

Plant Spacing Demonstration Plot with Jack-o-Lantern and Giant Pumpkins

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Plant spacing is known to influence the size of pumpkins. To demonstrate this influence two jack-o-lantern cultivars and two giant pumpkin cultivars were grown at narrow and wide in-row spacings at Coulter's Farm in Westville, Indiana.

Materials and Methods

Two trials were established, one for jack-o-lantern pumpkins (*Cucurbita pepo*) and one for giant pumpkins (*C. maxima*). Each trial included four treatments arranged in a randomized complete block design. Treatments for the jack-o-lantern trial were: 1) Gold Rush, 2.5-ft. spacing in the row; 2) Gold Rush, 5-ft. spacing; 3) Trax Field, 2.5-ft. spacing; and 4) Trax Field, 5-ft. spacing. Treatments for the giant trial included Atlantic Giant and Big Moon, each at 4-ft. and 6-ft. spacings in the row. Individual treatment plots contained 5 rows on 6-ft. centers. Rows were 50 ft. long for jack-o-lanterns and 60 ft. long for giant pumpkins. The two outer rows were planted with the cultivar Baby Bear and acted as border rows to provide constant plant population. The three inner rows were planted with 2, 3, or 4 guard plants of Baby Bear on each end, and 6, 9, or 12 plants (depending on spacing treatment) of the test variety in the middle. Plant populations for jack-o-lanterns were 2904 and 1452 plants per acre. Plant populations for giants were 1815 and 1210 plants per acre. Pumpkins were planted on June 18 and 19, 2001. Two seeds per hill of each test variety were planted. Emerged plants were thinned to one per hill and plant stand determined on July 6 for jack-o-lanterns and July 11 for giants. Prior to planting, fertilizer was applied at the following per-acre rate: 150 lb. 46-0-0, 140 lb. 18-46-0 and 250 lb. 0-0-60, for a total of 94 lb. N, 64 lb. P₂O₅ and 150 lb. K₂O per acre. Pest management followed standard practices on the farm.

Pumpkins were harvested from one replication on September 14 and from the second on October 8, 2001. Some jack-o-lantern pumpkins had not turned completely orange, and so both mature green and marketable orange pumpkins were counted and weighed to estimate potential yield. Yield per acre, pumpkins per plant, and average pumpkin weight were calculated. Analyses of variance were performed separately for jack-o-lantern and giant pumpkins.

Results and Discussion

Jack-o-lantern pumpkins yielded poorly due to poor fruit set and rot of mature fruit. Results are shown in Figure 1. The two cultivars produced similar yields and did not differ in average fruit weight or average number of fruit per plant. Spacing did not affect yield per acre. The 5-ft. spacing averaged twice as many pumpkins per plant, and pumpkins weighed on average 25% more than pumpkins from the 2.5-ft. spacing. Given the amount of variability in the results, this trial alone does not convincingly show that closer spacing reduces fruit size, but results are consistent with what is known about spacing effects on fruit size.

The giant pumpkins performed better than the jack-o-lanterns. They set more fruit and had less fruit rot. Results are shown in Figure 2. The two cultivars produced similar yields and did not differ in

average number of fruit per plant. Atlantic Giant fruit averaged 28% larger than Big Moon, but given the experimental variability, it is difficult to say with much confidence that a similar difference would be observed in other trials. Spacing did not affect yield per acre. The 6-ft. spacing averaged 12% more pumpkins per plant than the 4-ft. spacing. Pumpkins from the 6-ft spacing averaged 23% heavier than pumpkins from the 4-ft. spacing. As with the jack-o-lantern pumpkins, this trial alone does not convincingly show that closer spacing reduces fruit size, but results are consistent with what is known about spacing effects on fruit size.

Figure 1. Yield and yield components of jack-o-lantern pumpkins grown at two in-row spacings, Westville, Indiana, 2001.

