

# VEGETABLE SOYBEAN (EDAMAME) VARIETAL OBSERVATION IN CENTRAL OREGON

Peter Sexton, Rhonda Baths, Janet Pang, and Bob Rodgers

## Introduction

There is increasing interest in soybeans harvested for green pods as a snack food (edamame) in the marketplace. Edamame has been grown experimentally in eastern Oregon (Erik Feibert, Malheur Experiment Station, personal communication), but there is no information in its yield potential in central Oregon. In order to make a preliminary evaluation of its suitability for central Oregon, observation plots were set up at the Madras experiment station and at Mr. Bob Rodgers' farm near Culver. Four edamame varieties were evaluated for yield and samples were sent to Vitasoy in San Francisco, California, for market evaluation.

## Methods

Observation plots of 'Early Hakucho', 'SE-4', 'White Lion', and 'Gion' edamame soybean varieties were planted on 26 May 2000 at the Bob Rodgers farm and on 13 June at the experiment station. Plots were four rows wide at both sites and were 40 ft long at the on-farm site and 20 ft. long at the experiment station. Seeds were planted at a depth of 0.75 inches and at a rate of 4 seeds per ft. of row with 2 ft. row spacing. All plots were irrigated with a solid set sprinkler system as necessary to avoid drought stress. Weeds were controlled by pre-emergence application of alachlor at a rate of 3 qt/acre and by hand-weeding at both sites. The on-farm plots were sprayed with orthene (1 lb/acre) for thrips on 11 and 19 July. Pod yields were determined by sampling total biomass from 6 ft. of row from each plot, obtaining fresh weight of the whole sample, and the subsampling three plants and weighing the subsample. The three-plant subsamples were then depodded, the pods sorted into marketable and unmarketable classes, and then weighed. The weight fraction of marketable pods from the subsample was used with the whole sample fresh weight to estimate marketable pod yield on a per acre basis. Samples were collected twice weekly from other parts of the plots at the Bob Rodgers' farm for shipment to Vitasoy for evaluation. For comparison of sample handling, the samples were either, (1) chilled in ice water and then frozen, (2) blanched in boiling water for one minute and then chilled in ice water, or (3) just chilled in ice water. These samples were shipped weekly, for four consecutive weeks, to Vitasoy facilities in San Francisco.

## Results and Discussion

'Early Hakucho', 'White Lion', and 'Gion' showed good; although slow, emergence. The line 'SE-4' showed poor emergence at both sites. Yields at Bob Rodgers' farm were in the range of 4.5-6 tons per acre total pod weight, and 2.3-3.6 tons/acre marketable pod weight (Table 1). Total pod yields are similar, although a little lower, than those reported from eastern Oregon (Feibert et al. 1995), and are consistent with yields obtained from edamame in the Vancouver area of Washington (Carol Miles, Washington State University extension, personal communication). Therefore it appears that edamame could be grown in central Oregon with a reasonable biological yield potential. However, edamame must be frozen or chilled within 24

hours of harvest, and there are no commercial processing facilities in central Oregon for freezing vegetables. The plots at the experiment station were planted about 3 weeks after those at Bob Rodgers, and there were more lodging problems at the station. This resulted in much lower yields at the station. The data from Bob Rodgers' farm is probably more representative of production potential for edamame in central Oregon.

Market evaluation of pods indicated that 'White Lion' produced acceptable product either blanched and frozen or chilled and then frozen (Table 2). However, this evaluation was based on only one sample date, therefore it must be considered with caution. If a processor could be found and a linkage made between Vitasoy and the growers, it may be that edamame could be produced in central Oregon. However, given that the closest processors are in the Willamette Valley, that is where the production would most likely be located.

Table 1. Edamame pod yields for observation plots grown near Culver (Bob Rodgers' farm) and at the Madras experiment station in 2000. Plots at Bob Rodgers were harvested on 14 September, and plots at the experiment station were harvested on 20 September.

	Variety	Total yield	Marketable yield	Percent marketable
		(lb/ac)	(lb/acre)	(%)
Bob Rodgers				
	Early Hakucho	12,836	7,226	56
	SE-4	628	361	57
	White Lion	9,098	5,297	58
	Gion	9,681	4,634	48
Madras Station				
	Early Hakucho	2,697	274	8
	Gion	2,665	547	25
	SE-4	1,589	865	54
	White Lion	2,457	1,474	57

Table 2. Sensory evaluation results on three different processing treatments of edamame near Culver, OR, 2000. Sensory evaluation for appearance, flavor, and texture are based on a 1-10 scale with 1=unacceptable and 10= excellent.

	White Lion	M92-237	Korada	Early Hakucho	RO725CH
<u>Process</u>					
<u>Chilled and Freeze</u>					
Appearance	8.25	5.75	6.00		
Flavor	8.00	7.50	7.50		
Texture	7.50	7.25	7.50		
Overall	7.75	6.00	6.50		
<u>Blanch and Freeze</u>					
Appearance	6.50	5.50	5.25		
Flavor	7.75	6.50	7.50		
Texture	7.75	7.50	7.50		
Overall	7.00	6.00	5.50		
<u>Chill, No freeze</u>					
Appearance	8.50	6.00	6.00	6.50	6.00
Flavor	7.75	7.50	7.00	8.00	8.00
Texture	7.75	7.50	7.50	8.00	8.00
Overall	7.75	6.25	6.25	6.75	6.25