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Introduction

Cantaloupe production in Indiana ranked fifth in planted area in the U.S. in 2017. A total of 1,800 acres of cantaloupe were planted with a value of \$8.16 million (USDA 2018). Melon produced in Indiana is primarily eastern type cantaloupe. Specialty melons are gaining interest among small-sized growers as a way to differentiate the product in the local food market.

Materials and Methods

Twenty-one melon (*Cucumis melo*) varieties including eastern type cantaloupe, harper type melon, green-flesh netted melon, casaba melon, honeydew melon, and Tuscan melon were evaluated in the trial. Seed sources and melon descriptions are provided in Table 1.

Seeds of all the varieties were planted into 50-cell black seeding flats (T.O. Plastics, Clearwater, MN) on April 18, 2018, using a peat-based potting media (Metro-Mix® 360, a mixture of sphagnum peat moss, coarse perlite, bark ash, starter fertilizer, and dolomite). Transplants were produced in a greenhouse at the Southwest Purdue Agricultural Center (SWPAC). Plants were transplanted to the field on May 14, 2018.

The soil type of the experimental field is sandy loam with 0.8 percent organic matter. Soybean was previously grown in the field in 2017. A randomized complete block design with three blocks and 20 plants per variety per plot was used in the study. Plants were grown in raised beds covered with a 4 ft wide black plastic mulch (Visqueen 4020). Drip tape with a 12-inch emitter spacing and flow rate of 0.22 gpm/100 ft was used for irrigation. Bed spacing and in-row spacing were 6 and 2.5 ft, respectively. Fertilizers at the rate of 250 lb/acre urea (46-0-0), 100 lb/acre potash (0-0-60), 100 lb/acre diammonium phosphate (18-46-0), 200 lb/acre pelletized lime, 100 lb/acre K-Mag granular (0-0-22-11-22), 7 lb/acre boron 14.3% and 10 lb/acre Zinc 10% LS were pre-plant broadcast applied. During transplanting, each plant received approximately one cup of starter fertilizer solution (Miracle-Gro, 4.7 grams per gallon water).

Diseases were managed by scouting and using recommendations from Melcast (melcast.info) and the *Midwest Vegetable Production Guide for Commercial Growers* (Egel et al., 2018). Bravo®, Luna Experience® and Cabrio® were rotationally sprayed for disease control. Admire Pro® was applied through transplant water at 4.3 fl. oz per acre rate. Permethrin® was applied on 1 June at 8.0 fl. oz/A and Warrior® applied on 14 June at 1.25 oz/A.

Disease severity of bacterial wilt was evaluated on 18 Jun, 25 Jun, 2 Jul, 8 Jul and 11 Jul using the Horsfall-Barratt rating system. Area under the disease progress curve (AUDPC) was calculated by trapezoidal integration.

Yield was assessed three times a week from July 5 to July 27. Fruit was weighed individually. Twelve fully ripe fruit from each variety were collected during peak harvest for the evaluation of

fruit quality attributes. Fruit size, seed cavity size, total soluble solids, and flesh firmness were recorded. Data analysis of variance was performed using the Proc Anova procedure of SAS. Fisher's least significant difference test ($\alpha = 0.05$) was conducted for multiple comparisons of different measurements among melon varieties.

Results and Discussion

A flush of striped cucumber beetles was observed at the end of May. Bacterial wilt (*Erwinia tracheiphila*) symptom was first noticed in middle June. Varieties with relatively low AUDPC values included the western-shipper cantaloupe 'F39' and eastern-type cantaloupes 'Athena' and 'Aphrodite' (Table 2). They had less than 10% plant wilt at the last disease rating. Variety Honeydew 252 and HD 150 were the most susceptible varieties to bacterial wilt. About 50% plant wilted at the last disease rating.

Varieties that had the highest marketable yields were Accolade, Athena, Astound and Aphrodite. No significant difference were detected among the four eastern type cantaloupe varieties. USAM 14836, F39, Infinite Gold and USAM 16141 also had relatively higher marketable yield. The trend for total yields among varieties were similar to that of the marketable yield (Table 3).

