2024 University of Delaware Snap Bean Variety Trials

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Introduction

The 2024 Snap Bean Variety Trials included thirty round-podded varieties and eight flat-podded variety from six participating companies. Varieties in the trials are listed below. Round and flat podded varieties were planted in separate trials. The purpose of the trials was to evaluate varieties for yield, quality characteristics, and heat tolerance in a once-over harvest situation.

Round-Podded Varieties Trialed in 2024

Name	Entering Company	Name	Entering Company
BEX162	Brotherton	RR 2015	Pure Line
BEX089	Brotherton	RR 3006	Pure Line
BEX100	Brotherton	PL 0008	Pure Line
BEX069	Brotherton	SVGG2123	Seminis
Jaguar	Crites	NYQUIST	Seminis
PV 966	Crites	SVGV2138	Seminis
PV981	Crites	Emotion	Syngenta
PV 4043	Crites	R302088	Syngenta
PV 4041	Crites	SB4829	Syngenta
Byrd	HM Clause	PV 857	check (Crites)
Peary	HM Clause	Silverado	check (Crites)
Fraser	HM Clause	Caprice	check (HM Clause)
HMC019396	HM Clause	HM5101	check (HM Clause)
HMC010522	HM Clause	Bartram	check (HM Clause)
RR 2006	Pure Line	Greenback	check (Syngenta)

Flat-Podded Varieties Trialed in 2024

Name	Entering Company	Name	Entering Company
BEX175	Brotherton	Solferina	Seminis
Navaho	Crites	Stronga	Seminis
RR 5020	Pure Line	Usambara	Seminis
Alesia	Pure Line	Velero	check (HM Clause)

Materials and Methods

Trial Design and Cultural Practices

Location
Field 6 B& C at the University of Delaware Research and Education Center Farm, Georgetown, DE.

Planting Dates
Flat Podded Trials: May 14, 2024 and July 17, 2024
Round Podded Trials: May 23, 2024 and June 6, 2024

Cultural Practices
For all trials, varieties were planted in single-row plots arranged in a randomized complete block design with four replications. Plots were 20 feet long. Border rows of a standard variety (Caprice for round-podded trials and Usambara for flat-podded trials) were planted on the outside of the plot. For round-podded varieties, the seeding rate was 5.15 seeds/foot, for an in-row spacing of 2.3 inches, ~90,000 seeds per acre. For flat podded varieties, the seeding rate was 4.6 seeds/foot, for an in-row spacing of 2.6 inches, ~80,000 seeds per acre.

The field was fertilized with potassium before planting according to soil test results. An application of 1 pt/A Dual Magnum 15 gpa N SUL 33 (27-0-0-6S) (44 lbs/a of N) was made pre-emergence. Trials were cultivated and sidedressed with 20 gpa N-SUL 33 (58 lb/A of N) approximately 30 days after planting. Additional hand weeding was done as necessary. Weed control in the trial was excellent.

The trials were overhead irrigated with a traveling linear system.

Plant Measurements

The size of fully mature plants was measured on the first day of harvest for all trials except the trial planted July 17 (flat beans). Plant canopy height and width was measured to the nearest centimeter at a randomly selected location in each replicate.

Harvest Procedures

Round Podded Variety Harvest
Harvest of the May 23-planted trial began on July 17 (55 DAP) and was completed on July 29 (67 DAP). At harvest, plants were pulled from a 10-foot section of each 20-foot plot. All replications for a variety were harvested on the same day. The harvested plants were weighed to determine fresh biomass. Pods were removed from the plants and weighed to determine yield. A 200 g sub-sample of pods from each replicate was then evaluated for quality based on the USDA standard and graded as U.S. Fancy, U.S. No. 1 or Cull. Fancy and No. 1 grade beans were considered marketable and were further graded by diameter sieve size. The beans in each quality and size grade were weighed. Pod length and seed length was recorded for 10 marketable grade pods.

Harvest of the June 6-planted trial began on August 1 (56 DAP) and was completed on August 12 (67 DAP). Harvest procedures were the same as for the May 23-planted trial.

Flat Podded Variety Harvest

Harvest of the May 14-planted trial began on July 9 (56 DAP) and was completed on July 17 (64 DAP). At harvest, plants were pulled from a 10-foot section of each 20-foot plot. All replications for a variety

were harvested on the same day. The harvested plants were weighed to determine fresh biomass. Pods were removed from the plants and weighed to determine yield. A 1000 g sub-sample of pods was then evaluated for quality based on the USDA standard and graded as U.S. Fancy, U.S. No. 1 or Cull. Pod length, pod width and length of the center seed was recorded for 10 marketable pods. Pod dimensions were measured with a ruler, seed length with digital calipers.
Harvest of the July 17-planted trial began on September 4 (49 DAP) and was completed on September 16 (61 DAP). Harvest procedures were the same as for the May 14-planted trial.

Results for Round Podded Varieties

Yields from the two round podded trials are reported separately in Tables 1 and 2. Figure 1 shows marketable and cull yields from both trials. The percent of yield in each quality grade is reported in Tables 3 and 4. Tables 5 and 6 report the percent of marketable pods in each sieve size and Figure 2 is a chart showing the same data for both trials. Table 7 reports the pod length for each variety for both trials. Table 8 reports the seed length of marketable pods for both trials. Table 9 reports plant height and width for both trials. Table 10 reports pythium incidence in the June 6 planted trial.

Figures 3 and 4 are charts showing high and low temperatures and rainfall for each trial. Figure 5 is a photo of the May 23-planted trial on the first day of harvest.

Discussion of Round Podded Varieties

The first trial (May 23) had excellent emergence and stand establishment for most varieties. There were significant differences in percent stand among the varieties (Table 1), but total yield was not correlated with percent stand (R^2 value =0.08). Plants in this trial established well but experienced drought stress and moderate heat stress during the early flowering period. Plants did not completely fill the rows (Figure 5) and plants were smaller than in the June 6 planted trial (Table 9). Weeds were well controlled. This trial experienced moderate heat stress during the early flowering period, June 26 to July7, and sustained heat stress during the later flowering period, July 8-17. High night temperatures (above 68°F) in the bud development and flowering stage cause poor pollination which results in poor pod set and misshapen pods.

The varieties with the highest marketable yield in the first trial were PV 966, PV 857 and PL 0008. All these varieties produced significantly higher marketable yields than the standard variety Caprice. The variety Greenback also produced significantly higher marketable yield than Caprice. Many of the varieties had very low yields in this trial. PV 857 has performed well in many past heat-stressed trials in Delaware. PL 0008 was previously tested in the 2021 trials, where if performed well under heat stress. Greenback was previously tested in 2023 and performed well under heat stress. PV 966 had not been trialed before in Delaware.

Overall, average marketable yields were much higher in the second trial, planted on June 6, (2,901 lbs/a) than in the first trial (959 lbs/a). The second trial had lower average stands than the first trial, with an overall average of 48% compared to 77% in the first trial. Low stands in the second trial resulted from pythium infection during the late vegetative stage that killed plants in many varieties. A 4.2 inch rain event on July 12-13 (37 DAP) caused pythium infection that killed established plants. The number of dead plants in each plot was counted and the averages are reported in Table 10. There were variety differences in pythium incidence. The varieties with the lowest numbers of plants killed by pythium were: RR 3006, BEX162, Caprice, HM5101, PV 4043, PV 4041, R302088, SB4829, HMC010522, Peary, Byrd, Greenback, BEX100 and HMC019396. BEX089, Fraser, Jaguar, and BEX 069 had the highest number of plants killed by pythium. Varieties with more plants killed by pythium tended to have lower yields and vice versa (Table 10). BEX 162 (low pythium, low yield) and Nyquist (high pythium, high yield) were notable exceptions. Average plant height and width was larger in the second trial, compared

to the first trial. The second trial experienced moderate heat stress during the bud formation and flowering period, with higher night time temperatures early in the flowering period compared to later.

The varieties with the highest marketable yield in the second trial were Byrd, HM5101, RR 3006 and R302088. Only Byrd produced significantly higher yield than Caprice in this trial.

Results for Flat Podded Varieties

Yields from the two flat podded trials are reported separately in Tables 11 and 12. Figure 6 shows marketable and cull yields from both trials. The percent of yield in each quality grade is reported in Tables 13 and 14. Table 15 reports the pod length and Table 16 the pod width for each variety for both trials. Table 17 reports the seed length of marketable pods for both trials.

Figures 7 and 8 are charts showing high and low temperatures and rainfall for each trial.

Discussion of Flat Podded Varieties

Some varieties in the first flat podded trial (May 14) had good emergence and stand establishment but others did not (Table 14). However, good stand was not correlated to higher yield in this trial. The trial experienced drought stress and moderate heat stress during the early flowering period and overall yields were very low.

The varieties with the highest marketable yields in the May 14 trial were Alesia, Stronga and Velero (Table 11, Figure 6).

The second flat podded trial grew under low stress conditions (Figure 7) and produced much higher yields. RR 5020, BEX 175, Velero and Usambara produced the highest marketable yields in this trial (Table 12).

Velero was among the highest yielding varieties in both 2024 trials.

BEX175 also performed well in trials in 2021 and 2023.

Usambara also performed well in the 2019 and 2021 trials.

Processors in the Mid-Atlantic region are interested in flat bean varieties with slightly narrower pod widths. Of the higher yielding varieties, Velero had the narrowest pod width (Table 16), but Velero also had the shortest pods on average (Table 15). Navaho had the widest pods. Usambara and BEX175 produced long pods with moderate width.

