

**Supplemental Report  
to the Oregon Processed Vegetable Commission  
1990-1991**

**Title:** Green Bean breeding and evaluation.

**Project Leaders:** J.R. Baggett, Horticulture  
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**Project Status:** Terminated June 30, 1991

**Project Funding:** 39,000 breeding  
25,000 breeding supplementary technical support  
14,355 processing

Processing funds were used for student labor and supplies required for processing samples of experimental beans, laboratory analysis and panel evaluations.

**Objectives:** Breed bush green beans for the Western Oregon processing industry with:

- sizes and
- a) improved potential for high yields at favorable sieve dependability,
  - b) improved straightness, texture, and other quality factors,
  - c) emphasis on easy picking and small pod strains of Blue Lake type,
  - d) resistance to white mold and root rot.

**Evaluation of Processing Quality of Experimental Green Beans. 1990-1991.**

During the summer of 1990, 15 experimental OSU green bean lines (including two small sieve lines), two commercial small sieve varieties, and Oregon 91G were processed for evaluation (Planting I). Seven of the OSU lines and 91G were subjected to further evaluation. These lines were processed approximately every two days for three plantings (Plantings II, IV, and V). Canned beans were produced from Plantings I, II, and V. Frozen samples were produced from Plantings I and IV.

The sensory analysis was performed by a volunteer industry panel. Whole bean samples were displayed of sieves 3-6 and samples of cut 5 sieve beans were presented for tasting. Quality factors rated by the panel were: appearance, color, flavor, texture, and overall quality. A 1 to 9 point scale was used with 1 being "unacceptable" and 9 being "superior." Scores were averaged and the standard deviations calculated for each sample and attribute. The values are shown in Tables 1-4 and depicted in Figures 1-20. Table 5 shows the % seed and fiber for the seven OSU lines and 91G in the multiharvest trial.

Thirteen ballots were completed for the canned product and fifteen for the frozen. Unfortunately, this number of panelists is too small to show statistically significant differences between almost any of the samples. The fact that many of the experimental beans are closely related makes discrimination between samples difficult under the best circumstances. A larger number of panelists is clearly needed to make the sensory analysis useful.

### Single Harvest

The lines and varieties included in the single harvest trial were:

Oregon 91G	OSU 5404	
OSU 5163	OSU 5405	and small sieve lines:
OSU 5256	OSU 5408	B7184
OSU 5384	OSU 5416	B7206
OSU 5386	OSU 5418	BBL 76-110
OSU 5402	OSU 5420	S&G 6192
OSU 5403	OSU 5421	

Canned: High scoring lines in appearance were OSU 5408 and BBL 76-110. The low standard deviation for the 5408 appearance score indicates more agreement among panelists about their sample than most others. High standard deviations for several attributes for BBL 76-110 indicate some disagreement about this sample. However, 76-110 generally scored the highest of the small sieve lines. OSU 5386 scored relatively high in color, texture, and overall quality.

Frozen: OSU 5256 scored the highest of the standard size beans in all categories. OSU 5386 had the lowest scores in all attributes. In flavor, texture, and overall quality, the scores for 5386 were even statistically less than the highest scoring lines. Of the small sieve lines, BBL 76-110 had the highest appearance score, but had flavor, texture, and overall quality scores that were very low, statistically less than all the other small sieve lines. B7184 had the highest color, flavor, and overall quality scores of all the frozen beans in the single harvest trial, standard and small sieve lines.

### Multi-Harvest

The following beans were included in the multiharvest trial:

Oregon 91G	OSU 5403
OSU 5163	OSU 5405
OSU 5256	OSU 5416
OSU 5402	OSU 5421

Canned: Oregon 91G was given the lowest appearance, color, texture, and overall quality scores. OSU 5163 and 5256 had high appearance and color scores but low to moderate flavor and overall quality scores. OSU 5402 had highest appearance, flavor and overall quality scores and scored high in color. OSU 5421 had the highest color and texture scores and scored high in appearance and overall quality. OSU 5405 had the lowest color and overall quality scores.

Frozen: Oregon 91G scored relatively better as a frozen bean than as a canned bean; it was neither high nor low in any attribute. OSU 5402 scored highest in all categories. In appearance, color, and overall quality the scores for OSU 5402 were statistically different than some of the lowest scoring samples. OSU 5416 had the lowest scores in appearance, color, flavor, and overall quality and a very low score in texture.

### Summary

<u>Highest Scoring Lines</u>	<u>Process/Trial</u>	<u>Lowest Scoring Lines</u>
OSU 5408, BBL 76-110	canned, single harvest	OSU 5420, B7206
OSU 5402, OSU 5421	canned, multi-harvest	Oregon 91G
B7184, OSU 5256	frozen, single harvest	OSU 5386, BBL 76-110
OSU 5402	frozen, multi-harvest	OSU 5416

The two most important conclusions from this year's work are:

1. OSU 5402 was the only line to score at the top for both canned and frozen products.
2. More panelists are needed to obtain statistically significant results.

Table 1. 1990-91 Canned Green Beans - Industry Panel, single harvest.  
 Data for days to harvest, % 1-4 sieve, average and standard deviation  
 (in parenthesis) for appearance, color, flavor, texture and overall quality.  
 Planting date: April 20, 1990.

Line	Days to harvest	% 1-4 sieve	Appearance	Color	Flavor	Texture	Overall Quality
91 G	84	62	4.9 (1.2)	5.4 (1.2)	5.4 (1.0)	5.0 (1.6)	5.2 (1.3)
5163	84	67	5.4 (1.0)	5.4 (1.3)	4.8 (1.5)	5.1 (1.5)	5.2 (1.2)
5256	84	81	5.2 (1.3)	5.3 (1.4)	5.3 (1.0)	5.1 (1.1)	5.1 (0.9)
5384	81	60	5.2 (1.3)	5.5 (1.1)	5.2 (1.2)	4.8 (1.4)	5.1 (1.0)
5386	83	58	4.9 (1.0)	5.6 (1.4)	5.2 (1.2)	5.4 (1.0)	5.5 (1.1)
5402	87	64	4.9 (1.3)	5.5 (1.2)	5.3 (0.8)	5.1 (1.2)	5.1 (1.0)
5403	87	69	5.5 (1.1)	5.4 (1.2)	4.9 (1.3)	4.9 (1.4)	5.4 (1.0)
5404	85	67	4.9 (0.9)	5.6 (1.0)	5.2 (0.9)	4.9 (1.1)	5.2 (0.8)
5405	84	59	5.1 (1.0)	5.3 (1.2)	5.2 (1.0)	5.1 (1.0)	5.2 (1.0)
5408	84	56	5.8 (0.7)	5.5 (1.0)	5.3 (0.9)	5.4 (0.7)	5.4 (0.8)
5416	87	67	4.9 (1.0)	5.2 (1.1)	5.0 (1.2)	5.1 (1.1)	5.1 (1.2)
5418	87	78	5.1 (1.1)	5.5 (1.4)	5.2 (1.1)	4.9 (1.2)	5.2 (1.1)
5420	85	70	4.6 (1.3)	5.3 (1.4)	4.9 (1.6)	4.2 (1.9)	4.7 (1.5)
5421	85	68	4.9 (0.9)	5.6 (1.5)	5.5 (1.2)	4.6 (1.8)	4.9 (1.1)
Small sieve							
B7184	87	66	5.3 (1.2)	5.7 (1.0)	4.9 (1.2)	5.0 (1.2)	5.4 (1.1)
B7206	82	91	4.9 (1.5)	5.2 (1.5)	4.5 (1.7)	4.4 (1.2)	4.8 (1.3)
BBL 76-110	83	97	6.1 (1.6)	5.9 (1.3)	4.8 (2.0)	5.1 (2.1)	5.7 (1.7)
S & G 6192	85	96	5.4 (1.5)	5.2 (1.6)	4.7 (1.8)	4.9 (1.7)	5.1 (1.4)

Table 2. 1990-91 Frozen Green Beans - Industry Panel, single harvest. Data for days to harvest, % 1-4 sieve, average and standard deviation (in parenthesis) for appearance, color, flavor, texture and overall quality. Planting date: April 20, 1990.

Line	Days to harvest	% 1-4 sieve	Appearance	Color	Flavor	Texture	Overall Quality
91 G	84	62	4.4 (1.1)	4.6 (1.3)	4.8 (1.4)	4.8 (1.4)	4.5 (1.3)
5163	84	67	4.9 (1.2)	4.7 (1.3)	4.6 (1.3)	4.9 (1.5)	4.9 (1.2)
5256	84	81	5.2 (1.1)	5.3 (1.6)	5.0 (1.3)	5.3 (1.6)	5.4 (1.1)
5384	81	60	4.7 (1.1)	4.9 (1.3)	4.7 (1.2)	4.8 (1.3)	4.8 (0.9)
5386	83	58	4.2 (1.3)	4.1 (1.7)	3.5 (1.4)	3.2 (1.5)	3.6 (1.3)
5402	87	64	4.9 (1.3)	4.9 (1.3)	4.5 (1.4)	4.6 (1.5)	4.9 (1.3)
5403	87	69	4.8 (1.3)	4.9 (1.5)	4.5 (1.5)	4.9 (1.3)	4.8 (1.5)
5404	85	67	4.8 (1.0)	4.6 (1.5)	4.5 (1.1)	5.2 (1.3)	4.6 (1.2)
5405	84	59	4.9 (1.2)	5.1 (1.4)	4.9 (1.4)	5.1 (1.4)	5.0 (1.3)
5408	84	56	4.3 (1.1)	4.6 (1.3)	4.7 (1.6)	5.1 (1.5)	4.6 (1.1)
5416	87	67	4.8 (1.3)	5.1 (1.3)	4.3 (1.5)	4.5 (1.4)	4.6 (1.4)
5418	87	78	4.2 (0.9)	4.4 (1.7)	4.0 (1.5)	4.6 (1.4)	4.1 (1.2)
5420	85	70	4.7 (1.1)	4.6 (1.3)	4.3 (1.4)	4.6 (1.4)	4.4 (1.1)
5421	85	68	4.6 (1.1)	4.5 (1.3)	4.5 (1.1)	4.9 (1.2)	4.6 (1.1)
Small sieve							
B7184	87	66	5.5 (1.2)	5.8 (1.3)	5.1 (1.5)	5.1 (1.4)	5.4 (1.5)
B7206	82	91	5.1 (1.3)	5.2 (1.3)	4.7 (1.6)	4.8 (1.1)	5.1 (1.1)
BBL 76-110	83	97	5.8 (1.4)	4.7 (1.4)	3.2 (1.5)	2.3 (1.3)	3.9 (1.3)
S & G 6192	85	96	5.4 (1.1)	5.0 (1.2)	4.9 (1.7)	5.1 (1.5)	5.1 (1.2)

Table 3. 1990-91 Canned Green Beans - Industry Panel, multi-harvest. Data for planting date, harvest date, % 1-4 sieve, days planted, average and standard deviation (in parenthesis) for appearance, color, flavor, texture and overall quality.

