

2022

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Recommended Citation

Aly, Bronwyn, "2022 DSAC High Tunnel Bell Pepper Variety Trial" (2022). *Midwest Vegetable Trial Reports*. Paper 245.
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2022 DSAC High Tunnel Bell Pepper Variety Trial

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This paper reports on seven bell pepper cultivar entries evaluated in a high tunnel production system during the 2022 growing season at the University of Illinois Dixon Springs Agricultural Center (DSAC) located in southern Illinois (Pope County).

The plots were established from transplants set on April 18, 2022. Plants were grown on in-ground raised beds with twin rows of plants spaced at 12 inches between plants and 8 inches between the twin rows with two runs of trickle irrigation (4-inch emitter spacing) per bed and without plastic mulch. The spacing between beds within this high tunnel is 20 inches, making the spacing on each side of the twin rows 3 feet. All plots were replicated four times in a randomized complete block design.

Weekly fertilizer applications were made through the drip irrigation system starting a week after transplanting on April 22 and ending the last week of August. The following fertilizer products were used during the growing season; 20-20-20, potassium nitrate, calcium nitrate, potassium sulfate, and magnesium sulfate, delivering a total of

- 120 lbs/acre of nitrogen
- 35 lbs/acre of phosphorus
- 415 lbs/acre of potassium
- 60 lbs/acre of calcium
- 9 lbs/acre of magnesium.

The high tunnel containing this variety trial was also included in a biological insect control project and served as the control tunnel. No insecticides were applied during the growing season except for three applications of a Bt product to control tomato horn worm, army worm, and tomato fruit worm. No fungicides were needed or applied during the growing season.

The plots were harvested weekly for the period from June 15 to August 31, 2022, providing a total of 12 harvests. The harvested fruit was sorted and graded based on USDA grades and standards for U.S. No. 1 and U.S. No. 2 sweet peppers <https://www.ams.usda.gov/grades-standards/sweet-peppers-grades-and-standards>, and yield data was recorded accordingly.

Cultivars are listed in descending order of total pounds of U.S. No. 1 fruit harvested per plant in Table 1. ‘Vanguard’ and ‘SV3964PB’ significantly outperformed ‘Boca’, ‘Tarpon’, and ‘Sailfish’ in total pounds of U.S. No. 1 fruit but there was no significant difference from ‘Karisma’ or ‘Aristotle’. In regards to the total pounds of U.S. No. 2 fruit harvested, ‘Sailfish’, ‘Karisma’, and ‘Tarpon’ had significantly higher yields than ‘Vanguard’, ‘Aristotle’, and ‘SV3964PB’. Average fruit size of U.S. No. 1 grade was relatively uniform across all varieties. Observations made during the growing season included the following: ‘SV3964PB’ was noted to be elongated or tapered; ‘Vanguard’ and ‘Karisma’ were extra-large and blocky; and ‘Aristotle’ tended to sunscald and was slightly tapered.

Table 1. 2022 DSAC High Tunnel Bell Pepper Variety Trial.

2022 Bell Pepper Variety Trial-DSAC (high tunnel)*								
	Total No. 1 Yield		Total No. 2 Yield		Total Marketable Yield	Culls	BER	Fruit Size
	----U.S. No. 1----		----U.S. No. 2----		U.S. No. 1 & No. 2			U.S. No. 1
Cultivar	<i>fruit per plant</i>	<i>lbs per plant**</i>	<i>fruit per plant</i>	<i>lbs per plant</i>	<i>lbs per plant</i>	<i>fruit per plant</i>		<i>oz per fruit</i>
Vanguard	4.2	1.8 a	5.1	1.7	3.5	1.6	0.1	7.0
SV3964PB	3.7	1.5 a	5.1	1.6	3.1	1.0	0.2	6.6
Karisma	3.2	1.4 ab	7.3	2.3	3.7	1.5	0.2	7.0
Aristotle	3.3	1.4 ab	4.7	1.6	3.0	1.5	0.0	6.9
Boca	2.4	1.1 b	5.4	1.9	3.0	1.6	0.2	7.2
Tarpon	2.4	1.0 b	6.1	2.0	3.0	1.9	0.2	6.9
Sailfish	0.8	0.3 c	8.0	2.4	2.8	3.2	0.1	6.7
*data analyzed across 4 replications								
**descending order based on total yield No. 1 lbs per plant						LSD 0.435		

Acknowledgements

J. Zakes and J. Warren assisted with field work and data collection on site at the Dixon Springs Agricultural Center. Seedway donated the seed used in this trial.