Acknowledgements

The author gratefully acknowledges:

Participating seed companies.

Vegetable and Fruit Extension Agent, Lyndsie Mikkelsen.

Vegetable Program employees Lily Hearn, Ketsia Murat, Arely Arriaga-Gonzalez, Brayden Hearn, Twyla Beachy and Sam Cooke for their assistance throughout the trial, and especially during harvest.

Vegetable Program Technician, Frank Reith for assistance with harvest.
Brian Hearn and the REC Farm Crew for help with field operations.

Table 1. May 23 Planted Trial: Days to Harvest; % Stand; Total and Marketable Yields; Percent Marketable; Plant Weight; Harvest Index; Seed Length

Variety	Days to Harvest	% Stand	Total Yield (lbs/ acre)	Marketable Yield (lbs/acre)	Percent Marketable	Plant Weight	Mkt Harvest Index	Seed Length (mm)
PV 966	55	80.3 a-e	6,873 a	4,569 a	60.7 abc	17,502 abc	0.24 a	10.7
PV 857	55	87.3 abc	6,334 a	4,177 ab	64.1 ab	17,232 abc	0.24 a	10.7
PL 0008	55	86.0 abc	5,687 ab	4,150 ab	69.8 a	16,910 a-d	0.23 a	11.0
Greenback	55	75.0 c-h	4,371 bc	3,139 b	64.3 ab	14,810 b-g	0.19 a	7.9
SB4829	56	83.0 a-e	2,893 cd	1,186 c	30.0 fgh	14,279 c-g	0.06 b	8.6
PV 4041	57	89.3 abc	1,668 d-h	992 c	51.2 a-d	16,623 a-d	0.06 b-e	9.8
Bartram	56	76.3 b-g	2,682 de	939 c	27.8 f-i	13,207 efg	0.06 bc	9.7
Jaguar	57	73.8 c-i	1,541 d-j	848 c	50.3 b-e	13,835 d-g	0.06 bcd	9.5
HM5101	60	75.3 b-h	1,877 d-g	766 c	33.2 d-h	16,588 a-e	0.04 b-f	7.8
SVGV2138	60	90.8 ab	1,986 d-g	760 c	25.0 g-j	17,381 abc	0.04 b-f	8.6
R302088	62	81.0 a-e	2,480 def	742 c	21.9 g-j	17,381 abc	0.04 b-f	7.2
NYQUIST	61	86.0 abc	1,636 d-i	709 c	39.2 d-g	16,196 a-e	0.04 b-f	8.7
BEX069	57	58.3 ijk	1,598 d-j	707 c	44.2 c-f	12,432 fg	0.05 b-f	7.6
RR 2015	60	79.0 a-f	1,334 e-j	707 c	49.4 b-e	16,588 a-e	0.04 b-f	8.2
PV 4043	57	93.0 a	1,317 e-j	550 c	30.2 fgh	16,109 a-e	0.03 b-f	7.8
Fraser	63	60.3 h-k	1,095 f-j	529 c	51.7 a-d	19,019 a	0.03 b-f	6.2
Byrd	61	81.5 a-e	1,202 e-j	525 c	31.4 e-h	16,753 a-d	0.03 b-f	8.1
Silverado	61	93.5 a	975 f-j	491 c	36.9 d-g	18,552 a	0.02 b-f	5.7
RR 2006	63	55.5 jk	1,338 e-j	485 c	31.5 e-h	14,680 b-g	0.03 b-f	9.6
HMC019396	63	76.3 b-g	650 g-j	396 c	62.3 abc	16,501 a-e	0.03 b-f	3.7
BEX100	62	70.0 d-j	1,272 e-j	312 c	23.8 g-j	17,476 abc	0.02 b-f	10.6
PV981	60	49.5 k	663 g-j	291 c	44.2 c-f	12,711 fg	0.02 b-f	9.8
BEX089	62	76.3 b-g	719 g-j	257 c	34.3 d-g	14,270 c-g	0.02 b-f	9.0
HMC010522	62	85.0 a-d	664 g-j	211 c	33.1 d-h	15,028 b-f	0.01 b-f	9.9
RR 3006	67	63.8 f-k	550 g-j	100 c	20.2 g-j	11,535 g	0.01 c-f	5.3
Emotion	67	75.5 b-h	149 ij	76 c	36.0 d-g	14,427 c-g	0.01 def	4.7
SVGG2123	63	68.3 e-j	271 hij	66 c	15.0 hij	15,638 a-f	0.00 ef	8.4
Peary	67	87.5 abc	248 hij	45 c	24.5 g-j	17,407 abc	0.00 ef	4.9
Caprice	63	62.5 g-k	480 g-j	39 c	7.0 j	17,869 ab	0.00 f	9.6
BEX162	63	75.0 c-h	103 j	14 c	10.1 ij	17,154 a-d	0.00 f	7.4
p-value		***<0.0001***	***<0.0001***	***<0.0001***	***<0.0001***	***0.0007***	***<0.0001***	***<0.0001***
LSD		**15.68**	**1,508**	**1,237**	**19.11**	**3,387**	**0.055**	
CV		**14.6**	**58.9**	**91.7**	**36.3**	**15.2**	**71.5**	**31.5**

[1]Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 2. June 6 Planted Trial: Days to Harvest; % Stand; Total and Marketable Yields; Percent Marketable; Plant Weight; Harvest Index; Seed Length

Variety	Days to Harvest	% Stand	Total Yield (lbs/ acre)	Marketable Yield (lbs/acre)	Percent Marketable	Plant Weight	Mkt Harvest Index	Seed Length (mm)
Byrd	63	58.3 a-e	7,654 abc	6,995 a	92.1 a	19,001 a-f	0.37 a	10.1
HM5101	67	63.0 a-d	8,349 a	6,450 ab	78.2 a-f	19,933 a-d	0.33 ab	10.1
RR 3006	64	71.0 a	6,712 a-d	6,125 abc	89.9 ab	23,139 ab	0.26 b-e	8.4
R302088	62	66.0 abc	5,913 a-f	4,902 a-d	83.1 a-d	18,914 a-f	0.26 b-e	7.1
Caprice	63	69.5 ab	8,105 ab	4,677 b-e	58.4 h-k	24,089 a	0.20 d-f	7.6
Peary	67	52.0 a-f	5,446 b-g	4,432 b-e	82.7 a-d	15,812 c-i	0.27 bcd	8.8
NYQUIST	63	39.0 e-j	6,404 a-e	4,422 b-e	69.7 d-i	16,326 c-h	0.24 c-f	7.0
SVGG2123	63	38.8 e-j	5,000 c-g	4,321 b-e	87.4 abc	15,324 c-i	0.28 bc	8.3
SB4829	61	57.3 a-e	5,419 c-g	4,037 c-f	75.4 b-g	15,046 c-i	0.27 bcd	10.7
PV 4043	63	68.5 ab	4,218 d-i	3,799 d-g	90.6 ab	20,247 abc	0.19 e-h	8.1
HMC019396	67	49.3 b-g	4,525 d-h	3,568 d-h	79.3 a-e	13,617 e-j	0.27 b-e	8.8
HMC010522	61	58.3 a-e	3,984 e-j	3,494 d-i	87.9 abc	15,804 c-i	0.21 c-f	9.9
Greenback	56	68.5 ab	5,374 c-g	3,135 d-j	57.8 h-k	19,036 a-e	0.16 f-j	7.2
Fraser	63	29.8 g-j	3,210 g-k	2,919 d-k	90.8 ab	10,106 i-l	0.28 bc	8.4
RR 2015	64	34.5 f-j	2,963 g-k	2,807 d-l	94.3 a	10,115 i-l	0.27 bcd	8.9
PV 966	56	43.3 d-i	4,572 d-h	2,605 e-m	53.6 ijk	12,877 f-k	0.19 e-i	9.4
BEX089	64	27.3 h-k	2,308 h-k	2,075 f-m	89.8 ab	8,782 j-m	0.23 c-f	8.3
PV 4041	60	68.5 ab	3,380 f-k	2,047 f-m	62.2 f-j	17,599 b-g	0.11 h-k	8.3
PV 857	56	52.5 a-f	3,944 e-j	1,767 g-m	46.2 jkl	13,931 d-j	0.11 h-k	7.0
Bartram	67	46.3 c-h	4,985 c-h	1,549 h-m	29.9 lm	11,918 g-k	0.12 g-k	11.7
PL 0008	56	63.5 a-d	5,205 c-g	1,540 h-m	28.5 m	15,865 c-i	0.09 jk	9.2
BEX162	61	66.3 abc	1,561 ijk	1,415 i-m	90.3 ab	14,445 c-j	0.09 jk	7.8
BEX100	60	41.8 e-i	3,162 g-k	1,382 i-m	46.3 jkl	13,155 e-k	0.10 jk	8.1
BEX069	56	23.3 ijk	1,835 ijk	1,334 j-m	71.9 c-h	7,248 klm	0.19 e-i	6.0
RR 2006	60	40.3 e-i	2,921 g-k	1,286 j-m	43.2 klm	11,735 g-k	0.11 h-k	7.4
SVGV2138	61	41.3 e-i	1,509 jk	1,102 j-m	62.7 f-j	10,951 h-l	0.09 jk	8.0
Silverado	60	26.0 h-k	1,362 jk	871 klm	58.3 h-k	7,205 klm	0.11 ijk	6.8
PV981	60	37.8 e-j	1,312 jk	791 klm	70.2 d-h	10,472 h-l	0.07 k	7.9
Jaguar	60	19.0 jk	1,046 k	668 lm	62.7 e-j	4,922 lm	0.12 h-k	9.0
Emotion	62	7.0 k	737 k	519 m	60.9 g-j	3,093 m	0.13 g-k	5.5
p-value		***<0.0001***	***<0.0001***	***<0.0001***	***<0.0001***	***0.0007***	***<0.0001***	***<0.0001***
LSD		**21.1**	**2,678**	**2,145**	**16.59**	**6,131**	**0.080**	
CV		**31.6**	**46.4**	**52.6**	**16.9**	**31.1**	**30**	**27.3**