Line	Planting date	Harvest date	% 1-4 sieve	Days	Appearance	Color	Flavor	Texture	Overall Quality
91 G	3-May	18-Jul	48	75	4.1 (1.0)	5.1 (1.2)	5.0 (1.3)	4.8 (1.1)	4.8 (1.1)
		20-Jul	35	77	4.5 (0.7)	5.3 (1.0)	4.7 (1.5)	4.3 (1.3)	4.8 (1.4)
	15-Jun	10-Aug	55	56	4.5 (1.0)	5.7 (1.0)	4.7 (1.4)	5.0 (1.0)	5.1 (0.9)
		13-Aug	35	59	4.6 (1.1)	5.1 (1.2)	5.1 (1.1)	4.4 (0.9)	4.9 (0.9)
		15-Aug	43	61	4.8 (1.0)	5.0 (1.3)	5.0 (1.0)	5.0 (1.0)	5.0 (1.0)
5163	3-May	18-Jul	66	75	5.1 (0.8)	5.4 (1.2)	5.0 (1.2)	4.7 (1.0)	4.9 (1.1)
		20-Jul	57	77	5.1 (1.1)	5.5 (1.0)	5.1 (1.0)	4.5 (1.3)	5.1 (1.1)
	15-Jun	10-Aug	65	56	5.8 (0.9)	5.8 (1.2)	5.2 (1.1)	5.2 (1.1)	5.6 (1.0)
		13-Aug	49	59	5.0 (1.3)	5.1 (1.3)	4.6 (1.3)	4.9 (1.3)	5.1 (1.1)
		15-Aug	45	61	4.9 (1.2)	5.1 (1.1)	4.7 (1.3)	4.5 (1.2)	4.9 (1.1)
5256	3-May	18-Jul	66	75	5.0 (1.0)	5.7 (0.9)	4.7 (1.3)	4.4 (1.4)	4.9 (1.2)
		20-Jul	63	77	5.9 (1.1)	5.8 (0.9)	4.9 (1.4)	5.0 (1.1)	5.6 (0.9)
	15-Jun	10-Aug	82	56	5.6 (0.7)	5.9 (1.0)	5.0 (1.0)	5.2 (0.9)	5.6 (0.9)
		13-Aug	70	59	5.1 (1.1)	5.5 (0.8)	4.7 (1.3)	4.7 (1.1)	4.8 (1.2)
		15-Aug	72	61	5.5 (0.8)	5.5 (1.1)	4.9 (1.2)	5.1 (1.1)	5.3 (1.0)
5402	3-May	19-Jul	65	76	5.3 (1.1)	5.7 (1.1)	5.1 (1.1)	5.1 (0.9)	5.4 (1.0)
		21-Jul	59	78	5.0 (1.0)	5.5 (1.2)	5.1 (0.9)	4.7 (0.9)	5.1 (0.7)
	15-Jun	13-Aug	58	59	5.7 (1.2)	5.6 (0.8)	5.5 (0.7)	5.3 (0.6)	5.7 (0.6)
		15-Aug	50	61	6.2 (1.0)	5.9 (1.1)	5.4 (0.8)	5.4 (0.7)	5.9 (0.9)

Table 3. Continued

Line	Planting date	Harvest date	% 1-4 sieve	Days	Appearance	Color	Flavor	Texture	Overall Quality
5403	3-May	19-Jul	67	76	5.3 (1.2)	5.3 (1.3)	5.0 (1.0)	5.0 (0.8)	5.2 (0.9)
		21-Jul	56	78	5.6 (1.0)	5.5 (0.8)	4.8 (1.1)	4.9 (1.0)	5.3 (0.9)
	15-Jun	13-Aug	59	59	5.4 (0.9)	5.5 (1.3)	4.9 (1.2)	5.1 (0.9)	5.4 (1.0)
		15-Aug	53	61	5.0 (1.2)	5.5 (1.0)	5.1 (1.1)	4.9 (0.8)	5.4 (1.0)
5405	3-May	18-Jul	52	75	4.8 (1.2)	5.2 (1.3)	5.1 (1.0)	5.0 (1.1)	5.1 (1.2)
		20-Jul	43	77	4.8 (1.0)	5.3 (1.1)	5.3 (1.0)	4.7 (1.1)	4.9 (0.9)
	15-Jun	10-Aug	53	56	5.0 (1.3)	5.5 (0.9)	5.3 (1.0)	5.3 (0.8)	5.3 (0.8)
		13-Aug	44	59	4.8 (1.3)	5.0 (1.4)	5.1 (1.3)	5.1 (1.0)	5.0 (1.0)
		15-Aug	33	61	4.9 (1.0)	5.3 (1.1)	5.0 (1.0)	4.7 (0.9)	4.8 (0.9)
5416	3-May	19-Jul	60	76	4.7 (0.9)	5.3 (1.0)	5.1 (1.1)	4.8 (1.1)	5.0 (1.0)
		21-Jul	58	78	4.8 (1.0)	5.3 (1.2)	4.7 (1.3)	4.7 (1.0)	4.9 (1.1)
	15-Jun	10-Aug	67	56	5.2 (0.9)	5.7 (1.0)	5.2 (1.0)	5.0 (0.8)	5.4 (0.9)
		13-Aug	60	59	5.4 (1.1)	5.7 (0.9)	5.1 (0.9)	5.0 (1.0)	5.5 (1.0)
		15-Aug	59	61	4.8 (1.0)	5.1 (1.2)	4.7 (1.4)	4.6 (1.3)	4.9 (1.4)
5421	3-May	18-Jul	54	75	5.8 (0.9)	6.1 (1.1)	5.4 (1.2)	5.3 (1.0)	5.8 (0.9)
		20-Jul	48	77	5.6 (1.1)	5.9 (1.0)	5.4 (1.5)	5.5 (0.9)	5.7 (0.9)
	15-Jun	13-Aug	56	59	5.3 (0.7)	5.7 (1.1)	5.1 (1.2)	5.2 (1.0)	5.4 (0.9)
		15-Aug	53	61	5.2 (1.2)	5.5 (1.1)	4.9 (1.1)	4.8 (1.0)	5.2 (1.1)

Table 4. 1990-91 Frozen Green Beans - Industry Panel, multi-harvest. Data for harvest date, % 1-4 sieve, days planted, average and standard deviation (in parenthesis) for appearance, color, flavor, texture and overall quality. Planting date: June 4, 1990.

Line	Harvest date	% 1-4 sieve	Days	Appearance	Color	Flavor	Texture	Overall Quality
91 G	2-Aug	70	59	4.8 (1.0)	4.9 (0.9)	4.8 (1.7)	4.8 (1.6)	5.0 (1.2)
	4-Aug	38	61	5.0 (1.1)	5.1 (1.3)	4.9 (1.3)	5.1 (1.1)	5.0 (1.1)
	6-Aug	38	63	5.1 (0.9)	5.3 (1.2)	5.2 (1.3)	5.1 (1.2)	5.2 (1.1)
5163	2-Aug	75	59	5.3 (1.3)	5.2 (1.0)	5.1 (0.9)	5.2 (1.1)	5.3 (1.1)
	4-Aug	58	61	5.6 (1.2)	5.2 (1.2)	4.8 (1.4)	4.8 (1.4)	4.9 (1.2)
	6-Aug	56	63	5.5 (1.4)	5.3 (1.3)	4.5 (1.0)	4.7 (1.1)	4.9 (1.2)
5256	3-Aug	76	60	5.2 (1.1)	5.1 (1.3)	4.9 (1.2)	4.9 (1.0)	5.2 (1.1)
	6-Aug	58	63	5.2 (1.0)	5.3 (1.1)	4.8 (1.2)	4.7 (0.9)	5.1 (1.0)
	8-Aug	47	65	5.2 (1.0)	5.0 (1.0)	4.5 (1.0)	4.3 (1.1)	4.9 (0.8)
5402	4-Aug	75	61	5.4 (0.8)	5.4 (1.0)	5.0 (1.3)	5.2 (1.1)	5.3 (1.1)
	6-Aug	63	63	6.2 (0.9)	5.9 (1.1)	5.2 (1.2)	5.2 (1.3)	5.8 (1.1)
	8-Aug	47	65	5.4 (1.2)	5.4 (1.1)	4.7 (1.3)	4.9 (1.1)	5.3 (1.3)
5403	4-Aug	68	61	5.7 (1.3)	5.5 (1.2)	5.0 (1.0)	5.2 (1.0)	5.5 (1.0)
	6-Aug	55	63	4.9 (1.1)	5.2 (1.3)	4.9 (1.2)	4.8 (1.1)	5.0 (1.1)
	8-Aug	41	65	4.8 (1.3)	4.8 (1.1)	4.7 (1.3)	4.6 (1.1)	4.7 (1.1)
5405	2-Aug	76	59	5.2 (1.1)	5.3 (1.0)	4.6 (1.1)	4.8 (1.1)	4.9 (1.0)
	4-Aug	57	61	4.6 (1.0)	4.9 (1.0)	4.9 (1.0)	4.6 (1.1)	4.7 (0.9)
	6-Aug	51	63	4.6 (1.1)	4.9 (1.1)	4.9 (1.1)	4.6 (1.0)	4.8 (1.0)



Table 4. Continued

Line	Harvest date	% 1-4 sieve	Days	Appearance	Color	Flavor	Texture	Overall Quality
5416	3-Aug	71	60	5.1 (1.2)	5.2 (1.1)	4.7 (1.1)	5.0 (1.0)	5.2 (1.3)
	6-Aug	49	63	4.5 (1.1)	4.7 (1.1)	4.4 (1.5)	4.4 (1.6)	4.4 (1.4)
	8-Aug	47	65	4.6 (1.3)	4.5 (1.1)	4.3 (1.3)	4.4 (1.5)	4.4 (1.2)
5421	3-Aug	69	60	5.2 (1.1)	5.2 (1.0)	5.1 (1.2)	5.2 (1.2)	5.1 (1.0)
	6-Aug	46	63	4.5 (1.2)	5.1 (1.3)	4.9 (1.3)	4.9 (1.1)	4.9 (1.2)
	8-Aug	41	65	4.8 (1.0)	4.6 (0.8)	4.9 (1.4)	4.9 (1.2)	4.8 (1.0)

Table 5. 1990-91 Green Bean Seed and Fiber Analysis

Sample Line	Harvest Date	% 1-4	Sieve Size	% Seed	% Fiber
91G	8/13	35	6	8.9	0.023
5163	8/15	45	6	11.8	0.022
5256	8/15	72	6	10.4	0.017
5402	8/15	50	6	8	0.017
5403	8/15	53	6	8.7	0.025
5405	8/15	33	6	9.4	0.027
5416	8/13	60	6	9.5	0.027
5421	8/15	53	6	7.1	0.014