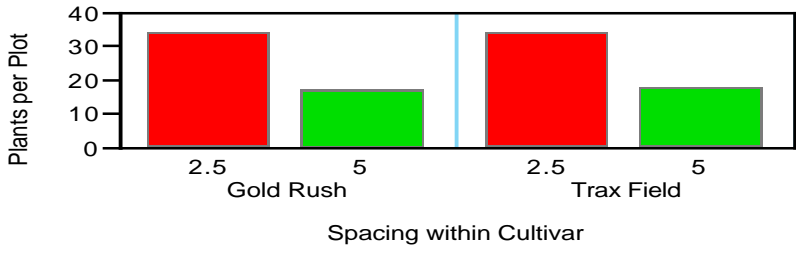
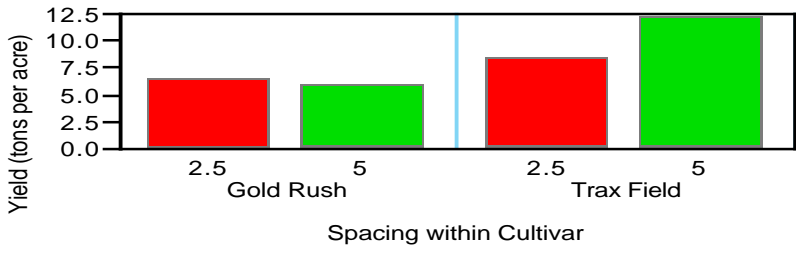
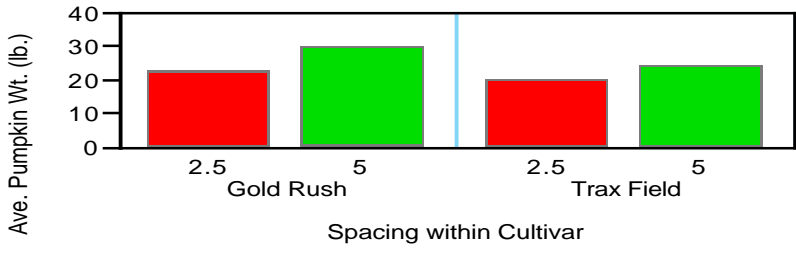
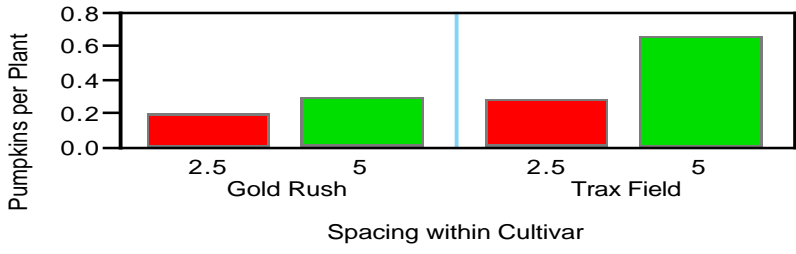
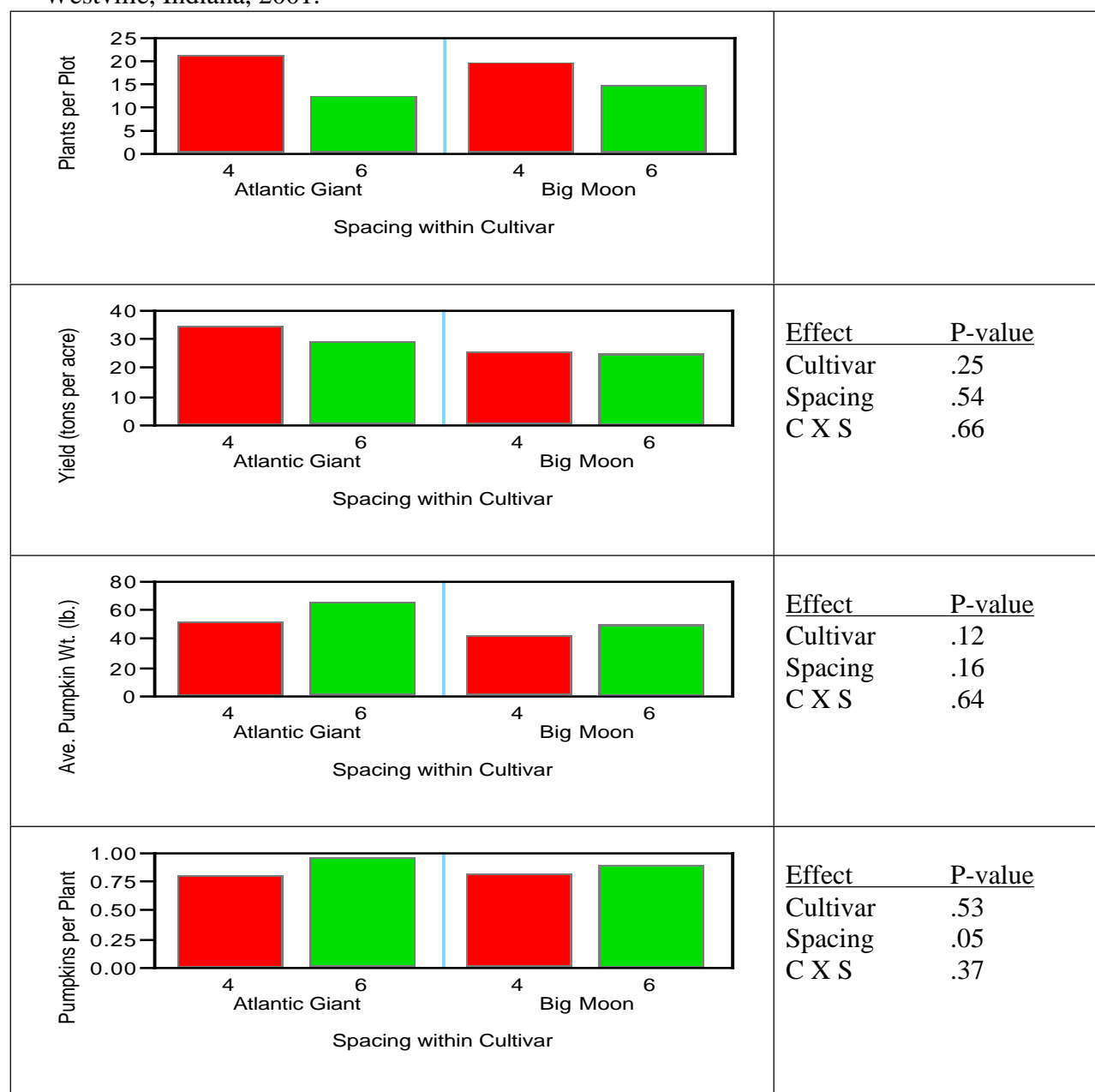
 <p>Plants per Plot</p> <p>2.5 5 2.5 5</p> <p>Gold Rush Trax Field</p> <p>Spacing within Cultivar</p>									
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Figure 2. Yield and yield components of giant pumpkins grown at two in-row spacings, Westville, Indiana, 2001.



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