Variety Red Aroma, USAM 14836, Sheba, Miracle, Fondness, and Flourish had outstanding fruit quality with sugar content significantly higher than that of the eastern-type cantaloupes (Table 4). Miracle and Sheba are green flesh netted melons, while the others have orange flesh (Figure 1). Except USAM 14836 that showed a high yield potential and partial resistance to bacterial wilt, yield potentials were relatively low for the other aforementioned high quality melon varieties. Ideal melon size largely depends on melon type and market. Among the evaluated varieties, OC 164, HD 150 and Golden Aroma were significantly larger than the other varieties. Average fruit weight was above 7 lb. Variety Fondness, Da Vinci and Red Aroma were the smallest, with average fruit weight less than 4 lb (Table 4).

References

Egel, D., R. Foster, E. Maynard, R., et al. 2018. *Midwest Vegetable Production Guide for Commercial Growers*, 2018 (ID-56). Purdue University.

USDA, 2018. National Agricultural Statistics Service. Vegetables 2017 Summary. <<http://usda.mannlib.cornell.edu/usda/current/VegeSumm/VegeSumm-02-13-2018.pdf>>.

Acknowledgements

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Table 1. Varieties, melon descriptions, and seed sources of varieties in the 2018 melon variety trial in Indiana.

Variety	Melon Description	Seed Source
Accolade	Eastern cantaloupe	Southwest Purdue Agricultural Center
Aphrodite	Eastern cantaloupe	Southwest Purdue Agricultural Center
Astound	Eastern cantaloupe	Southwest Purdue Agricultural Center
Athena	Eastern cantaloupe	Southwest Purdue Agricultural Center
Dainty	Non-slip orange fresh cantaloupe	Known-You Seed
Da Vinci	Tuscan type	Texas A&M University
F39	Western shipper cantaloupe	Texas A&M University
Flourish	Non-slip orange fresh cantaloupe	Known-You Seed
Fondness	Non-slip orange fresh cantaloupe	Known-You Seed
Golden Aroma	Non-slip hami melon	Known-You Seed
HD 150	Experimental honeydew	Texas A&M University
Honeydew 252	Commercial honeydew	Texas A&M University
Infinite Gold	Harper	Texas A&M University
Miracle	Non-slip netted yellow-green fresh melon	Known-You Seed
OC 164	Orange casaba	Texas A&M University
Prity	Non-slip sweet & sour melon	Known-You Seed
Red Aroma	Non-slip orange fresh cantaloupe	Known-You Seed
Sheba	Non-slip netted green fresh melon	Known-You Seed
USAM 14836	Harper	US Agriseeds
USAM 14837	Harper	US Agriseeds
USAM 16141	Harper	US Agriseeds

Table 2. Severity of bacterial wilt (*Erwinia tracheiphila*) on melon varieties as measured by the Area Under the Disease Progress Curve (AUDPC) in the 2018 variety trial in Indiana.

Variety	AUDPC	
Accolade	205.5	ef ^z
Aphrodite	140.6	f
Astound	208.5	ef
Athena	142.5	f
Dainty	223.0	ef
Da Vinci	619.3	abc
F39	102.5	f
Flourish	230.9	def
Fondness	434.1	bcdef
Golden Aroma	409.7	bcdef
HD 150	764.3	ab
Honeydew 252	883.2	a
Infinite Gold	353.7	cdef
Miracle	617.3	abc
OC 164	514.4	abcde
Prity	436.4	bcdef
Red Aroma	240.9	def
Sheba	597.8	abcd
USAM 14836	191.1	ef
USAM 14837	239.7	cdef
USAM 16141	236.2	edf

^zMeans within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

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Table 3. Marketable and total yield of melon varieties in the 2018 melon variety trial in Indiana.



