

2008
Vermont Food Grade Soybean
Performance Trial Results



Soybeans 2008

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2008 VERMONT FOOD GRADE SOYBEAN HYBRID PERFORMANCE TRIALS
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In 2008, the University of Vermont Extension conducted a food grade soybean evaluation program at two locations. The purpose of the program was to provide yield comparisons of food-grade soybean varieties suitable for the Vermont climate. Performance trials were established as replicated research trials in northern Vermont.

TESTING PROCEDURE

Replicated Research Trials:

Replicated soybean variety trials were conducted in Alburgh and Hardwick. The experimental design at both locations was a randomized complete block with four replications. The treatments were soybean varieties. The soybean varieties evaluated at the Alburgh site were longer season varieties based on the Maturity Group Rating System (Group 0.4-1.9). Those tested in Hardwick were a lower maturity group rating (Group 0.5-1.08) than those at Alburgh. There were some hybrids that were trialed at both locations. The specific hybrids and maturity groupings are listed for each replicated trial location in Table 1.

Table 1. Soybean Hybrids evaluated in replicated research trials.

Company	Variety		Location	
	Hybrid	Maturity	Hardwick	Alburgh
Prograin	Lotus	0.8	X	
Prograin	Nova	0.4		X
Prograin	Ohgata	05	X	X
Prograin	Venus	0.5	X	X
Prograin	Oria	0.9		X
Blue River	06F8	0.68	X	
Blue River	10F8	1.08	X	X
Blue River	15F8	1.58		X
Blue River	1F44	1.44		X
Blue River	1F61	1.61		X
Albert Lea Seed	MN1607	1.60		X
Albert Lea Seed	Vinton81	1.90		X

Seasonal precipitation and temperature recorded at weather stations in close proximity to the 2008 sites are shown in Table 2. This growing season brought cooler temperatures and higher than normal rainfall patterns across the region. However this phenomenon does not appear to have had an impact on soybean yields. In fact, yields were higher in Alburgh this year as compared to the 2007 yields. The total GDD for the soybean growing season in Alburgh was 2237 and 1406 for Hardwick.

Table 2. 2008 Temperature and Precipitation Summary

Location*		June		July		August		September		October	
	Temp.	Average	Departure from normal	Average	Departure	Average	Departure	Average	Departure	Average	Departure
	Precip.	Total		Total	Departure	Total	Departure	Total	Departure	Total	Departure
	GDD	Total		Total	Departure	Total	Departure	Total	Departure	Total	Departure
Alburgh	Temp.	54.3	-2.3	67.6	+1.8	71.5	+0.4	68	-0.6	63	+3
	Precip.	1.4	-1.6	7.2	+4.0	7.86	+4.5	2.8	-1.1	1.3	-2.2
	GDD	148	----	526	----	621	----	549	----	393	----
Hardwick	Temp.	62.9	+0.7	65.3	-1.3	61.4	-2.6	57.5	+1.9	42.5	-1.5
	Precip.	6.86	+3.13	10.54	+6.28	1.28	-3.5	1.19	-2.61	5.0	+1.44
	GDD	394	+10	484	0	246	-166	259	+47	25	-6

*Based on National Weather Service data from cooperative observer stations in close proximity to field trials. Historical averages are for 30 years of data (1971-2000). Average GDD was not available for Alburgh location.

The seedbed at each location was prepared by conventional tillage methods. All plots were managed with practices similar to those used by producers in the surrounding areas (Table 2). Plots were seeded at a rate of 175,000 seeds acre. The plots size was 5' x 25' at the Hardwick site and 10' x 50' at the Alburgh site. Planting was done with standard soybean seeding equipment. Plots at the Alburgh location were harvested with an Almaco SP50 plot combine. Plots were harvested by hand and then run through the combine at the Hardwick location. Yield was measured by weighing the combined soybeans on a platform scale. At harvest, moisture, plant height, and distance of the pods to the soil were measured on a 10 plant subsample per plot and pod number was counted on a 5 plant subsample. A 10 pound subsample of each variety was collected to measure quality.

