

Performance of Shelly Bean Cultivars, Plateau Experiment Station, 2000

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Interpretative Summary

'French Horticultural' plants were slightly more vigorous and lodged more than the other cultivars. 'Horto' had a higher yield than 'French Horticultural'. All cultivars had low levels of trash, broken pods, and immature pods in the harvested product. Pod dimensions were similar for all cultivars. 'French Horticultural' had more seeds per pound than all other cultivars. 'French Horticultural' had a darker pod color than 'Etna'.

Introduction

Horticultural beans, known as shelly or October beans, are grown on a limited acreage in Tennessee. A market for this type of specialty bean is available in many areas of the United States. 'French Horticultural' and 'Taylors Horticultural' have been the primary cultivars grown. These cultivars are characterized by a red striped pod and red striped beans. The seeds are shelled in a relatively soft stage of maturity. The cooked product is somewhat similar to that of Pinto beans. Seedsmen have continued to develop new lines of horticultural beans, and evaluation of these lines under local conditions was needed. An experiment was conducted at the Plateau Experiment Station at Crossville, TN in 2000 to evaluate performance of five shelly bean cultivars.

Materials and Methods

The site was prepared for planting using conventional tillage in late April. Fertilizer was broadcast at 300 lb/A of 15-15-15 before final disking on May 5. Plots were direct seeded on May 5. Plot size was two rows, 20 ft long and 160 seeds were planted per row. Rows were spaced 30 inches apart. Experimental plot design was a randomized complete block with four replications. Metolachlor (Dual II) at 2 lb ai/A was applied for weed control on May 5. Overhead irrigation was used to apply an inch of water on June 14. Chlorothalonil (Bravo) at 1.5 lb ai/A was applied for disease control on June 23. Esfenvalerate (Asana) at 0.05 lb ai/A was applied for insect control on June 23 and July 7. Four cultivars were machine harvested on July 17 and one cultivar ('French Horticultural') was harvested on July 24.

Plant characteristics determined at harvest were height, width, and lodging. Harvested yield was recorded for each plot. A 2 lb sample of harvested product from each plot were separated into trash, broken pods, immature pods, and marketable pods. Pods were rated for color and measured for length, width, and thickness. The number and weight of seeds from a one pound sample of marketable pods was determined. All data were analyzed by analysis of variance methods, and cultivar means were separated by

Duncan's multiple range tests at the 0.05 level of probability.

Results and Discussion

Plant height was not significantly different due to cultivar (Table 1). Plants of 'Atlas' and 'French Horticultural' had more width than plants of 'Etna'. 'French Horticultural' had more lodging than the other cultivars. 'Horto' had a higher yield than 'French Horticultural'. None of the cultivars harvested well, and several pods were left in the field. 'French Horticultural' seemed to be more difficult to harvest than the other cultivars. Perhaps harvester ground and reel speeds need to be adjusted for more efficient harvest.

Trash levels in harvested pods were relatively low. 'Atlas' had more trash than all cultivars except 'Volcano' (Table 2). The percentage of broken pods was low and was not significantly different due to cultivar. 'Atlas' had more immature pods than all cultivars except 'Etna'. The percentage of marketable pods was high and was not significantly different due to cultivar.

Pod length, width, and thickness were not significantly different due to cultivar (Table 3). 'French Horticultural' had more seeds per pound than all other cultivars. 'Horto' and 'Volcano' had a higher percentage shellout than 'French Horticultural'. The pod color of 'French Horticultural' was darker than pod color of 'Etna'. Shelly beans are characterized by red stripes on the pods, and 'Etna' had few red stipes.

Table 1. Plant characteristics and yield of shelly bean cultivars evaluated at The University of Tennessee Plateau Experiment Station at Crossville, 2000.

Cultivar	Plant height- inches	Plant width- inches	% Lodging	Yield - bu/A
Atlas	14.2 a ^z	19.0 a	35.0 b	110 ab
Etna	14.0 a	14.5 b	12.5 b	127 ab
French Hort.	14.5 a	19.5 a	60.0 a	95 b
Horto	15.5 a	18.2 ab	26.2 b	152 a
Volcano	15.0 a	17.0 ab	17.5 b	121 ab

^z Means within columns not followed by the same letter are significantly different at the 0.05 level of probability, Duncan's multiple range tests.

Table 2. Harvest characteristics of shelly bean cultivars evaluated at The University of Tennessee Plateau Experiment Station at Crossville, 2000

Cultivar	Trash - %	Broken pods - %	Immature pods - %	Marketable p %
Atlas	2.0 a ^z	2.5 a	3.0 a	93 b
Etna	1.2 b	1.4 a	2.0 ab	96 a
French Hort.	1.0 b	1.8 a	0.5 b	98 a
Horto	1.1 b	0.8 a	0.5 b	98 a
Volcano	1.5 ab	1.7 a	0.7 b	96 a

^z Means within a column followed by the same letter are not significantly different at the 0.05 level of probability, Duncan's multiple range tests.

Table 3. Pod characteristics of shelly bean cultivars evaluated at The University of Tennessee Plateau Experiment Station at Crossville, 2000.

Cultivar	Pod length - inches	Pod thickness - inches	Pod width - inches	Seeds/lb	Shellout - %	Pod col rating ^x
Atlas	4.9 a ^z	0.50 a	0.64 a	210 b	38 bc	4.0 ab
Etna	4.9 a	0.49 a	0.61 a	207 b	42 ab	3.2 b
French Hort.	5.0 a	0.49 a	0.60 a	293 a	36 c	4.6 a
Horto	5.0 a	0.51 a	0.62 a	216 b	44 a	3.8 ab
Volcano	5.0 a	0.51 a	0.64 a	226 b	45 a	4.4 ab

^x Rating on a scale of 1 to 5; 5 = dark colored pods.

^z Means within a column followed by the same letter are not significantly different at the 0.05 level of probability, Duncan's multiple range tests.

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This research represents one season's data and does not constitute recommendations. After sufficient data is collected over the appropriate number of seasons, final recommendations will be made through research and extension publications.