

ORGANIC SOYBEAN VARIETY & FERTILITY EVALUATIONS

Twenty-two (22) varieties of edible (food grade) soybeans were evaluated over 3 years (2013-2015), examining yield and quality performance. Small plot trials were established at two (2) farm sites - one in Freetown and the other in Alberry Plains. Fertility response was also evaluated at the two small plot trial sites, where the addition of potassium sulphate was assessed for soybean yield and quality. Fertility rates were based on specified soil analysis.

Other field trials were established on seven (7) farms; assessing performance of selected varieties for yield and quality characteristics. In project years 2 and 3, two different plant spacings (12" and 18") were also evaluated for yield.

RESULTS & OBSERVATIONS:

1. All twenty-two (22) of the selected and commercially available (and locally sourced) soy bean varieties grown organically demonstrated similar yield and quality characteristics as when grown conventionally. That is to say that all 22 varieties are suitable for organic production. It is important to note, that the later maturing varieties will tend to yield slightly higher, but when harvested the moisture is high and may affect quality for a food grade soybean.
2. All twenty-two varieties were able to consistently achieve the 40% protein requirement for edible (food grade) soybeans.
3. The addition of potassium showed no significant effect on yield; but, did result in noticeable reductions in soybean quality (specifically % protein and oil).
4. Overall, there was a general trend towards higher yields at higher plant populations. However, it is clear that plant population is not a "more is better" type of situation, but rather a certain range is best for certain management approaches (i.e. spacing, and weeding strategy).

There was a higher average population in the fields where there was an 18" row spacing. Typically, plant population generally has no definite relationship to row spacing, it is more related to the number of seeds that are planted and germination rates. The average plant population with 18" row spacing was about 20,0000 plants per acre; the average plant population at 12" row spacing was about 14,0000 plants per acre.

In general highest average yields (1-1.5 t/ha) were at the 12" row spacing at a plant population of 15,0000-20,0000 plants per acre. The average yield was slightly lower at the 18" spacing at about 0.75 t/ha.

Even though the population on average was higher with the 18" row spacing, yields were slightly lower. It is possible that at the wider spacing, the plant canopy is later to close and weed pressure could be higher. The longer that canopy closure is delayed, the greater the likelihood, weeds are going to cause yield drag.

Observations, over the three project years, demonstrate the importance of establishing specified targets for plant population for each variety rather than seeding rate based on volume/ weight of seed, i.e. 60 lbs of seed planted per acre. Seed size, germination rate and vigor are variable for all varieties and seed suppliers and need to be taken into account when planning target plant populations. Overshooting a plant population results in wasted seed, and undershooting the population can result in a lower yield.

It should also be noted that at the 18 inch spacing (higher plant populations) air movement tended to be limited with resultant increased risk for disease.

5. It was observed that timing of weed control impacted yield, where typically lower yields were achieved in plots with higher levels of weed competition. This was consistent for all varieties.

In one of the test years, three (3) varieties failed to germinate properly for evaluation. Those varieties were: Laurent, Champion and Vision.

The varieties evaluated for yield and quality are as follows: Champion, Dares, Etna, Jari, Laurent, Marula, Narita, Oria, Plantina, PRO 25, Proteina, Quenatto, S03-W4, S07-D2, S07-M8, S09-L6, S18-R6, Saska, Savanna, Taurus, Venus and Vision.

Taken from: Craig, Brian and Cairns, Harvey . "2013-2015 Organic Soybean Variety/ Fertility Evaluations. Final Report to the PEI Certified Organic Producers Cooperative". April 2016.