Table 3. General plot management at Hardwick and Alburgh sites.

Trial Location & Cooperator		
Trial Information	Hardwick High Mowing Seeds	Alburgh Borderview Farm
Soil type	Silt loam	Silt loam
Previous Crop	Cover crop	Soybean
Row Width (in.)	30	30
Planting date	10-June	12-June
Cultivation	2x cultivation	2x cultivation
Harvest date	5-Nov	21-Oct
Tillage operations	Spring Plow	Spring Plow



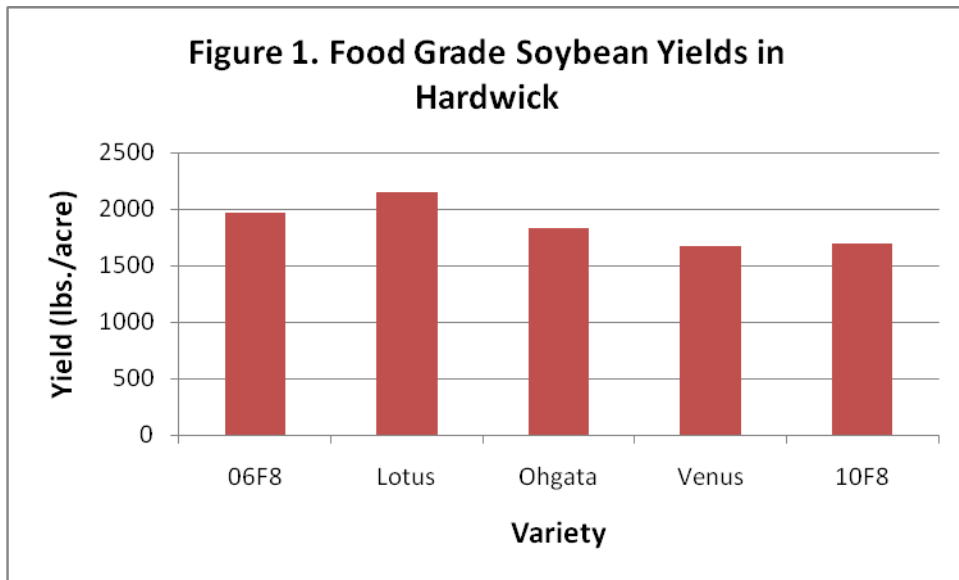
Hardwick variety trials starting to dry down, September 2008

RESULTS

The plots in Hardwick were surrounded by an electric fence in September until harvest to help minimize wildlife damage. Yields from the Hardwick site ranged from 1673 to 2153 lbs. to the acre. Lotus was the highest yielding hybrid and Venus was lowest yielding at this site. The data suggests that varieties with a lower relative maturity rating yielded better at the Hardwick site. However, there was no statistical significance in yield differences among the Hardwick varieties.

Table 4. Yield and plant characteristics of soybean varieties at the Hardwick site.

Variety	Moisture	Yield	Population per Acre	Height	Pods per plant	Pods distance to soil
	%	lbs/acre		in.		in.
06F8	13.3c	1969	165833a	36	30	4.2a
Lotus	13.2c	2153	151667a	32	26	3.5ab
Ohgata	13.5bc	1831	106667b	32	28	2.9b
Venus	14.2ab	1673	100000b	32	32	2.9b
10F8	14.3a	1694	132500ab	33	31	4.3a



