



Northern New York Agricultural Development Program 2013 FINAL REPORT

2013 Soybean Variety Trials in NNY

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Background

Soybean acreage in New York has increased from about 40,000 acres in 1990 to ~300,000 acres in 2013. Most of the acreage increase has occurred in the Finger Lakes and Western NY regions. Nevertheless, soybean production in Northern NY has also increased significantly in the last 5 years. In 2007, approximately 5,000 acres were grown in all of Northern NY. In 2012, approximately 12,000 acres were grown in Jefferson, St. Lawrence, and Lewis Counties and about 2,000 acres in the eastern NNY counties. The probability of increased soybean acreage in Northern NY is high for the following reasons:

First, it is no longer too cool to produce soybeans in NNY because of the warmer summers.

The Watertown Airport averaged 1934 growing degree days (GDD) from June 1-September 30 during the 1981-2010 period compared with 1911 GDD during 1961-1990. The 2013 growing season, however, was considered to be a cool year, especially from mid-July through September. Nevertheless, the Watertown Airport recorded 2040 GDD from June 1 through September 30, more than 100 GDD above normal. The Watertown Airport and the site at Sackets Harbor did touch down to 31 degrees on the morning of September 17, after only 1905 GDD had been accumulated from June 1. Likewise, another light frost (31 degrees) on the morning of September 24 occurred, after only 1972 GDD had been accumulated since June 1.

Despite the early frosts, the Group I soybeans (planted on May 14) had attained physiological maturity (R7.0 stage) by September 17 and did not suffer any yield loss. The Group II varieties, however, probably suffered some yield loss. Nevertheless, as global warming continues over the next couple of decades, NNY may prove to be the ideal rather than a marginal region for soybean production.

Second, the high price for soybean meal (~\$425/ton) has more dairy farmers in NNY considering planting the crop. Dairy producers could transport their soybean crop to a local roaster while deciding on whether to install an on-farm soybean roaster.

Soybeans are a “low-input” crop requiring minimum tillage, planting, and spraying once with Roundup (unless aphids or diseases appear and then an additional spray is required), and harvesting the crop in October.

The lower inputs required for soybeans vs. corn makes it an attractive crop from a labor-management perspective, especially on smaller dairy operations.

Also, the relatively high price of the crop makes it an ideal candidate as a cash crop, if liquidity is an issue for some dairy farmers.

Soybean handling facilities that ship soybeans on railroad cars for overseas destinations are now in place in Jefferson County. Also, soybean processing facilities are now on the St. Lawrence River, so transportation of the crop to either of these facilities is relatively easy, if local soybean roasters are not available.

Third, soybeans do not suffer the same yield penalty that corn does with delayed planting.

Soybeans can be planted through the first week of June with minimal yield penalty (1/3 bushel/day loss in central NY from May 15-June 15 compared with 1 bushel/day for corn until June 1 and then 1.5 bushel/day until June 15). Many soils in NNY do not dry out until early June and soybeans could be planted at this time with a limited yield penalty. Of equal importance, these wet spring soils hold moisture better than lighter soils in August when conditions become dry. More soil water and cooler comparative temperatures in NNY in August would result in less moisture stress for soybeans during this critical period of soybean development.

The price of soybean meal continues to exceed \$400/ton and will probably remain high because of the increased demand for soybeans in China. Soybeans may be better adapted to Northern NY than corn as indicated by the vast acreage of soybeans in Canadian Provinces directly north of NNY and the limited yield penalty for planting soybeans in June on slow-draining soils.

Soybean acreage has increased in the Finger Lakes and Western NY regions because growers have substituted soybeans for dry beans, potatoes, oats, and other miscellaneous crops, which has proved to be a major boon to these producers over the last 5 years. It is time for more NNY farmers to reap the same benefits.

Methods:

We planted Group I (14 entries) and Group II (21 entries) soybean variety trials on the Ron Robbins farm at Sackets Harbor with a small plot drill (Almaco) at 200,000 seeds/acre on May 14.

Mike Davis planted 9 Group I and 11 Group II varieties at the Miner Institute at 200,000 seeds/acre at Chazy on June 6.

A randomized complete block experimental design was used for all tests. We used 22 fluid oz. /acre of Roundup Powermax about 5 weeks after planting for weed control at both sites.

The Sackets Harbor site was harvested with a small plot combine (Almaco) on October 10 and at Chazy with a small plot combine (Hege) on 24 October.

Results:

Growing Conditions

May was a warm month in Northern New York with moderately dry conditions at Sackets Harbor and exceedingly wet conditions at Chazy (Table 1).

