

Trial Report: Bell Pepper Variety Evaluation Spring 2017

Conducted by:
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Production:

Location: Tifton, GA

Entries: 17

Planting Date: 16 March

Plant spacing: 6' centers black TIF plastic mulch with 12" in-row spacing. Double rows were used for a plant population of 14,520 plants per acre.

Plot size: 30 plants per plot with three plots (replicates per variety) arranged as a randomized complete block design.

Fumigation: Paladin Pic applied in February when plastic laid.

Fertility: 500 lbs of 5-10-15 applied preplant under plastic. Weekly fertigrations of 4-0-8 at 12 lbs N acre for a total of 194 lbs/acre N. Irrigation applied at approximately 1-1.5 inch per week.

Data Collection:

Harvests: 3 harvests each. 23, 31 May and 13 June, which were 68, 76, and 90 days after transplant (DAT).

Grading: Pepper graded into industry grades as suggested by the North American Perishable Agricultural Receivers as follows:

Jumbo: >3 ¼ inch diameter, 45 ct or less per box.

Extra Large: >3 ½ inch diameter, 46-55 ct per box

Large: > 3 ¾ inch diameter, 56-70 ct per box

Medium: >3 inch diameter, 71-85 ct per box

Choppers: Misshapen but otherwise no defects (processing)

Culls: Misshapen or not with defects

Yields are presented in boxes per acre. A typical pepper 1 1/9 bushel boxes weighs 22 pounds.

Data analysis: Data analyzed using SAS statistical software using the GLM procedure and Fisher's Least Significant Difference Test for mean separation.

Table 1. Entries in Spring 2017 Trial

| Harris Moran | Sakata | Seedway | Seminis |
|---------------------|---------------|----------------|-------------------|
| HMX51008 | XPP2618 | Boca | Antebellum |
| Prowler | XPP2622 | SWBP001 | Aristotle |
| | Ninja | Seedway 48 | Autry |
| | Samurai | | Green Machine |
| | | | Playmaker |
| | | | PS09979325 |
| | | | PS09942815 |
| | | | SV3255PB |

Results:

The variety SWBP001 had the highest numerical total yield, but it was not significantly different from seven other varieties. Yields were driven by large yields of Jumbo (>3.75 inch diameter) fruit. The variety SV3255 had the most extra large fruit, while Prowler had the highest yield of large fruit. This spring had a higher rate of chopper peppers than in previous studies, ranging from approximately 11% to more than 21% of total marketable fruit. This was a significant portion of fruit harvested for some varieties. We had variable rates of cull fruit, with culls being either caused by blossom end rot or sun burn (other). The percentage of fruit lost to blossom end rot ranged from 5.3-31%, while fruit lost for other reasons (mostly sun burn) ranged from 6.4-20.4% of fruit. Fruit lost from sun burn did not necessarily correspond to total plant vigor, as some compact plants had more foliage covering fruit than larger more open plants. The variety Antebellum had the highest first harvest yield, although Autry had the highest percentage of fruit picked on the first harvest. The first harvest was conducted 68 days after transplant. The amount of cull fruit lost to blossom end rot was variable in the first harvest, ranging up to 38% of fruit. Yields were better than Spring 2016.

Table 2. Yields for peppers in boxes per acre from Spring 2017.