Alburgh field day July 2008

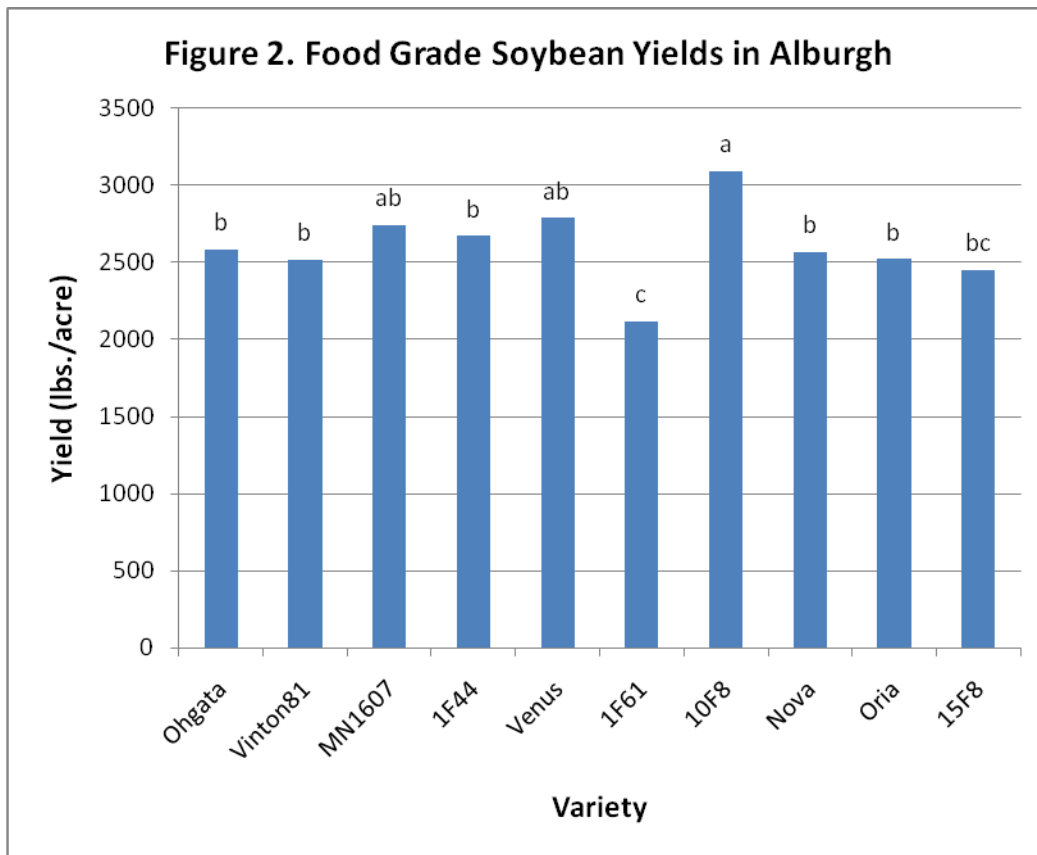


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Yields at the Alburgh site ranged from 2114 to 3088 lbs to the acre and differences between varieties were statistically significant. 10F8, Venus, and MN1607 were the highest yielding varieties and 1F16 was the lowest yielding variety. Pod distance from the soil showed differences that were statistically significant as well. The 10F8 and 1F44 had pods that were the furthest from the ground. This is an important trait for a variety to express. The higher the pods are from the ground the less likely it is that soil and stones will be picked up during combining. Dirty beans require considerable amounts of time and expense to clean properly for commercial sale. In addition, soil can discolor the beans and render them unfit for sale. There was some difference in plant height among the varieties. We observed significant lodging at the Alburgh site, especially in the taller varieties.

Table 5. Yield and plant characteristics of soybean varieties at the Alburgh site.

Variety	Moisture	Yield	Population Per acre	Height	Pods per plant	Pods distance to soil
	%	lbs/acre		in.		in.
Ohgata	15.3	2579b	136000ab	40cd	40bc	3.4de
Vinton81	15.4	2513b	143000ab	44ab	54a	4.5ab
MN1607	15.6	2737ab	126000bc	42bc	46ab	4.4abc
1F44	15.5	2667b	133000ab	46a	46ab	4.9a
Venus	15.5	2785ab	119000bc	39d	42abc	3.7cde
1F61	15.3	2114c	98000c	33e	46ab	2.2f
10F8	15.5	3088a	162000a	45a	43abc	5.0a
Nova	15.4	2561b	140000ab	40cd	46ab	3.8bcd
Oria	15.7	2518b	96000c	38d	38bc	3.6cde
15F8	15.4	2447bc	114000bc	32e	32c	2.9ef



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