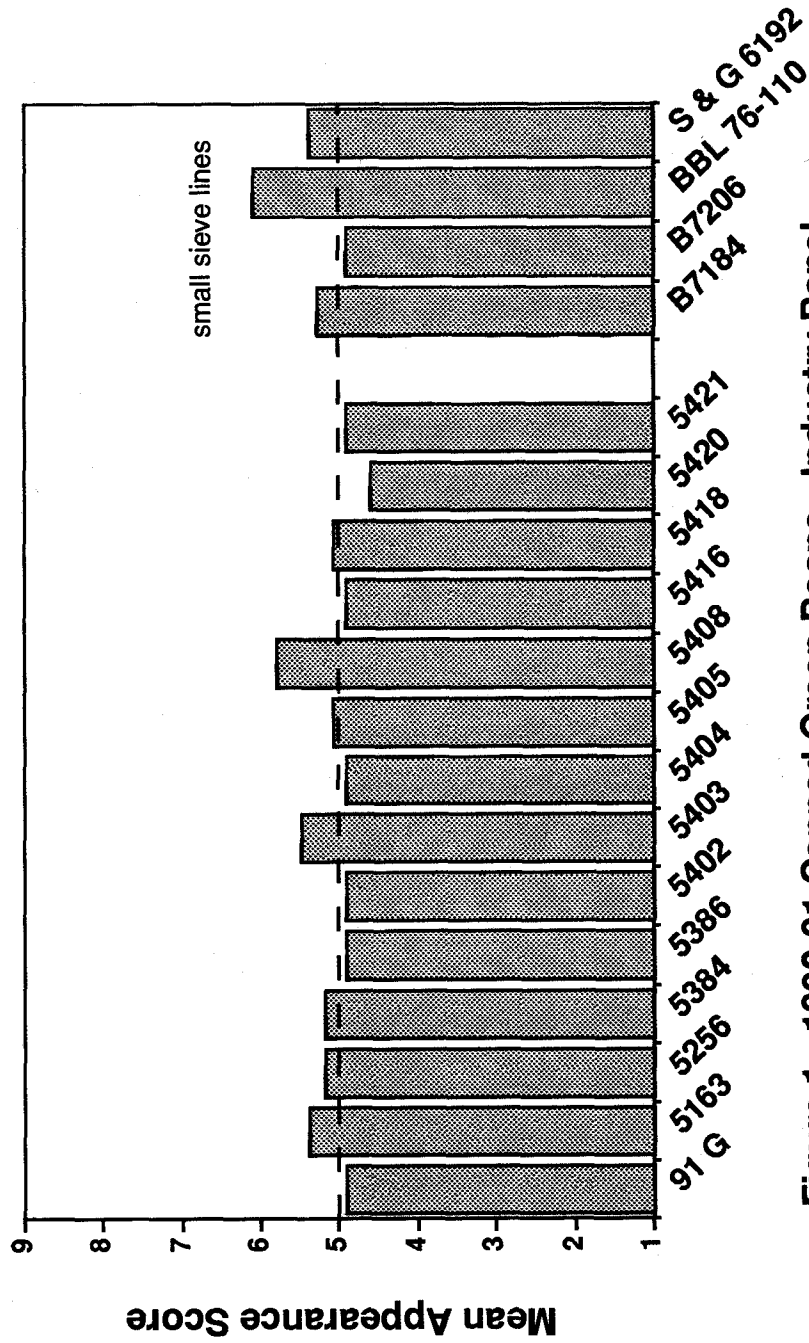
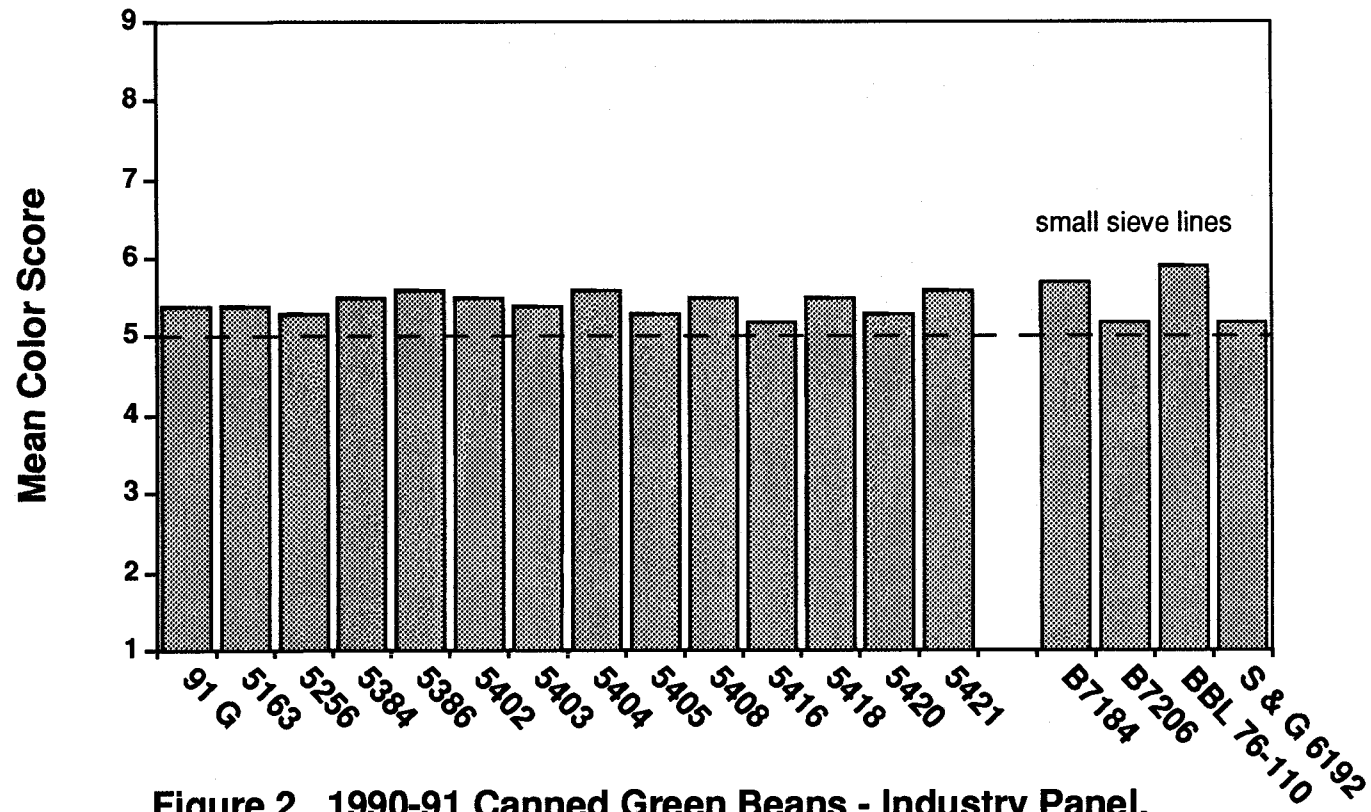
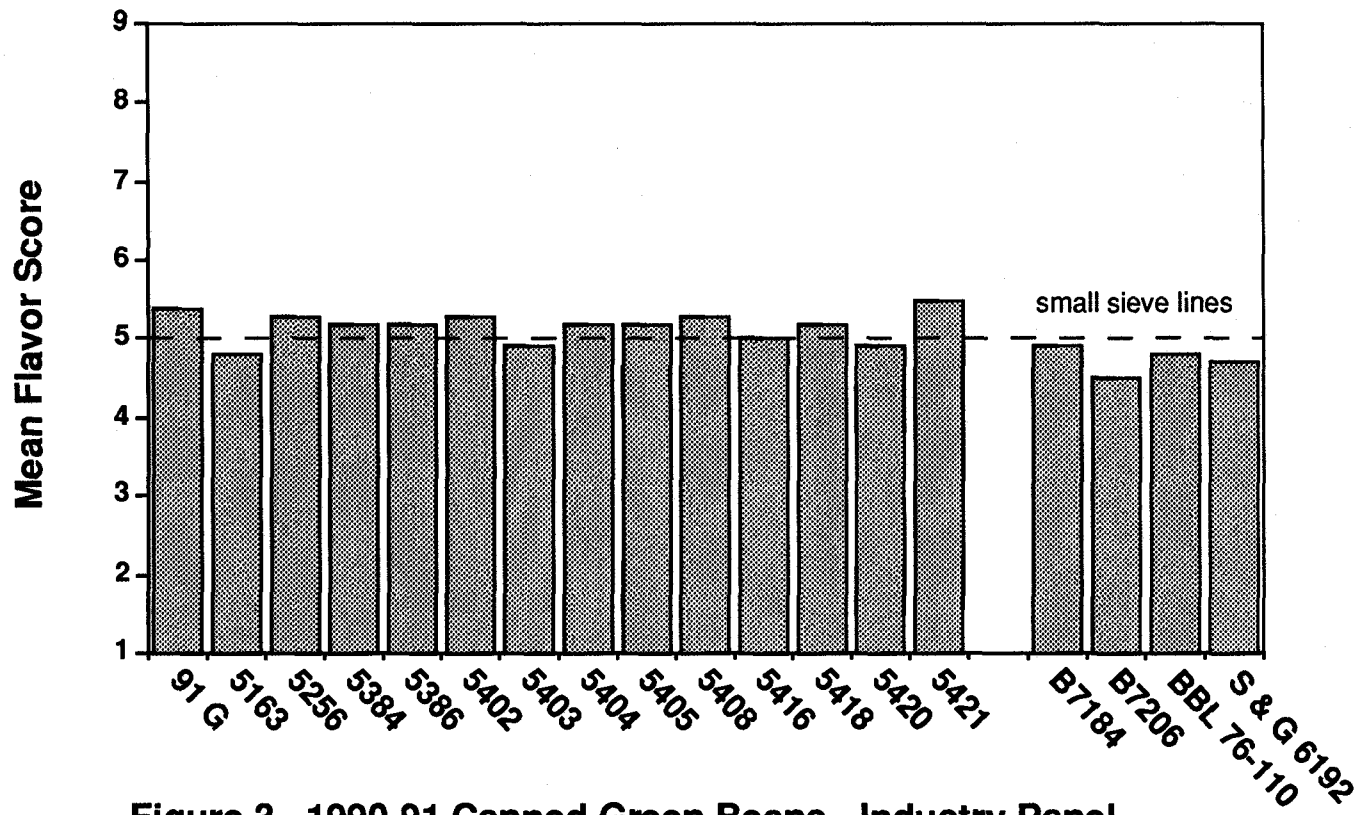


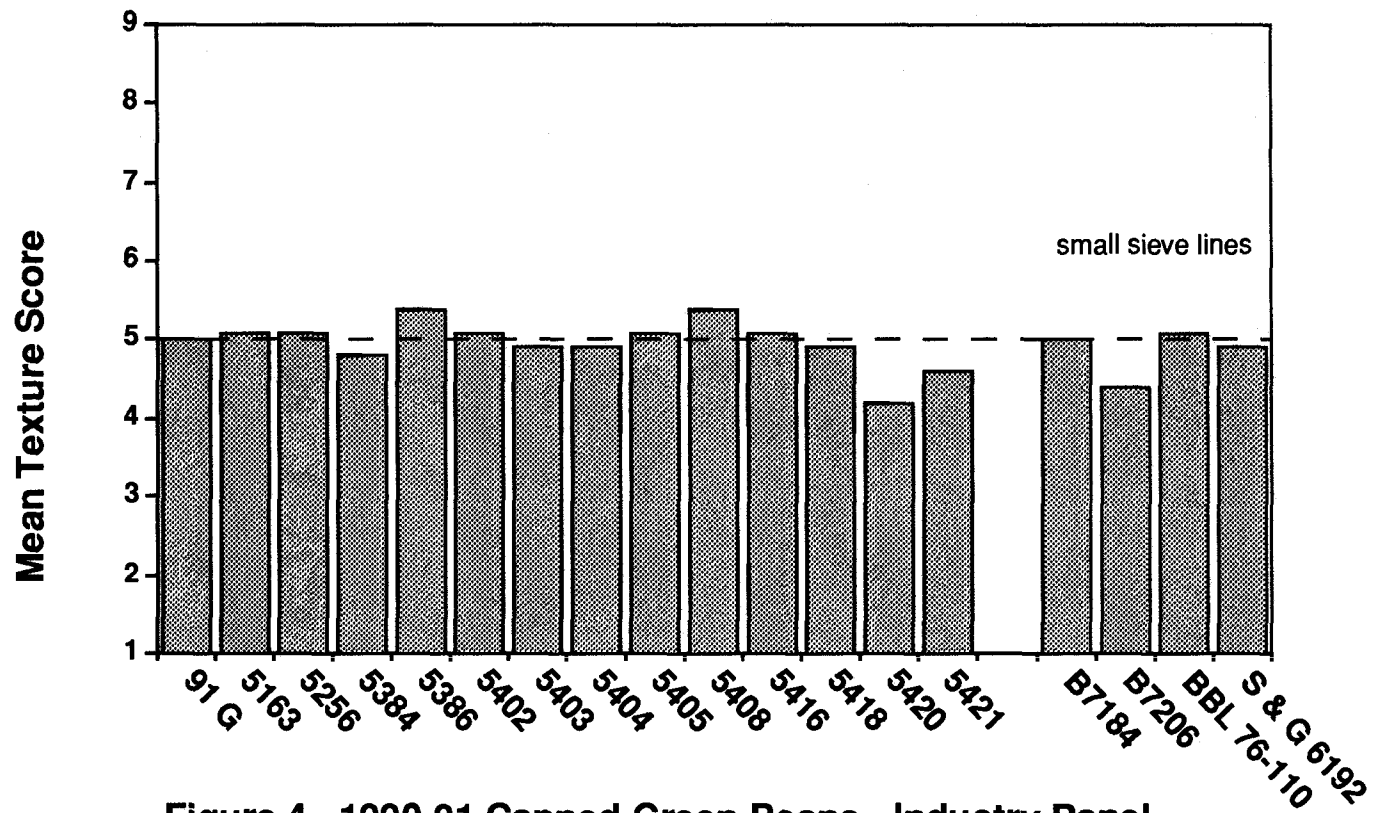
Figure 1. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Appearance Scores



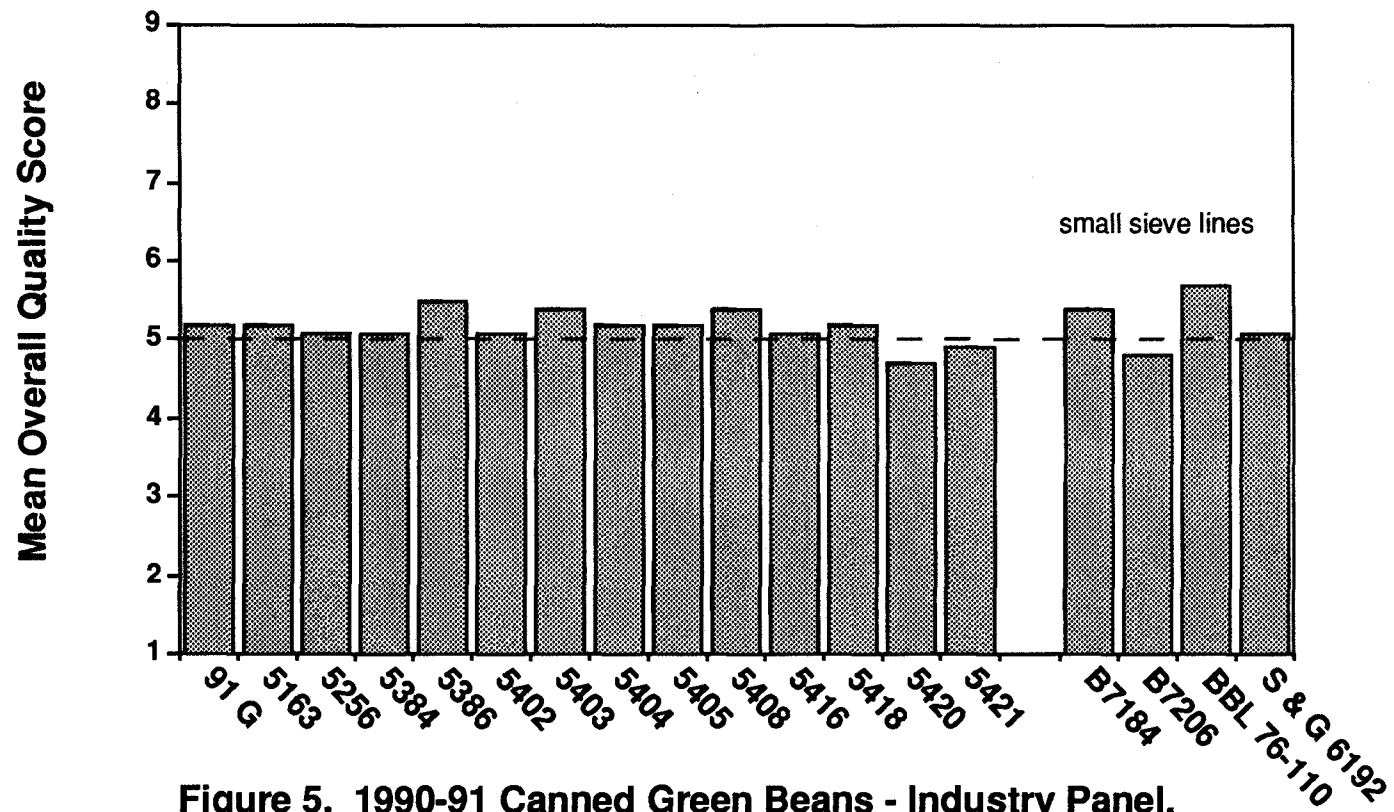
**Figure 2. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Color Scores**



