

2021 Cantaloupe Variety Evaluation in Indiana

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Introduction

Indiana ranks sixth in cantaloupe production in the US. A total of 1,800 acres of cantaloupes were planted in Indiana with a production value of \$8.6 million in 2018 (USDA 2021). Melon produced in Indiana is primarily eastern-type cantaloupes. Traditional eastern-type cantaloupes have less pronounced netting, larger fruit size, softer flesh and shorter shelf life compared with western-type cantaloupes. They are harvested at quarter-slip to full-slip stage, and require frequent harvest. Recently, extended shelf life varieties have been developed and are becoming attractive. This variety trial included 11 eastern-type cantaloupes and extended shelf-life cantaloupes. Yield and fruit quality were evaluated.

Materials and Methods

Cantaloupe seeds were planted in 50-cell black seeding flats filled with a peat-based potting media on April 14, 2021. Transplants were grown in greenhouses at Southwest Purdue Agricultural Center. Seedlings were transplanted in the field on May 14. Soils of the experimental fields are sandy loam with 1.3% organic matter. Fertilizers at a rate of 300 lb/acre urea (46-0-0), 200 lb/acre potash (0-0-60), 100 lb/acre AMS (21-0-0-24), 7 lb/acre boron 14.3%, and 10 lb/acre Zinc 10% LS were pre-plant broadcast applied. Plants were grown on raised beds covered with black plastic mulch. Drip tape with a 12-inch emitter spacing and a flow rate of 0.22 gpm/100 feet were used for irrigation. At transplant, each seedling received approximately one cup of starter fertilizer solution (Miracle-Gro[®] 20-20-20, 4.7 grams per gallon water).

A randomized complete block design with three replications was used for the experiment. The experimental plot was comprised of one 25-ft bed with 10 melon plants on 2.5 ft in-row spacing. The beds were spaced on 6 ft centers.

Herbicide Dual Magnum[®] was applied in row middles before planting. Disease and insect pests were managed by scouting and using recommendations from the Melcast (melcast.info) and the Midwest Vegetable Production Guide for Commercial Growers (Phillips et al, 2021). Insecticide Admire Pro[®] was applied in transplant water for controlling cucumber beetles. Fungicides Initiate[®] 720, Aprovia Top[®], Ranman[®], Luna Sensation[®], Inspire Super[®], Cabrio[®], Quadris Top[®] and Zampro[®] were used to control foliar diseases. Harvests were conducted on July 14, 16, 19, 21, 23, 26, 28 and 30. Fruit were weighed individually and separated as marketable and culls. Three fruit of each variety per replication were collected for fruit quality measurement. Fruit size, seed cavity size, total soluble solids, and flesh firmness were recorded.

Analysis of variance was performed using JMP Pro 16. Fisher's least significant difference test ($\alpha = 0.05$) was conducted for multiple comparisons of yields; 95% confidence intervals were calculated for quality parameters.

Results and Discussion

Eleven cantaloupe varieties were evaluated in the trial. Variety names and seed sources are provided in Table 1.

Marketable yield of the varieties ranged from 57,493 lbs/acre (Astound) to 23,079 lbs/acre (MS7350), similar range as the yields in previous years (Table 2). Top yielding varieties were Astound, Aphrodite (51,422 lbs/acre), Damaris (49,879 lbs/acre) and Accolade (47,006 lbs/acre) (Table 2). Variety Heidi (MS7350) had a high yield in 2020, but its yield was the lowest in 2021.

Varieties Aphrodite and Heidi had the largest fruit size. Average fruit weights were 7.84 lb and 7.24 lb respectively. HMC458996 also had relatively larger fruit, with average fruit weight 6.86 lb (Table 2).

Flesh firmness varied significantly among varieties (Table 3). Aphrodite and Athena had the lowest value of flesh firmness, followed by VM18011260. Astound, Accolade, Sun Pac, HMC458995 and HMC 458996 had the similar values of flesh firmness, ranked in the middle. Damaris (ME8892), Emperador, and Heidi (MS7350) had the highest values of flesh firmness. Total soluble solids were similar among the varieties (Table 3).

References

Phillips, B. et al., 2021. Midwest vegetable production guide for commercial growers 2021. <https://mdc.itap.purdue.edu/item.asp?Item_Number=ID-56>.

USDA, 2021. National Agricultural Statistics Service. Vegetables 2020 Summary. <https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Vegetables/index.php>.

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Table 1. Variety name and seed source of cantaloupe varieties evaluated at the Southwest Purdue Agricultural Center in Vincennes, IN in 2021.

