

**Supplemental Report to the Oregon Processed Vegetable Commission  
2004-2005**

**Processing and Quality Evaluation of Experimental Green Beans**

<b><u>Title</u></b>	Green Bean Breeding and Evaluation
<b><u>Project Leaders</u></b>	Brian Yorgey, Food Science and Technology Jim Myers, Horticulture
<b><u>Project Dates</u></b>	July 1, 2004 - June 30, 2005
<b><u>Project Funding</u></b>	\$ 20000

Processing funds were used for labor and supplies for processing of experimental beans, laboratory and data analysis, and industry evaluation.

**Objectives**

The general objective of the processing component of this research is to support the vegetable processing industry in the Willamette Valley by evaluating green beans developed in Jim Myers' breeding program in Oregon State University's Horticulture Department. The specific objectives are:

- A. To provide Dr. Myers and the Oregon vegetable processing industry with frozen and canned samples of experimental green bean lines for comparison to varieties currently grown in Oregon,
- B. To organize and conduct the industry cutting for evaluation of experimental beans, including data analysis, and
- C. To analyze processed selections and varieties for objective quality characteristics.

**Report of Progress**

During the 2004 season, twelve advanced green bean selections were canned and frozen in the Food Science Pilot Plant along with 91G and Minuette for standard checks. One hundred twenty-five preliminary OSU selections were frozen including standard checks. Twenty-one varieties and selections ranging from small to standard sieve and two Italian flat bean selections were evaluated in the commercial trial.

## **Industry Evaluation**

Industry members rated frozen samples for color, straightness, smoothness, pod length, and overall quality. Canned samples were rated for color, sloughing, flavor, and overall quality. The rating scale ranged from 1 (totally unacceptable) to 9 (superior). Results were analyzed using Analysis of Variance (ANOVA) and Tukey's Honestly Significant Difference test (HSD). The ANOVA test yields a value for the mean score. Tukey's HSD test yields a value for the minimum difference required between two values for that difference to be statistically significant at the 95% confidence limit.

Industry participation in the evaluation was very low. For one set of samples, only one person completed a ballot.

### **Results - 5 Sieve Advanced Selections**

**91G, 54, 5630, 5669, 5989, 6104, 6137, 6185, 6193**

Color: 6104 was rated significantly lower than all other selections for frozen samples. For canned samples, 5989 and 5630 were rated higher than 6104.

Straightness: 6137 was rated significantly higher than 91G, 6104, and 6193. Other than 6137, all other selections were rated statistically the same.

Smoothness: 6137 was rated higher than 6193. Otherwise, all selections were rated equally.

Pod Length: 5630 was rated higher than 6193 and 6104. 5669 was rated higher than 6104.

Sloughing: 6104, 91G, and OR54 were rated higher than 6193.

Flavor: 91G was rated higher than 5989 and 6193.

Overall Quality: For frozen samples, 5630 was rated higher than 6193 and 6104. 6104 was rated lower than all other samples except 6193. For canned samples, there was no statistically significant difference among the samples.

### **Results - Small Sieve Advanced Selections**

**Minuette, 5613, 5835, 6100, 6127**

Color: 5835 and 6127 had statistically better color than 5613 in the frozen evaluation.

Straightness: No significant difference

Smoothness: Minuette was rated significantly higher than 6100.

Pod Length: No significant difference

Sloughing: No significant difference

Flavor: Only one person completed a ballot; no statistics were possible.

Overall Quality: No significant difference

#### **Results - 5 Sieve Commercial Trial**

**91G, OR 54, 5630, 5669, 5989, 6137, 8110633, 8120670, SB 4263, SB 4285, Keeper**

Color: For frozen samples, 5630 and 91G were scored significantly higher than 5989, SB 4285, and Keeper. For canned samples, OR 54, 6137, 8110633, 8120670, and 5669 were rated significantly better than Keeper.

Straightness: No significant difference.

Smoothness: No significant difference.

Pod Length: No significant difference.

Sloughing: No significant difference.

Flavor: 91G was rated significantly higher than 5989.

Overall Quality: No significant difference.

#### **Results – 4 and 3/4 Sieve Commercial Trial**

**Minuette, 5613, 5835, 15330733, 8120667, SB 4252, 835**

Color: For frozen samples, no significant difference was shown. For canned samples, 8120667, 15330733, and 5835 were rated significantly higher than SB 4252.

Straightness: No significant difference.

Smoothness: No significant difference.

Pod Length: No significant difference.

Sloughing: No significant difference.

Flavor: No significant difference.

Overall Quality: For frozen samples, 5613 was rated higher significantly higher than SB 4252. No significant difference was detected for canned samples.

**Results – 3 and 2 Sieve Commercial Trial**  
**PLS 75, PLS 87, SB 4277**

Color: No significant difference.

Straightness: No significant difference.

Smoothness: No significant difference.

Pod Length: SB 4277 was rated significantly higher than PLS 75 and PLS 87.

Sloughing: No significant difference.

Flavor: No significant difference.

Overall Quality: For frozen samples, SB 4277 was rated significantly higher than PLS 75. No significant difference was shown among the canned samples.

**Results – Romano Commercial Trial**  
**Serpedor, Dulcina**

Color: No significant difference.

Straightness: No significant difference.

Smoothness: Dulcina was rated significantly better than Serpedor.

Pod Length: No significant difference.

Sloughing: No significant difference.

Flavor: No significant difference.

Overall Quality: Dulcina was rated significantly higher than Serpedor for frozen samples. No significant difference was shown for canned samples.