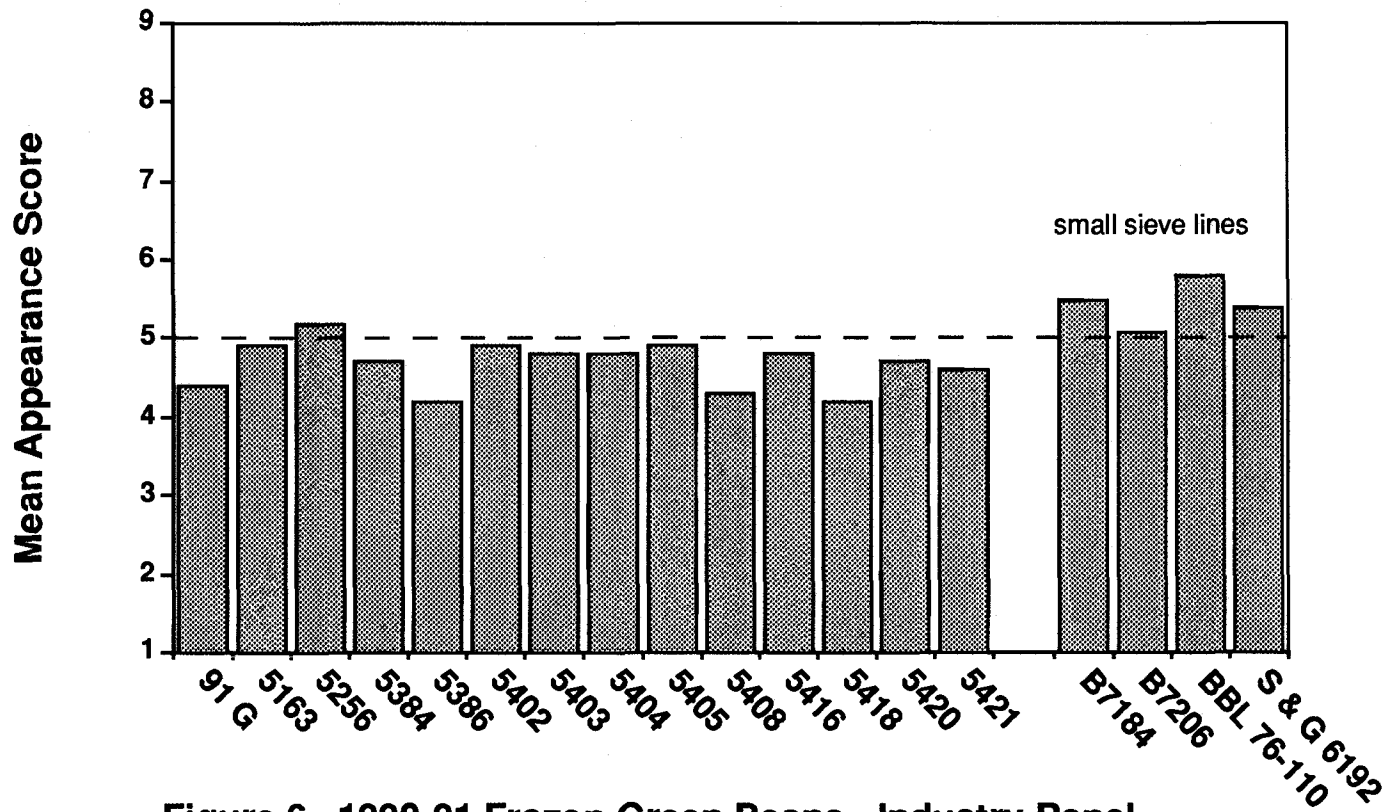
**Figure 3. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Flavor Scores**



**Figure 4. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Texture Scores**

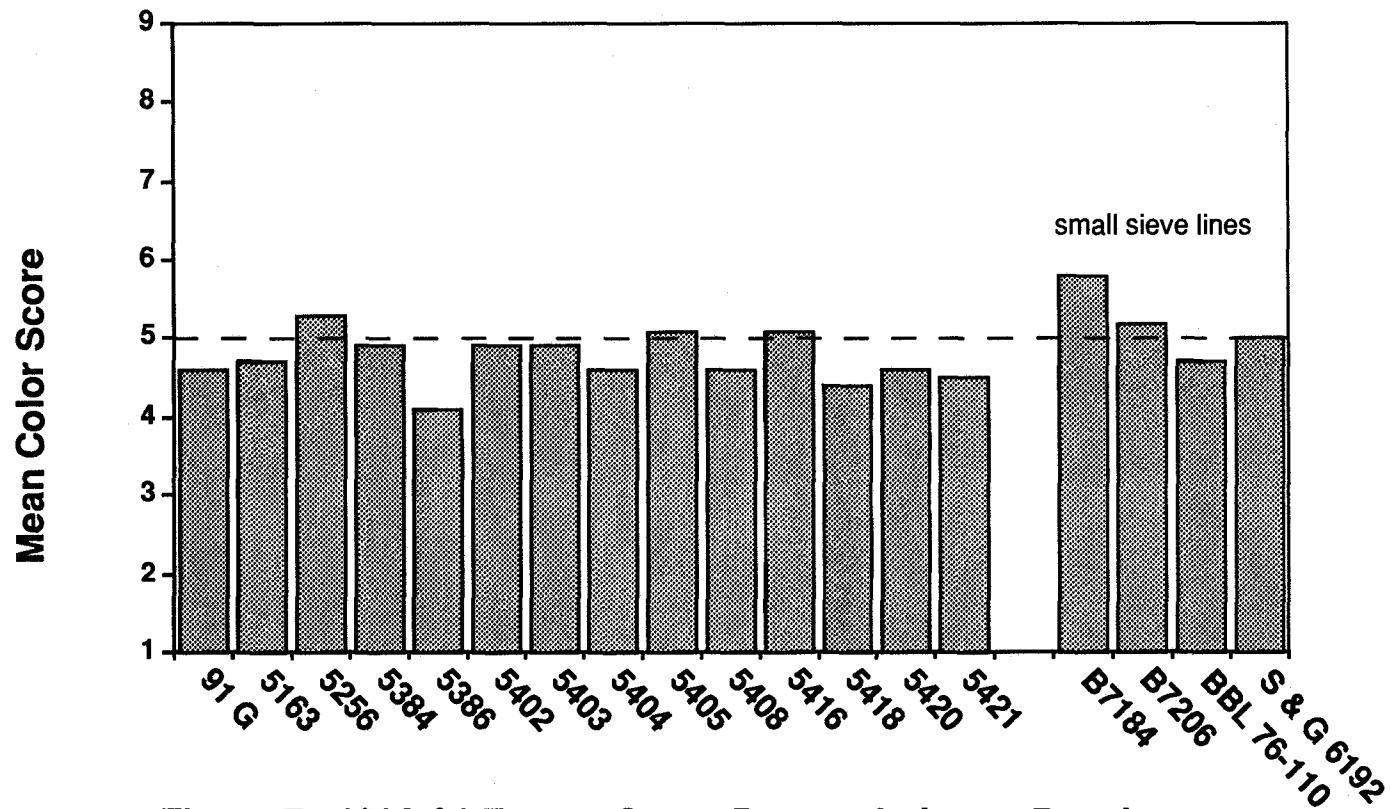


**Figure 5. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Overall Quality Scores**



**Figure 6. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Appearance Scores**





**Figure 7. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Color Scores**

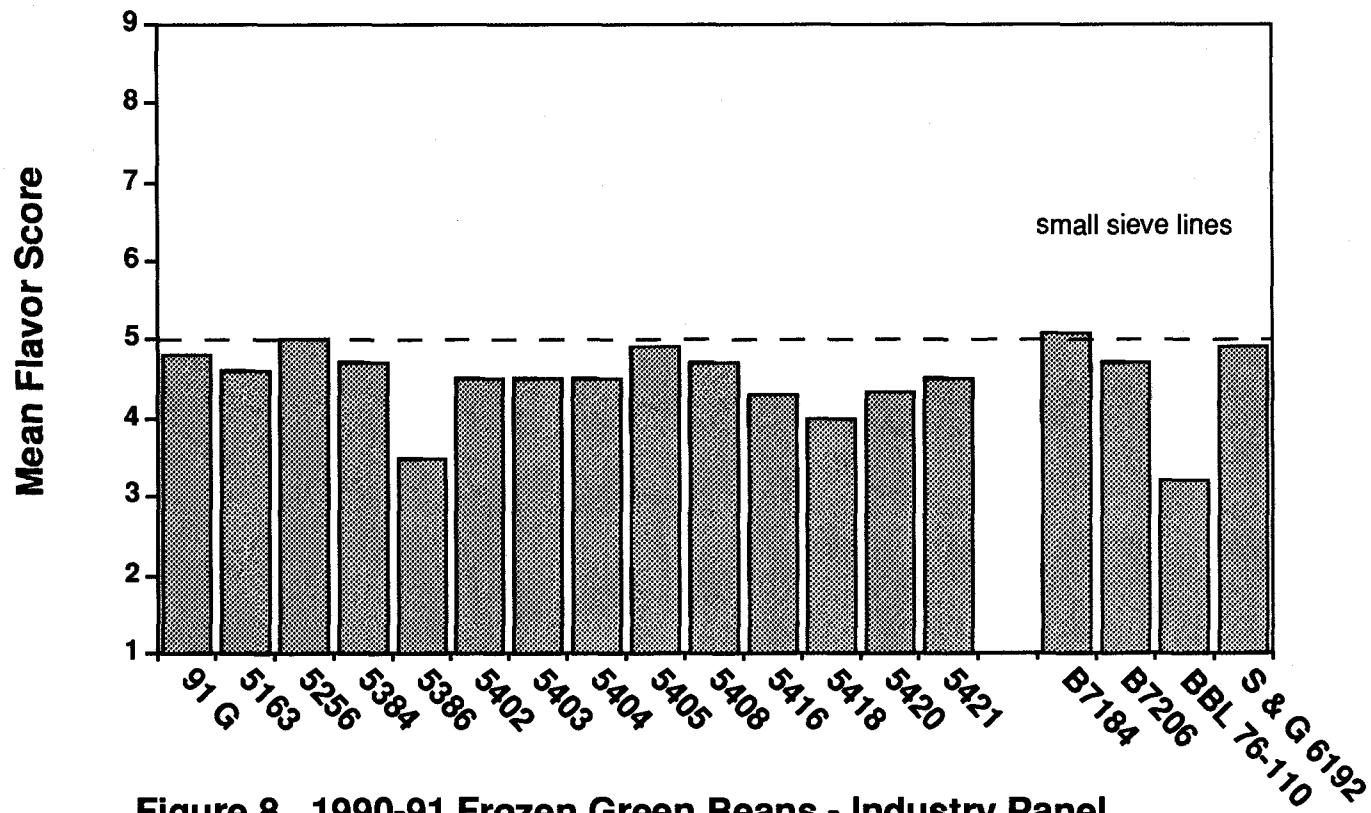
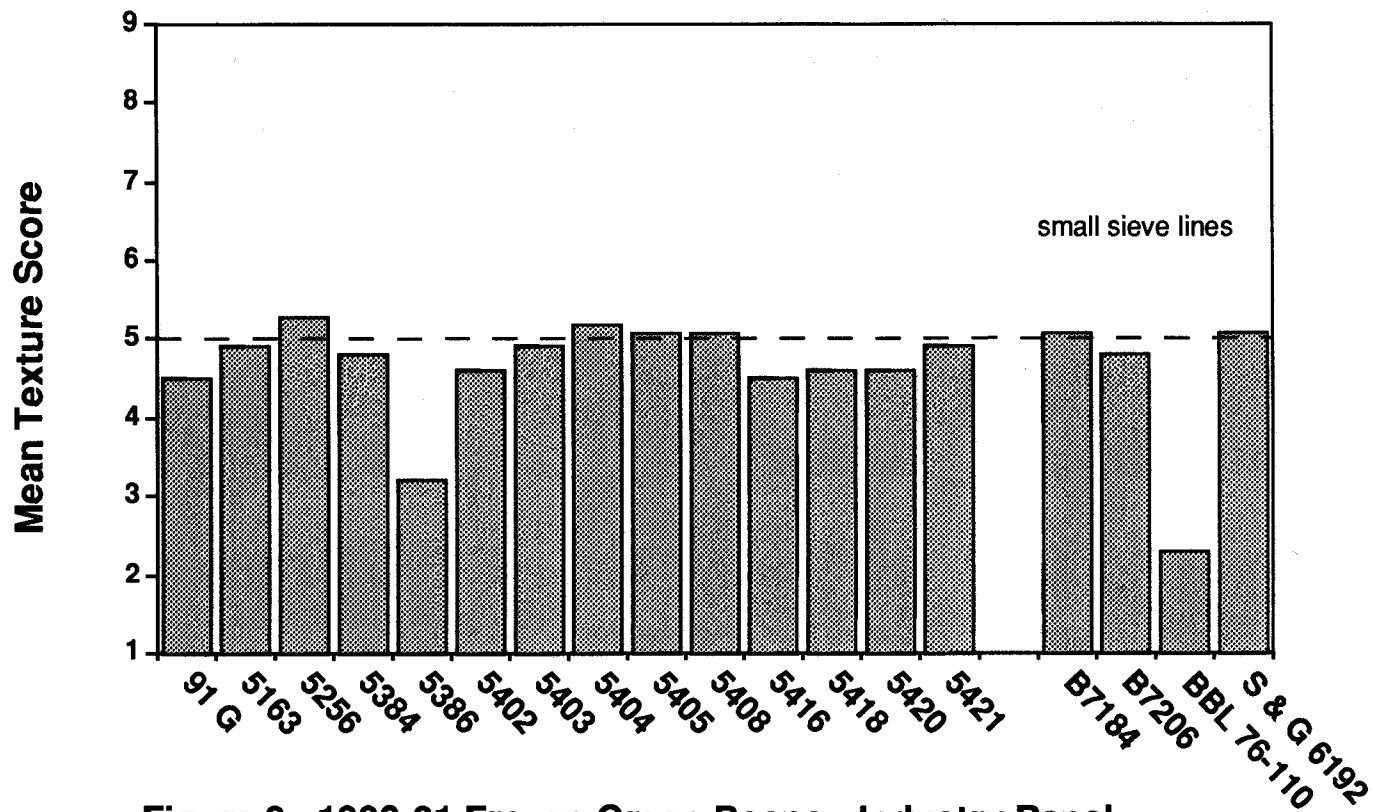