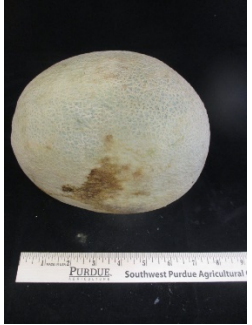

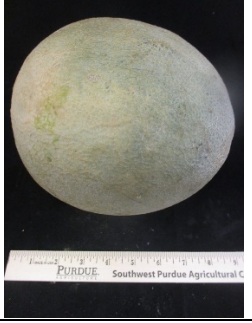



Variety	Marketable fruit weight (lb) per acre		Marketable fruit number per acre		Total fruit weight (lb) per acre		Total fruit number per acre	
Accolade	41,324	a ^z	7,405	abc	42,926	a	7,744	bc
Aphrodite	39,245	a	5,905	bcdef	41,320	ab	6,340	de
Astound	39,576	a	6,921	abcd	41,400	ab	7,356	bcde
Athena	39,949	a	7,792	a	41,344	ab	8,179	ab
Dainty	24,794	bcde	5,033	efgh	33,446	cdefg	7,356	bcde
Da Vinci	20,031	cdef	5,856	bcdef	26,291	ghi	8,131	ab
F39	32,339	ab	8,179	a	36,134	abcde	9,147	a
Flourish	28,438	bc	5,130	defgh	35,018	bcdef	6,776	cde
Fondness	18,471	def	5,517	defg	23,875	i	8,276	ab
Golden Aroma	21,589	cdef	2,652	ijk	32,127	cdefg	4,958	f
HD 150	15,209	ef	2,323	jk	21,193	i	4,211	fg
Honeydew 252	26,237	bcd	3,969	ghij	28,650	efghi	4,840	f
Infinite Gold	31,888	ab	6,388	abcde	36,261	abcd	7,889	abc
Miracle	18,667	def	4,501	fghi	28,089	fhji	7,937	abc
OC 164	18,141	def	2,081	k	21,491	i	3,049	g
Prity	19,578	cdef	3,339	hijk	26,497	ghi	4,958	f
Red Aroma	25,415	bcd	6,437	abcde	30,657	defgh	8,518	ab
Sheba	12,404	f	2,565	jk	23,444	hi	6,292	e
USAM 14836	34,248	ab	7,453	ab	37,862	abcd	8,421	ab
USAM 14837	26,565	bcd	5,420	defg	34,223	bcdef	7,647	bc
USAM 16141	31,831	ab	5,614	cdefg	39,605	abc	7,598	bcd

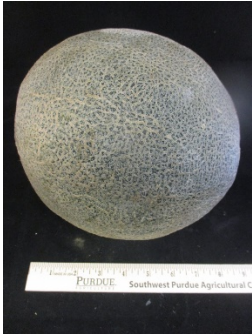



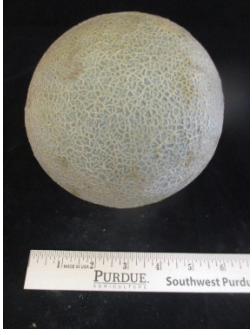


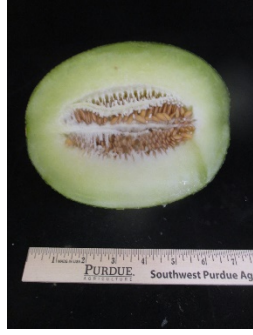
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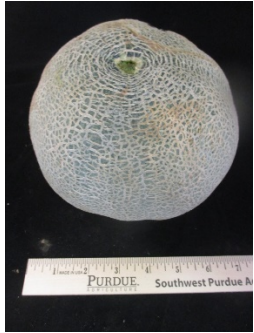







Table 4. Average fruit weight and fruit quality parameters of melon varieties in the 2018 variety trial in Indiana.





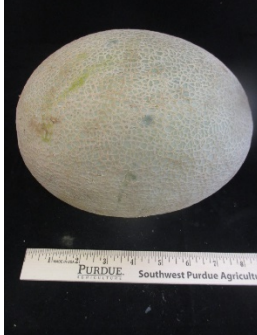
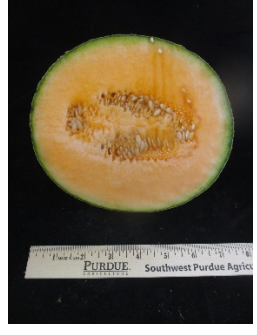