Consequently, a timely planting date occurred at Sackets Harbor (May 14) but a delayed planting date at Chazy (June 6).

June was exceedingly wet at both sites. Weather conditions turned exceedingly warm from June 22 until July 20 but antecedent wet soil conditions prevented any moisture stress.

From July 21 through September, weather conditions were cool at both sites. The Sackets Harbor site, which was dry in August and the first half of September, received a light frost (31°) on the morning of September 17 and again on September 24, which was before most Group II varieties attained the R7.0 (physiological maturity) stage. The top leaves, the physiologically most active leaves, were frosted but lower leaves in the canopy were protected from the frost on both nights.

The Group I test at Sackets Harbor averaged 56 bushels/acre compared to 54 bushels/acre in the Group I test (Tables 2 and 3); whereas the Group II varieties averaged 64 bushels/acre and Group II varieties 68 bushels/acre at Chazy (Table 4). The early light frosts on September 17 and 24 probably reduced the yield of the Group II varieties at Sackets Harbor.

Group I Varieties-Yield

S17-B3 from Syngenta had the highest yield at Sackets Harbor and 4th highest of the Group I varieties at Chazy (Tables 2 and 4).

Also, **5N180R2** from Mycogen, which had the highest yield among Group I varieties at Chazy, had the 2nd highest average yield among Group I varieties in Northern NY.

Other above-average varieties that yielded well at both sites in Northern NY include **RPMDB1212** from Doeblers and **S19RY84** from Dyna-Gro. **SG1311** from Seedway, **HS 15A11** from GROWMARK FS, **1805R2** from Channel, and **RPMDB1713** from Doeblers, yielded above-average at Sackets Harbor.

With the exception of **RPMDB1713**, none of these varieties were entered at Chazy. **H15-12R2** from Hubner, which was not entered at Sackets Harbor, had the second highest numerical yield behind **5N180R2** among Group I varieties at Chazy.

Group II Varieties-Yield

When averaged across sites, **31RY20** from Dyna-Gro, which had the highest yield at Chazy, and **S22-Y2**, **S24-K2**, and **S22-S1** from Syngenta, had the highest yield in the Group II test.

SG2013 from Seedway, **HS 20A12** from GROWMARK FS, and **2105R2** from Channel, which were not entered at Chazy, had the top three yields in the Group II test at Sackets Harbor.

Likewise, **H20-12R2** from Hubner, which was not entered at Sackets Harbor, had the second highest numerical yield at Chazy.

Conclusions/Outcomes/Impacts:

Soybean, which was harvested on ~300,000 acres in New York in 2013, had a State average yield of 48 bushels/acre, tied with the 2010 growing season for the highest ever. In addition the selling price of the crop is projected to average about \$12.50/bushel during marketing year of the 2013 crop resulting in a value ~\$170 million in NY. If the current soybean to corn price ratio remains at ~3:1, we expect soybean acreage to increase to ~350,000 acres in NY. We hope that NNY farmers contribute to that increase in NY acreage.

Outreach: The results of the NNY soybean variety trials were presented to extension educators at Cornell's November In-Service, to industry personnel at the Field Crop Dealer Meetings in December, and to farmers at the Soybean Congresses in February. The results were also incorporated into our Recommended Soybean Variety Tables for NNY in our 2014 Cornell Guide for Integrated Field Crop Management.

Table 1. Monthly precipitation and growing degree days (GDD) at Sackets Harbor (Watertown weather data) and Chazy (Plattsburg weather data) testing sites during the 2013 growing season.

Month	PRECIPITATION-inches		GDD-degrees F	
	Sackets*	Chazy**	Sackets*	Chazy**
May	1.64	5.23	357	339
June	6.04	7.89	448	425
July	3.06	3.48	674	651
August	2.10	3.36	547	537
Sept.	1.71!	2.91	229!	337
Seasonal	14.55	19.87	2255	2289

* Sackets Harbor data is from the Watertown Airport weather station.

** Chazy data is from the Plattsburg Airport weather station.

! GDD until 9/17 when the first fall frost occurred at Sackets Harbor

Table 2. Yield, seed moisture, height, and lodging score of Group I Roundup Ready soybean varieties harvested at Sackets harbor, NY on 10 October, 2013.