Figure 8. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Flavor Scores

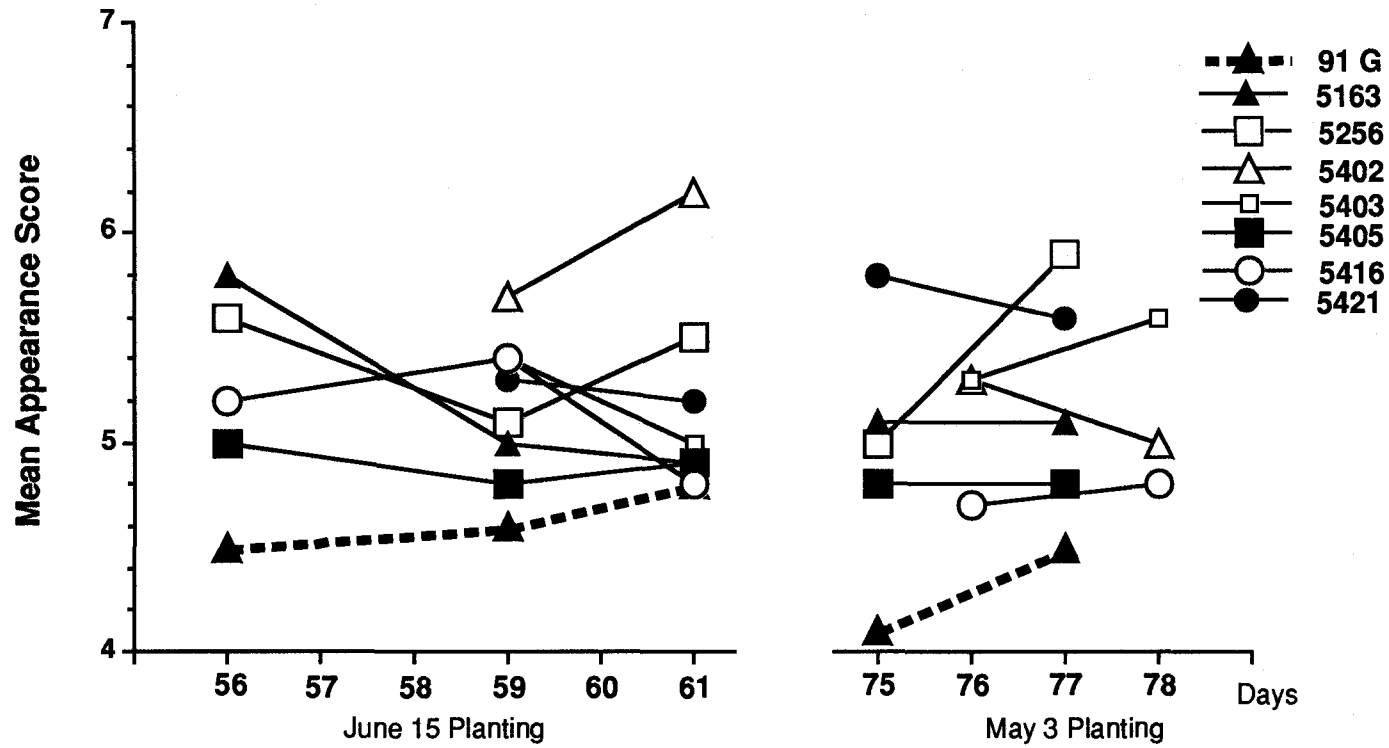


**Figure 9. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Texture Scores**

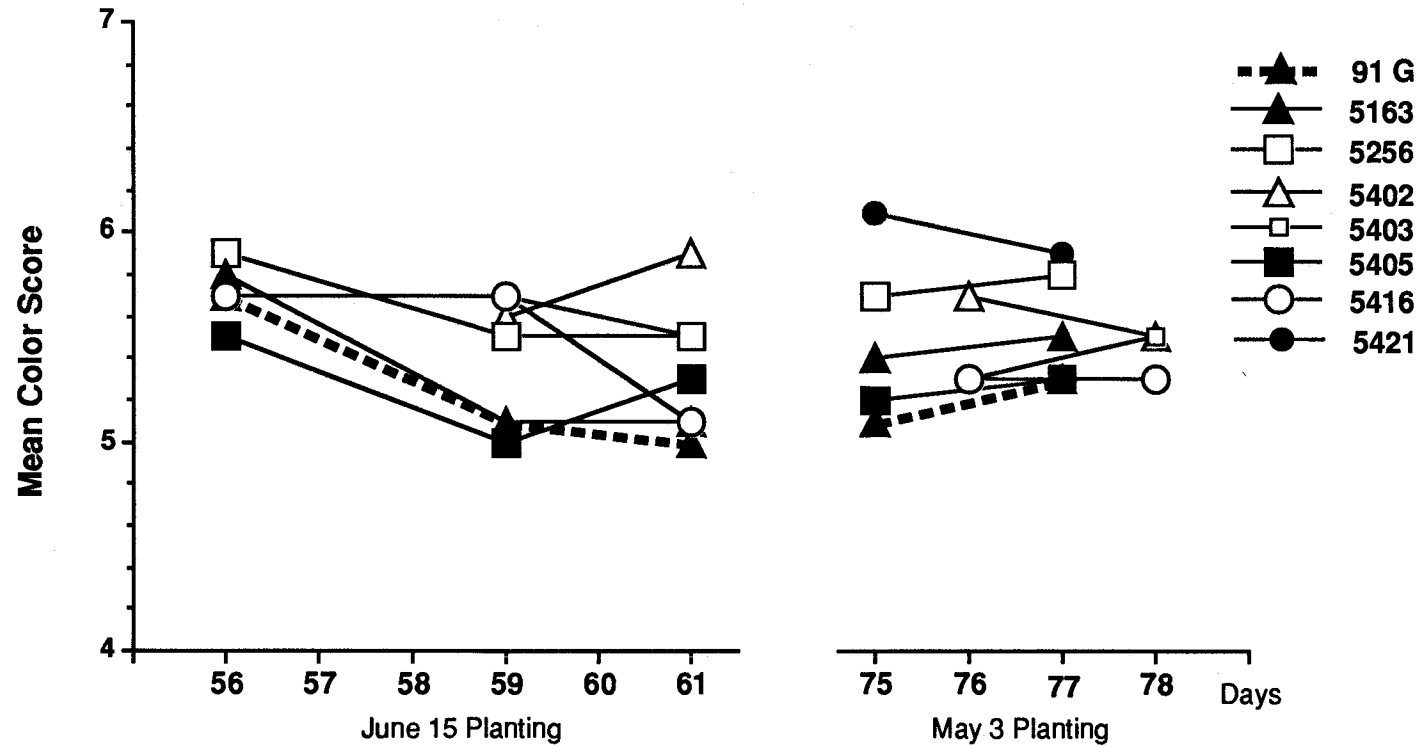
# Mean Overall Quality Score



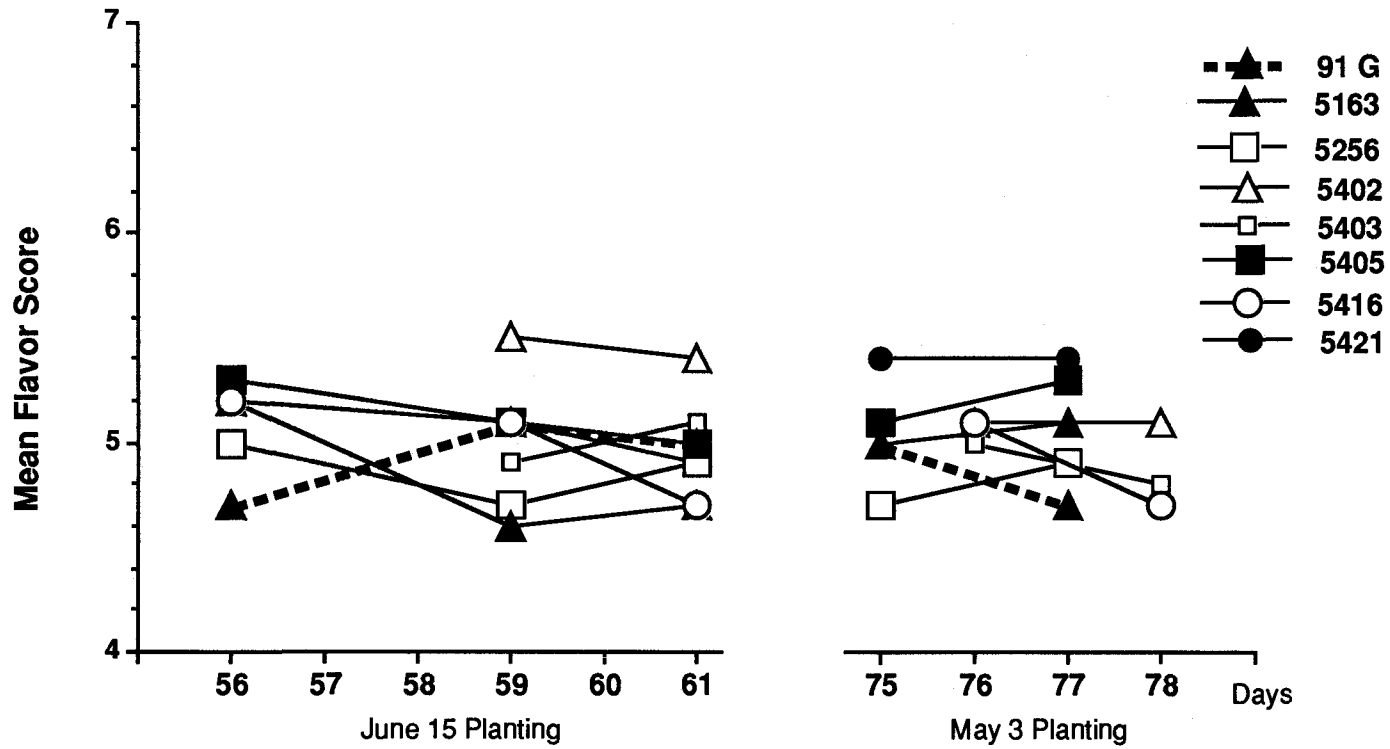
Figure 10. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Overall Quality Scores



