0 varieties at Chazy.

Table 1. Monthly precipitation and growing degree days (GDD) at Aurora, Groveland Station, Sackets Harbor, and Chazy during the 2002 growing season.

	PRECIPITATION				GDD (86-50°F)			
Month	Aurora	Groveland Station†	Sackets Harbor‡	Chazy	Aurora	Groveland Station	Sackets Harbor	Chazy
	in				°F			
April	3.30	3.42	5.49	4.60	177	204	144	151
May	4.96	4.01	6.00	4.31	222	263	197	200
June	4.53	2.96	4.34	8.31	515	541	485	470
July	0.81	4.14	1.56	1.66	680	674	678	628
August	1.52	2.63	1.00	1.28	643	622	663	601
September	4.92	3.50	3.35	5.24	493	488	507	453

† Climatic data from Dansville.
‡ Climatic data from Watertown.

Table 2. Yield, test weight, height, lodging, and physiological maturity of medium (Group I) maturing Roundup Ready soybean varieties at Aurora, New York in 2002.

VARIETY	YIELD	TEST WEIGHT	HEIGHT	LODGING†	MATURITY‡
	bu/acre	lbs/bu	in.	score	date
S1918-4	35	57.5	57	1.0	9/12
X213	32	57.3	60	1.0	9/16
X199	32	58.5	60	1.0	9/18
T9936	31	55.8	62	1.0	9/10
S19-V2	30	56.3	57	1.0	9/13
RRReign	30	58.0	64	1.0	9/9
X197	30	55.8	52	1.0	9/6
AG1902	29	57.5	59	1.0	9/13
X198	27	56.0	54	1.0	9/14
T0152	25	56.3	57	1.0	9/8
X211	24	55.3	57	1.0	9/6
Mean	29	56.7	58	1.0	
LSD 0.05	5	0.8	8	NS	

Table 3. Yield, test weight, height, lodging, and physiological maturity of late (Group II) maturing Roundup Ready soybean varieties at Aurora, New York in 2002.

VARIETY	YIELD	TEST WEIGHT	HEIGHT	LODGING†	MATURITY‡
	bu/acre	lbs/bu	in.	score	date
AG2705	33	58.0	69	1.0	9/22
X200	33	57.3	61	1.0	9/18
S24-K4	32	56.8	66	1.0	9/17
X214	31	58.0	57	1.0	9/19
DKB25-51	31	57.0	56	1.0	9/21
S2736-4	31	57.3	56	1.0	9/21
DKB22-51	30	56.8	57	1.0	9/17
AG2105	29	58.0	59	1.0	9/18
X217	29	56.3	51	1.0	9/15
DKB27-51	28	58.0	56	1.0	9/22
X201	28	56.8	62	1.0	9/19
S23-Q3	28	57.0	59	1.0	9/16
DKB31-52	27	57.5	63	1.0	9/27
X218	24	57.3	56	1.0	9/25
S2463-4	23	57.8	53	1.0	9/17
Mean	29	57.3	59	1.0	
LSD 0.05	5	1.0	8		

Table 4. Yield, test weight, height, lodging, and physiological maturity of medium (Group I) Roundup Ready soybean varieties at Groveland Station in western New York in 2002.

VARIETY	YIELD	TEST WEIGHT	HEIGHT	LODGING†	MATURITY‡
	bu/acre	lbs/bu	in.	score	date
X199	63	57.5	67	1.0	9/25
S1918-4	59	57.0	63	1.0	9/18
AG1902	56	57.8	64	1.0	9/19
T0152	55	57.0	67	1.0	9/15
RRReign	55	57.0	78	1.0	9/15
X198	53	57.5	63	1.0	9/21
T9936	53	56.3	72	1.0	9/15
X213	49	56.5	73	1.0	9/22
X211	48	55.8	59	1.0	9/13
S19-V2	48	57.0	60	1.0	9/19
X197	44	56.0	60	1.0	9/11
Mean	53	56.8	66	1.0	
LSD 0.05	8	0.7	8		

Table 5. Yield, test weight, height, lodging, and physiological maturity of late (Group II) maturing Roundup Ready soybean varieties at Groveland Station in western New York in 2002.

