

Saginaw Valley Research and Extension Center 2014 Pumpkin Variety Trial

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Editor's note: *This report was revised in May 2015, after the original publication of January 2015.*

A carving jack-o-lantern pumpkin variety trial was planted at the Saginaw Valley Research and Extension Center (3775 S. Reese Road, Frankenmuth, MI 48734). Harris Seeds, Hollar Seeds, Veseys, and Johnny's Selected Seeds generously donated publicly available carving jack-o-lantern pumpkin seeds to the trial. This trial did not use fungicidal or insecticidal protectants. However, a disease- and insect-managed trial was replicated along with an additional 12 varieties at Ohio State University (Thom Harker) and West Virginia University (Lewis Jett), under the coordination of Brad Bergefurd (OSU).

The 60 randomized plots consisted of six replications of 10 pumpkin varieties planted 14 to a plot (Table 1). Curbit (3 pt/a) and urea (60 lb N/a) were applied to the disked field approximately two weeks before planting. The soil type was a Tappan-Londo loam with a poor-moderate drainage classification, typical of the growing region of Michigan's Saginaw Valley.

On June 9, 2014, pumpkins were hand-planted in two rows per plot, 27 feet long and 5 feet apart, with a 5-foot break (east-west) between varieties. Seagulls were a major problem at this time, and resulted in 30-70% loss of seed in plots. Gladiator, Cronus, Mustang, and Rockstar pumpkin plots were the most affected by this bird. On June 16 and 23, a survey evaluated the extent of the eaten seeds, and pumpkins were replanted as necessary. On June 30, a final attempt was made to replant plots, and fresh seeds were protected with partially buried Styrofoam bowls. The bowls were removed on July 16, and the final emergence tally was conducted on July 23. Plots were hoed on July 17, and August 4.

On August 22, the plots were evaluated for presence or absence of foliar diseases. Plants suffering from root rot and wilt were removed from the trial and subtracted from the final emergence tally. By this date, most plots had obvious signs of powdery mildew, and they were rated on a 0-2 scale (0=absent, 1=present, 2=infested).

All pumpkins from all plots were harvested on September 17 and 18 and measurements were taken on the same days as each respective harvest. These were days 100 and 101 from the first planting date, which fell between the shortest and longest predicted maturity time for the varieties in the trial (83-115 days). Fruit were individually weighed and rated for the presence or absence of powdery mildew on the handle, the presence or absence of other handle defects, the percentage of bacterial infections on the fruit surface, and color.

Results

The average weight of marketable Apollo, Charisma, Cronus, Expert, Racer, and Racer Plus fell within their predicted weight ranges, and less than 25% of fruit from these were unmarketable. The average weight of Camaro, Corvette, Cougar, Gladiator, Mustang, and Rockstar pumpkins

fell above their predicted weight ranges (Table 1). Except for Cougar, the short 85-day pumpkins held their size within their predicted ranges, despite being harvested on day 100. However, late 110-115 day pumpkins were not as marketable, with more than 75% of Gladiator and 59% of Cronus pumpkins still too green for sale. Additionally, Gladiator, Cronus, Mustang, and Rockstar had a high proportion of seed planted three weeks later than the first set of plants due to seagull damage. This factor contributed to a lower number of marketable fruit for these varieties.

Overall, Racer and Racer Plus had significantly more fruit per acre than any other variety, though they were smaller fruit and were defoliated by a major powdery mildew infestation (Figure 1). Cronus yielded significantly heavier fruit overall ($P < 0.001$), but along with Gladiator did not yield many marketable fruit at time of harvest (Figure 2). Mustang and Camaro had the lowest powdery mildew rating across their six plots. Racer and Cougar yielded the highest percentage of marketable fruits, owing mostly to their uniform color. Cougar actually started as a yellow fruit, and darkened into a rich orange color, sometimes with a small ring of green near where the handle attaches. However, this could give growers an advantage in that even under-mature fruit are uniformly yellow to yellowish-orange and look nicer than a green pumpkin in transition.

Acknowledgements

Special thanks to Brad Bergefurd, Thom Harker, and Jim Jasinski, of Ohio State University for acting as mentors for this trial, and to Gerald Johnson, for the plywood Linus to decorate the plot. Thanks go to Paul Horny, and Dennis Fleishman at SVREC for their help with ground prep and equipment needs.

Table 1. Measured characteristics of the 12 pumpkin varieties at the Saginaw Valley Research and Extension Center, Frankenmuth, Michigan. Six reps of pumpkins were hand-planted in 2 rows per plot, 27 feet long, and 5 feet apart. They were harvested on days 100-101.

Variety	Co. ¹	Predicted Maturity (days)	Weight/Fruit (lb)	% Marketable ²	% Emergence by July 23	Fruits/Plant	Fruit/A	Tons/A	PMR ³	PM Rating ⁴
Cougar	HO	85	20.15	92.31	88.44	1.76	2,896.48	28.92	Y	1.00
RacerPlus	JS	85	14.49	81.10	86.75	1.93	3,692.08	27.03	Y	1.31
Racer	JS	85	14.81	94.74	94.38	1.97	3,558.50	26.19	N	2.00
Camaro	HO	110	24.70	79.69	90.48	1.42	1,932.94	23.80	Y	0.75
Apollo	HA	105	27.02	83.87	80.63	1.06	1,793.38	23.51	Y	1.00
Corvette	HO	110	20.76	79.07	92.33	1.19	2,263.54	23.40	Y	1.00
Rockstar	JS	98	30.77	81.82	85.19	0.79	1,475.98	22.34	N	1.03
Charisma	JS	98	16.54	87.06	84.75	1.71	2,677.41	22.06	Y	1.25
Expert	VE	88	23.47	77.59	74.29	1.42	1,774.77	19.72	N	1.22
Mustang	HO	100	31.42	55.93	86.80	0.77	1,090.28	16.92	Y	0.59
Cronus	HA	115	38.81	41.38	92.86	0.30	618.48	12.35	Y	0.83
Gladiator	HA	115	26.56	24.44	88.96	0.23	396.02	4.11	Y	0.82