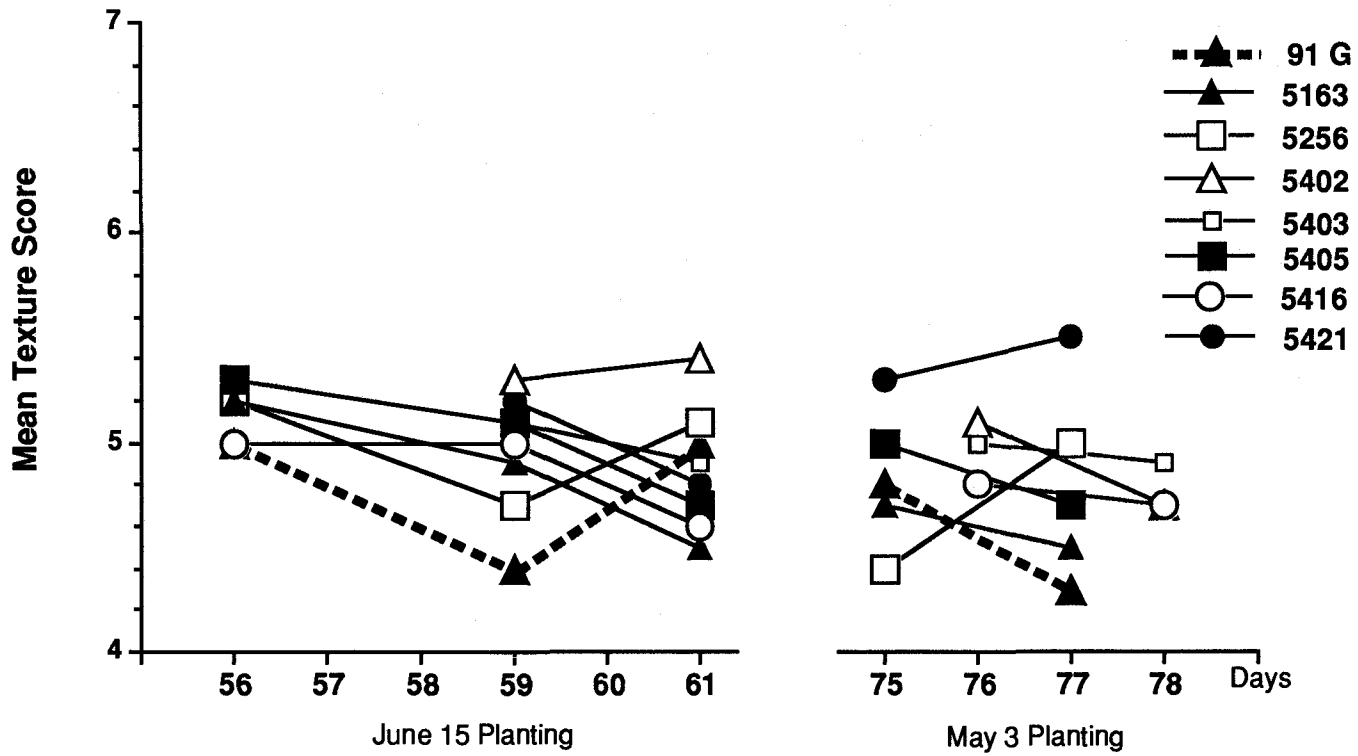
**Figure 11. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Appearance Score**



