

Triploid Mini-Watermelon Spacing Trial, 2005

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Introduction

Considerable interest has recently been shown in triploid seedless mini-watermelons, or palm melons. Field plant spacing continues to be a concern to achieve maximum production of melons less than 9 lb in weight. This study was conducted to determine the optimum plant spacing for Mohican mini-watermelons under Kentucky conditions.

Materials and Methods

Mini seedless Mohican (Southwestern Seeds) and seeded watermelon Stars N' Stripes (Seedway Inc.) seeds were sown in Styrofoam plug trays (72 cells/tray) on 29 April. Trays were placed on a bench with bottom heat in a warm greenhouse. Seedlings were thinned to one per cell and the trays moved to a slightly cooler house. On 2 June, the plants were set into raised, plastic-mulched beds using a water wheel setter on Maury silt loam at the University of Kentucky Horticultural Farm in Lexington, KY. Each plot consisting of two rows of plants with the same in-row spacing was 20 feet long. Each of these two rows contained 21, 14, 11, or 9 plants, with 1, 1.5, 2, or 2.5 feet between plants respectively. Between-row spacing was 6 feet, providing 6, 9, 12, or 15 ft² per plant respectively. Plots were replicated four times in a randomized complete block design. Seeded pollinator Stars N' Stripes plants were used as a border on both sides of the planting and one row was planted down the center of the plot with two rows of seedless melons on each side. Drip irrigation was used to irrigate and fertigate as needed.

Eighty three lbs N/A as ammonium nitrate and 150 lbs K/A as potassium chloride were applied preplant. A total of 28 lbs N/A as ammonium nitrate was fertigated over 7 applications throughout the season. A systemic insecticide, Admire 2F, was applied as a drench to the base of each plant soon after planting, at the high rate of 24 fl oz/A. The foliar insecticides Sevin, Capture, and Pounce were also used. Foliar fungicide sprays included Quadris, Nova, Topsin M, and Bravo. Epsom salts foliar sprays were applied twice. The pre-emergent herbicide Curbit was applied between rows before vine coverage. All fruit were weighed individually and sixteen fruit from each replication were measured and evaluated for soluble solids, flavor, hollowheart, and seed number per fruit.

Results and Discussion

In 2003 mini-watermelons were planted using 20 ft² per plant and most of the watermelons were too large or over nine pounds. In 2004 a density of 15 ft² per plant was used with better success. Since most Kentucky growers have a market for seeded watermelons these were used for pollination instead of non productive pollinator plants.

Watermelon quality was excellent because of the dry season. There were no statistical differences in total yield of marketable fruit per acre among the spacing treatments (Table 1). The average number of marketable fruit per acre was greater for the one ft in-row spacing than the 2.5 ft in-row spacing. The average weight per fruit was smaller for the one ft in-row spacing than for the 1.5 ft in-row spacing, which in turn was smaller than the 2 and 2.5 ft in-row spacings. There was no difference in the number of cull fruit harvested at the different plant spacings (data not shown). Fruit external measurements showed a slight trend toward an increase

in melon length with the wider plant spacings.

Fruit percent soluble solids and flavor were both higher for the 1 foot in-row spacing treatments (Table 2). There was no difference in hollowheart between the plant spacing treatments. Average seed number per fruit trended toward being higher for the 2.5 ft in-row spacing and there was no difference in melon rind thickness between treatments.

Table 3 shows fruit size comparisons for the different spacing treatments. The 1 and 1.5 ft in-row spacings had the greatest percentage of melons less than 6 lb in weight. There was no difference in the percentage of melons produced in the 6 to 8 pound category. The percent melons produced in the greater than 8 lb size class was low; 27 percent and 34 percent of the melons fall in this category for the 1 and 1.5 foot spacings, respectively.

The best in row plant spacings to achieve the greatest number of small Mohican watermelons with the best quality are 1 and 1.5 ft on 6 ft row centers. The best plant spacing should be determined by the grower based on seed or plant cost and if a premium will be paid for the smaller melons to justify a higher plant population at the 1 ft in-row spacing.

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**Table 1. Mohican seedless mini-watermelon spacing trial yield and fruit characteristics
Mohican, Lexington, KY, 2005.**

Plant Spacing (ft)	Sq. ft Per Plant	Yield (cwt/A) ¹	Avg. No. Mkt. Fruit/ A	Avg. Wt/Fruit (lbs.)	Outside Measurements	
					Length (in.)	Width (in.)
1 X 6	6	1886 a	28223 a	6.7 c	7.6	7.3
1.5 X 6	9	1637 a	23232 ab	7.0 b	7.5	7.0
2 X 6	12	1783 a	23958 ab	7.4 a	7.8	7.3
2.5 X 6	15	1499 a	20056 b	7.5 a	7.8	7.3

¹Numbers followed by the same letter are not significantly different (Waller-Duncan LSD P=0.05).

**Table 2. Mohican seedless mini-watermelon spacing trial fruit characteristics,
Lexington, KY, 2005.**

Plant Spacing (ft)	Soluble Solids (%)	Flavor (1-5) ¹	Hollow-heart (1-2) ²	Avg. Seed No./fruit	Rind Thickness (in.)
1 X 6	12.8 a	4.8 a	1.9 a	2.3 ab	0.69 a
1.5 X 6	12.0 b	4.3 b	1.8 a	2.0 b	0.63 a
2 X 6	11.9 b	4.3 b	2.0 a	2.9 ab	0.67 a
2.5 X 6	12.1 b	4.3 b	2.0 a	3.4 a	0.66 a

¹Flavor Rating: 1 = poor, 5 = excellent.

²Hollow Heart Rating: 1 = hollow heart, 2 = no hollow heart.

Table 3. Mohican fruit size class evaluation for plant spacing by fruit number.

Plant Spacing	% < 6 lbs ¹	% 6-8 lbs	% ≤ 8 lbs	% > 8 lbs
1 X 6	33 a	40 a	73 a	27 c
1.5 X 6	26 ab	40 a	66 ab	34 bc
2 X 6	20 b	35 a	55 c	44 ab
2.5 X 6	21 b	36 a	57 bc	44 ab

¹Numbers followed by the same letter are not significantly different (Waller-Duncan LSD P=0.05).