Variety	Seed Source
Aphrodite	SWPAC
Athena	SWPAC
Heidi (MS7350)	Syngenta
Damaris (ME8892)	Syngenta
Astound	Syngenta
Accolade	Syngenta
HMC458995	HM Clause
HMC458996	HM Clause
Sun Pac	HM Clause
Emperador F1	PureLine seeds
VM18011260	US Agriseeds









Table 2. Yield and average fruit weight of cantaloupe varieties evaluated at the Southwest Purdue Agricultural Center in Vincennes, IN in 2021.









Variety	Marketable yield		Total Yield		Average fruit weight (lb)
	Weight (lbs) per acre	Fruit no. per acre	Weight (lbs) per acre	Fruit no. per acre	
Astound	57,493 a	9,099 a	58,186 a	9,293 a	6.34 cd
Aphrodite	51,422 ab	6,582 bcd	54,851 ab	7,066 bc	7.84 a
Damaris (ME8892)	49,879 ab	7,647 ab	55,065 ab	8,712 ab	6.48 bcd
Accolade	47,006 abc	7,647 ab	47,728 abc	7,744 abc	6.16 cd
Athena	43,2492 bc	6,969 bc	45,290 bc	7,454 abc	6.20 cd
VM18011260	39,965 bc	7,066 bc	47,097 abc	8,712 ab	5.72 de
HMC458996	37,882 cd	5,517 cde	39,390 c	5,905 cd	6.86 bc
HMC458995	35,824 cde	5,614 cde	39,098 c	6,292 cd	6.40 cd
Sun Pac	26,736 def	4,549 ef	26,736 d	4,550 de	5.89 de
Emperador F1	24,781 ef	4,743 def	24,781 d	4,743 de	5.24 e
Heidi (MS7350)	23,079 f	3,291 f	25,950 d	3,978 e	7.24 ab

Table 3. Fruit size, seed cavity size, firmness and total soluble solids of cantaloupe varieties evaluated at the Southwest Purdue Agricultural Center in Vincennes, IN in 2021.

Variety	Length (cm)		Width (cm)		Seed cavity length (cm)		Seed cavity width (cm)		Firmness		Total soluble solids	
	Mean	95% CI*	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Aphrodite	21.2	(20.2,22.2)	20.3	(19.5,21.2)	14.7	(13.7,15.8)	9.5	(9.0,10.0)	3.5	(2.7,4.2)	10.2	(9.7,10.6)
HMC458995	20.2	(19.3,21.2)	17.6	(16.9,18.4)	13.2	(12.5,13.8)	7.4	(7.1,7.6)	5.6	(5.1,6.2)	10.0	(9.2,10.9)
HMC458996	21.8	(20.8,22.8)	18.2	(17.3,19.1)	14.3	(13.4,15.3)	8.0	(7.6,8.5)	5.8	(4.9,6.8)	9.1	(8.1,10.2)
Sun Pac	19.0	(18.1,20.0)	17.5	(16.8,18.1)	12.6	(11.5,13.7)	7.4	(7.1,7.8)	5.0	(4.3,5.7)	10.0	(8.5,11.4)
Heidi (MS7350)	20.5	(19.5,21.5)	17.7	(16.7,18.7)	13.2	(12.4,14.1)	6.9	(6.2,7.5)	6.4	(5.8,7.0)	10.6	(9.3,11.8)
Damaris (ME8892)	19.9	(18.9,20.9)	18.0	(16.7,19.4)	12.1	(11.0,13.2)	7.5	(6.9,8.1)	7.3	(6.0,8.5)	9.6	(9.0,10.2)
Astound	20.2	(19.2,21.2)	18.5	(17.9,19.4)	12.9	(12.2,13.6)	7.3	(6.6,8.0)	5.0	(4.0,5.9)	9.7	(9.3,10.0)
Accolade	20.1	(19.1,21.1)	18.7	(17.8,19.6)	12.8	(11.6,13.9)	7.5	(7.0,8.1)	5.2	(4.3,6.1)	10.4	(9.9,10.8)
Emperador F1	18.0	(17.1,19.0)	16.3	(15.7,16.9)	10.8	(9.9,11.6)	6.2	(5.4,6.9)	6.6	(6.0,7.1)	10.3	(9.0,11.6)
VM18011260	19.0	(18.0,20.0)	17.5	(17.1,18.0)	11.9	(11.0,12.8)	5.8	(5.4,6.2)	4.4	(4.1,4.8)	10.7	(9.9,11.5)
Athena	20.2	(19.2, 21.2)	18.2	(16.9,19.5)	13.1	(11.4,14.8)	8.0	(7.4,8.7)	3.8	(3.1,4.4)	10.1	(9.7,10.6)