[1]Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 3. May 23 Planted Trial: Percent of Yield in Each Quality Grade

Variety	% Marketable		% Fancy		% No. 1	
PL 0008	69.8	a	18.3	a	51.4	abc
Greenback	64.3	ab	10.7	bc	53.6	ab
PV 857	64.1	ab	20.1	a	44.0	abcdef
HMC019396	62.3	abc	0.8	f	61.5	a
PV 966	60.7	abc	10.3	bc	50.4	abcd
Fraser	51.7	abcd	1.6	ef	50.1	abcd
PV 4041	51.2	abcd	15.0	ab	36.2	bcdefgh
Jaguar	50.3	bcde	1.5	ef	48.8	abcde
RR 2015	49.4	bcde	0.6	f	48.8	abcde
PV981	44.2	cdef	0.8	f	43.4	bcdef
BEX069	44.2	cdef	0.4	f	43.8	abcdef
NYQUIST	39.2	defg	0.0	f	39.2	bcdefg
Silverado	36.9	defg	0.0	f	36.9	bcdefgh
Emotion	36.0	defg	0.0	f	36.0	bcdefgh
BEX089	34.3	defg	0.0	f	34.3	cdefgh
HM5101	33.2	defgh	0.0	f	33.2	defgh
HMC010522	33.1	defgh	0.0	f	33.1	defgh
RR 2006	31.5	efgh	0.0	f	31.5	efghi
Byrd	31.4	efgh	0.0	f	31.4	efghi
PV 4043	30.2	fgh	2.8	def	27.4	fghi
SB4829	30.0	fgh	3.4	def	26.6	fghi
Bartram	27.8	fghi	8.0	cd	19.8	hijk
SVGV2138	25.0	ghij	0.0	f	25.0	ghi
Peary	24.5	ghij	0.0	f	24.5	ghij
BEX100	23.8	ghij	0.0	f	23.8	ghij
R302088	21.9	ghij	0.0	f	21.9	ghij
RR 3006	20.2	ghij	0.0	f	20.2	hijk
SVGG2123	15.0	hij	1.1	f	13.8	ijk
BEX162	10.1	ij	7.5	cde	2.6	k
Caprice	7.0	j	0.0	f	7.0	jk
p-value	***<0.0001***		***<0.0001***		***<0.0001***	
Fisher's LSD[1]	**19.11**		**6.21**		**17.97**	
Coefficient of Variation	**36.3**		**128.6**		**37.6**	

[1]Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 4. June 6 Planted Trial: Percent of Yield in Each Quality Grade

Variety	% Marketable	% Fancy	% No. 1
RR 2015	94.3 a	0.0 f	94.3 a
Byrd	92.1 a	3.3 abc	88.8 ab
Fraser	90.8 ab	0.0 f	90.8 ab
PV 4043	90.6 ab	0.4 ef	90.2 ab
BEX162	90.3 ab	2.7 abcde	87.7 ab
RR 3006	89.9 ab	0.0 f	89.9 ab
BEX089	89.8 ab	0.9 def	88.9 ab
HMC010522	87.9 abc	4.1 ab	83.9 a-d
SVGG2123	87.4 abc	1.1 cdef	86.3 abc
R302088	83.1 a-d	4.1 a	78.9 a-e
Peary	82.7 a-d	0.0 f	82.7 a-d
HMC019396	79.3 a-e	0.0 f	79.3 a-d
HM5101	78.2 a-f	0.0 f	78.2 a-e
SB4829	75.4 b-g	0.7 def	74.6 b-f
BEX069	71.9 c-h	0.8 def	71.1 c-g
PV981	70.2 d-h	1.6 cdef	68.7 d-h
NYQUIST	69.7 d-i	1.8 bcdef	68.0 c-h
Jaguar	62.7 e-j	0.0 f	62.7 e-i
SVGV2138	62.7 f-j	0.0 f	62.7 e-i
PV 4041	62.2 f-j	1.7 cdef	60.5 f-j
Emotion	60.9 g-j	0.5 ef	60.4 f-j
Caprice	58.4 h-k	2.9 abcd	55.6 g-k
Silverado	58.3 h-k	0.0 f	58.3 f-k
Greenback	57.8 h-k	1.5 cdef	56.3 g-k
PV 966	53.6 ijk	0.0 f	53.6 h-k
BEX100	46.3 jkl	0.0 f	46.3 i-l
PV 857	46.2 jkl	0.4 ef	45.8 jkl
RR 2006	43.2 klm	0.0 f	43.2 klm
Bartram	29.9 lm	0.0 f	29.9 lm
PL 0008	28.5 m	0.0 f	28.5 m
p-value	***<0.0001***	***0.0008***	***0.0151***
Fisher's LSD[1]	**16.59**	**2.31**	**16.55**
Coefficient of Variation	**16.9**	**173.5**	**17.1**

[1]Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 5. May 23 Planted Trial: Varieties by Percent of Marketable Pods in Each Diameter Size Grade

Variety	% Grade 2	% Grade 3	% Grade 4	% Grade 5	% Grade 6	Seed Length (mm)
PV 966	0.5 f	6.5 cd	27.5 f-j	65.6 a	0.0 b	10.7
PL 0008	0.3 f	4.1 cd	35.1 d-i	60.6 ab	0.0 b	11.0
SVGV2138	2.2 f	9.2 cd	35.1 d-i	53.5 abc	0.0 b	8.6
PV 857	0.0 f	5.0 cd	44.6 b-g	50.4 a-d	0.0 b	10.7
PV 4043	0.8 f	2.8 cd	21.8 g-k	49.7 a-d	0.0 b	7.8
RR 2006	0.0 f	0.8 cd	18.2 h-k	49.6 a-d	31.3 a	9.6
Peary	55.1 bc	3.3 cd	0.0 k	41.7 a-e	0.0 b	4.9
Byrd	35.3 cde	11.4 cd	13.9 ijk	39.4 a-e	0.0 b	8.1
HM5101	16.4 def	13.6 bcd	32.3 e-i	37.8 a-e	0.0 b	7.8
BEX069	1.8 f	15.1 bcd	47.7 b-f	35.3 a-f	0.0 b	7.6
Jaguar	7.9 ef	15.6 bcd	43.8 c-g	32.7 b-f	0.0 b	9.5
PV 4041	5.3 f	15.8 bcd	46.6 b-g	32.3 b-f	0.0 b	9.8
Caprice	17.1 def	27.3 bc	0.0 k	30.7 b-f	0.0 b	9.6
Greenback	9.9 def	39.9 ab	23.9 f-k	26.3 c-g	0.0 b	7.9
BEX162	0.0 f	25.0 bcd	0.0 k	25.0 c-g	0.0 b	7.4
NYQUIST	1.9 f	5.9 cd	69.4 ab	22.8 d-g	0.0 b	8.7
PV981	6.3 ef	23.0 bcd	48.9 b-f	21.7 d-g	0.0 b	9.8
SVGG2123	0.0 f	0.0 d	54.0 a-e	21.0 d-g	0.0 b	8.4
Bartram	0.0 f	6.4 cd	75.5 a	18.0 efg	0.0 b	9.7
BEX089	8.6 def	14.6 bcd	59.4 a-d	17.5 efg	0.0 b	9.0
BEX100	11.4 def	3.5 cd	68.6 abc	16.5 efg	0.0 b	10.6
Fraser	47.9 bc	4.6 cd	3.7 jk	15.7 efg	28.1 a	6.2
RR 2015	4.3 f	24.6 bcd	55.6 a-e	15.5 efg	0.0 b	8.2
Silverado	37.5 cd	11.7 cd	36.5 d-i	14.3 efg	0.0 b	5.7
SB4829	1.3 f	38.9 ab	48.3 b-f	11.5 efg	0.0 b	8.6
RR 3006	72.7 ab	15.1 bcd	5.0 jk	7.1 fg	0.0 b	5.3
HMC019396	88.0 a	3.2 cd	3.4 jk	5.4 fg	0.0 b	3.7
Emotion	50.0 bc	25.0 bcd	0.0 k	0.0 g	0.0 b	4.7
R302088	12.7 def	62.4 a	24.9 f-k	0.0 g	0.0 b	7.2
HMC010522	1.8 f	57.9 a	40.3 d-h	0.0 g	0.0 b	9.9
p-value	***<0.0001***	***0.0001***	***<0.0001***	***0.0001***	***<0.0001***	***<0.0001***
Fisher's LSD[1]	**29.21**	**25.6**	**25.17**	**30.57**	**10.05**	
C.V.	**125.5**	**115.4**	**54.6**	**79.8**	**360.8**	**31.5**

