

VEGETABLE SOYBEAN (EDAMAME) PERFORMANCE AT ONTARIO IN 2001

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Introduction

Interest in the production and export of green vegetable soybeans (edamame) has grown in the Pacific Northwest. Soybeans for edamame are harvested at the large green bean stage and the pods can then be sold fresh or frozen. The pods are boiled for a few minutes and then shelled by hand at the table and consumed as a snack. Vegetable soybeans are sweeter and less beany tasting than grain soybeans. As the crop is harvested at the green bean stage, a shorter growing season is required than for conventional dry beans or soybeans as an oil seed crop. Four vegetable soybean cultivars were evaluated for their performance in eastern Oregon in 2001.

Methods

The trial was conducted on a silt loam previously planted to onion. Fifty lb of N, 100 lb of P, 55 lb of K, 55 lb of S, 28 lb of Mg, 1.8 lb of Zn, and 1.2 lb of Cu were broadcast in the fall of 2000. The field was then disked twice, moldboard plowed, groundhogged twice and bedded to 22-inch rows. Seed of the four cultivars was planted on May 18 at 120,000 seeds/acre in rows 22 inches apart. *Rhizobium japonicum* soil implant inoculant was applied in the seed furrow at planting. Micro-Tech herbicide at 1.5 lbs ai/ac was sprayed on May 19. The field was furrow irrigated as necessary. Plots were four rows wide and 22 ft long and were arranged in a randomized complete block design with four replicates.

Plant height and reproductive stage were measured every week for each cultivar. When a cultivar reached the green bean stage, bean samples from the border rows were dried in an oven to determine moisture content. Three ft of the middle two rows in each plot were harvested when the bean moisture content for a variety reached 70 percent. Plants were cut at ground level and measured for total weight and pod weight. A subsample of pods was weighed, and the subsample was divided into pods with two or more beans, pods with one bean, and cull pods. Marketable pods contain one or more beans. The pods in each category were weighed. The pods with two or more beans were shelled and the beans weighed and oven dried for moisture content determination. Pods with two or more beans are the most desirable.

Results and Discussion

The optimum plant population for edamame is 60,000 to 70,000 plants per acre (Miles et al. 2000). Plant populations were close to the optimum range for all varieties except 'Shironomai' (Table 1). There was no significant difference between varieties in either total pod yield or marketable pod yield. 'Sayamusume' had among the highest percentage of pods with two or more beans. Bean moisture at harvest was close to the target of 70 percent for all varieties.

References

Miles, C.A., T.A. Lumpkin, and L. Zenz. 2000. Edamame. Pacific Northwest Extension Publications. PNW0525.

Table 1. Characteristics of four vegetable soybean cultivars (edamame). Malheur Experiment Station, Oregon State University, Ontario, OR, 2001.

Cultivar	Source*	Plant population plants/acre	Height cm	Days to green bean harvest [†]	Pod to whole plant ratio	Pod yield --- lb/acre ---	Marketable pod yield ---	Two or more bean pods	One bean pod	Culls	Green bean moisture
								----- % by weight -----			
Kenko	1	74,227	80	103	0.30	13,912	10,065	24.3	47.6	26.3	69.3
Lucky Lion	2	77,848	65	103	0.31	15,130	11,373	27.3	48.2	24.3	68.5
Sayamusume	3	73,322	75	98	0.40	17,804	13,967	51.0	26.1	21.2	70.6
Shironomai	4	22,630	78	98	0.41	12,644	10,528	41.8	41.3	14.5	71.3
LSD (0.05)		24,966			0.01	NS	NS	17.3	7.2	NS	1.4

*Seed sources: 1 = Seedex, Inc., Longmont, CO; 2 = American Takii, Salinas, CA; 3 = Snow Brand Seed, Chiba City, Japan; 4 = Sakata Seed America Inc., Morgan Hill, CA.

[†]From emergence.