COMPANY/BRAND	VARIETY	YIELD	MOISTURE	HEIGHT	LODGING
		bu/acre	%	cm	1-5 scale
Syngenta	S17-B3	63.8	13.4	93.5	1.05
Seedway	SG1311	59.9	13.0	89.25	1.10
Dyna-Gro	S19RY84	59.0	13.1	96	1.20
Growmark FS	HS 15A11	59.0	12.8	93.5	1.30
Channel	1805R2	58.2	13.1	84	1.05
Doebler's	RPMD1713	56.2	14.2	94.5	1.08
Growmark FS	HS 13A11	56.0	12.9	87.75	1.15
Growmark FS	HS 17A12	55.8	13.4	92.25	1.08
Syngenta	S10-P9	55.4	13.6	76	1.00
Seedway	SG1911	53.8	14.1	87.5	1.05
Mycogen	5N180R2	53.6	13.3	82.25	1.05
Doebler's	RPMD1212	53.6	12.7	97.25	1.00
Syngenta	S14-J7	51.7	13.6	81.5	1.00
Growmark FS	HS 19A11	51.2	13.4	83.5	1.00
Seedway	SG1055	50.7	13.6	78.75	1.00
AVG.		56	13.36	87.55	1.07
LSD 0.05		6.1	0.49	8.1	0.18

Table 3. Yield, seed moisture, height, and lodging score of Group II Roundup Ready soybean varieties harvested at Sackets Harbor, NY on 10 October, 2013.

COMPANY/BRAND	VARIETY	YIELD bu/acre	MOISTURE %	HEIGHT cm	LODGING 1-5 scale
Seedway	SG2013	61.9	12.4	91.25	1.00
Growmark FS	HS 20A12	60.8	12.5	89.5	1.05
Channel	2105R2	59.2	13.0	100	1.05
Syngenta	S24-K2	57.8	13.5	88.25	1.00
Hubner	H22-14R2	54.9	12.9	95	1.08
Dyna-Gro	31RY20	54.4	12.9	87.75	1.00
Dyna-Gro	S22RY64	54.4	12.6	89.75	1.00
Syngenta	S22-S1	54.3	12.4	83	1.08
Growmark FS	HS 24A12	54.2	13.2	93	1.00
Doebler's	RPMDB2812	53.9	14.1	92.3	1.00
Mycogen	5N210RR2	53.7	13.2	86.8	1.00
Syngenta	S22-Y2	53.6	12.8	82.75	1.08
Dyna-Gro	S20RY94	53.5	13.3	85.75	1.00
Seedway	SG2115	53.4	12.7	90.5	1.00
Hubner	H26-12R2	53.1	14.4	101.25	1.05
Mycogen	5N234R2	52.7	13.4	86.5	1.00
Syngenta	S20-T6	49.6	12.6	81	1.08
Growmark FS	HS 21A14	49.3	12.8	88.5	1.05
Growmark FS	HS 28A12	48.7	14.0	95.25	1.30
Channel	2207R2	48.1	13.3	85.75	1.00
Doebler's	RPMDB2612	45.5	13.0	89.3	1.08
AVG.		54	13.1	89.7	1.05
LSD 0.05		6.0	0.5	8.0	0.20

Table 4. Yield, seed moisture, height, and lodging score of Group I and II Roundup Ready soybean varieties harvested at Chazy, NY on 24 October, 2013.

COMPANY/BRAND	VARIETY	YIELD bu/acre	MOISTURE %	HEIGHT cm	LODGING 1-5 scale
Dyna-Gro	31RY20	77.7	12.4	78.75	1.0
Hubner	H20-12R2	75.4	12.5	74.75	1.0
Syngenta	S22-Y2	75.0	13.0	74.3	1.0
Mycogen	5N180R2	70.5	13.5	69.25	1.0
Hubner	H15-12R2	69.8	12.9	78	1.0
Syngenta	S22-S1	68.9	12.9	73.3	1.0
Doebler's	RPMDDB1212	67.8	12.6	84.25	1.0
Syngenta	S24-K2	67.8	12.4	73.3	1.0
Syngenta	S17-B3	66.9	13.2	69.5	1.0
Hubner	H22-14R2	66.8	14.1	79	1.0
Syngenta	S20-T6	65.6	13.2	74.25	1.0
Doebler's	RPMDDB2812	65.4	12.8	81	1.0
Doebler's	RPMDDB2612	64.9	13.3	84	1.0
Mycogen	5N234R2	64.5	12.7	78	1.0
Dyna-Gro	S19RY84	61.7	14.4	71.5	1.0
Syngenta	S10-P9	60.7	13.4	54.5	1.0
Doebler's	RPMDDB1713	57.6	12.6	77.5	1.0
Hubner	H26-12R2	57.2	12.8	90.75	1.0
Syngenta	S14-J7	56.8	14.0	64.5	1.0
AVG.		66	13.8	75.3	1.0
LSD 0.05		7.3	1.0	6.1	NS