[1]Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 6. June 6 Planted Trial: Varieties by Percent of Marketable Pods in Each Diameter Size Grade

Variety	% Grade 2	% Grade 3	% Grade 4	% Grade 5	% Grade 6	Seed Length (mm)
SVGV2138	9.3 f-i	28.1 e-h	9.7 hi	52.9 a	0.0 d	8.0
PL 0008	4.5 i	17.1 gh	40.1 a-e	36.3 b	2.0 cd	9.2
PV 4043	8.0 ghi	22.6 fgh	25.0 d-h	33.6 bc	10.8 b	8.1
RR 2015	3.5 i	27.5 e-h	27.8 d-h	31.7 bcd	9.6 bc	8.9
RR 2006	11.0 c-i	27.8 e-h	30.1 c-g	31.2 bcd	0.0 d	7.4
Silverado	19.4 b-f	23.9 fgh	22.1 e-h	28.3 b-e	6.2 bcd	6.8
SB4829	5.2 hi	27.6 e-h	39.3 a-e	27.8 b-e	0.0 d	10.7
Fraser	8.3 ghi	33.3 d-g	23.7 e-h	27.6 b-e	7.2 bcd	8.4
Caprice	14.8 c-h	30.2 efg	29.8 c-g	25.2 b-e	0.0 d	7.6
SVGG2123	9.8 e-i	37.9 b-f	22.4 e-h	24.6 b-e	5.2 bcd	8.3
HM5101	4.9 hi	27.9 e-h	37.1 a-f	22.2 b-f	7.9 bcd	10.1
Byrd	5.3 hi	27.4 e-h	34.5 b-f	21.1 c-f	11.7 b	10.1
RR 3006	4.7 hi	20.9 fgh	48.1 abc	20.7 c-f	5.6 bcd	8.4
PV981	19.9 b-e	30.7 d-g	29.6 d-g	19.8 c-g	0.0 d	7.9
PV 966	8.2 ghi	28.0 e-h	23.0 e-h	18.9 c-g	21.8 a	9.4
Jaguar	25.5 b	30.3 efg	23.8 e-h	18.4 d-g	2.0 cd	9.0
NYQUIST	8.4 ghi	36.4 c-f	35.5 a-f	18.0 d-h	1.6 cd	7.0
PV 857	12.6 c-i	42.9 b-e	15.3 ghi	17.9 d-h	11.3 b	7.0
Greenback	10.9 d-i	37.2 c-f	31.1 c-g	17.2 d-i	3.6 bcd	7.2
PV 4041	19.2 b-f	37.2 c-f	26.1 d-h	15.7 e-j	1.8 cd	8.3
BEX162	21.1 bc	31.8 d-g	38.1 a-f	9.0 f-k	0.0 d	7.8
HMC019396	3.4 i	51.8 abc	35.9 a-f	8.9 f-k	0.0 d	8.8
BEX100	20.2 bcd	37.6 c-f	33.7 b-g	8.6 f-k	0.0 d	8.1
BEX069	6.6 hi	43.7 b-e	43.0 a-d	5.2 g-k	1.6 cd	6.0
Bartram	5.8 hi	48.1 a-d	42.7 a-d	3.4 h-k	0.0 d	11.7
Peary	2.8 i	44.8 a-e	49.7 ab	2.7 ijk	0.0 d	8.8
BEX089	6.9 hi	37.2 c-f	53.0 a	1.9 jk	1.0 cd	8.3
R302088	12.5 c-i	55.4 ab	30.2 c-g	1.9 jk	0.0 d	7.1
Emotion	87.9 a	12.1 h	0.0 i	0.0 k	0.0 d	5.5
HMC010522	17.9 b-g	61.8 a	20.3 fgh	0.0 k	0.0 d	9.9
p-value	***<0.0001***	***<0.0001***	***<0.0001***	***<0.0001***	***<0.0001***	***<0.0001***
Fisher's LSD[1]	**10.2**	**17.67**	**18.37**	**14.7**	**8.13**	
C.V.	**54.6**	**37**	**42.6**	**57**	**156.6**	**27.3**

[1]Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 7. Pod Length in Centimeters of Marketable Pods for Both Trials and Overall Average

Variety	May 23 Trial		Jun 6 Trial		Overall Average Pod Length (cm)
	Pod Length (cm)	95% CI	Pod Length (cm)	95% CI	
BEX069	11.6	10.8 -	13.2	12.7 - 13.7	12.4
Bartram	12.3	11.4 - 13	12.1	11.5 - 12.5	12.2
PV 4041	12.0	11.2 -	12.2	11.6 - 12.6	12.1
RR 2006	12.2	11.3 -	12.0	11.4 - 12.4	12.1
Jaguar	12.1	11.3 -	12.0	11.4 - 12.4	12.0
NYQUIST	11.4	10.6 -	12.6	12.1 - 13.0	12.0
PV 857	12.3	11.5 -	11.6	11.1 - 12.0	11.9
Greenback	12.0	11.2 -	11.8	11.2 - 12.2	11.9
Silverado	10.8	9.9 - 11.6	12.8	12.3 - 13.2	11.8
PL 0008	12.6	11.8 -	10.9	10.3 - 11.3	11.7
PV 966	12.4	11.6 -	11.0	10.5 - 11.4	11.7
SVGG2123	11.5	10.4 -	11.6	11.1 - 12.0	11.5
Byrd	11.4	10.6 -	11.6	11.1 - 12.0	11.5
Caprice	11.2	9.8 - 12.4	11.6	11.1 - 12.0	11.4
SVGV2138	10.6	9.7 - 11.4	12.1	11.6 - 12.5	11.4
SB4829	11.5	10.7 -	11.2	10.7 - 11.6	11.3
PV 4043	10.8	10 - 11.6	11.7	11.1 - 12.1	11.2
BEX100	10.5	9.7 - 11.3	11.8	11.2 - 12.2	11.1
HMC010522	10.8	9.9 - 11.5	11.2	10.7 - 11.6	11.0
BEX162	10.6	8.7 - 12.4	11.3	10.7 - 11.7	10.9
RR 2015	10.8	10 - 11.5	10.9	10.4 - 11.3	10.9
PV981	10.8	9.9 - 11.5	10.8	10.2 - 11.3	10.8
Fraser	10.0	9.2 - 10.7	11.4	10.9 - 11.8	10.7
HM5101	10.5	9.7 - 11.2	10.7	10.2 - 11.1	10.6
BEX089	10.5	9.7 - 11.2	10.2	9.6 - 10.6	10.3
RR 3006	9.3	8.4 - 10.1	11.3	10.8 - 11.8	10.3
Emotion	9.7	8.7 - 10.5	10.6	10.1 - 11.0	10.1
R302088	9.6	8.7 - 10.3	10.2	9.7 - 10.6	9.9
Peary	8.2	7.2 - 9.0	9.9	9.4 - 10.3	9.0
HMC019396	8.4	7.5 - 9.1	9.4	8.9 - 9.8	8.9
p-value	***<0.0001***		***<0.0001***		
CV	**14.3**		**13.4**		

Table 8. Seed Length in Millimeters from Marketable Pods for Both Trials and Overall Average

Variety	May 23 Trial		Jun 6 Trial		Overall Average Seed Length (mm)
	Seed Length (mm)	95% CI	Seed Length (mm))	95% CI	
Bartram	9.7	8.4 - 10.9	11.7	11 - 12.4	10.7
PL 0008	11.0	9.7 - 12.1	9.2	8.4 - 9.9	10.1
PV 966	10.7	9.5 - 11.8	9.4	8.6 - 10.0	10.0
HMC010522	9.9	8.7 - 11.1	9.9	9.1 - 10.5	9.9
SB4829	8.6	7.3 - 9.7	10.7	9.9 - 11.3	9.6
BEX100	10.6	9.3 - 11.8	8.1	7.4 - 8.8	9.4
Jaguar	9.5	8.3 - 10.7	9.0	8.2 - 9.7	9.3
Byrd	8.1	6.7 - 9.3	10.1	9.4 - 10.8	9.1
PV 4041	9.8	8.6 - 10.9	8.3	7.5 - 8.9	9.0
HM5101	7.8	6.6 - 9.0	10.1	9.3 - 10.7	9.0
PV 857	10.7	9.5 - 11.9	7.0	6.2 - 7.6	8.9
PV981	9.8	8.6 - 11.0	7.9	7 - 8.6	8.8
BEX089	9.0	7.8 - 10.1	8.3	7.5 - 8.9	8.6
Caprice	9.6	7.5 - 11.6	7.6	6.9 - 8.3	8.6
RR 2015	8.2	6.9 - 9.3	8.9	8.2 - 9.6	8.5
RR 2006	9.6	8.3 - 10.8	7.4	6.7 - 8.1	8.5
SVGG2123	8.4	6.7 - 10	8.3	7.6 - 9.0	8.3
SVGV2138	8.6	7.3 - 9.8	8.0	7.3 - 8.7	8.3
PV 4043	7.8	6.5 - 9.0	8.1	7.4 - 8.8	8.0
NYQUIST	8.7	7.5 - 9.8	7.0	6.3 - 7.7	7.9
BEX162	7.4	4.6 - 10.2	7.8	7.1 - 8.5	7.6
Greenback	7.9	6.7 - 9.1	7.2	6.5 - 7.9	7.6
Fraser	6.2	5.1 - 7.3	8.4	7.6 - 9	7.3
R302088	7.2	5.9 - 8.3	7.1	6.4 - 7.8	7.1
RR 3006	5.3	4.0 - 6.5	8.4	7.6 - 9.0	6.8
Peary	4.9	3.5 - 6.2	8.8	8 - 9.5	6.8
BEX069	7.6	6.4 - 8.7	6.0	5.3 - 6.7	6.8
HMC019396	3.7	2.4 - 4.9	8.8	8.1 - 9.5	6.3
Silverado	5.7	4.4 - 6.9	6.8	6 - 7.5	6.3
Emotion	4.7	3.2 - 6.1	5.5	4.8 - 6.2	5.1
p-value	***<0.0001***		***<0.0001***		
CV	**31.5**		**27.3**		