| Variety | Total Yield | Jumbo | Extra Large | Large | Medium | Choppers | Chopper ^z | Cull BER ^y | Cull Other ^x | |
|---------------------------|----------------------|---------|-------------|---------|------------------|----------|----------------------|-----------------------|-------------------------|--|
| (Boxes/acre) ^w | | | | | | | (%) | | | |
| SWBP001 | 1,190 a ^v | 730 a | 280 abc | 150 bc | 30 bc | 200 a-d | 14.6 ab | 4.6 g | 6.4 g | |
| Aristotle | 1,160 a | 650 ab | 330 ab | 150 bc | 40 bc | 160 a-d | 12.1 b | 8.0 fg | 11.9 def | |
| Boca | 1,120 ab | 510 a-d | 300 abc | 210 ab | 110 a | 160 bcd | 12.5 b | 5.3 g | 9.1 efg | |
| 2815 | 1,100 abc | 610 abc | 300 ab | 140 bcd | 40 bc | 250 a | 18.5 ab | 8.7 efg | 7.3 fg | |
| HMX51008 | 1,070 a-d | 570 a-d | 320 ab | 140 bcd | 40 bc | 150 bcd | 12.3 b | 12.4 d-g | 11.6 efg | |
| Antebellum | 1,010 a-e | 560 a-d | 290 abc | 130 bcd | 30 bc | 210 abc | 17.2 ab | 8.3 gf | 11.6 efg | |
| SV3255 | 1,010 a-e | 480 bcd | 350 a | 140 bcd | 40 bc | 120 cd | 11.4 b | 26.3 ab | 13.5 cde | |
| Prowler | 1,010 a-e | 330 d | 320 ab | 270 a | 90 ab | 210 abc | 17.6 ab | 7.6 fg | 9.4 efg | |
| XPP2618 | 910 b-e | 610 abc | 150 d | 100 cd | 50 bc | 120 d | 11.7 b | 22.0 a-d | 12.2 def | |
| Autry | 910 b-e | 540 a-d | 270 a-d | 90 cd | 0 ^u c | 170 a-d | 15.4 ab | 17.0 b-f | 13.9 b-e | |
| Playmaker | 890 b-e | 600 abc | 210 bcd | 70 cd | 20 c | 160 a-d | 15.6 ab | 25.4 abc | 12.3 def | |
| XPP2622 | 890 b-e | 490 bcd | 240 a-d | 130 bcd | 30 c | 170 a-d | 15.3 ab | 21.8 a-d | 9.8 efg | |
| Green Machine | 870 c-f | 480 bcd | 270 a-d | 100 cd | 30 c | 160 a-d | 14.8 ab | 18.7 b-f | 20.4 a | |
| Samurai | 850 def | 530 a-d | 220 bcd | 70 cd | 20 c | 140 bcd | 13.7 ab | 13.7 d-g | 19.3 ab | |
| Ninja | 820 ef | 380 cd | 280 abc | 120 bcd | 40 bc | 180 a-d | 18.6 ab | 20.0 a-e | 17.1 a-d | |
| 9325 | 790 ef | 470 bcd | 260 a-d | 60 d | 10 c | 230 ab | 21.6 a | 14.1 c-g | 13.5 cde | |
| Seedway 48 | 650 f | 340 d | 180 cd | 90 cd | 40 bc | 130 cd | 17.5 ab | 31.0 a | 18.3 abc | |

^zPercentage of choppers based on weight of chopper fruit divided by total marketable plus chopper weight.

^yCull percentage due to blossom end rot (BER) based on number of fruit with BER divided by total of all fruit harvested.

^xCull percentage for other reasons were almost entirely due to sunburn and calculated by dividing number of other cull fruit picked by total of all fruit harvested.

^wWeight based on a 22 lb box and 14, 520 plants per acre – *note that numbers are rounded to the nearest ten boxes.

^vValues within a column followed by the same letter(s) are not significantly different according to Fisher's Least Significant Difference Test ($P < 0.05$)

^u'Autry' averaged 4 boxes of medium per acre, which after rounding to the nearest tenth digit was rounded down to zero.