¹Seed companies: HA=Harris, HO=Hollar Seeds, JS=Johnny's Selected Seeds, VE=Veseys Seeds

²Marketability was determined as an orange skin that covered 75% of the fruit with no other visual defects.

³PMR: Y=indicates the product is advertised as resistant to powdery mildew, N=no indication of resistance.

⁴PM rating was a 3-category variable measured on all marketable and unmarketable fruit, with 0 as no powdery mildew occurrence, 2 as powdery mildew present, and 3 as full powdery mildew infestation.

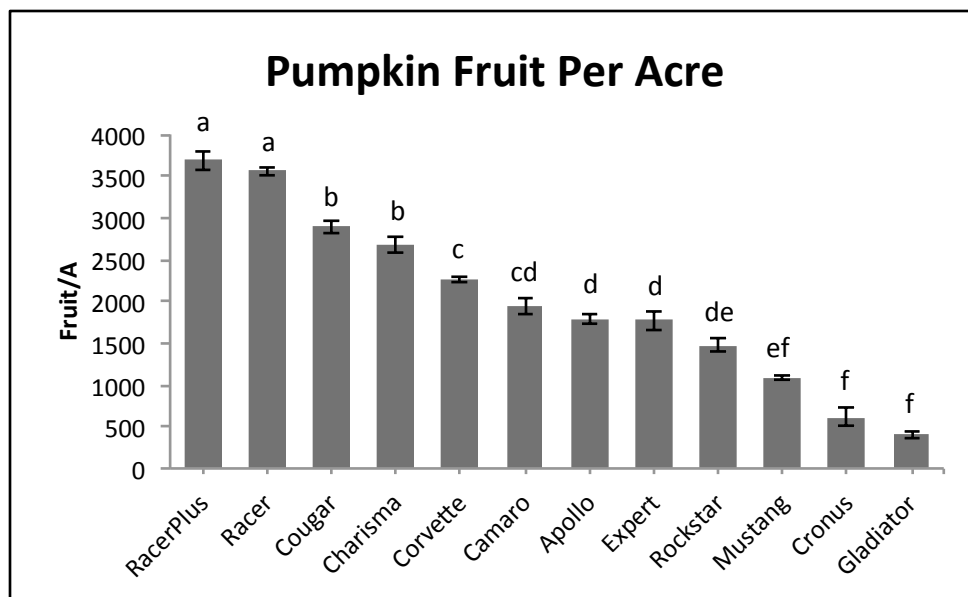


Figure 1. Fruit per acre measurement of the 12 pumpkin varieties at the Saginaw Valley Research and Extension Center, Frankenmuth, Michigan. Six reps of pumpkins were hand-planted in two rows per plot, 27 feet long, and 5 feet apart. They were harvested on days 100-101.

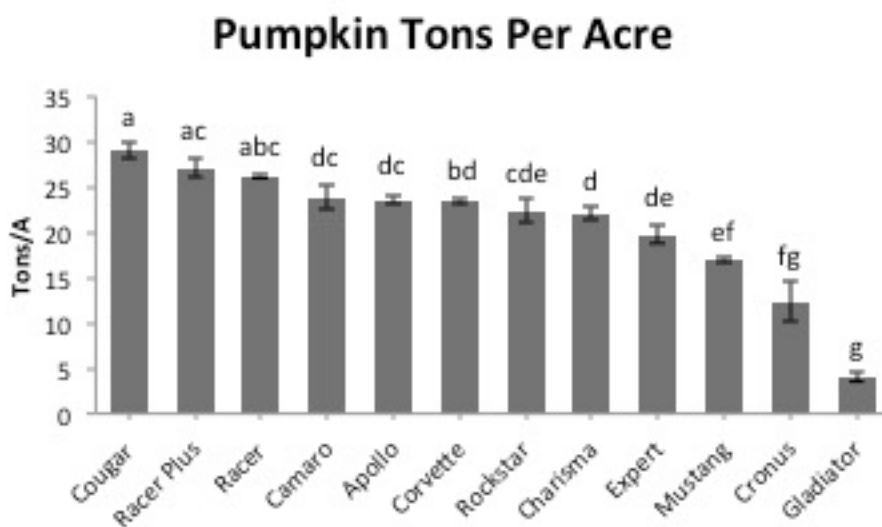


Figure 2. Tons per acre measurement of the 12 pumpkin varieties at the Saginaw Valley Research and Extension Center, Frankenmuth, Michigan. Six reps of pumpkins were hand-planted in two rows per plot, 27 feet long, and 5 feet apart. They were harvested on days 100-101. Cronus yielded significantly heavier fruit overall, but along with Gladiator did not yield many marketable fruit at time of harvest. Seagulls ate 30-70% of seeds in Gladiator, Cronus, Mustang, and Rockstar pumpkin plots, and replantings did not yield as many fruit as original plants.