Table 9. Plant Height and Width in Centimeters for Both Trials and Overall Average

	May 23 Trial		June 6 Trial		Overall	
Variety	**Height (cm)**	**Width (cm)**	**Height (cm)**	**Width (cm)**	**Height**	**Width**
Caprice	44 a-d	44 a	57 abc	55 a	50	50
PV 4043	43 a-d	43 a	52 a-f	52 ab	48	48
HM5101	47 a	45 a	53 a-e	45 b-e	50	45
RR 2015	41 a-f	45 a	48 d-i	53 ab	44	49
HMC010522	40 b-f	45 a	53 a-d	45 b-e	46	45
BEX100	44 a-d	37 a	58 a	45 b-e	51	41
SVGV2138	46 ab	36 a	51 a-g	48 abc	48	42
Silverado	43 a-d	43 a	47 d-i	46 a-d	45	45
BEX089	45 abc	40 a	50 b-g	41 cde	48	41
NYQUIST	37 d-g	37 a	57 ab	44 b-e	47	41
BEX162	42 a-e	33 a	57 ab	44 b-e	49	39
SVGG2123	41 a-f	39 a	51 a-g	45 b-e	46	42
RR 3006	38 d-g	39 a	51 a-g	48 abc	44	43
Peary	41 a-f	38 a	53 a-e	43 cde	47	40
Byrd	43 a-d	41 a	51 a-g	40 cde	47	40
PV981	40 b-f	36 a	47 d-i	49 abc	43	42
Fraser	41 a-f	41 a	44 g-j	44 b-e	43	43
R302088	37 d-g	36 a	50 c-h	46 a-d	43	41
Greenback	37 d-g	42 a	49 d-h	40 cde	43	41
RR 2006	40 b-f	39 a	49 d-h	40 cde	45	39
PL 0008	41 a-f	40 a	46 e-j	41 cde	43	41
BEX069	44 a-d	42 a	45 g-j	37 de	44	40
PV 4041	39 b-f	38 a	47 d-i	41 cde	43	40
PV 857	37 d-g	42 a	43 hij	43 cde	40	42
HMC019396	41 a-f	36 a	45 f-j	41 cde	43	38
SB4829	34 fg	38 a	47 d-i	42 cde	41	40
Jaguar	35 efg	41 a	38 j	42 cde	37	41
Bartram	39 c-f	33 a	49 d-h	36 e	44	35
Emotion	37 d-g	39 a	41 ij	38 de	39	38
PV 966	31 g	32 a	45 f-j	38 de	38	35
p-value	***0.0057***	***0.0784***	***<0.0001***	***0.0134***		
Fisher's LSD[1]	**7**	**NA**	**7.4**	**9.6**		
C.V.	**12.4**	**14.7**	**10.8**	**15.7**		

[1]Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 10. Number of Plants Killed by Pythium in the June 6 Planted Trial

Variety	Plants Killed by Pythium (#/plot)		Total Yield in June 6 Trial
RR 3006	1	n	6,712
BEX162	2	mn	1,561
Caprice	3	mn	8,105
HM5101	3	mn	8,349
PV 4043	3	lmn	4,218
PV 4041	4	klmn	3,380
R302088	4	jklmn	5,913
SB4829	6	ijklmn	5,419
HMC010522	6	ijklmn	3,984
Peary	9	hijklmn	5,446
Byrd	9	hijklmn	7,654
Greenback	10	ghijklmn	5,374
BEX100	11	fghijklmn	3,162
HMC019396	11	fghijklmn	4,525
RR 2006	12	efghijklm	2,921
PL 0008	13	efghijkl	5,205
SVGV2138	14	efghijk	1,509
PV981	14	efghi	1,312
PV 857	15	defghi	3,944
Bartram	17	defgh	4,985
SVGG2123	18	defgh	5,000
RR 2015	18	defgh	2,963
Emotion	19	defg	737
Silverado	21	cdef	1,362
PV 966	22	cde	4,572
Nyquist	25	bcd	6,404
BEX069	30	abc	1,835
Jaguar	30	abc	1,046
Fraser	32	ab	3,210
BEX089	38	a	2,308
p-value	***<0.0001***		
LSD	**10.5**		
CV	**53.8**		

Figure 1. Chart showing total and marketable yield in lbs/acre for the May 23 and June 6 planted trials.

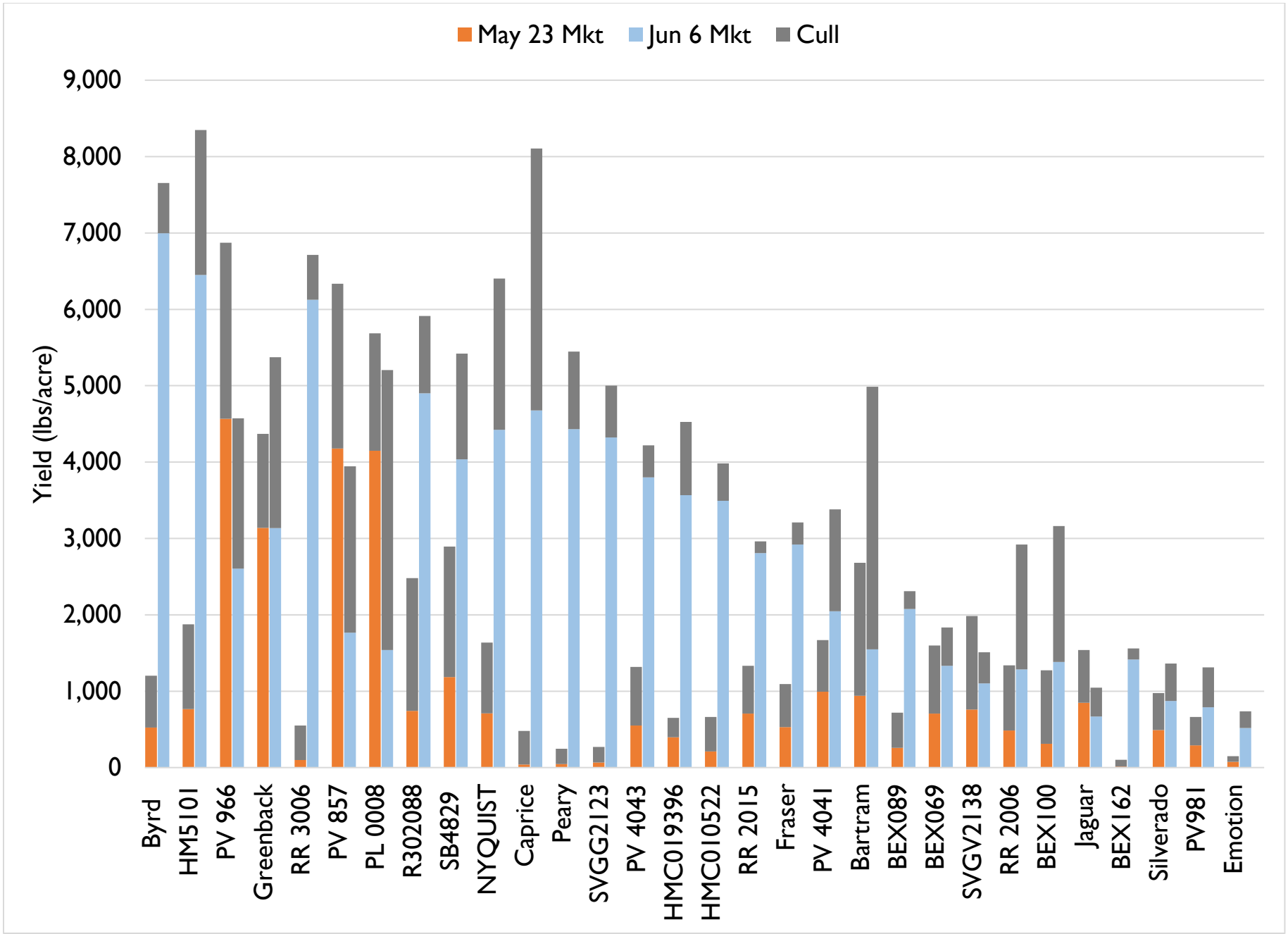

Figure 2. Chart showing percent of harvest in each diameter size grade for round podded varieties in the May 23 (left column) and June 6 (right column) trials.