Table 3. Vigor for peppers trialed in Spring 2017.

| Variety | Vigor (1-5) | |
|---------------|----------------|-----|
| 2815 | 5.0 | a |
| 3255 | 5.0 | a |
| Antebellum | 4.7 | ab |
| Seedway 48 | 4.3 | abc |
| Green Machine | 4.3 | abc |
| Autry | 4.0 | a-d |
| Samurai | 4.0 | a-d |
| Ninja | 3.7 | a-e |
| SWBP001 | 3.7 | a-e |
| Playmaker | 3.7 | a-e |
| HMX51008 | 3.3 | b-e |
| XPP2622 | 3.3 | b-e |
| Prowler | 3.0 | cde |
| XPP2618 | 3.0 | cde |
| Aristotle | 2.7 | de |
| 9325 | 2.5 | e |
| Boca | 2.3 | e |

²Values within a column followed by the same letter(s) are not significantly different according to Fisher's Least Significant Difference Test ($P < 0.05$)

Table 4. Yields in numbers per acre from all three harvests for the Spring 2017 variety trial.

| Variety | Total | Jumbo | Extra Large | Large | Medium | Chopper | Bull BER | Cull Other |
|----------------|--------|--------|-------------|--------|--------|---------|----------|------------|
| (No. per acre) | | | | | | | | |
| Aristotle | 54,210 | 24,360 | 16,620 | 9,840 | 3,390 | 10,490 | 6,450 | 9,680 |
| 2815 | 52,270 | 22,590 | 15,970 | 9,840 | 3,870 | 15,170 | 6,940 | 5,810 |
| Boca | 51,630 | 18,390 | 13,710 | 11,940 | 7,580 | 9,680 | 4,030 | 6,610 |
| SWBP001 | 51,470 | 25,170 | 14,040 | 9,030 | 3,230 | 11,620 | 3,230 | 4,520 |
| HMX51008 | 50,980 | 21,460 | 16,780 | 9,030 | 3,710 | 10,000 | 10,160 | 9,200 |
| Prowler | 49,850 | 12,340 | 15,000 | 15,490 | 7,020 | 18,390 | 6,290 | 7,740 |
| Antebellum | 46,780 | 20,810 | 14,680 | 7,910 | 3,390 | 12,590 | 6,130 | 8,550 |
| XPP2622 | 46,140 | 19,840 | 13,710 | 9,360 | 3,230 | 11,130 | 17,750 | 8,070 |
| SV3255 | 45,920 | 17,910 | 15,260 | 9,360 | 3,390 | 7,100 | 26,300 | 11,450 |
| Ninja | 44,530 | 15,650 | 15,810 | 8,710 | 4,360 | 12,420 | 18,230 | 15,490 |
| Green Machine | 43,560 | 18,230 | 15,000 | 7,580 | 2,740 | 10,490 | 15,810 | 17,590 |
| XPP2618 | 43,520 | 24,050 | 8,660 | 6,570 | 4,240 | 7,300 | 16,620 | 9,380 |
| Autry | 42,430 | 20,490 | 14,360 | 6,940 | 650 | 10,810 | 12,910 | 10,490 |
| Samurai | 38,880 | 19,200 | 12,100 | 5,490 | 2,100 | 8,070 | 9,840 | 13,710 |
| 9325 | 38,720 | 18,390 | 14,280 | 4,600 | 1,450 | 14,280 | 10,160 | 9,920 |
| Playmaker | 38,240 | 21,620 | 10,330 | 4,680 | 1,610 | 9,360 | 19,360 | 9,360 |
| Seedway48 | 34,200 | 13,870 | 9,680 | 6,780 | 3,870 | 9,680 | 27,100 | 15,970 |

Table 5. Yields from the first harvest (23 May).

