

2020

Cantaloupe and Specialty Melon Variety Evaluation in Indiana

Wenjing Guan

Purdue University, guan40@purdue.edu

Dennis Nowaskie

Southwest Purdue Agriculture Center, nowaskie@purdue.edu

Petrus Langenhoven

Purdue University, plangenh@purdue.edu

Daniel S. Egel

egel@purdue.edu

Follow this and additional works at: <https://docs.lib.purdue.edu/mwvtr>



Part of the [Agriculture Commons](#), and the [Horticulture Commons](#)

Recommended Citation

Guan, Wenjing; Nowaskie, Dennis; Langenhoven, Petrus; and Egel, Daniel S., "Cantaloupe and Specialty Melon Variety Evaluation in Indiana" (2020). *Midwest Vegetable Trial Reports*. Paper 13.
<https://docs.lib.purdue.edu/mwvtr/13>

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries.
Please contact epubs@purdue.edu for additional information.

Cantaloupe and Specialty Melon Variety Evaluation in Indiana

Wenjing Guan¹, Dennis Nowaskie, Petrus Langenhoven, Daniel S. Egel,

¹Southwest Purdue Agricultural Center, Vincennes, IN, 47591, guan40@purdue.edu

Thirty melon varieties including traditional eastern-type cantaloupe, non-slip muskmelon, honeydew, and other specialty type melons were evaluated in a field trial at the Southwest Purdue Agricultural Center (SWPAC) in Vincennes, IN in 2019. Variety names, seed sources and melon types are provided in Table 1.

Seeds were planted in 50-cell black seeding flats filled with a peat-based potting media on April 16. Transplants were grown in greenhouses at SWPAC. Seedlings were transplanted in the field on May 14.

Soil type of the experimental field is a sandy loam with 1.0 percent organic matter. Plants were grown on raised beds covered with black plastic mulch. Drip tape with a 12-inch emitter spacing and 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[®], 4.7 grams per gallon water). Fertilizers at the rate of 300 lb/acre urea (46-0-0), 250 lb/acre potash (0-0-60), 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 broadcast applied prior to laying black plastic mulch and before transplanting.

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

Diseases and insects were managed by scouting and using recommendations from *Melcast* (melcast.info) and the *Midwest Vegetable Production Guide for Commercial Growers* (Egel et al., 2019). Admire Pro[®], Warrior II[®] and Pounce 25WP[®] were used for insect pest control. Bravo[®] and Cabrio EG[®] were rotationally applied for foliar disease control.

Harvests were conducted from July 8 to Aug. 7. Fruit were inspected three times a week for ripeness. Harvested fruit were weighed individually. Only fruit that had soluble solids content (SSC%) above 8 °Brix were used for other quality evaluation, which included fruit size, seed cavity size, pH and flesh firmness. For each variety, the quality evaluation was conducted on 10-20 fruit.

Results

The 2019 season was marked with above-normal precipitation (Table 2), yields of three eastern-type cantaloupe varieties were lower compared to previous years. The top yielding variety in 2019 was Golden Crush (45337 lbs/acre, 15.6 lbs/plant), followed by Napoli (42663 lbs/acre, 14.7 lbs/plant), Melemon (41452 lbs/acre, 14.3 lbs/plant), and Whatamelon (40630 lbs/acre, 13.9 lbs/plant) (Table 3). Other high yielding varieties in 2019 included Full moon, Alaniz Gold, OC164, Snow Leopard, Torpedo, and HD252. Total yields of Accolade, Astound and Aphrodite ranked in 8th, 9th, and 10th, respectively, among the 30 evaluated melon varieties.

Soluble solids content (SSC%) ranged from 8.95 to 12.80 °Brix in this trial (Table 5). Sheba, Sugar Cube and Brilliant had average SSC% above 12 °Brix. Amy, Lambkin, Sweet Sunrise, New Century, Da Vinci, Honey Orange, Golden Aroma, Aphrodite, and HD252 had average SSC% above 11°Brix. Whatamelon had a high yield by weight, but average SSC% on this variety barely reached 8 °Brix at the end of harvest period.

Comments on outstanding performing varieties

The top yielding variety Golden Crush is a non-slip muskmelon. Average fruit weight was 4.8 lb, slightly smaller than Astound and Accolade. Ripeness of Golden Crush is determined by golden yellow external fruit color. Flesh of Golden Crush is orange (Figure 1), slightly firmer than Astound and Accolade. Average SSC% was 9.82 °Brix in this trial.

