

TITLE OF PROJECT: Bacterial spot resistant pepper cultivar evaluation - 2007

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METHODS:

Fruit Yield and Quality

Eight bell pepper cultivars and seven hot banana pepper cultivars were included in the 2007 trial. Bell pepper transplants were produced by Demaiter Greenhouses, Thamesville, and seeded on 26 April; banana pepper transplants were provided by Smuckers. Mulch was laid on 08 June onto a Brookston clay loam sand spot phase soil on the Ridgetown Campus research farm. Peppers were transplanted on 13 June, 2007, using a Rainflo water wheel transplanter, with a row spacing of 1.5 m and in row spacing of 45 cm (29,630 plants/ha). There was a twin row of plants per bed, which were centered at 1.5 m.

Weeds were controlled with a preplant incorporated treatment of Dual. Weed escapes were controlled with Gramoxone herbicide and hoeing.

Nitrogen fertilizer was applied preplant at rate of 60 kg/ha actual N. Phosphorous and potassium applications were based on soil analysis.

The trial was irrigated with Netafim Streamline drip tubing. Irrigation scheduling was based on tensiometer values (turned on if soil water tension falls below -30 cb) and accumulated rainfall; a target of 1" per week was used

Aristotle was included as green standard cultivar. King Arthur was included as an early maturing comparison. Peppers were harvested until October 10.

BLS Resistance

Pepper transplants were greenhouse inoculated with bacterial leaf spot culture, and transplanted into a disease nursery. The number of bacterial cluster counts on plant foliage and fruit were recorded at several times during the summer, and a total number determined.

DATA COLLECTION: Peppers were harvested according to Ontario processing standards: mature green peppers were a minimum 2 3/4" diameter with a 5% tolerance on color. At the first harvest (green only), samples were taken and the following assessment made:

- a. fruit length: average length of 10 fruit per plot
- b. fruit diameter: average diameter of 10 fruit per plot
- c. wall thickness: average thickness of 10 fruit per plot

The hot banana types were harvested once there was 40-45% color on all fruit.

Data is sorted by descending total yields.

EXPERIMENTAL DESIGN AND DATA ANALYSIS: The trial was established in a randomized complete block design with four replications. A single plot consisted a twin row, 8 m in length.

The data was statistically analysed using analysis of variance for a randomized complete block design. A protected LSD was used to separate the treatments with significant differences ($P \leq 0.05$).

DISCUSSION:

While King Arthur provided the numerically largest bell pepper fruit yield, there was no statistically significant differences among the cultivars evaluated, except for Pro5 -C67 x 68, which produced the smallest yield. Trends for fruit number and early yield were similar (Table 2). Aristotle had the greatest fruit weight, while Pro5 -C67 x 68 had the greatest wall thickness (Table 2). Inferno produced the greatest fruit yield among the banana pepper varieties (Table 3).

Total bacterial cluster counts recorded from inoculated plants were low in 2007; however the lowest total counts were found on Aristotle, Red Bull, Variety # 8620, Pro3 -13x14R-4, and Pro5 -C67 x 68 (Figure 1). PX 11412119 had the fewest bacterial cluster counts among the banana pepper types (Figure 2)

Table 1. Fruit ratings and green fruit characteristics of bacterial spot resistant bell peppers, Ridgetown Campus, University of Guelph, 2007. Cultivars sorted by decreasing yield.

Cultivar	Source	Fruit length (cm)	Fruit Diameter (cm)	Wall Thickness (mm)	Average Fruit Weight (g)
King Arthur	Stokes	10.1	10 ab	6.41 b	252
Aristotle	Stokes	10.8	9.4 bcd	7.19 ab	256
Excursion II	Abbott & Cobb	10.5	9.1 cd	6.78 ab	238
Pro3 -13x14R-4	Pepper Research	10.4	9.7 abc	7.22 ab	250
Red Bull	Sakata	11.1	9.3 cd	7.46 a	253
Variety # 8620	Abbott & Cobb	10.7	10.1 a	6.66 ab	245
Pro5 -C65 x 66	Pepper Research	10.3	8.8 d	6.98 ab	239
Pro5 -C67 x 68	Pepper Research	10.4	8.9 cd	7.49 a	230
LSD (0.05)		0.76	0.54	0.601	22
C.V.		4.93	3.92	5.82	6.11
P-value		N.S.	0.0001	0.0103	N.S.