VARIETY	YIELD	TEST WEIGHT	HEIGHT	LODGING†	MATURITY‡
	bu/acre	lbs/bu	in.	score	date
DKB31-52	63	57.8	77	1.0	10/2
DKB25-51	61	56.5	64	1.0	9/28
AG2705	60	58.0	73	1.0	9/28
S2463-4	60	57.0	59	1.0	9/24
X218	59	57.8	63	1.0	10/1
AG2105	58	57.5	63	1.0	9/24
S23-Q3	57	58.0	69	1.0	9/23
S24-K4	56	57.5	74	1.0	9/23
X201	54	57.5	74	1.0	9/26
S2736-4	54	57.0	62	1.0	9/28
X214	54	57.8	69	1.0	9/25
X200	54	57.3	63	1.0	9/23
DKB27-51	53	58.0	61	1.0	9/28
X217	52	57.0	61	1.0	9/21
DKB22-51	52	57.0	60	1.0	9/23
Mean	56	57.4	66	1.0	
LSD 0.05	8	0.7	9	NS	

Table 6. Yield, test weight, height, lodging, and physiological maturity of medium (Group 0) maturing Roundup Ready soybean varieties at Sackets Harbor in Northern New York in 2002.

VARIETY	YIELD	TEST WEIGHT	HEIGHT	LODGING†	MATURITY‡
	bu/acre	lbs/bu	in.	score	date
T0151	33	56.3	53	1.0	9/9
X216	31	56.3	56	1.0	9/8
DKB09-53	30	57.0	59	1.0	9/12
X197	29	56.8	51	1.0	9/14
T2024	26	57.0	57	1.0	9/19
Mean	30	56.7	55	1.0	
LSD 0.05	5	NS	6	NS	

Table 7. Yield, test weight, height, lodging, and physiological maturity of late (Group I) maturing Roundup Ready soybean varieties at Sackets Harbor in Northern New York in 2002.

VARIETY	YIELD	TEST WEIGHT	HEIGHT	LODGING[†]	MATURITY[‡]
	bu/acre	lbs/bu	in.	score	date
T9936	30	57.8	72	1.0	9/15
AG1401	24	58.3	55	1.0	9/17
X211	23	58.0	64	1.0	9/14
S1918-4	20	58.8	62	1.0	9/17
RRReign	18	60.0	64	1.0	9/15
S1613-4	15	59.0	56	1.0	9/20
T0152	14	58.8	61	1.0	9/14
T0150	13	58.8	57	1.0	
Mean	20	58.6	62	1.0	
LSD 0.05	6	1.0	9	NS	

Table 8. Yield, height, lodging, and physiological maturity of medium (Group 0) maturing Roundup Ready soybean varieties at Chazy in Northern New York in 2002.

VARIETY	YIELD	HEIGHT	LODGING	MATURITY
	bu/acre	in.	score	date
PR9935[§]	71	69	1.0	9/15
X216	57	48	1.0	9/15
T0151	55	44	1.0	9/15
DKB09-53	52	41	1.0	9/19
T2024	50	47	1.0	9/15
X197	42	34	1.0	9/21
Mean	55	47	1.0	
LSD 0.05	9	11	NS	

[§] A non Roundup-Ready Group 0 variety that was planted on the edge of the study surrounded by a border.

Table 9. Yield, height, lodging, and physiological maturity of late (Group I) maturing Roundup Ready soybean varieties at Chazy in Northern New York in 2002.

VARIETY	YIELD	HEIGHT	LODGING[†]	MATURITY[‡]
	bu/acre	in.	score	date
S1918-4	71	51	1.0	9/27
S1613-4	67	52	1.0	9/22
X211	65	45	1.0	9/18
AG1401	65	60	1.0	9/19
Mean	67	52	1.0	
LSD 0.05	NS	11	NS	

Table 10. Yield, test weight, height, lodging, and physiological maturity of food grade soybean varieties at Aurora in central New York in 2002.

VARIETY	YIELD	TEST WEIGHT	HEIGHT	LODGING[†]	MATURITY[‡]
	bu/acre	lbs/bu	in.	score	date
HS96-3136	28	55.5	73	1.0	9/14
HS96-3140	28	54.5	72	1.0	9/22
HS96-3850	27	55.8	66	1.0	9/17
OHF3	27	55.8	71	1.0	9/18
Vinton 81	26	55.8	74	1.0	9/14
PR9935	25	53.8	77	1.0	9/14
HS96-3145	23	55.5	80	1.0	9/17
Mean	26	55.3	73	1.0	
LSD 0.05	4	1.0	9	NS	