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Evaluation of Three Pollinizer Planting Patterns on Seedless Watermelon Yield

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Objective

The purpose of this trial was to determine if a transplanted pollinizer in combination with the same pollinizer directly seeded at transplanting would contribute to higher seedless watermelon yield.

Summary

Transplanted pollinizers and transplanted plus direct seeded pollinizer treatments produced similar yield in fruit number, total fruit weight, and average fruit weight in transplanted Distinction seedless watermelon. Only direct seeding pollinizers with transplanted Distinction produced significantly lower yields in fruit number and total weight but did produce similar individual fruit weight.

Methods

Planting

On May 4, 2015, seed of Distinction seedless watermelon and SP-5 pollinizer were planted into 32-cell transplant trays and placed into a commercial greenhouse. Transplants were set to the field into a plasticulture system on June 4. Beds were 6 inches high with a spacing of 5.5 feet between beds and 6 feet between plants in the row (1,320 plants/acre). A drip irrigation line was inserted in the bed at the time of bed shaping and plastic mulch application.

Trials were planted and analyzed as a completely randomized design with four replications. Plots were six rows wide and 30 feet long (30 plants/plot). There was a 20-foot buffer between each plot, which was planted to crops with similar growth habit but that would not serve as a watermelon pollinizer. Twelve SP-5 pollinizers were interplanted into the plots at a pattern of two/row as all transplants, half as transplants and half as a direct seed (one of each in each row) or as all direct seed. Plants that died or seed that failed to germinate were replanted so the number of plants per plot was maintained as best as possible.

Fertilizer

Prior to bed shaping, 44-0-0, 0-0-64, sulfur and Granubor were broadcast and incorporated at a rate of 75, 330, 27, and 7 pounds per acre, respectively. After planting, liquid 28-0-0 and 0-0-30 were applied through the drip system once a week at a rate of 1 pound nitrogen and 2 pounds potassium (K₂O)/acre/day. Drip fertilization for nitrogen was done the weeks of June 22 and 29, July 6 and 13, and August 10 for a total of 35 lbs./acre post-plant nitrogen. Potassium was applied the weeks of June 22 and 29; July 6, 13, 20, and 27; and August 3, 10, and 17 for a post-plant total of 126 lbs./acre potassium (K₂O).

Pest Control

Weeds between rows were controlled when they were small with Gramoxone[®] applied using a backpack sprayer. Diseases and insects were controlled using commercially recommended practices.

Harvest and data collection

Plots were harvested August 28 and September 8. Data collected included fruit number and fruit weight.

Results

Observations from previous triploid, seedless watermelon plantings interplanted with diploid pollinizers seemed to indicate that when pollinizers flowered and set fruit, their fruit and flower number decreased while the seedless watermelon continued to flower. This trial was designed to determine if direct seeding pollinizers at the same time as transplanting a pollinizer would extend the period when pollen from pollinizer flowers would be available for pollination, thus leading to greater fruit set for the triploid. In this trial, extending the flowering period in this manner did not increase yield in total number or total weight (Table 1).

Transplanted only and transplanted plus direct seeded had similar yields of tons/acre and fruit/acre while the direct seeded only had significantly lower yields compared to the treatments having transplants (Table 1). All three treatments produced similar average fruit weights. This indicates having only transplanted pollinizers is sufficient for good fruit set while only directly seeding pollinizers is not.

Table 1. Effect of three pollinizer treatments on yield of Distinction seedless watermelon pollinated with SP-5 diploid pollinizer at the Southwest Michigan Research and Extension Center, Benton Harbor, Michigan, in 2015. Plant spacing was 6 feet in the row and 5.5 feet between rows (1,320 plants/acre).

Pollinizer Treatment	Tons/acre	Fruit/acre	Average Fruit Weight
Transplants	18.12	2,295	16.8
Transplants + Direct Seed	16.48	2,022	16.3
Direct Seed	13.15	1,564	15.8
lsd .05	2.6	283	ns