Napoli is a Tuscan melon with characteristically segmented skin. Compared with other Tuscan melon varieties in the trial (Da Vinci and Eastern Crush), Napoli ripened about two weeks earlier, and had a much higher yield. Fruit of Napoli may crack along skin segment in the field. This was also observed on Eastern Crush, but was less likely to happen on Da Vinci. Average fruit weight of Napoli was 5.1 lb. Flesh was soft, with 10.64 °Brix.

Melemon is a unique melon variety with a surprisingly sweet-sour taste. The skin is yellowish green. It may develop a light netting when fruit is ripe. Internal color is similar to a honeydew variety. Average fruit weight was 5.1 lb. The flesh of Melemon was firmer than eastern cantaloupe, average SSC % was 10.85 °Brix. pH of Melemon was 4.72, while pH on all the other varieties were above 5.40.

Full moon is a typical honeydew melon. Average fruit weight was 4.9 lb. Flesh was firmer than most other honeydew varieties, and average SSC% was 10.90 °Brix in this trial.

Alaniz Gold is a non-slip western-shipper cantaloupe with an average fruit weight of 4.7 lb which was slightly smaller than Astound and Accolade. The flesh was firmer compared to eastern cantaloupes, and similar to Infinite Gold and Golden Crush. Average SSC% was 10.22 °Brix in this trial.

Snow Leopard is an Ivory Gaya melon (average fruit weight 2.5 lb) with a unique external appearance. Flesh is white with a typical honeydew melon taste. Snow Leopard plants were highly productive, producing 5-6 melons per plant and had a long harvest window. Average soluble solids content of Snow Leopard was 10.67 °Brix in this trial.

Torpedo is the smallest melon (average fruit weight 1.1 lb) and the only Korean melon in the trial. The Korean melon is favored by some customers because of its crispy texture, which was reflected by the highest flesh firmness value in the trial. Korean melons usually have a very thin skin that may crack. However, this defect was seldom observed on Torpedo. Torpedo plants were highly productive, producing up to 10 fruit per plant with a long harvest window. Average SSC% of Torpedo was 10.55 °Brix in this trial.

Amy and Brilliant are Canary melon varieties. Marketable yields from the two varieties were similar, ranking near the middle of the evaluated cultivars. Fruit size of Brilliant was larger than that of Amy. Both Amy and Brilliant had outstanding SSC% that was around 12 °Brix.

Comment on other melon varieties

Among the high SSC% varieties, Sheba is a green-fleshed cantaloupe. The quality of Sheba was outstanding but yield was relatively low in our evaluations in both 2019 and 2018. Sugar Cube is a personal-size cantaloupe (average fruit weight 2.1 lb). The flesh of Sugar Cube was soft but had very high SSC%. Although relatively low yield by weight, each Sugar Cube plant produced 3-4 melons, which may sell for a premium price to consumers who prefer personal-size and high quality cantaloupe.

Galia melon Arava; Ananas melon San Juan; and Hami melon Aurora and New Century have unique tastes that may be less familiar to American customers who mainly consume cantaloupe and honeydew melons. However, these type melons may find their roles in local food markets where consumers are looking for unusual and high quality produce.

Galia melon Arava has a green, soft and juicy flesh. Its unique tropical aroma is particularly favored by some customers. Ananas melon San Juan has a creamy-white soft flesh, its highly aromatic flesh attracts consumers. Both melon types form abscission zones, and ripened 2-3 days earlier than eastern cantaloupe in our trial. In order to harvest high quality fruit, both varieties need to be checked daily for ripeness. Fruit is over-ripe when it completely detaches from the vines, which reduced SSC%. This is particularly likely to happen on the Ananas melon San Juan, as fruit slipped from vines almost overnight.

Hami melon is favored by Asian customers, for whom Hami melon may be a staple. Hami melon has a juicy, crisp flesh with high sugar content. Determining fruit ripeness is difficult for Hami melon as they do not slip from vines and barely change color when ripe. In this trial, we harvested Hami melon about the same time as honeydew melon Full Moon and Honey Orange, which was about one week later than eastern cantaloupes. Among the evaluated Hami melon varieties, New Century had a moderate high yield in our trial.