| Variety | Total | Jumbo | Extra Large | Large | Medium | Chopper | Cull BER | Cull Other | First Harvest Percentage of Total Yield |
|---------------|-------|-------|-------------|-------|--------|---------|----------|------------|---|
| Boxes/acre | | | | | | | (%) | | |
| Antebellum | 701 | 393 | 191 | 95 | 23 | 185 | 6.5% | 13.0% | 69.9% |
| Autry | 687 | 419 | 214 | 52 | 2 | 82 | 16.8% | 15.2% | 76.0% |
| Aristotle | 662 | 302 | 226 | 112 | 23 | 63 | 4.8% | 14.8% | 57.3% |
| Boca | 561 | 154 | 189 | 151 | 67 | 81 | 2.0% | 10.2% | 51.5% |
| HMX51008 | 554 | 221 | 212 | 98 | 23 | 56 | 11.2% | 10.1% | 53.7% |
| SWBP001 | 543 | 273 | 166 | 85 | 20 | 97 | 3.6% | 6.3% | 46.2% |
| 2815 | 509 | 227 | 174 | 86 | 23 | 124 | 7.8% | 4.7% | 46.9% |
| Green Machine | 488 | 272 | 162 | 49 | 5 | 88 | 16.8% | 19.5% | 58.1% |
| Playmaker | 482 | 312 | 127 | 36 | 7 | 88 | 27.3% | 11.0% | 54.3% |
| 9325 | 458 | 271 | 159 | 22 | 5 | 158 | 14.6% | 12.8% | 59.0% |
| Prowler | 454 | 46 | 180 | 166 | 62 | 131 | 6.5% | 12.1% | 45.4% |
| SV3255 | 446 | 222 | 136 | 66 | 23 | 64 | 29.9% | 13.6% | 43.7% |
| Samurai | 428 | 233 | 116 | 59 | 20 | 101 | 10.0% | 25.6% | 50.1% |
| Ninja | 248 | 95 | 92 | 50 | 12 | 70 | 11.8% | 31.0% | 30.4% |
| Seedway48 | 213 | 69 | 64 | 65 | 15 | 28 | 38.3% | 14.5% | 31.7% |
| XPP2618 | 203 | 93 | 43 | 38 | 28 | 35 | 23.0% | 21.5% | 25.5% |
| XPP2622 | 178 | 60 | 54 | 53 | 11 | 51 | 30.4% | 8.9% | 20.2% |

Appendix 1- weather conditions during trial – note plants were transplanted during the day of 16 March, the low temperature was observed the morning prior to planting.

| Date | Temp. Max | Temp. Min | Rainfall (inches) |
|--------|-----------|-----------|-------------------|
| Mar 16 | 56.7 | 28.3 | 0 |
| Mar 17 | 68.8 | 35.3 | 0 |
| Mar 18 | 74.4 | 49.1 | 0 |
| Mar 19 | 70.4 | 46.7 | 0 |
| Mar 20 | 75.4 | 39.8 | 0 |
| Mar 21 | 83.1 | 53.1 | 0 |
| Mar 22 | 81.7 | 57.5 | 0 |
| Mar 23 | 67.2 | 54.2 | 0 |
| Mar 24 | 76.5 | 50.5 | 0 |
| Mar 25 | 77.7 | 54 | 0 |
| Mar 26 | 81.8 | 60.1 | 0 |
| Mar 27 | 82.7 | 57.8 | 0 |
| Mar 28 | 82.6 | 58.6 | 0 |
| Mar 29 | 84.6 | 61.1 | 0 |
| Mar 30 | 82.1 | 58.3 | 0 |
| Mar 31 | 80.6 | 60.7 | 0.01 |
| Apr 01 | 82.6 | 51.2 | 0 |
| Apr 02 | 86.7 | 56.1 | 0 |
| Apr 03 | 82 | 60 | 0.73 |
| Apr 04 | 81.7 | 60.7 | 0 |
| Apr 05 | 81 | 63.4 | 2.74 |
| Apr 06 | 70.3 | 49.1 | 0.01 |
| Apr 07 | 66.9 | 47.5 | 0 |
| Apr 08 | 70.8 | 39 | 0 |
| Apr 09 | 76.2 | 43.4 | 0 |
| Apr 10 | 79.2 | 49.7 | 0 |
| Apr 11 | 81.5 | 54.3 | 0 |
| Apr 12 | 79.9 | 53.8 | 0 |
| Apr 13 | 80.6 | 55.2 | 0 |
| Apr 14 | 81.4 | 54.8 | 0 |
| Apr 15 | 81.5 | 59 | 0 |
| Apr 16 | 81.2 | 60.7 | 0 |
| Apr 17 | 83.9 | 57.3 | 0 |
| Apr 18 | 84.9 | 59.8 | 0 |
| Apr 19 | 83.8 | 62.9 | 0 |
| Apr 20 | 84.7 | 59.8 | 0 |
| Apr 21 | 86.8 | 60.5 | 0 |
| Apr 22 | 85.6 | 59.9 | 0 |
| Apr 23 | 82 | 59.4 | 0.32 |
| Apr 24 | 65.4 | 53 | 0 |
| Apr 25 | 79.4 | 54.5 | 0 |
| Apr 26 | 80.3 | 55.9 | 0 |
| Apr 27 | 85 | 61.1 | 0 |
| Apr 28 | 88.4 | 66.9 | 0 |
| Apr 29 | 88.4 | 69.1 | 0 |
| Apr 30 | 87.8 | 68.3 | 0 |
| May 01 | 83.1 | 61.4 | 0.07 |
| May 02 | 82 | 53 | 0.01 |
| May 03 | 87.7 | 52.4 | 0 |