**Figure 12. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Color Score**

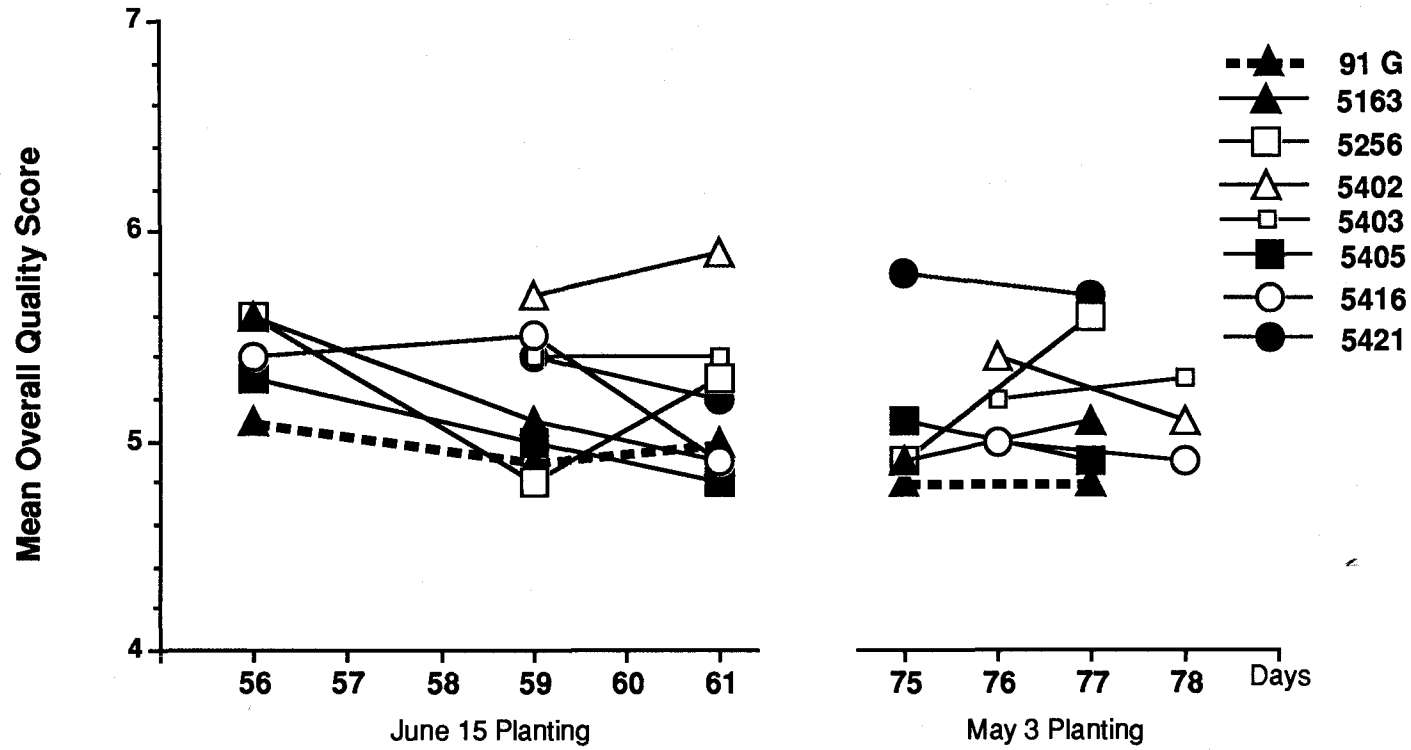


**Figure 13. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Flavor Score.**

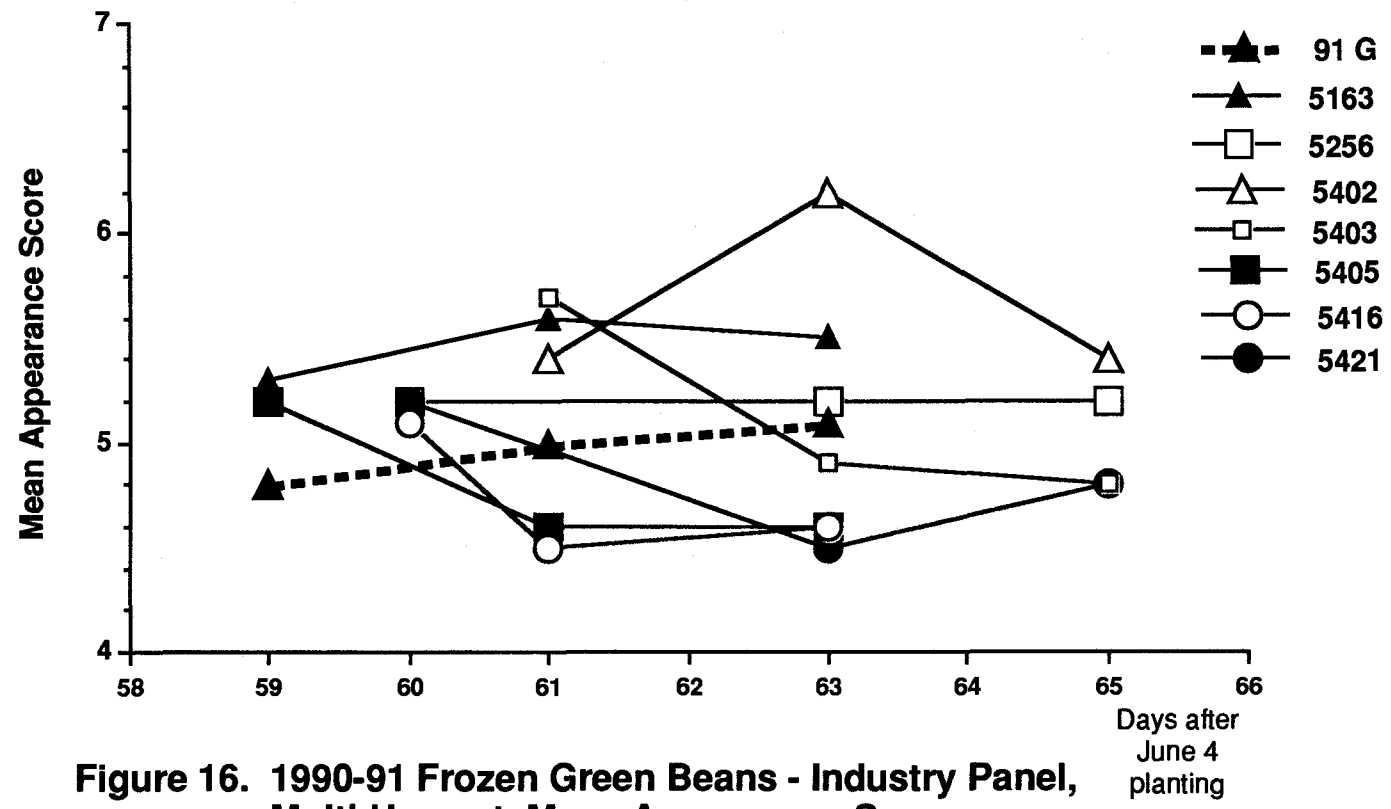


**Figure 14. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Texture Score**

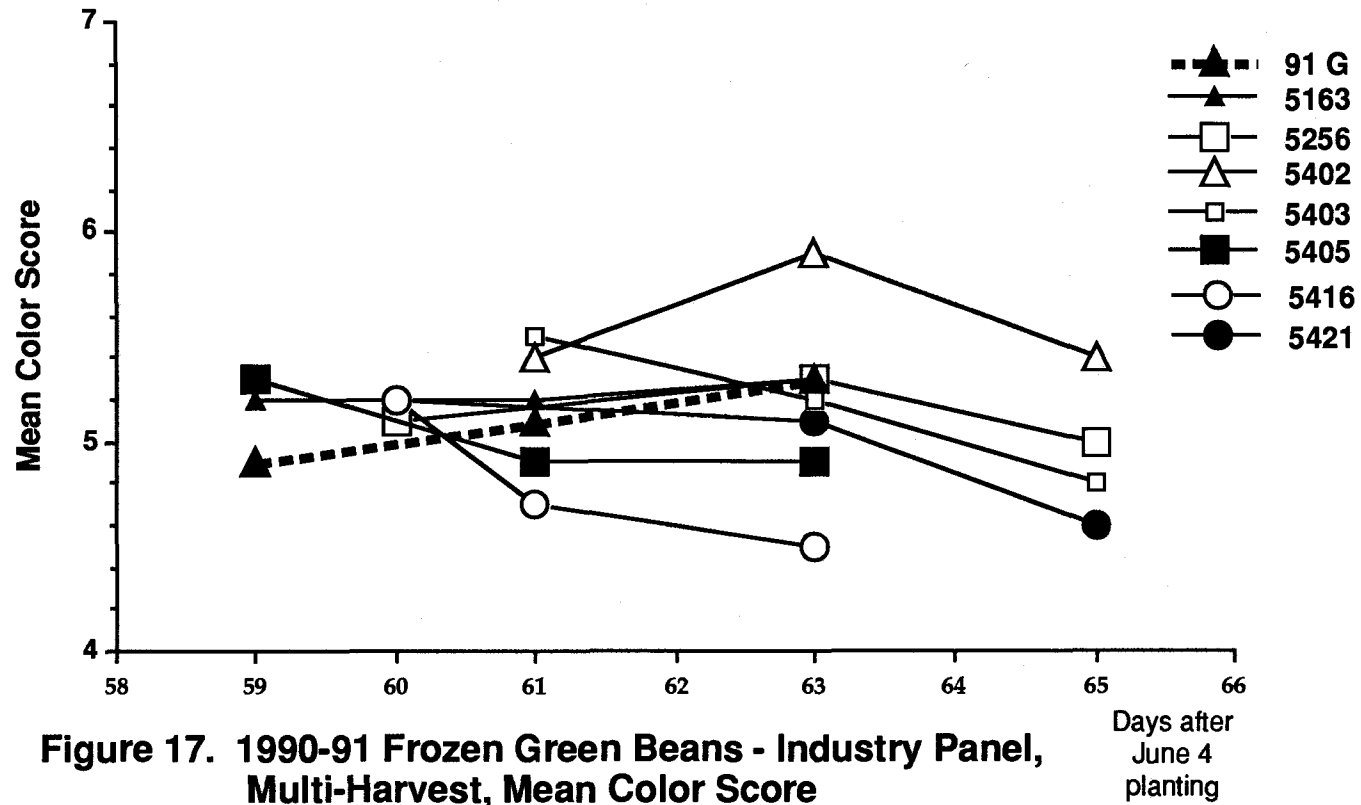


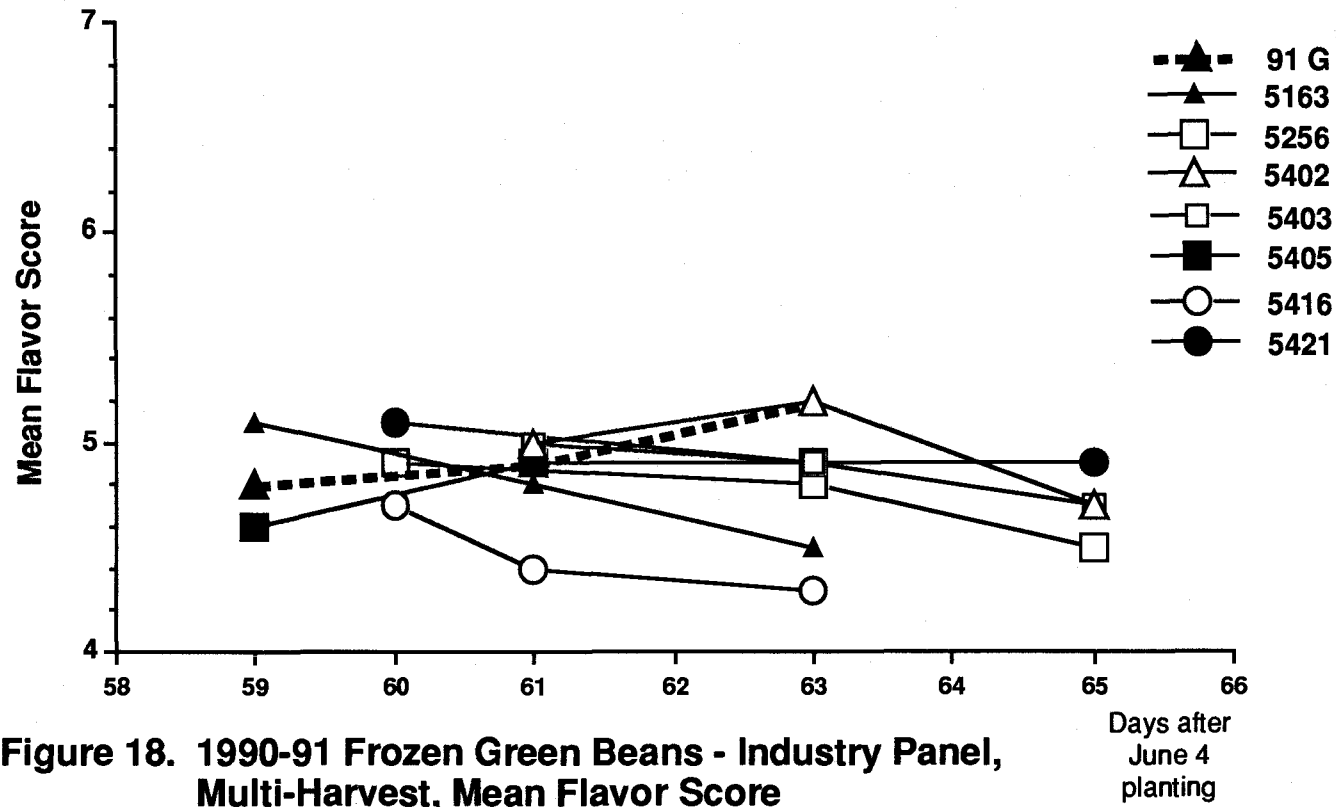


**Figure 15. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Overall Quality Score.**



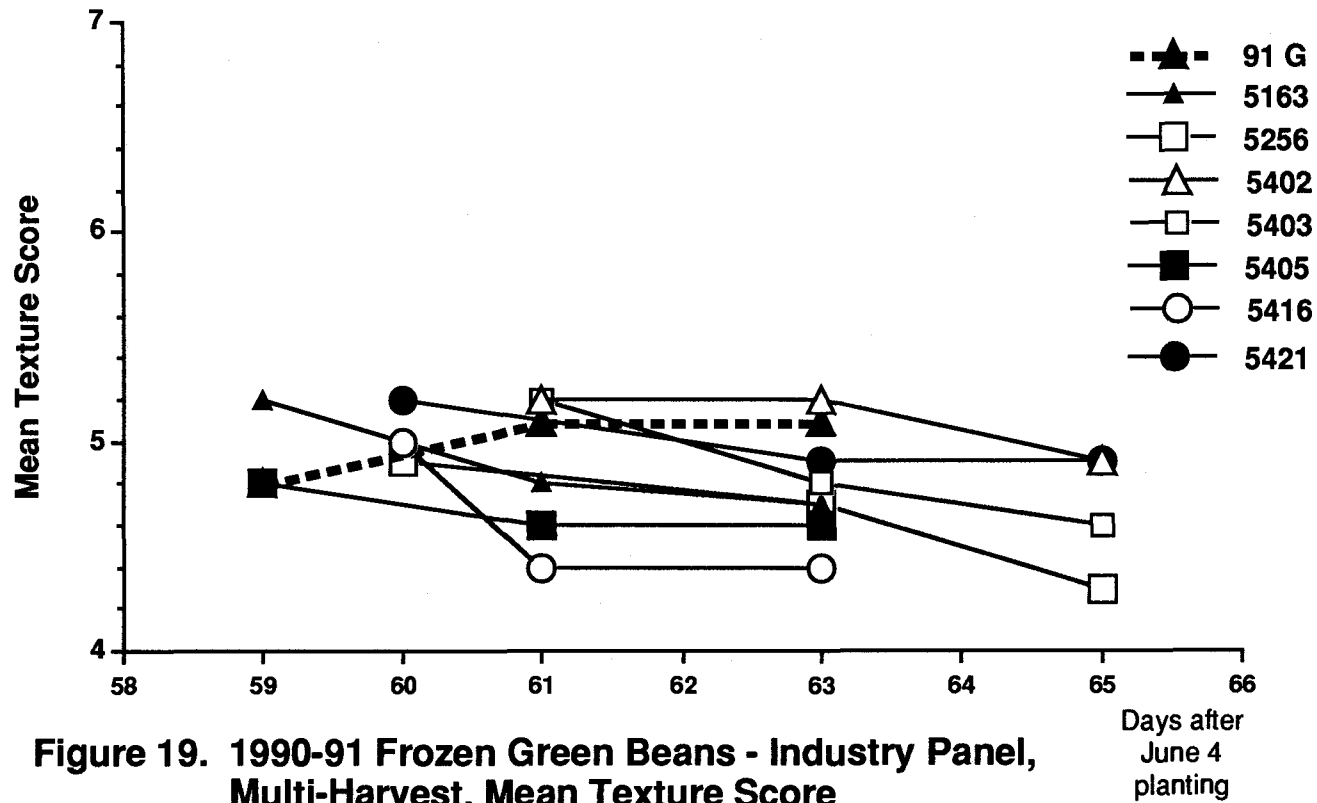
**Figure 16. 1990-91 Frozen Green Beans - Industry Panel, Multi-Harvest, Mean Appearance Score**