*CI: confidence interval

<p>Astound</p>		
<p>Aphrodite</p>		
<p>Damaris (ME8892)</p>		
<p>Accolade</p>		

<p>Athena</p>		
<p>VM1801126 0</p>		
<p>HMC458996</p>		
<p>HMC458995</p>		

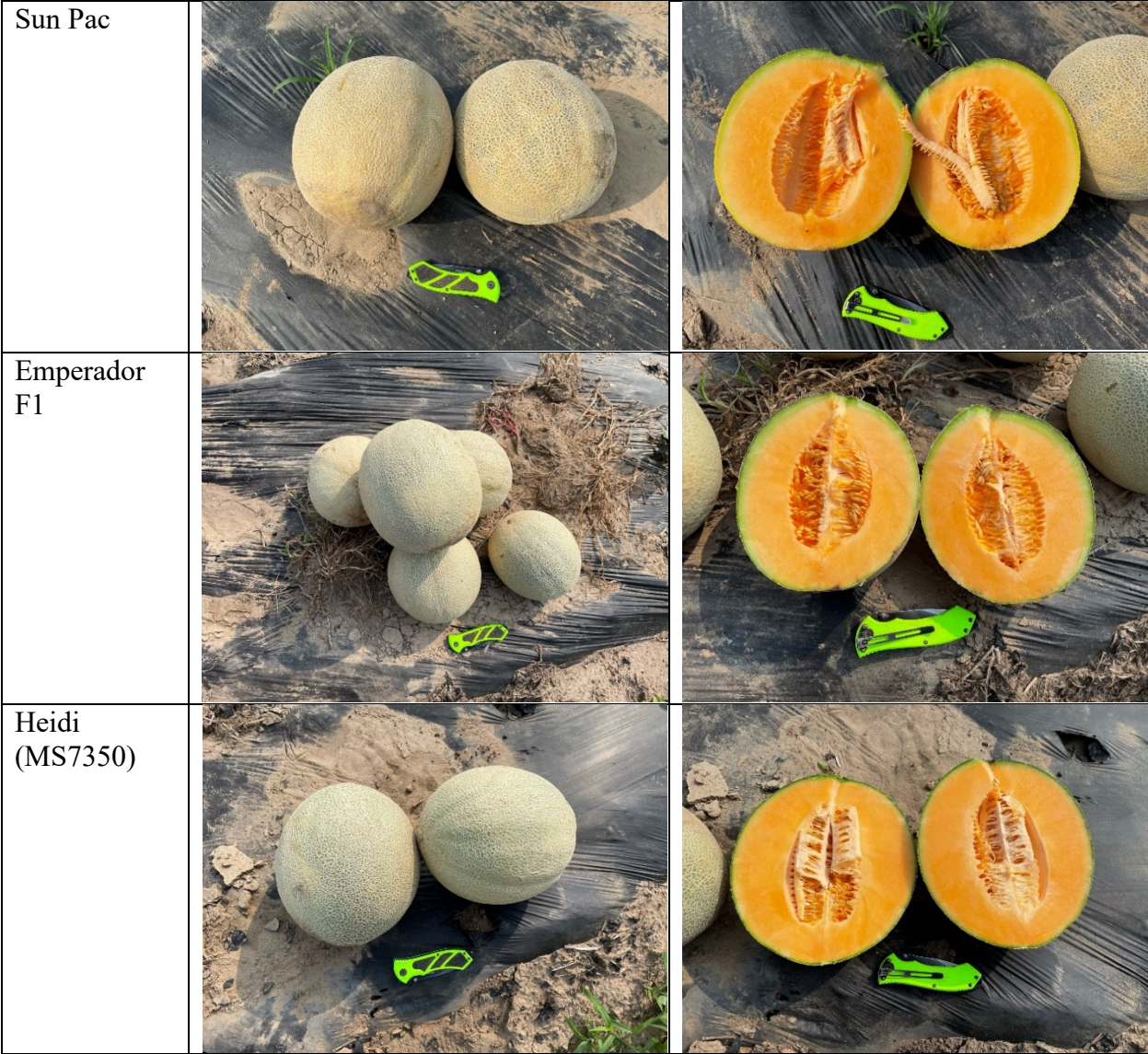


Figure 2. Exterior and interior of cantaloupe varieties evaluated at the Southwest Purdue Agricultural Center in Vincennes, IN in 2021.