Cantaloupe Variety Trial - 2019

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Field experimental design and crop management

Location: Tifton, GA

Entries: 5

Table 1. List of varieties.

Treatment	Variety
1	Athena
2	Samoa
3	Infinite Gold
4	Davinci
5	F-39

Planting date and spacing:

Five-week-old transplants were planted on April 3, 2019. Transplants were planted in black plastic mulch with raised beds 6-inches tall. Beds were set on 6-ft centers with a single row of 22-inch of in-row planting spacing (3967 plants per acre).

Plot size:

Plots were comprised by 10 plants with 4 replication per variety. A total of 20 plots were arranged as a randomized complete block design.

Pest management:

Plastic mulch was fumigated with Pic-clor 60 at the time of application, while insecticides and pest management programs follow the UGA recommendations.

Fertilizer management:

Prior to planting 500 lb of 10-10-10 fertilizer (Rainbow, Agrium) was applied under plastic mulch, followed by a weekly fertigation program with 7-0-7 liquid fertilizer applied at a rate of 12 lb./acre of nitrogen until harvest.

Irrigation management:

After transplant, water was daily applied at an irrigation depth of 0.2-in for a 20 days period to ensure plant establishment. After this point, water was applied according to the crop evapotranspiration.

Harvest

Fruit were harvested 3-times beginning on 20 June and ending on 27 Jun. Fruit were individually weighed and placed in the following groups for boxes:

23 count: 1.5-1.72lb; 18 count 1.73-2.24 lb; 15 count: 2.25-3.00 lb; 12 count: 3.01-3.89 lb; 9 count: 3.90-5.60 lb; 6 count > 5.61 lb

Fruit from a representative harvest were analyzed for firmness, determined using an 8 mm probe with a hand-held firmness tester from 2 locations on 2 melons (4 readings) per replication, total of soluble solids (Brix), obtained from teaspoon sample of flesh from each of the 4 melon subsets from each replicate which was crushed using a hand-held lemon press and read using a hand-held refractometer, rind size, and seed cavity.

Statistical analysis

Statistical analyses were performed using the software R studio v.3.5.1 (RStudio team, 2018). When the *F*-value of an ANOVA was significant, a multiple means comparison was performed using Tukey-Kramer at a *p*-value of 0.05.

Results

There was no significant difference among cantaloupe varieties for total yield; however, there was significant differences for fruit average weight. The highest fruit average weight was measured for Athena, followed by Infinite Gold and Samoa, indicating that Athena, Infinite Gold, and Samoa have heavier fruit but lower number of fruit compared to Davinci and F-39. This was confirmed by the fruit size distribution, in which Davinci had the highest yield for the 15 count, but the lowest for 9 count. The 15 count and 9 count were the only fruit size distribution that were significant different among cantaloupe varieties. Cantaloupe fruit quality

was significantly different among varieties for brix, firmness, and seed cavity. Cantaloupe varieties had the highest brix for Samoa and Davinci, but these varieties did not differ from Infinite Gold and Athena. Infinite Gold and Davinci had the highest firmness, while seed cavity was the highest for Athena and Infinite Gold.

Overall, the cantaloupe varieties Athena, Samoa, Infinite Gold, and Davinci had great performance in 2019 related to yield and fruit quality, while the variety F-39 performed great for yield but not for quality.

Table 1. Total yield and yield per count (ct) of Cantaloupes in the 2019 trial.

Variety	(pounds/acre)							(pounds)
	Yield	23-ct[z]	18-ct	15-ct	12-ct	9-ct	6-ct	Avg. Weight
Athena	48,453 a	235 a	144 a	2,746 b	10,814 a	24,807 a	9,703 a	4.4 a
Samoa	40,546 a	0 a	476 a	7,157 ab	13,611 a	16,904 ab	2,395 a	3.7 ab
Infinite Gold	44,793 a	120 a	559 a	5,691 b	13,741 a	21,794 ab	2,930 a	3.8 ab
Davinci	38,423 a	474 a	3,315 a	27,174 a	4,625 a	1,537 c	1,296 a	2.6 c
F-39	37,565 a	165 a	2,699 a	7,911 ab	13,611 a	10,490 bc	2,898 a	3.4 b
p value	0.5269	0.1181	0.1862	0.0175	0.0011	0.1773	<0.001	<0.001

[z]23 count: 1.5-1.72lb; 18 count 1.73-2.24 lb; 15 count: 2.25-3.00 lb; 12 count: 3.01-3.89 ls; 9 count: 3.90-5.60 lb; 6 count >5.61 lb

[y]Values in the same column followed by the same letter(s) are not significantly different according to Tukey-Kramer test (P<0.05).

Table 2. Quality of Cantaloupes in the 2019 trial.

Variety	Soluble Solids (Brix)	Firmness[y]	Rind	Seed Cavity:Melon
	(%)	(lbf)	(inches)	
Athena	11.5 ab	4.5 bc	0.24 a	0.44 a
Samoa	12.5 a	5.7 ab	0.28 a	0.41 ab
Infinite Gold	11.6 ab	7.5 a	0.28 a	0.42 a
Davinci	12.4 a	8.6 a	0.27 a	0.36 b
F-39	9.6 b	2.3 c	0.29 a	0.39 ab
p value	0.0086	<0.0001	0.8494	0.0034

[z]Values in the same column followed by the same letter(s) are not significantly different according Tukey-Kramer test (P<0.05).

[y]8-mm hand held probe.