

Trial Report: Snap Bean Variety & Fertilizer Trial, Spring 2025

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Objective

To evaluate the performance of fresh market snap bean cultivars ('Caprice' and 'PV 857') under four fertilizer application rates (50, 100, 150, and 200 lbs/acre), focusing on yield, plant height, lodging, and fertility.

Materials & Methods

The trial was conducted at the Southwest Research and Education Center, Plains, Georgia, USA, during the spring of 2025. A preplant application of 500 lbs/acre of 10-10-10 fertilizer was incorporated across the trial site to supply 50 lbs each of N, P, and K, along with minor nutrients. This baseline application ensured that the lowest treatment rate corresponded to 50 lbs N/acre (half rate). Additional nitrogen was supplied through two side-dressings of calcium nitrate at 2 and 4 weeks after planting, resulting in total nitrogen rates of 100 (full rate), 150 (1.5×), and 200 (2×) lbs/acre. The experiment was established as a split-block design, with half of the field planted to 'Caprice' and the other half to 'PV 857.' Within each block, fertilizer rates were applied in a randomized arrangement, with each treatment plot consisting of four rows. The crop was directly seeded on 36-inch rows at a target population of 80,000 seeds/acre using a Monosem™ vacuum planter. Individual plots measured 20 ft in length. Harvest was performed with a single-row Oxbo™ Pixall machine harvester.

Data Collection

- Yield: Marketable yield recorded as 28-lb boxes/acre.
- Growth traits: Plant height (inches), lodging (1 = laid down to 9 = very upright), and fertility rating (1 = yellow to 9 = dark green).
- Variety × fertilizer interactions: Evaluated for lodging and fertility.

Statistical Analysis

Data were analyzed using analysis of variance (ANOVA). Means were separated with Fisher's protected least significant difference (LSD) test at the 95% confidence level. Analyses were conducted using JMP Pro version 17 (SAS Institute Inc., Cary, NC, USA).

Results:

Table 1: Caprice variety marketable yield (28 lbs box/acre).

Treatment	Fertilizer	Marketable yield (28 lbs boxes/acre)
1	50 lbs	62 a ⁱ
2	100 lbs	60 a
3	150 lbs	81 a
4	200 lbs	71 a
P value		0.5258

ⁱMeans followed by the same letter are not significantly different based on Fisher's protected least significant difference test at 95%.

Table 2: Height, lodging, and fertility.

Treatment	Height (inches)	Lodging (1-9)	Fertility (1-9)
Variety (V)			
Caprice	16.8 a ⁱ	8 a	6 a
PV 857	13.4 b	8 a	6 a
Fertilizer (F)			
50 lbs	15.8 a	9 a	5 a
100 lbs	15.0 a	8 a	7 a
150 lbs	14.0 a	8 a	6 a
200 lbs	15.8 a	8 a	7 a
V x F			
Caprice x 50 lbs	16.3 a	8.8 a	4 a
Caprice x 100 lbs	16.3 a	7.5 bc	7 a
Caprice x 150 lbs	16.0 a	8.5 abc	6 a
Caprice x 200 lbs	18.8 a	7.5 c	7 a
PV 857 x 50 lbs	15.3 a	8.3 abc	5 a
PV 857 x 100 lbs	13.8 a	8.0 abc	7 a
PV 857 x 150 lbs	12.0 a	8.0 abc	6 a
PV 857 x 200 lbs	12.8 a	8.5 ab	6 a
Significance			
V	0.0346*	0.4584	0.4784
F	0.7900	0.5396	0.5852
V x F	0.0811	0.0211*	0.7522

ⁱMeans followed by the same letter are not significantly different based on Fisher's protected least significant difference test at 95%.

Note: Lodging: 1= Laid down, 9=Very upright

Fertility: 1= Yellow, 9= Super green

Table 3: Interaction (variety x treatment) data for fertility.

Fertilizer	Caprice	PV 857	P Value
50 lbs	8.8 aA ⁱ	8.3 aA	0.1557
100 lbs	7.5 aA	8.0 aA	0.1557
150 lbs	8.5 aA	8.0 aA	0.1557
200 lbs	7.5 aB	8.5 aA	0.0128*
P value	0.0834	0.8148	

ⁱMeans followed by the same letter are not significantly different based on Fisher's protected least significant difference test at 95%.

Conclusion

The 2025 snap bean trial demonstrated that increasing the fertilizer rate did not significantly affect marketable yield in 'Caprice.' However, cultivar differences were present, with 'Caprice' producing taller plants than 'PV 857.' Significant interactions for lodging and fertility suggest that cultivar response to fertilizer management should be considered in production decisions. Both cultivars maintained high fertility ratings, but excessive fertilizer (200 lbs) appeared to reduce the visual fertility of 'Caprice.' Overall, results indicate that moderate fertilizer inputs are sufficient for high performance, with 'Caprice' offering advantages in plant stature and 'PV 857' showing better standability under higher fertilizer rates.