Variety	Average fruit weight (lb)		Length (cm)		Width (cm)		Seed cavity length (cm)		Seed cavity width (cm)		Firmness (lbs-force)		Total soluble solids (°Brix)	
Accolade	5.6	de ^z	19.6	d	17.9	defg	12.0	cdef	7.5	def	6.8	abc	10.0	efg
Aphrodite	6.6	c	20.5	cd	19.7	b	13.1	c	9.6	ab	5.9	de	9.6	fg
Astound	5.7	v	19.2	de	18.0	cdefg	12.1	cdef	7.4	def	6.9	abc	9.7	fg
Athena	5.1	efg	19.2	de	17.9	defg	12.3	cdef	8.6	bcd	4.3	h	10.1	efg
Dainty	4.9	g	14.7	jk	16.1	hijkl	8.1	k	7.0	ef	5.9	de	10.9	bcdef
Da Vinci	3.4	jk	17.0	ghi	14.0	n	10.8	fghi	6.8	efg	4.8	gh	10.6	cdefg
F39	4.0	ij	16.0	hij	14.8	lmn	10.2	hi	5.7	gh	3.1	i	9.4	fg
Flourish	5.5	def	18.0	efg	17.3	efgh	11.1	efgh	7.8	de	5.9	de	11.8	abcd
Fondness	3.3	k	13.5	k	14.6	mn	8.5	jk	7.4	def	7.5	a	12.0	abc
Golden Aroma	7.3	b	21.3	bc	18.3	cde	12.7	cd	7.5	def	4.9	gh	11.4	abcde
HD 150	7.2	b	22.5	b	18.8	bcd	14.6	b	9.1	abc	5.8	def	9.8	fg
Honeydew 252	6.6	c	20.3	cd	18.5	bcde	12.1	cdef	8.4	cd	5.3	efg	10.0	efg
Infinite Gold	5.0	fg	19.5	de	16.9	ghij	12.8	cd	7.1	ef	7.0	ab	10.1	efg
Miracle	4.1	hi	15.3	j	15.7	jklm	9.5	ijk	6.9	ef	5.0	ghf	12.3	ab
OC 164	8.8	a	25.4	a	21.1	a	17.7	a	10.1	a	6.2	cd	9.3	g
Prity	5.8	d	18.9	def	19.2	bc	11.9	cdefg	10.2	a	6.0	de	10.1	efg
Red Aroma	3.9	ij	15.7	ij	15.1	lmn	10.0	hi	7.2	ef	5.9	de	12.8	a
Sheba	4.8	g	17.2	ghi	15.3	klmn	10.5	ghi	6.7	efg	4.6	gh	12.3	ab
USAM 14836	4.6	gh	17.5	fgh	16.4	hijk	11.4	defgh	6.7	efg	6.5	bcd	12.5	a
USAM 14837	4.9	g	19.3	de	15.9	ijklm	12.6	cde	5.4	h	6.9	abc	10.0	efg
USAM 16141	5.7	d	20.5	cd	17.1	fghi	12.7	cd	6.5	fgh	5.0	gfh	10.4	defg

^zMeans within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

<p>USAM 14836</p>	 <p>A whole cantaloupe melon with a light green, netted rind. A ruler is placed below it for scale.</p>	 <p>A cross-section of a cantaloupe melon showing a bright orange, ribbed flesh and a central cavity with seeds. A ruler is placed below it for scale.</p>
<p>USAM 14837</p>	 <p>A whole cantaloupe melon with a light green, netted rind. A ruler is placed below it for scale.</p>	 <p>A cross-section of a cantaloupe melon showing a bright orange, ribbed flesh and a central cavity with seeds. A ruler is placed below it for scale.</p>
<p>USAM 16141</p>	 <p>A whole cantaloupe melon with a light green, netted rind. A ruler is placed below it for scale.</p>	 <p>A cross-section of a cantaloupe melon showing a bright orange, ribbed flesh and a central cavity with seeds. A ruler is placed below it for scale.</p>
<p>Prity</p>	 <p>A whole cantaloupe melon with a bright green, netted rind. A ruler is placed below it for scale.</p>	 <p>A cross-section of a cantaloupe melon showing a pale, almost white, ribbed flesh and a central cavity with seeds. A ruler is placed below it for scale.</p>