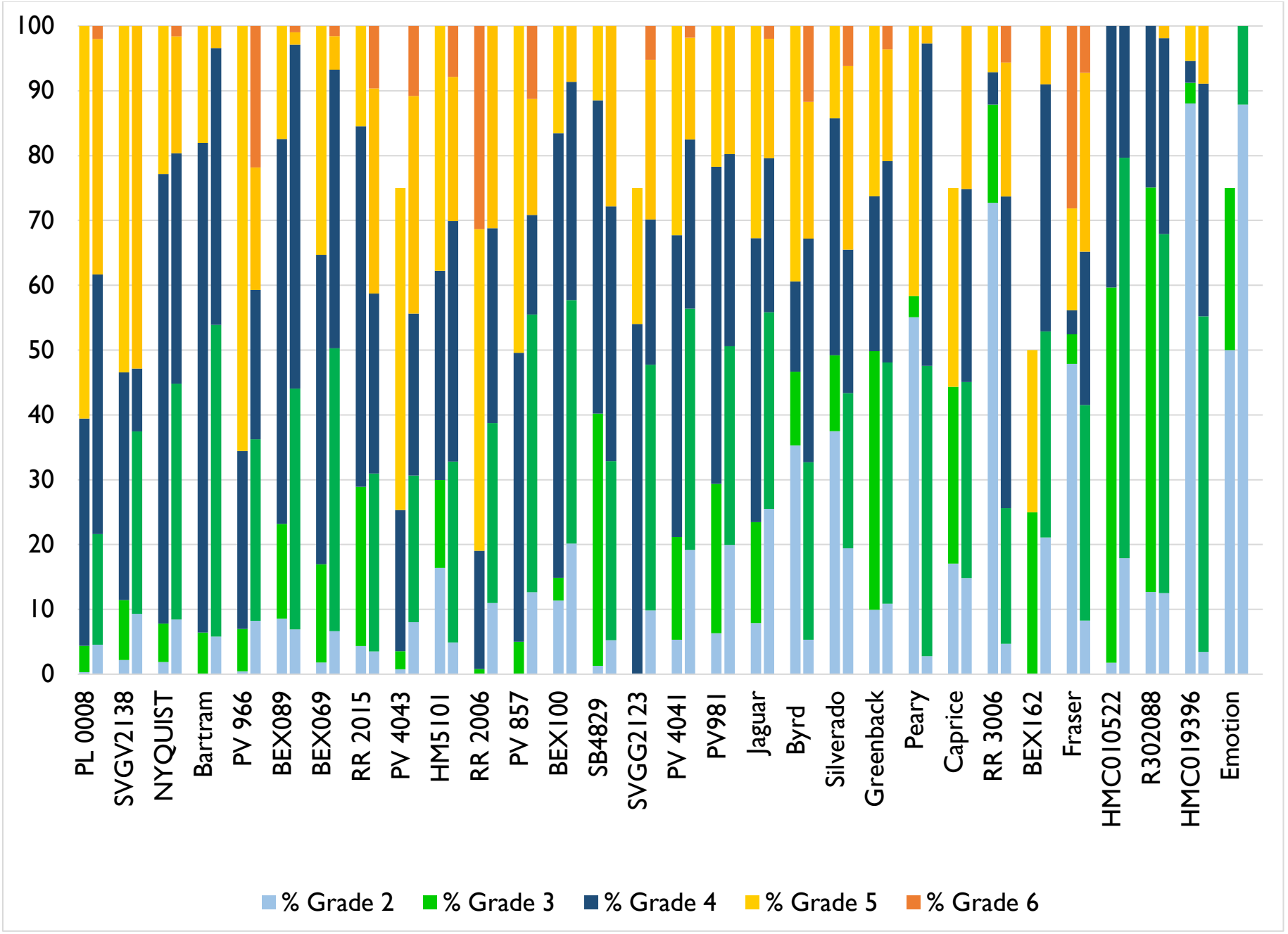

Figure 3. Temperature and Rainfall for the May 23 Planted Round Snap Bean Trial from May 23 (planting) July 29 (final harvest)

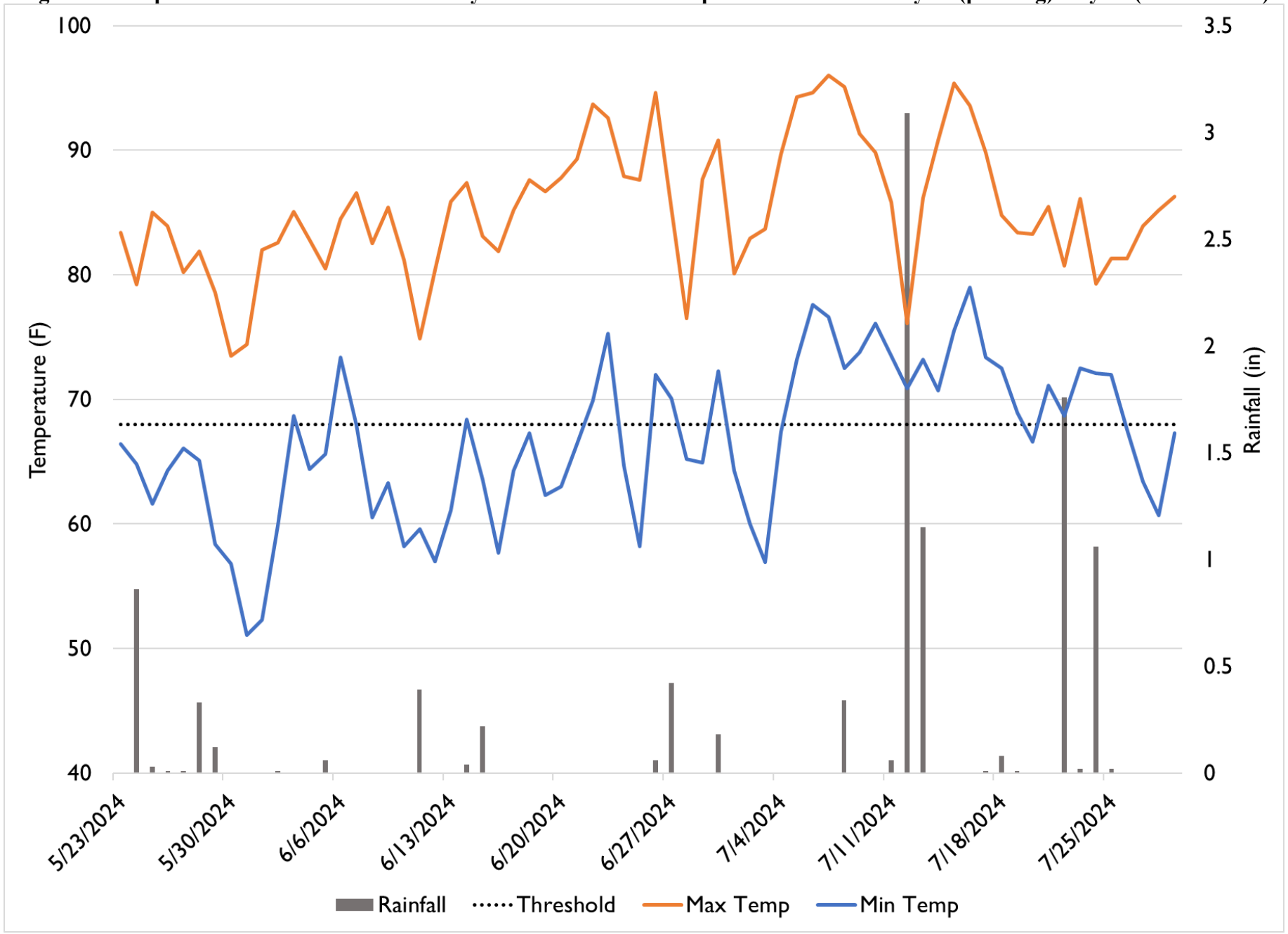

Figure 4. Temperature and Rainfall for the June 6 Planted Round Snap Bean Trial from June 6 (planting) August 12 (final harvest)

