

UPDATE ON COLORED HIGH TUNNEL BELL PEPPERS

Timothy Elkner
Penn State Extension – Lancaster County
1383 Arcadia Rd., Rm. 140, Lancaster, PA 17601
tee2@psu.edu

Introduction - Colored bell peppers are a high-value crop for vegetable growers. Producing these peppers in the field is risky because weather conditions can reduce marketable fruit. In addition, field production delays maturity of the crop. Earlier research showed that colored bell production was a good fit for high tunnel production because it helped overcome these two problems. The best red, yellow and orange varieties were identified in 2012 and recommended to growers. Since that trial was completed new pepper varieties have been introduced and this study was conducted to evaluate these new varieties compared to current standards.

Materials and Methods – Thirty-four bell pepper varieties (named and advanced selections) were evaluated using plasticulture (narrow beds) and drip irrigation in a high tunnel. Mature fruit colors were red, orange and yellow. Plants were seeded on April 6 and transplants were set in the tunnel on May 16. There were three 4-plant replications per variety except for 'Dazzle' which only had one replication of 4 plants. Plants were set in the beds in a double row with an in-row spacing of 1.5 ft. No fertilizer was applied preplant based on soil test results and in season fertility was based on recommendations as found in the Commercial Vegetable Production Guide and adjusted based on tissue test results. Harvest started on August 2 and stopped on October 31. Fruit were graded into #1, #2 and cull and each group was counted and weighed. Pests were managed using biological controls most of the season.

Results and Discussion – Red varieties with the highest yields of #1 fruit by weight were Antebellum, Bocca, Karisma, Mercer, Ninja, Red Knight and Sprinter (Table 1). Varieties with the highest yields of marketable fruit (#1 & #2) were Antebellum, Karisma, Mercer, Ninja, PS 1819, Red Knight and Touchdown. CS 1730 and PS 1819 had the largest average fruit size for #1 fruit; Sprinter had the smallest and at 0.42 lbs. is most likely too small for most markets.

All orange varieties had similar yields of #1 fruit by weight except for Garfield which was lower (Table 2). Garfield had the greatest average fruit size at 0.62 lbs. while all other varieties were 0.50 lbs or lower. Average size for orange bell peppers in previous studies was similar to this season and in general this color tends to have smaller fruit. Varieties with the highest total marketable yield per plant were Delerio and Muscato.

Yellow varieties with the highest yields of #1 fruit by weight and good fruit size were Dazzle, Early Sunsatation, and Sirius (Table 3). Catriona had good yields of #1 fruit but small fruit size; Galleon had good fruit size but poor yield. Varieties with the best marketable yields were Catriona, Dazzle, Early Sunsatation and Sirius.

I would like to thank the PA Vegetable Marketing & Research Board for funding this trial.

Table 1. Number and weight of #1, #2 and cull fruit, total marketable weight and total harvested weight of fruit for 22 varieties of red bell peppers grown in a high tunnel in Lancaster County, PA in 2017. Values are for individual plants.