<p>Golden Aroma</p>	 <p>A whole Golden Aroma melon with a light green, netted rind. A ruler below it shows the melon is approximately 4 inches in diameter. The ruler has "PURDUE Southwest Purdue Agricultural Center" printed on it.</p>	 <p>A cross-section of a Golden Aroma melon showing the orange flesh and a central cavity with seeds. A ruler below it shows the slice is about 4 inches wide. The ruler has "PURDUE Southwest Purdue Agricultural Center" printed on it.</p>
<p>Flourish</p>	 <p>A whole Flourish melon with a light green, netted rind. A ruler below it shows the melon is approximately 4 inches in diameter. The ruler has "PURDUE Southwest Purdue Agricultural Center" printed on it.</p>	 <p>A cross-section of a Flourish melon showing the orange flesh and a central cavity with seeds. A ruler below it shows the slice is about 4 inches wide. The ruler has "PURDUE Southwest Purdue Agricultural Center" printed on it.</p>
<p>Red Aroma</p>	 <p>A whole Red Aroma melon with a light green, netted rind. A ruler below it shows the melon is approximately 4 inches in diameter. The ruler has "PURDUE Southwest Purdue Agricultural Center" printed on it.</p>	 <p>A cross-section of a Red Aroma melon showing the orange flesh and a central cavity with seeds. A ruler below it shows the slice is about 4 inches wide. The ruler has "PURDUE Southwest Purdue Agricultural Center" printed on it.</p>
<p>Sheba</p>	 <p>A whole Sheba melon with a light green, netted rind. A ruler below it shows the melon is approximately 4 inches in diameter. The ruler has "PURDUE Southwest Purdue Agricultural Center" printed on it.</p>	 <p>A cross-section of a Sheba melon showing the orange flesh and a central cavity with seeds. A ruler below it shows the slice is about 4 inches wide. The ruler has "PURDUE Southwest Purdue Agricultural Center" printed on it.</p>

<p>Dainty</p>	 <p>A whole, round melon with a light green, netted rind. A ruler below it shows the size, with the text "PURDUE Southwest Purdue" visible.</p>	 <p>A cross-section of a melon showing a thick, green rind, a thick layer of orange-red flesh, and a central cavity with many small, light-colored seeds. A ruler below it shows the size, with the text "PURDUE Southwest Purdue" visible.</p>
<p>Miracle</p>	 <p>A whole, round melon with a light green, netted rind. A ruler below it shows the size, with the text "PURDUE Southwest Purdue" visible.</p>	 <p>A cross-section of a melon showing a thick, green rind, a thick layer of light green flesh, and a central cavity with many small, light-colored seeds. A ruler below it shows the size, with the text "PURDUE Southwest Purdue" visible.</p>
<p>Fondness</p>	 <p>A whole, round melon with a light green, netted rind. A ruler below it shows the size, with the text "PURDUE Southwest Purdue" visible.</p>	 <p>A cross-section of a melon showing a thick, green rind, a thick layer of orange-red flesh, and a central cavity with many small, light-colored seeds. A ruler below it shows the size, with the text "PURDUE Southwest Purdue" visible.</p>
<p>F39</p>	 <p>A whole, round melon with a light green, netted rind. A ruler below it shows the size, with the text "PURDUE Southwest Purdue" visible.</p>	 <p>A cross-section of a melon showing a thick, green rind, a thick layer of orange-red flesh, and a central cavity with many small, light-colored seeds. A ruler below it shows the size, with the text "PURDUE Southwest Purdue" visible.</p>

