

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 in 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 | 0.5 | 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.

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 at the Hardwick location were harvested by hand and then run through the combine. 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 |



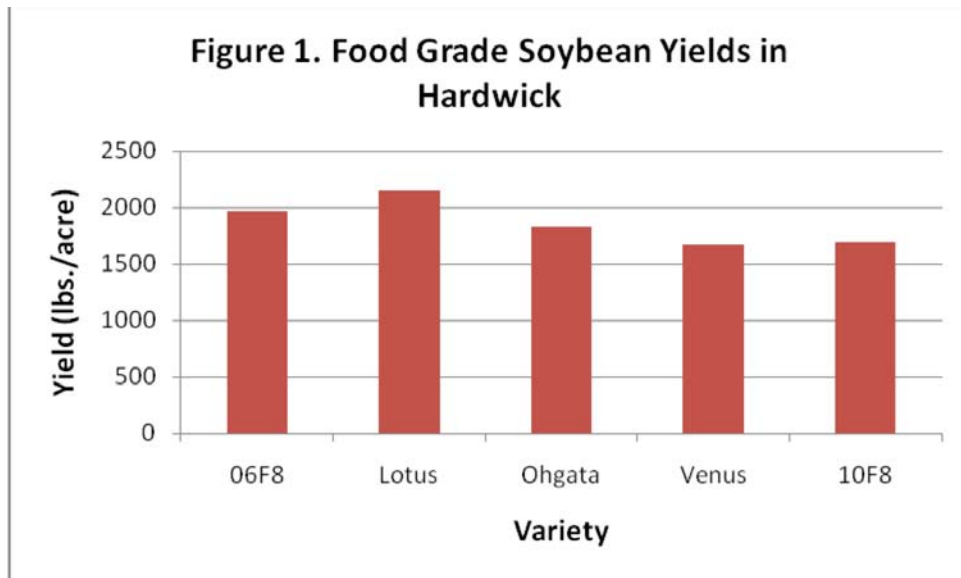
Hardwick variety trials starting to dry down, September 2008

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 than those with a higher maturity rating 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

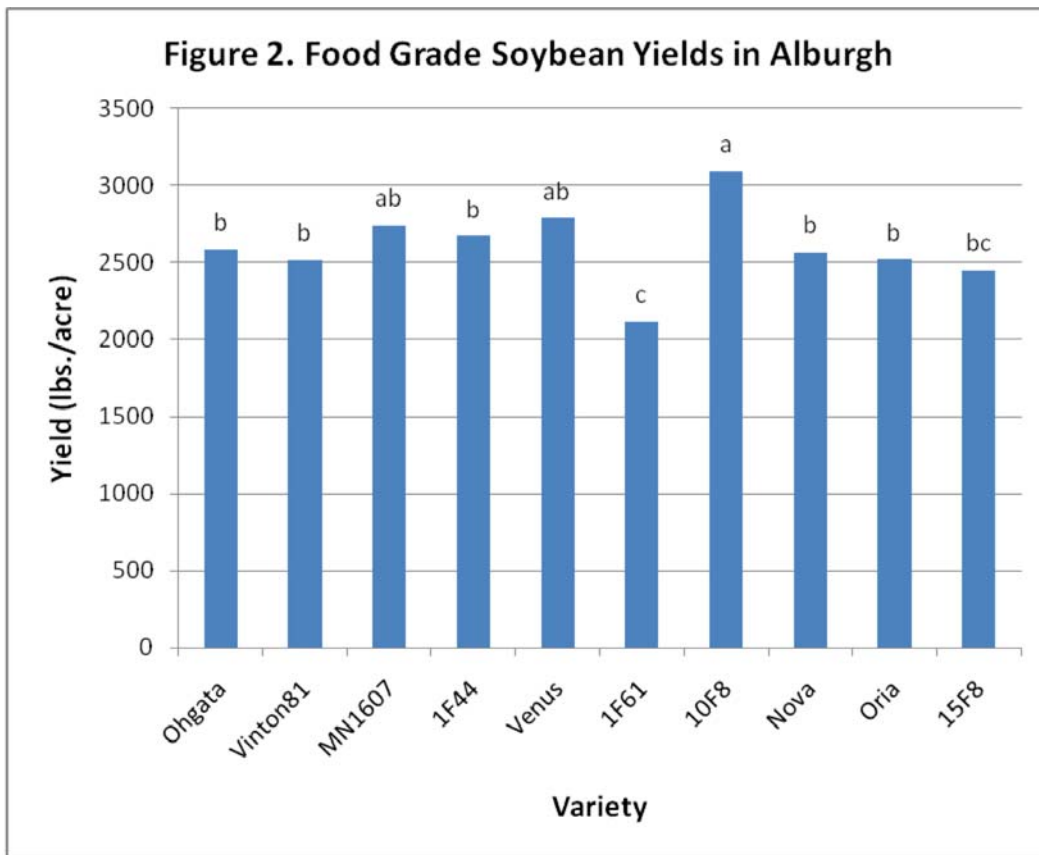


UVM Extension Soybean team

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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