

Northern NY Agricultural Development Program 2012 Project Report

Project Title: 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 310,000 acres in 2012. 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 5000 acres were grown in all of NNY. In 2011, approximately 11,000 acres were grown in Jefferson, St. Lawrence, and Lewis Counties and almost 3,000 acres in the eastern NNY counties. Soybean acreage in NNY undoubtedly exceeded 15,000 in 2012.

The probability of increased soybean acreage in NNY is great 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. In 2011, an amazing 2170 GDD were recorded from June 1 through September 30 only to be increased to 2179 GDD at the Watertown Airport in 2012. Obviously, we cannot count on this number of GDD each year but the trend has been upward as indicated by an average number of GDD from June 1-September 30 of 2036 during the last 10 years (2003-2012) at Watertown. In the Quebec Province of Canada, 720,000 acres were planted to soybeans in 2012 and over 100,000 acres were planted in the Ontario Province between the NY/Canadian border and Ottawa. 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 has more dairy farmers in NNY considering planting the crop themselves while putting in an on-farm soybean roaster or transporting their soybean crop to a local roaster. Soybeans are a "low-input" crop requiring minimum tillage, planting, 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 current 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 Co. Also, soybean processing facilities are now on the St. Lawrence River so transportation of the crop to either of these facilities is relatively easy.

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 now exceeds \$400/ton and will probably remain high because of the increased demand in China. Soybeans may be better adapted to NNY 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, snap beans, 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 (18 entries) and Group II (20 entries) soybean variety trials on the Ron Robbins farm at Sackets Harbor in Jefferson County on May 21. Mike Davis planted 16 Group I and 12 Group II varieties at the Miner Institute at Chazy on May 25. Attempts were made to harvest the Sackets Harbor site on October 9 and again on November 20 but soil conditions were too wet for our small plot combine to get through. We decided to wait until the ground froze but an opportunity was passed up on Friday, November 30 (20 degrees for the high) after an individual visited the plots the day before and determined the soil would not freeze the standing water in some of the plots by the next day (probably incorrect decision). The warm December conditions kept the soils wet before the Holiday break preventing any further opportunities for harvest until the beginning of the year. A visit to the plots during the first week of January revealed that the deer had broken through the electric fence and plot damage was too great as was the snow depth at that time to proceed with harvest. Fortunately, the Chazy site was harvested on 25 October.

Results:

When averaged across varieties at Chazy, the 16 Group I varieties averaged 81 bushels/acre compared with 91 bushels/acre for 12 Group II varieties. Outstanding Group I varieties at this site include **SG1911** from Seedway, **17A12** from GROWMARK FS, and **1805R2** from Channel (Table 1). All of these late Group I varieties had yields that exceeded the average Group II yields for this test (91 bushels/acre). We believe that the late Group I varieties are better adapted to eastern NNY, especially on farms further from Lake Champlain, because late Group I varieties have a higher probability of maturing in normal growing seasons with normal fall frosts. Other high-yielding Group I varieties at this site include **5N18ORR2** from Mycogen, **S18RY33** from Dyna-Gro, **TS1719R2** from T.A. Seeds, **SG1711** from Seedway, and **S17-G8** from Syngenta.

The Group II variety, **21A12** from GROWMARK FS had the highest numerical yield in the Group I/II test at this location. Another exceptionally high-yielding Group II variety at this site was **TS2229R2** from T.A. Seeds. Other above-average Group II varieties at this site include **S20-Y2** from Syngenta, **2105R2** from Channel, **SG2111** from Seedway, and **S21-N6** from Syngenta. These early Group II varieties are the longest maturing varieties that growers in eastern NNY should consider planting if they are able to plant by mid-May. In western NNY, however, mid-Group II varieties can consistently make it when planted near Lake Ontario by mid-May.

Conclusions/Outcomes/Impacts:

Soybean, which was harvested on 312,000 acres in New York in 2012, had an average yield of 46 bushels/acre. In addition the selling price of the crop averaged about \$15/bushel during the 2012 marketing year catapulting soybeans to a value that exceeded \$200 million in NY. Just to put that value in perspective, the entire fruit crop (apples, grapes, pears, cherries, etc.) was valued at \$323 million in NY in 2012. Obviously, soybeans should be considered a high value crop in NY.

In NNY, the Sackets Harbor site had a yield potential of 70 bushel/acre and the Chazy site had extremely high yields. Obviously, NNY farmers who planted soybeans in 2012 did quite well. If the current price remains above \$14/bushel, we expect soybean acreage in New York to once again increase in 2013. We hope that NNY farmers contribute to that increase in NY acreage. The 2012 yields in NNY indicate that soybeans are well adapted to this region.