Variety	Number #1 Fruit	Weight #1 Fruit (lb)	Average Fruit Wt. #1 (lb)	Number #2 Fruit	Weight #2 Fruit (lb)	Total Marketable Weight (lb)	Number Culls	Weight Culls (lb)	Total Harvested Weight (lb)	Source**
Antebellum*	4.83	3.18	0.66	1.42	0.85	4.03	3.08	1.91	5.93	TW
Bocca	4.58	3.01	0.66	0.92	0.58	3.60	1.58	1.00	4.60	SW
Cherokee	3.33	2.30	0.69	2.17	1.43	3.72	1.92	1.24	4.97	SK
CS 1730	2.83	2.20	0.78	1.33	0.87	3.07	1.92	1.04	4.11	CS
Green Flash*	3.67	2.52	0.69	1.75	1.04	3.56	1.92	0.93	4.49	CS
Karisma	4.50	3.18	0.70	1.92	1.21	4.39	1.50	0.93	5.33	SW
Majestic Red	4.25	2.40	0.56	1.83	1.06	2.63	2.67	1.24	4.70	TW
Mariner*	1.83	1.15	0.63	1.58	0.94	2.10	2.75	1.48	3.58	CS
Mercer	5.17	3.23	0.62	2.00	1.25	4.48	1.92	1.06	5.54	SG
Mingun	3.50	2.44	0.70	1.75	1.12	3.56	2.67	1.57	5.13	SW
Ninja*	6.25	3.90	0.60	1.75	1.03	4.93	2.75	1.34	6.27	SK
Pepper #1	3.67	2.49	0.68	1.42	0.84	3.33	1.67	0.96	4.29	CS
Procraft	4.67	2.94	0.63	1.42	0.83	3.78	2.00	1.08	4.86	SW
PS 1819	3.67	2.81	0.77	2.25	1.68	4.49	1.58	1.09	5.51	SW
PS 8302	2.00	1.44	0.72	1.92	1.37	2.81	1.33	0.99	3.80	RP
PS 9325*	4.00	2.73	0.68	0.83	0.54	3.27	2.25	1.40	4.66	RP
Red Knight	6.42	3.65	0.57	2.00	1.08	4.74	2.50	1.23	5.96	SW
Samurai*	5.25	2.92	0.56	1.92	0.98	3.90	1.42	0.70	4.60	SK
Sprinter	6.50	3.01	0.46	1.42	0.69	3.72	1.92	0.75	4.47	SG
SV 3255*	3.83	2.54	0.66	1.50	0.90	3.44	2.33	1.38	4.82	RP
Touchdown	4.08	2.63	0.65	2.25	1.38	4.02	1.33	0.73	4.75	SK
Triology	4.00	2.76	0.69	1.25	0.79	3.54	1.42	0.71	4.25	SW

*X-10 variety

**CS = Clifton Seed; RP = Rupp Seed; SG = Siegers Seed; SK = Sakata Seed; SW = SeedWay; TW = Twilley Seed

Table 2. Number and weight of #1, #2 and cull fruit, total marketable weight and total harvested weight of fruit for 5 varieties of orange bell peppers grown in a high tunnel in Lancaster County, PA in 2017. Values are for individual plants.

Variety	Number #1 Fruit	Weight #1 Fruit (lb)	Average Fruit Wt. #1 (lb)	Number #2 Fruit	Weight #2 Fruit (lb)	Total Marketable Weight (lb)	Number Culls	Weight Culls (lb)	Total Harvested Weight (lb)	Source*
Delerio	8.25	3.83	0.46	1.42	0.58	4.42	2.67	0.84	5.26	SG
Garfield	4.25	2.64	0.62	1.42	0.93	3.57	1.92	1.05	4.62	TW
Milena	7.00	3.35	0.48	1.08	0.49	3.84	2.67	1.13	4.97	SG
Muscato	7.67	3.45	0.45	2.00	0.87	4.32	2.08	0.88	5.20	TW
Orenji	6.83	3.38	0.50	0.75	0.33	3.72	3.58	1.51	5.23	SK

*CS = Clifton Seed; RP = Rupp Seed; SG = Seigers Seed; SK = Sakata Seed; SW = SeedWay; TW = Twilley Seed

Table 3. Number and weight of #1, #2 and cull fruit, total marketable weight and total harvested weight of fruit for 7 varieties of yellow bell peppers grown in a high tunnel in Lancaster County, PA in 2017. Values are for individual plants.

Variety	Number #1 Fruit	Weight #1 Fruit (lb)	Average Fruit Wt. #1 (lb)	Number #2 Fruit	Weight #2 Fruit (lb)	Total Marketable Weight (lb)	Number Culls	Weight Culls (lb)	Total Harvested Weight (lb)	Source**
Abay	5.17	3.09	0.60	1.08	0.68	3.76	0.83	0.47	4.23	SW
Catriona	8.75	4.04	0.46	1.42	0.67	4.72	1.75	0.68	5.39	SG
Dazzle***	6.75	3.79	0.56	1.00	0.50	4.29	2.50	1.41	5.70	SW
Early Sunsation	6.17	3.74	0.61	0.75	0.48	4.22	1.83	1.08	5.30	SG
Flavorburst	6.83	3.03	0.44	1.92	0.81	3.83	3.42	1.05	4.89	SW
Galleon*	2.00	1.36	0.68	1.25	0.72	2.07	2.83	1.31	3.38	CS
Sirius	6.25	4.00	0.64	1.00	0.66	4.65	1.08	0.67	5.32	SG

*X-10 variety

**CS = Clifton Seed; RP = Rupp Seed; SG = Siegers Seed; SK = Sakata Seed; SW = SeedWay; TW = Twilley Seed

***Average of 4 plants