Table 2. Green fruit yields of bacterial spot resistant bell peppers. Ridgetown Campus, University of Guelph, 2007. Cultivars sorted by decreasing yield.

Cultivar	Source	Green Fruit/ plant	Early Green Yield (t/ac)	Total Green Yield (t/acre)
King Arthur	Stokes	5.9 a	10 a	17.4 a
Aristotle	Stokes	5.8 a	9.9 a	15.6 a
Excursion II	Abbott & Cobb	6.3 a	8.4 a	15 a
Pro3 -13x14R-4	Pepper Research	5.5 a	5.9 ab	14.4 a
Red Bull	Sakata	5.2 a	8.6 a	14.1 a
Variety # 8620	Abbott & Cobb	5.3 a	8.8 a	13.4 a
Pro5 -C65 x 66	Pepper Research	5.3 a	7.4 a	12.9 a
Pro5 -C67 x 68	Pepper Research	3.9 b	3.4 b	8.9 b
LSD (0.05)		1	3.15	3.25
C.V.		12.85	27.43	15.82
P-value		0	0.0046	0.0019

Table 3. Fruit yields of bacterial spot resistant banana peppers. Ridgetown Campus, University of Guelph, 2007. Cultivars sorted by decreasing yield.

Cultivar	Average Fruit Weight (g)	Green Fruit/ plant	Total Green Yield (t/acre)
Inferno	74.5 ab	16.7 ab	16.4 a
Budapest	85.5 a	13.4 bc	14.9 ab
PX 11412119	62.8 bc	18.0 a	14.9 ab
Hot Banana 3277	49.8 c	19.4 a	12.7 bc
Stoked	54.3 c	16.3 ab	11.6 cd
Giant Hot Hungarian	76.6 ab	11.3 cd	11.5 cd
Hot Horn	84.3 a	8.3 d	9.1 d
LSD (0.05)	12.8	3.2	2.3
C.V.	12.4	14.5	11.9
P-value	0.0001	0.0001	0.0001

Figure 1: Bacterial cluster counts vs yield for bell pepper varieties.

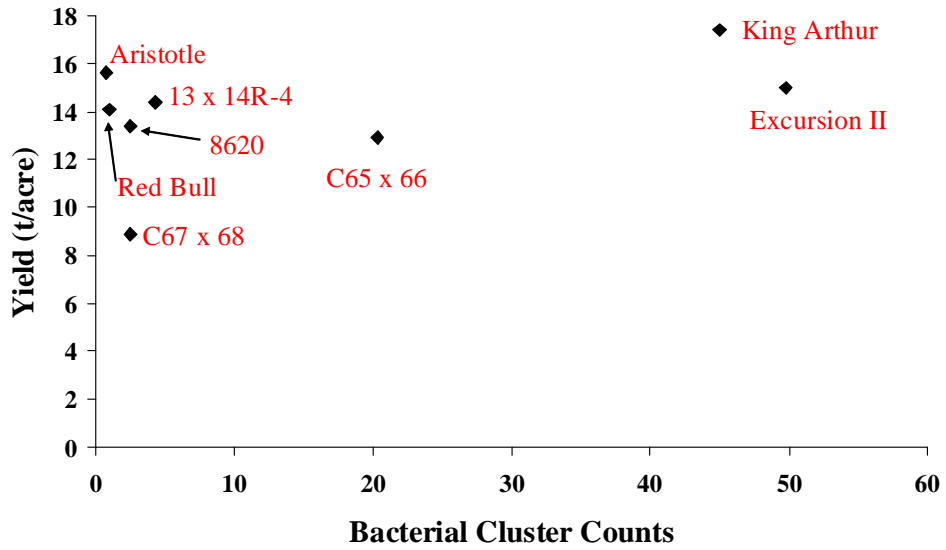


Figure 2: Bacterial cluster counts vs yield for banana pepper varieties.

