

2011 Organic Food Grade Soybean Trials

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In 2011, trials of non-GMO, food grade soybean varieties under organic management were conducted at Cornell’s Musgrave Research Farm and on fields of two cooperating farmers, Tony Potenza and John Myer. *The goal of these trials was to identify food-grade soybean varieties with excellent quality that have better yields and growing characteristics than Vinton 81, the current standard.* At the Musgrave Farm four replications were planted on June 9. We planted the on-farm trials on June 15, with two replications at Myer Farm in Romulus, NY, and one at Potenza Farm in Interlaken, NY. The varieties tested included:

MN1505SP (Relative Maturity 1.5)

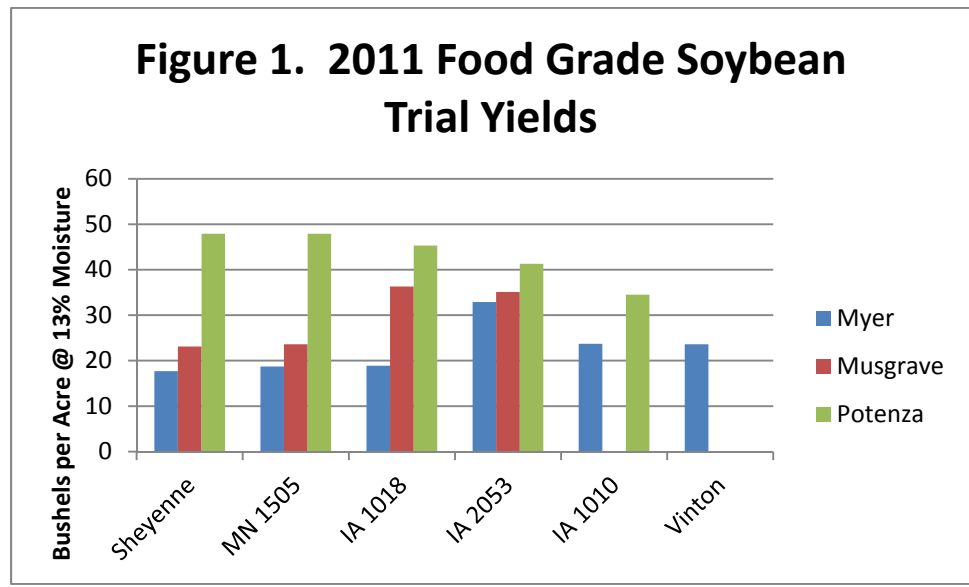
IA 1018 (RM 1.9)

IA 2053 (RM 2.1)

IA 1010 (RM 1.9)

Vinton 81 (RM 2.3), the standard tofu-type variety grown by organic farmers in upstate NY

Sheyenne (RM 0.8), a very early, clear hilum, small-seeded variety. Sheyenne does not have the high protein level needed for tofu, but could be used for soy milk



Yields at Potenza Farm were higher than at Musgrave or Myer Farms, probably due to timely rains there during July, when it was very dry at the other two sites. For IA 2053, this trend was not strong, so perhaps this variety has the potential to yield close to normal during dry years. However, yields of

Sheyenne and MN 1505SP were very depressed at the drier sites. IA 1018 performed like IA 2053 at Musgrave and Potenza Farms, but poorly at Myer Farm. Weed control was good at Myer and Musgrave Farms, but weeds were prominent at Potenza Farm.

Yields were reflected in the height of the plants at harvest. IA 2053 plants were similar in height (65-74 cm) at all three sites, while Sheyenne plants averaged 48 cm in height at Myer and Musgrave but 83 at Potenza Farm. MN 1505SP averaged 54.5 cm tall at Myer and Musgrave but 75 at Potenza Farm. A disadvantage of Sheyenne, and to a lesser extent MN1505SP, is that it tends to set very low pods which may be missed during harvest.

At Potenza Farm, we planted IA 2053 seed that the farmer had saved as well as IA 2053 seed from our supplier, Albert Lea Seed Co. The farmer-saved seed was visually larger at planting and produced a lower stand of 106,000/acre vs 210,000/acre due to a lower seeding rate. At harvest, plants from the farmer-saved seed averaged 15 cm taller than those from the supplier seed, but yielded about 5 bu/acre less.

Maturity followed the ratings well. Sheyenne plants were mature around the end of September, and all varieties by October 18.

We analyzed harvested seed from Potenza Farm for quality. The seeds tended to be very large, except for Sheyenne. Percent protein was high in IA 2053 MN and 1505SP, intermediate in IA 1018, and relatively low in IA 1010 and Sheyenne. The Sheyenne seed from each location also had unacceptable levels of purple stain caused by the fungus, *Cercopsora Kikuchii*, which can be seed-borne.

Table 1. Soybean Variety Analysis @ 13% Moisture

	seeds/lb	% Protein	% Oil	% Fiber	% Carbos	% Sum
Sheyenne	2451	37.3	17.1	4.7	22.9	54.4
MN1505	1807	40.3	16.5	4.4	20.8	56.8
IA1018	1836	39.6	16.6	4.5	21.3	56.2
IA2053	1724	41.1	15.4	4.5	21.0	56.5
IA1010	1378	38.2	16.6	4.7	22.5	54.8

In summary, IA 2053 looks like a reliable performer producing high-quality food grade beans based on one year's data. MN 1505SP also produced high yields of high quality beans at one site, but had poor yields under dry conditions. IA 1018 produced medium-quality beans and performed fairly well at two sites but poorly at the third. IA 1010 produced lower yields of very large beans, but lacked protein levels desired for tofu production. Sheyenne yielded very well at one site but poorly at the drier ones. Its protein content was too low for tofu, and it may be susceptible to purple stain fungus.

This variety trial was done as part of the Cornell Organic Cropping Systems Project at the suggestion of our farmer advisors. One of our goals is to help increase the capacity of NYS organic farmers to do collaborative research with other farmers, Extension personnel, and/or university scientists to find the answers to their questions. We will repeat this trial in 2012 with additional varieties.



Sampling at Myer Farm