| | | | |
|--------|------|------|------|
| May 04 | 70.7 | 61 | 1.2 |
| May 05 | 61.4 | 50.4 | 0 |
| May 06 | 74.1 | 48.4 | 0 |
| May 07 | 77.4 | 52.8 | 0 |
| May 08 | 80.1 | 48.7 | 0 |
| May 09 | 86.4 | 55.3 | 0 |
| May 10 | 89.1 | 61.3 | 0 |
| May 11 | 88.6 | 63.3 | 0 |
| May 12 | 83.4 | 64 | 0 |
| May 13 | 79.3 | 64.2 | 0.16 |
| May 14 | 82.7 | 61.3 | 0 |
| May 15 | 88.5 | 59.4 | 0 |
| May 16 | 92.2 | 63 | 0 |
| May 17 | 91.5 | 66.4 | 0 |
| May 18 | 91.9 | 67.3 | 0 |
| May 19 | 88.8 | 65.1 | 0 |
| May 20 | 87.1 | 70.9 | 0.08 |
| May 21 | 84.4 | 66.1 | 0.25 |
| May 22 | 87 | 67 | 0 |
| May 23 | 79.4 | 69.7 | 0.48 |
| May 24 | 76 | 62.4 | 0.15 |
| May 25 | 77.1 | 56.6 | 0 |
| May 26 | 85.2 | 52.5 | 0 |
| May 27 | 89.6 | 61.3 | 0 |
| May 28 | 92.2 | 67.9 | 0 |
| May 29 | 91.9 | 70.8 | 0 |
| May 30 | 87.4 | 71.5 | 0 |
| May 31 | 87.7 | 68.3 | 0.25 |
| Jun 01 | 84.4 | 67.2 | 0.01 |
| Jun 02 | 87.4 | 67.6 | 0.01 |
| Jun 03 | 88.3 | 66.5 | 0 |
| Jun 04 | 88.6 | 68.2 | 0.01 |
| Jun 05 | 85.7 | 68.3 | 0.06 |
| Jun 06 | 78.4 | 67.6 | 0.2 |
| Jun 07 | 69.7 | 62.5 | 0.54 |
| Jun 08 | 81.1 | 60.1 | 0.02 |
| Jun 09 | 85.8 | 58.3 | 0 |
| Jun 10 | 89.1 | 59.4 | 0 |
| Jun 11 | 84.5 | 72.4 | 0.03 |
| Jun 12 | 83.7 | 70.1 | 0.97 |
| Jun 13 | 80.1 | 70.4 | 0.5 |
| Jun 14 | 86 | 69 | 0.01 |

Rainfall

Avg. High 81.7 Avg. Low 58.9 total 8.82
inches