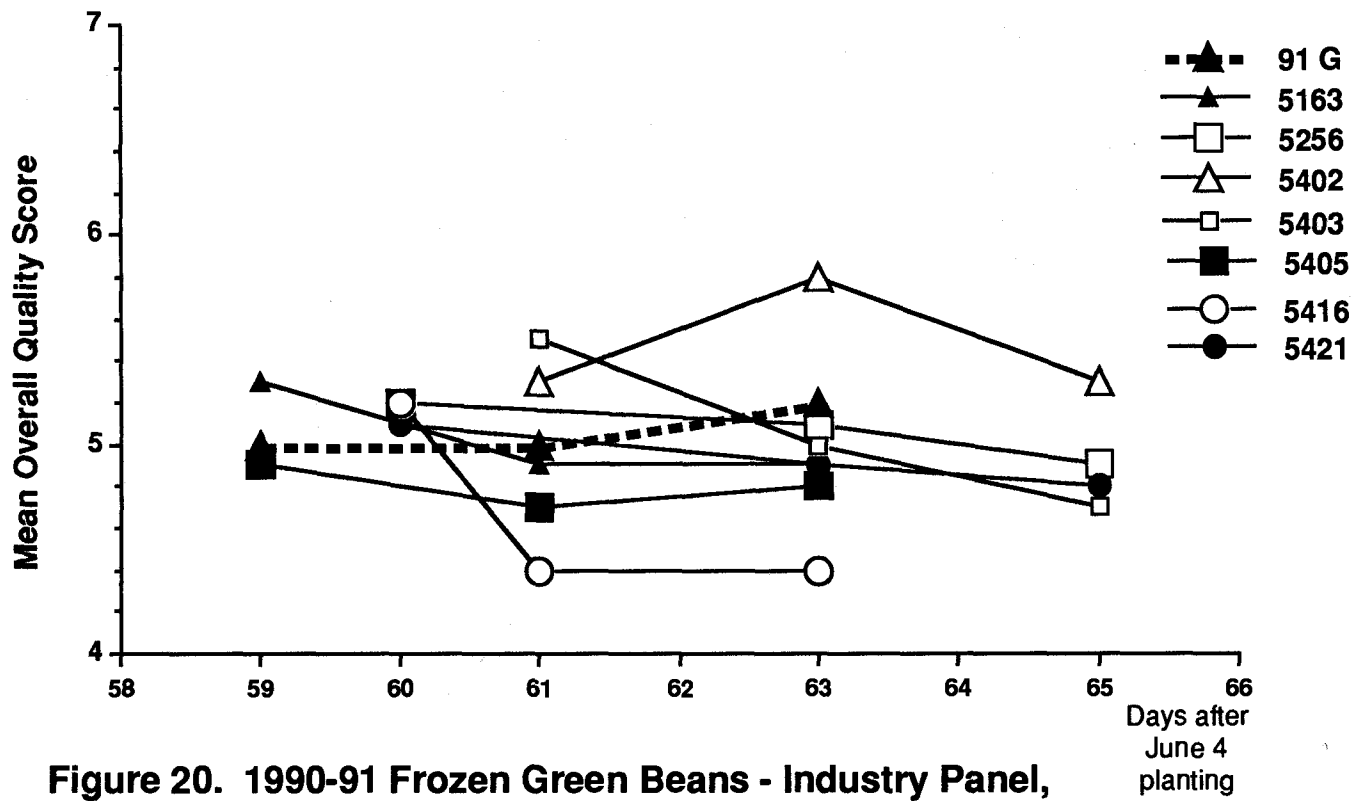


**Figure 18. 1990-91 Frozen Green Beans - Industry Panel, Multi-Harvest, Mean Flavor Score**

Days after  
June 4  
planting



**Figure 19. 1990-91 Frozen Green Beans - Industry Panel, Multi-Harvest, Mean Texture Score**



**Figure 20. 1990-91 Frozen Green Beans - Industry Panel, Multi-Harvest, Mean Overall Quality Score**

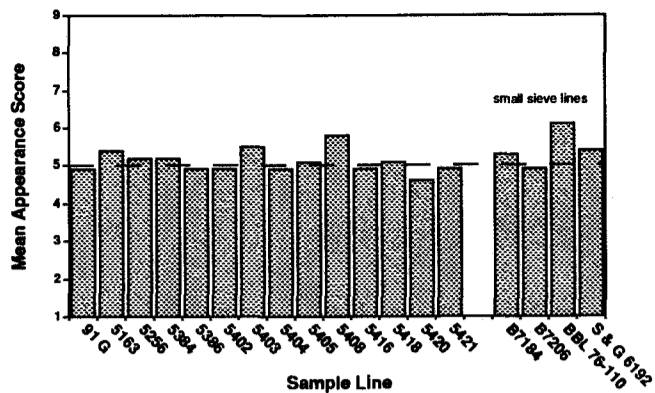


Figure 1. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Appearance Scores

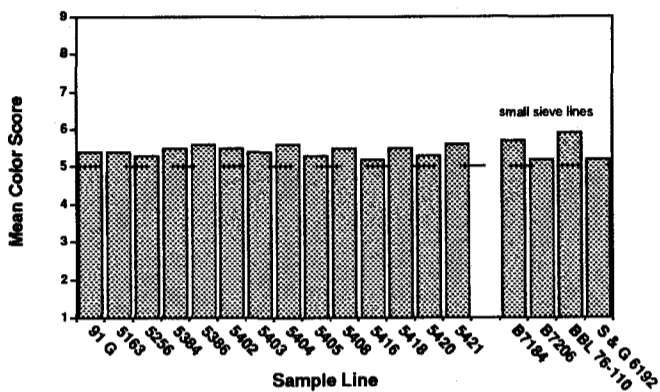


Figure 2. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Color Scores

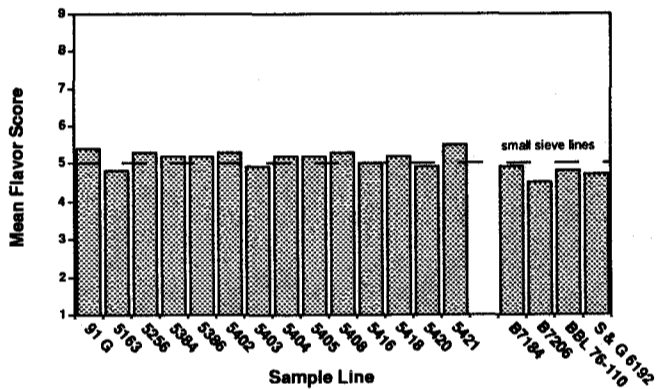


Figure 3. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Flavor Scores

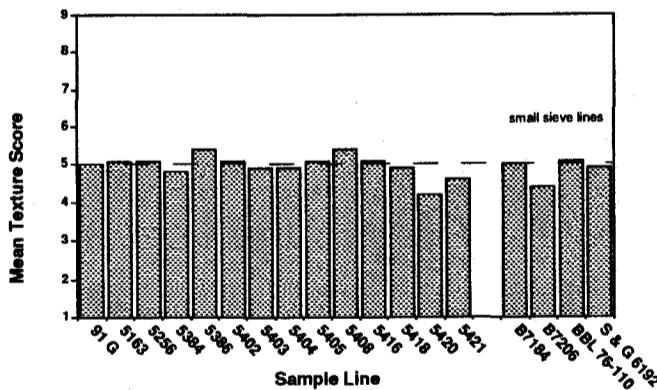


Figure 4. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Texture Scores

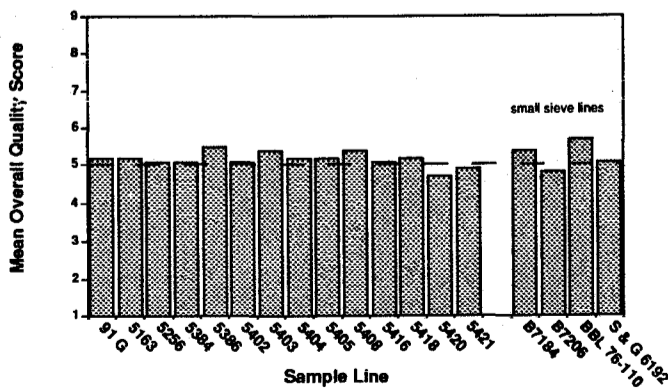


Figure 5. 1990-91 Canned Green Beans - Industry Panel, Single Harvest, Mean Overall Quality Scores

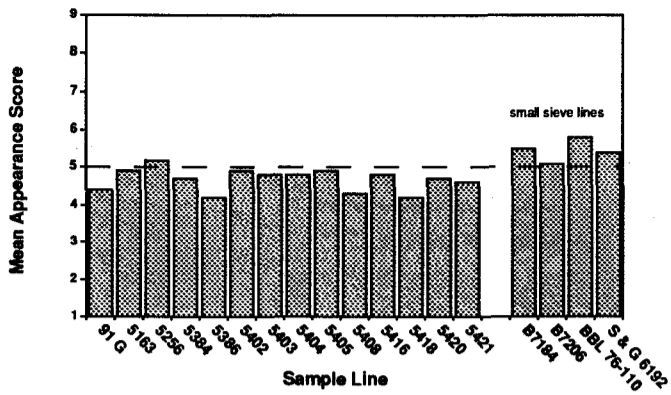


Figure 6. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Appearance Scores

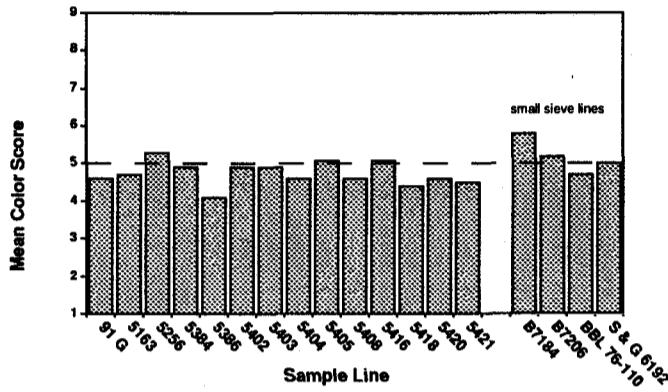


Figure 7. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Color Scores

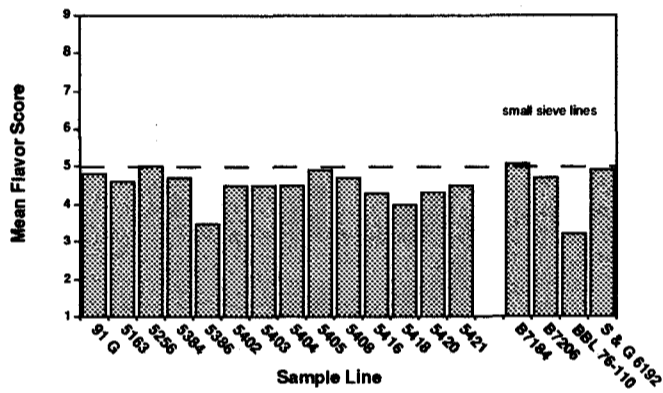


Figure 8. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Flavor Scores

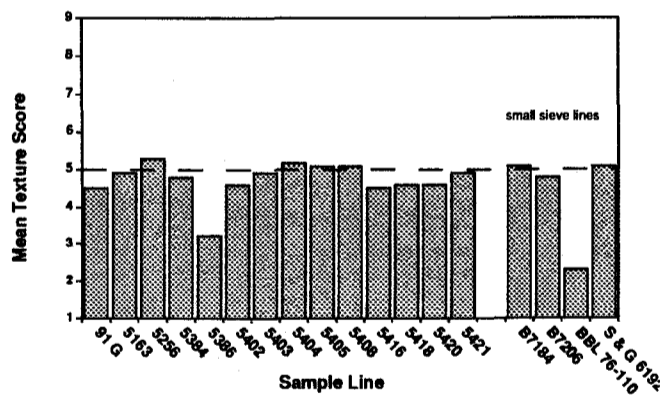


Figure 9. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Texture Scores

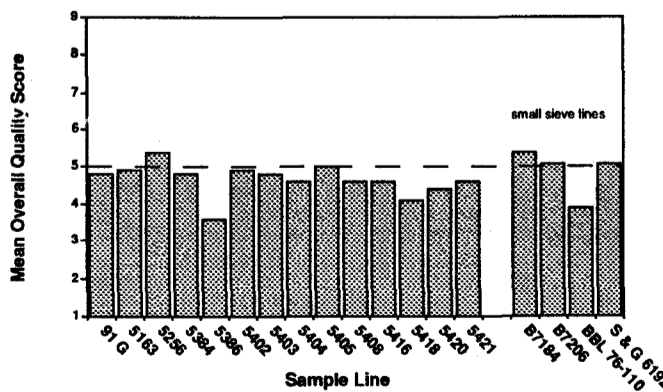


Figure 10. 1990-91 Frozen Green Beans - Industry Panel, Single Harvest, Mean Overall Quality Scores



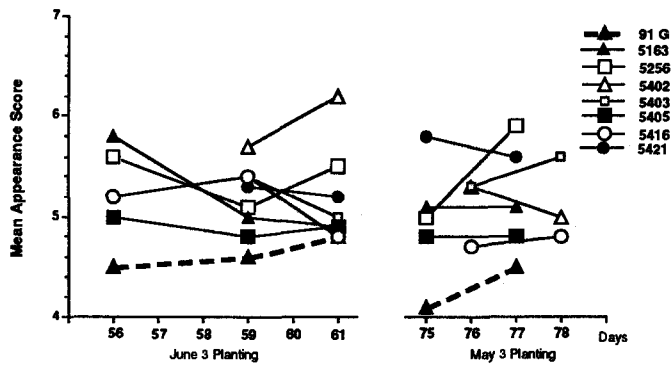


Figure 11. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Appearance Score

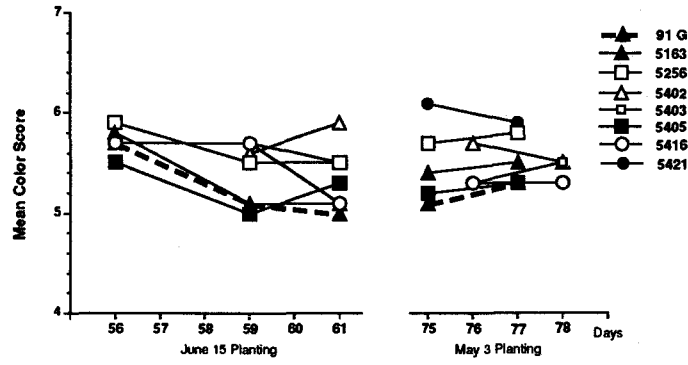


Figure 12. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Color Score

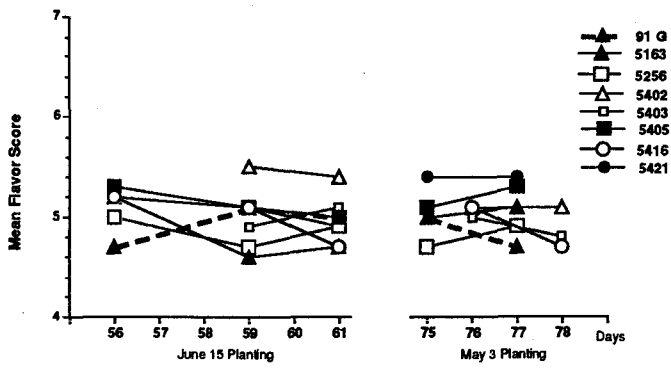


Figure 13. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Flavor Score

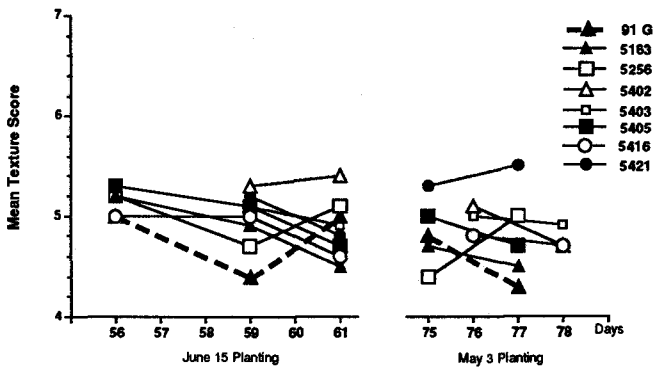


Figure 14. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Texture Score

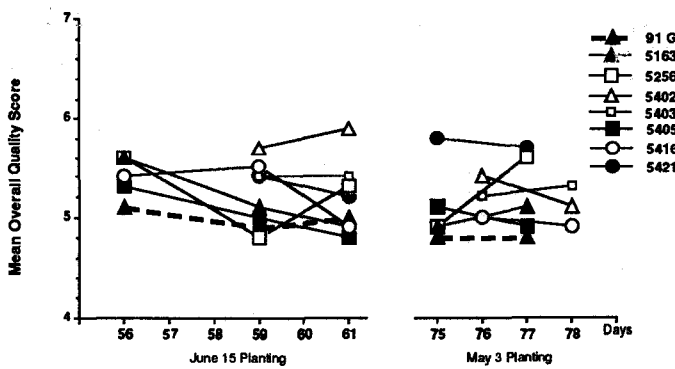


Figure 15. 1990-91 Canned Green Beans - Industry Panel, Multi-Harvest, Mean Overall Quality Score