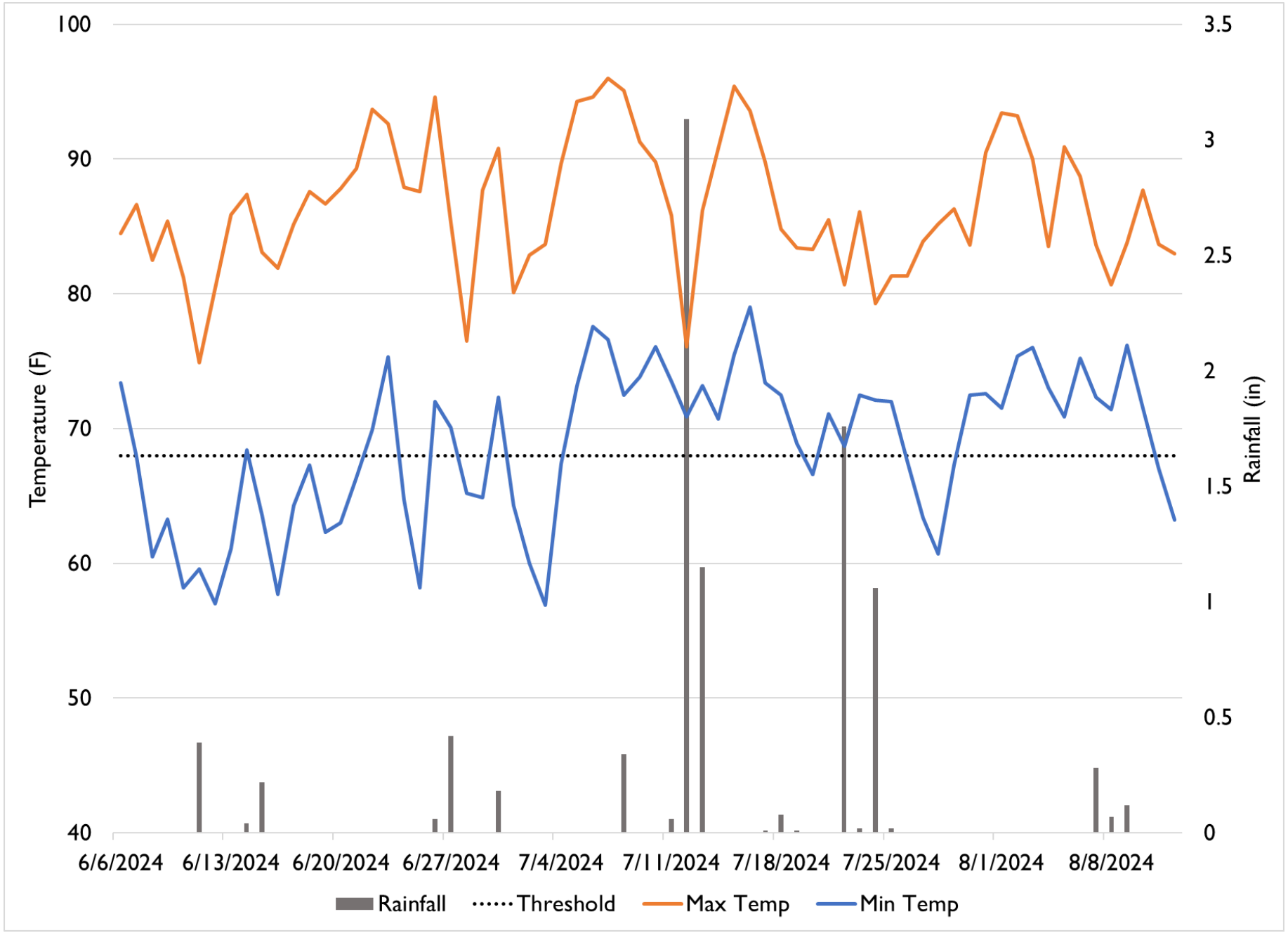

Figure 5. May 23 planted trial on July 17, 2024, 55 DAP, the first day of harvest.

Table 11. May 14 Planted Trial: Days to Harvest; % Stand; Total and Marketable Yields; Percent Marketable; Plant Weight; Harvest Index; Seed Length

Variety	Days to Harvest	% Stand	Total Yield (lbs/ acre)	Marketable Yield (lbs/acre)	Percent Marketable	Plant Weight	Mkt Harvest Index	Seed Length (mm)[1]
Alesia	58	51.7 e	3,420 a	1,434 a	37.7 bc	9,679 d	0.13 a	11.7
Stronga	62	66.3 cde	2,284 b	1,305 ab	57.7 a	13,155 b	0.10 ab	12.7
Velero	56	54.4 de	1,980 b	945 abc	48.3 ab	10,916 cd	0.09 b	9.2
Usambara	56	71.2 abcd	1,974 b	839 bcd	40.7 bc	11,395 bcd	0.07 bc	9.9
Solferina	64	90.3 a	1,520 bc	591 cde	39.7 bc	15,203 a	0.04 cde	13.0
Navaho	58	81.0 abc	1,617 b	514 cde	31.6 c	10,759 cd	0.05 cd	11.3
RR 5020	56	86.4 ab	1,713 b	299 de	16.5 d	11,997 bc	0.03 de	10.6
BEX175	64	67.4 bcde	538 c	146 e	14.0 d	11,901 bc	0.01 e	9.5
p-value		***0.003***	***0.00022***	***0.0015***	***<0.0001***	***<0.0003***	***<0.0001***	
LSD[2]		**19.35**	**1078.4**	**593**	**12.7**	**1894.1**		
CV		**18.5**	**39**	**53.1**	**24.1**	**10.8**	**40.4**	

[1] Target seed size is 9.0 to 11.2 mm. Blue highlight indicates smaller than target size, green indicates target size and yellow indicates larger than target size.

[2] Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 12. July 17 Planted Trial: Days to Harvest; % Stand; Total and Marketable Yields; Percent Marketable; Plant Weight; Harvest Index; Seed Length

Variety	Days to Harvest	% Stand	Total Yield (lbs/ acre)	Marketable Yield (lbs/acre)	Percent Marketable	Plant Weight	Mkt Harvest Index	Seed Length (mm)[1]
RR 5020	57	90.2 a	10,363 a	9,017 a	87.1 ab	18,147 ab	0.50 ab	11.3
BEX175	61	77.2 a	9,241 abc	8,460 ab	90.4 ab	17,140 ab	0.48 ab	10.1
Velero	57	63.6 a	8,626 abcd	8,155 ab	94.9 a	15,821 ab	0.52 ab	10.1
Usambara	54	66.3 a	10,002 ab	6,953 abc	68.8 de	17,494 ab	0.39 c	6.9
Solferina	55	85.9 a	9,283 abc	6,735 bcd	72.2 cd	16,971 ab	0.40 c	7.8
Stronga	49	70.7 a	7,303 cd	6,008 cd	81.7 bc	13,939 bc	0.43 bc	7.0
Navaho	55	66.9 a	7,791 bcd	4,867 cd	62.2 e	15,673 ab	0.31 d	8.9
Alesia	55	60.3 a	6,420 d	4,830 d	73.8 cd	12,023 c	0.39 c	8.4
p-value		***0.0845***	***0.0159***	***0.002***	***<0.0001***	***0.0112***	***<0.0001***	
LSD[2]		**NA**	**2211.6**	**2107.9**	**9.92**	**3185.9**	**0.07**	
CV		**20.4**	**17.4**	**20.8**	**8.5**	**13.6**	**11.1**	

[1] Target seed size is 9.0 to 11.2 mm. Blue highlight indicates smaller than target size, green indicates target size and yellow indicates larger than target size.

[2] Means followed by the same letter are not significantly different according to Fisher's LSD.

Table 13. May 14 Planted Trial: Percent of Yield in Each Quality Grade

Variety	% Mkt	% Fancy	% No. 1
Stronga	57.7 a	23.0 a	34.7 a
Velero	48.3 ab	12.0 b	36.3 a
Usambara	40.7 bc	11.1 b	29.6 a
Solferina	39.7 bc	5.1 c	34.6 a
Alesia	37.7 bc	5.2 c	32.4 a
Navaho	31.6 c	2.8 c	28.8 a
RR 5020	16.5 d	4.4 c	12.1 b
BEX175	14.0 d	2.0 c	12.0 b
p-value	***<0.0001***	***<0.0001***	***0.0001***
LSD	**12.7**	**5.36**	**10.54**
CV	**24.1**	**44.4**	**26**

Table 14. July 17 Planted Trial: Percent of Yield in Each Quality Grade

Variety	% Mkt	% Fancy	% No. 1
Velero	94.9 a	40.1 a	54.7 abc
BEX175	90.4 ab	33.9 ab	56.5 ab
RR 5020	87.1 ab	27.5 bc	59.6 a
Stronga	81.7 bc	28.4 bc	53.2 abcd
Alesia	73.8 cd	16.5 d	57.4 ab
Solferina	72.2 cd	24.2 cd	48.0 bcd
Usambara	68.8 de	24.7 c	44.0 d
Navaho	62.2 e	16.2 d	46.0 cd
p-value	***<0.0001***	***<0.0001***	***0.0179***
LSD	**9.92**	**8.21**	**9.4**
CV	**8.5**	**21.1**	**12.2**

Table 15. Pod Length in Centimeters of Marketable Pods for Both Trials and Overall Average

Variety	May 14 Trial		July 17 Trial		Overall Average Pod Length (cm)
	Pod Length (cm)	95% CI	Pod Length (cm)	95% CI	
Stronga	12.5	12.1 - 12.9	14.4	13.9 - 14.7	13.5
Usambara	12.1	11.7 - 12.4	14.6	14.1 - 14.9	13.3
BEX175	11.7	10.9 - 12.4	14.8	14.4 - 15.1	13.2
Alesia	11.5	11.1 - 11.8	13.8	13.3 - 14.1	12.6
RR 5020	11.0	10.5 - 11.4	12.9	12.5 - 13.3	11.9
Navaho	10.6	10.1 - 10.9	13.2	12.8 - 13.5	11.9
Solferina	10.7	10.2 - 11	12.5	12.1 - 12.8	11.6
Velero	10.7	10.3 - 11.1	12.1	11.6 - 12.4	11.4
p-value	***<0.0001***		***<0.0001***		
CV	**10.9**		**9.3**		

Table 16. Pod Width in Millimeters of Marketable Pods for Both Trials and Overall Average

Variety	May 14 Trial		July 17 Trial		Overall Average Pod Width (mm)
	Pod Width (mm)	95% CI	Pod Width (mm)	95% CI	
Navaho	18.2	17.7 - 18.7	16.9	16.1 - 17.6	17.6
RR 5020	16.5	15.9 - 17.1	16.0	15.2 - 16.7	16.3
Usambara	17.3	16.8 - 17.8	14.8	14 - 15.5	16.1
Alesia	16.4	15.8 - 16.9	15.1	14.3 - 15.8	15.8
BEX175	15.6	14.5 - 16.5	15.6	14.8 - 16.3	15.6
Solferina	16.3	15.7 - 16.8	14.3	13.5 - 15	15.3
Velero	14.9	14.4 - 15.4	15.4	14.6 - 16.1	15.1
Stronga	17.8	17.2 - 18.3	5.3	4.5 - 6	11.6
p-value	***<0.0001***		***<0.0001***		
CV	**9.7**		**17.1**		

Table 17. Seed Length in Millimeters of Marketable Pods for Both Trials and Overall Average

Variety	May 14 Trial		July 17 Trial		Overall Average Seed Length (mm)
	Seed Length (mm)	95% CI	Seed Length (mm)	95% CI	
RR 5020	10.6	9.9 - 11.1	11.3	10.7 - 11.8	10.9
Solferina	13.0	12.4 - 13.5	7.8	7.2 - 8.3	10.4
Alesia	11.7	11.1 - 12.2	8.4	7.8 - 8.9	10.1
Navaho	11.3	10.7 - 11.7	8.9	8.3 - 9.4	10.1
Stronga	12.7	12.1 - 13.2	7.0	6.4 - 7.5	9.9
BEX175	9.5	8.4 - 10.5	10.1	9.5 - 10.6	9.8
Velero	9.2	8.6 - 9.7	10.1	9.5 - 10.6	9.7
Usambara	9.9	9.4 - 10.4	6.9	6.3 - 7.4	8.4
p-value	***<0.0001***		***<0.0001***		
CV	**15.6**		**19.8**		

Figure 6. Chart showing total and marketable yield in lbs/acre for the May 14 and July 17 planted trials.