<p>OC 164</p>	 <p>A whole, round, light green melon with a slightly textured rind. A ruler is placed below it for scale, showing it is approximately 10 cm wide. The ruler has 'PURDUE Southwest Purdue Agricultural Center' printed on it.</p>	 <p>A cross-section of the OC 164 melon, showing a pale green outer rind, a thick, light green flesh, and a central cavity containing several seeds. A ruler is placed below it for scale, showing it is approximately 10 cm wide. The ruler has 'PURDUE Southwest Purdue Agricultural Center' printed on it.</p>
<p>HD 150</p>	 <p>A whole, round, light green melon with a smooth rind. A ruler is placed below it for scale, showing it is approximately 10 cm wide. The ruler has 'PURDUE Southwest Purdue Agricultural Center' printed on it.</p>	 <p>A cross-section of the HD 150 melon, showing a pale green outer rind, a thick, light green flesh, and a central cavity containing several seeds. A ruler is placed below it for scale, showing it is approximately 10 cm wide. The ruler has 'PURDUE Southwest Purdue Agricultural Center' printed on it.</p>
<p>Infinite Gold</p>	 <p>A whole, round, light green melon with a smooth rind. A ruler is placed below it for scale, showing it is approximately 10 cm wide. The ruler has 'PURDUE Southwest Purdue Agricultural Center' printed on it.</p>	 <p>A cross-section of the Infinite Gold melon, showing a pale green outer rind, a thick, light green flesh, and a central cavity containing several seeds. A ruler is placed below it for scale, showing it is approximately 10 cm wide. The ruler has 'PURDUE Southwest Purdue Agricultural Center' printed on it.</p>
<p>Honeydew 252</p>	 <p>A whole, round, light green melon with a smooth rind. A ruler is placed below it for scale, showing it is approximately 10 cm wide. The ruler has 'PURDUE Southwest Purdue Agricultural Center' printed on it.</p>	 <p>A cross-section of the Honeydew 252 melon, showing a pale green outer rind, a thick, light green flesh, and a central cavity containing several seeds. A ruler is placed below it for scale, showing it is approximately 10 cm wide. The ruler has 'PURDUE Southwest Purdue Agricultural Center' printed on it.</p>

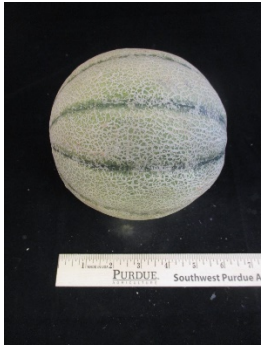





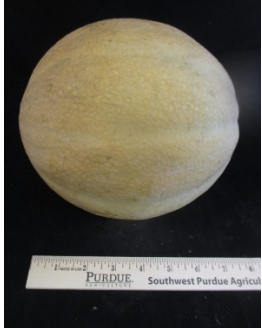

<p>Da Vinci</p>	 <p>A whole, round Da Vinci melon with a green and white mottled rind. A ruler is placed below it for scale, showing the text "PURDUE Southwest Purdue A".</p>	 <p>A cross-section of a Da Vinci melon showing a bright orange-red flesh and a central cavity with seeds. A ruler is placed below it for scale, showing the text "PURDUE Southwest Purdue A".</p>
<p>Athena</p>	 <p>A whole, round Athena melon with a smooth, light yellowish-tan rind. A ruler is placed below it for scale, showing the text "PURDUE Southwest Purdue Agricultural".</p>	 <p>A cross-section of an Athena melon showing a bright orange flesh and a central cavity with seeds. A ruler is placed below it for scale, showing the text "PURDUE Southwest Purdue Agricultural".</p>
<p>Aphrodite</p>	 <p>A whole, round Aphrodite melon with a smooth, light yellowish-tan rind. A ruler is placed below it for scale, showing the text "PURDUE Southwest Purdue Agricultural Center".</p>	 <p>A cross-section of an Aphrodite melon showing a bright orange flesh and a central cavity with seeds. A ruler is placed below it for scale, showing the text "PURDUE Southwest Purdue Agricultural Center".</p>
<p>Astound</p>	 <p>A whole, round Astound melon with a smooth, light yellowish-tan rind. A ruler is placed below it for scale, showing the text "PURDUE Southwest Purdue Agricul".</p>	 <p>A cross-section of an Astound melon showing a bright orange flesh and a central cavity with seeds. A ruler is placed below it for scale, showing the text "PURDUE Southwest Purdue Agri".</p>



Figure 1. Exterior and interior of melon varieties in the 2018 variety trial in Indian.