Table 1. Yield, seed moisture, and height of Group I/II Roundup Ready soybean varieties harvested at Chazy, NY on 25 October, 2012

COMPANY/BRAND	VARIETY	YIELD	MOISTURE	HEIGHT
		bu/ac	%	cm
GROWMARK FS	21A12	98.3	12.6	90
TA Seeds	TS2229R2	96.3	12.4	98
SeedWay	SG1911	93.4	12.4	88
GROWMARK FS	17A12	93.4	12.3	85
Channel	1805R2	92.6	12.2	94
Syngenta	S20-Y2	92.5	12.3	98
GROWMARK FS	20A12	91.9	12.2	92
Channel	2105R2	91.7	12.7	105
SeedWay	SG2111	91.6	12.7	87
Syngenta	S21-N6	91.3	12.9	95
SeedWay	SG2013	90.0	12.3	83
Mycogen	5N210RR2	89.6	12.6	91
DynaGro	31RY20	89.3	12.3	96
GROWMARK FS	13A11	89.2	12.1	82
DynaGro	38B21	88.5	12.6	97
Mycogen	5N180RR2	85.4	12.2	76
DynaGro	S18RY33	84.9	12.3	74
TA Seeds	TS1719R2	83.9	12.2	74
SeedWay	SG1711	83.0	12.3	87
Syngenta	S17-G8	81.7	12.3	75
SeedWay	SG1311	80.7	12.0	85
GROWMARK FS	15A11	80.4	12.3	89
SeedWay	SG1513	80.2	12.1	91
Doebler's	RPMDDB2212	75.3	13.4	98
Syngenta	S10-G7	74.2	12.7	78
TA Seeds	TS1139R2	73.5	12.5	78
Channel	0906R2	73.3	12.2	71
AVG.		85.1	12.37	86.1
LSD 0.05		9.5	0.45	6.2

Outreach:

We published the **2012 New York State Soybean Variety Yield Tests** in November (Dep. of Crop and Soil Sciences, Extension Series No. E-12-2, Cornell Univ. <http://www.fieldcrops.org/VarietyTrials/Pages/default.aspx>) and also used the results of the 2012 Chazy study and 2008-2011 studies at Sackets Harbor to make recommendations for soybean variety selection in our **2013 Cornell Guide for Integrated Field Crop Management** (<http://ipmguidelines.org/FieldCrops/>). In addition, the PI presented the variety trial results at the **2013 Winter Crop Meeting** in Ithaca on January 23rd, and will present the results at the **Soybean and Small Grain Congress** in Batavia and Waterloo on Feb. 6th and 7th, the **17th Annual North Country Crop**

Congress and Agribusiness Trade Show and 2013 Crop Congress at Miner Institute on Feb. 12th and 13th, and at a Soybean Meeting in Otsego Co. on March 20th.

Next steps if results suggest continued work is needed in the areas of research, demonstration and/or education.

Seed companies are always developing new varieties so variety testing is an ongoing process to determine if new varieties are well-adapted to NNY growing conditions. Also by including two locations as well as annual testing, we can determine the yield stability (consistently high yields across the two locations and across different growing seasons) of these varieties. News articles and winter presentations insure that the information is disseminated to the growers in a timely manner

Acknowledgments:

We thank the NNYADP for funding. In addition, CUAES deserves special recognition for funding Mike Davis whose work saved this project.

We also thank Ron Robbins for supplying about an acre of land for the Sackets Harbor study. We spent a considerable amount of time at the Jefferson County site (three individuals at planting in May, one individual spraying in June, two individuals erecting an electric fence in July, two individuals making alleys in August twice, four individuals visiting the plots in October and November for aborted harvest attempts, one individual visiting the plots once in December and again in January to determine if harvest was possible). Some but not all of the funding for these individuals also was provided by CUAES. Seed companies pay a fee per entry.

We appreciate the support from NNYADP in 2012 and plan to continue our variety trials in Sackets Harbor and Chazy in 2013.

Reports and/or articles in which the results of this project have already been published.

2012 New York State Soybean Variety Yield Tests (Dep. of Crop and Soil Sciences, Extension Series No. E-12-2, Cornell Univ.

<http://www.fieldcrops.org/VarietyTrials/Pages/default.aspx>)

2013 Cornell Guide for Integrated Field Crop Management

[\(http://ipmguidelines.org/FieldCrops/](http://ipmguidelines.org/FieldCrops/)

Person(s) to contact for more information (including farmers who have participated:

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