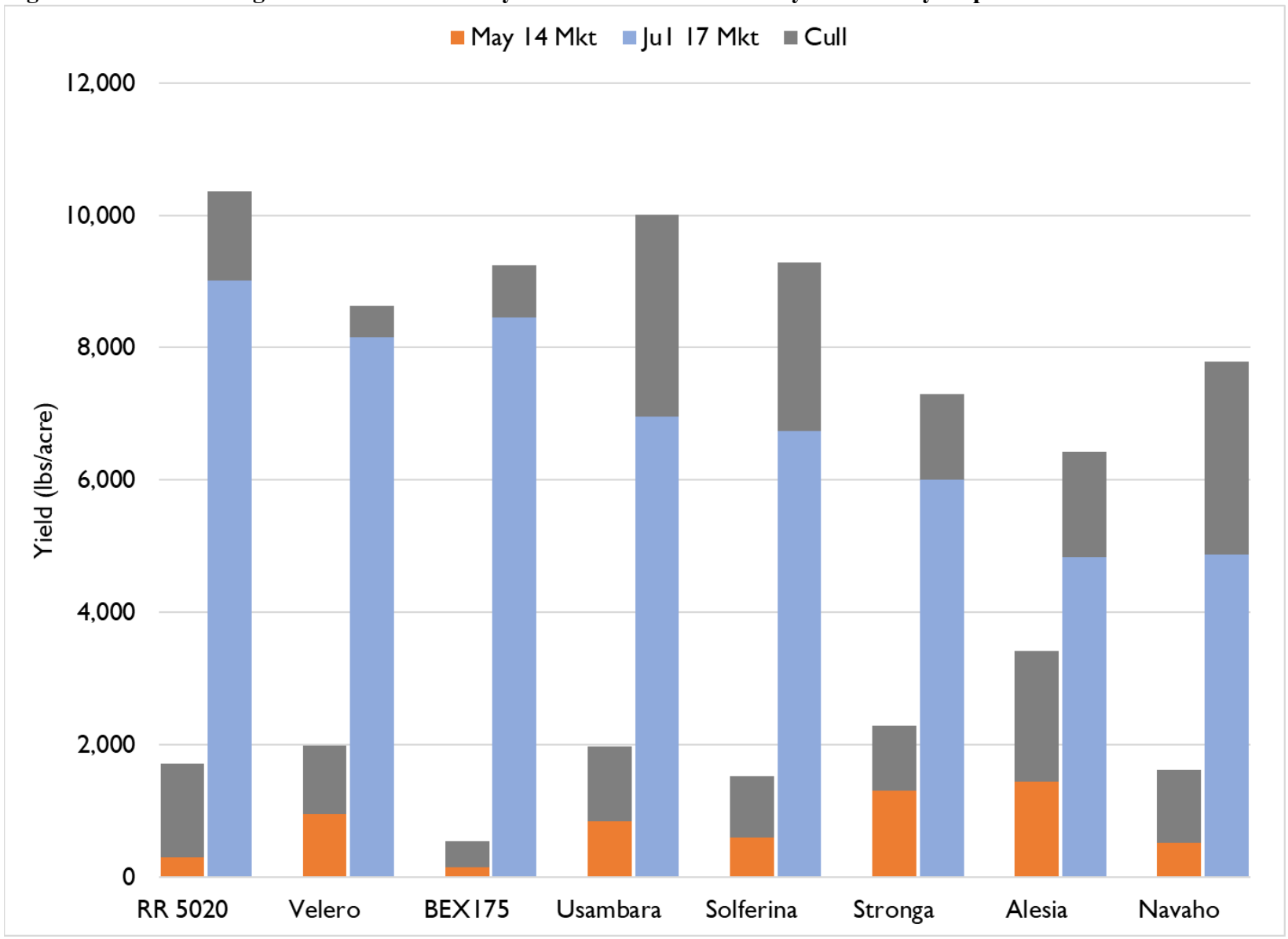

Figure 7. Temperature and Rainfall for the May 14 Planted Flat Snap Bean Trial from May 14 (planting) July 17 (final harvest)

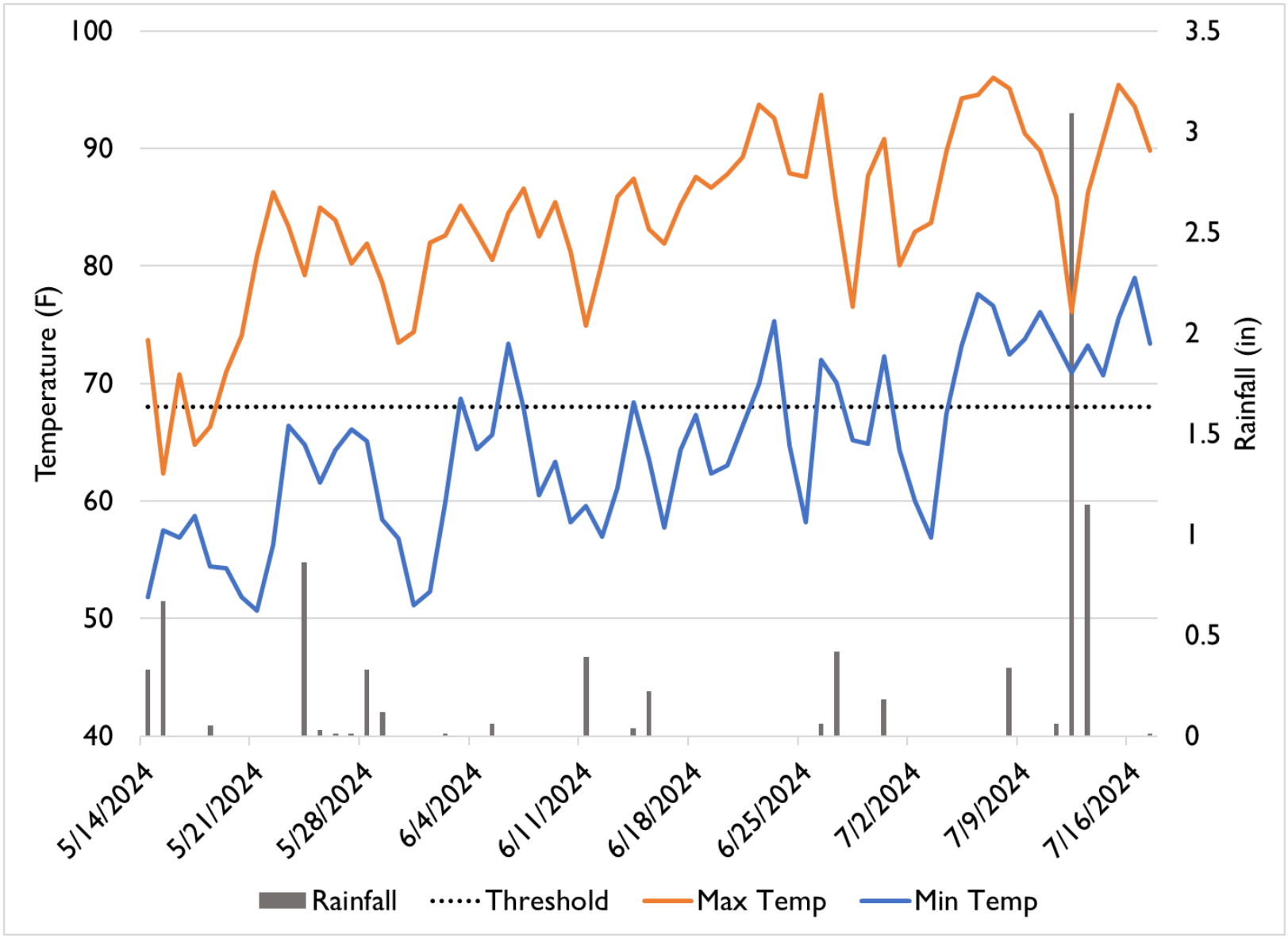

Figure 8. Temperature and Rainfall for the July 17 Planted Flat Snap Bean Trial from July 17 (planting) September 16 (final harvest)