Acknowledgements

This material is based on work supported by the USDA, Indiana State Department of Agriculture Specialty Crop Block Grant Program: A337-19-SCBG-18-004 and USDA-NIFA grant award: 2017-51181-26834. The authors would like to thank Dean Haseman, Angie Thompson, Bill Davis, Barbara Joyner and for their invaluable technical assistance with the variety trial.

Table 1. Variety, seed source and melon type in the 2019 melon variety trial at Southwest Purdue Agricultural Center in Vincennes, IN.

Variety	Seed Source	Melon type
<i>Muskmelon</i>		
Aphrodite	Syngenta	Eastern cantaloupe
Astound	Syngenta	Eastern cantaloupe
Accolade	Syngenta	Eastern cantaloupe
Sweet Sunrise	Syngenta	Non-slip cantaloupe
Infinite Gold	TAMU, Sakata	Non-slip cantaloupe
F-39	TAMU	Non-slip cantaloupe
Alaniz Gold	Sakata	Non-slip cantaloupe
Sheba	Known-You Seed	Non-slip cantaloupe, green flesh
Golden Crush	Sostena	Non-slip cantaloupe, golden rind
Arava	Johnny's Selected Seeds	Galia type, slip
Sugar Cube	Johnny's Selected Seeds	Mini-size cantaloupe, slip
San Juan	Johnny's Selected Seeds	Ananas type, slip
Aurora	Known-You Seed	Hami type, non-slip
New Century	Known-You Seed	Hami type, non-slip
Golden Aroma	Known-You Seed	Hami type, non-slip
Napoli	NE Seed	Tuscan
Da Vinci	TAMU, Sakata	Tuscan
Eastern Crush	Sostena	Tuscan
<i>Smooth-skinned melon</i>		
HD150	TAMU	Honeydew, non-slip
HD252	TAMU	Honeydew, non-slip
Honey Orange	Johnny's Selected Seeds	Honeydew, non-slip
Full Moon	U.S. AgriSeeds	Honeydew, non-slip
Snow Leopard	Johnny's Selected Seeds	Ivory Gaya, non-slip
Amy	Territorial Seed	Canary type, non-slip
Brilliant	Known-You Seed	Canary type, non-slip
OC164	TAMU	Casaba type, non-slip
Torpedo	Johnny's Selected Seeds	Korean melon, non-slip
Melemon	Known-You Seed	Sweet-sour, non-slip
Lambkin	Johnny's Selected Seeds	Santa Claus type, slip
Whatamelon	Burpee	Turkish melon, non-slip

Table 2. Monthly **precipitation** in 2019 and 1981-2010 in southwest Indiana. Data was adapted from Midwestern Regional Climate Center, cli-MATE: MRCC Application Tools Environment.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.
2019	4.09	6.67	5.46	6.24	7.03	7.70	4.34	4.88	0.42
Normal (1981-2010)	3.05	2.94	4.04	4.41	5.63	4.13	4.26	3.23	3.38

Table 3. Yield of melon varieties in the 2019 melon variety trial at Southwest Purdue Agricultural Center in Vincennes, IN.

Variety	Yield per acre (lbs/acre)				Yield per plant (lbs/plant)				Average fruit weight (lb)	
	Total yield		Marketable yield		Total yield		Marketable			
<i>Muskmelon</i>										
Aphrodite	35071.6	a-g ^z	30503.6	a-g	12.1	a-g	10.5	a-g	6.7	b
Astound	35757.9	a-g	31562.6	a-e	12.3	a-g	10.9	a-e	5	e-i
Accolade	36322.3	a-g	30915.0	a-g	12.5	a-g	10.7	a-g	5.4	d-f
Sweet Sunrise	32406.7	b-i	31376.8	a-f	11.2	b-i	10.8	a-f	4.9	e-j
Infinite Gold	28786.4	e-j	27307.3	b-h	9.9	e-j	9.4	b-h	4.3	h-m
F-39	28262.7	e-j	25026.7	c-h	9.7	e-j	8.6	c-h	4	k-m
Alaniz Gold	37262.2	a-e	33620.6	a-c	12.8	a-e	11.6	a-c	4.7	f-l
Sheba	31181.2	c-i	28999.3	a-g	10.7	c-i	9.9	a-g	4.2	j-m
Golden Crush	45337.2	a	39408.2	a	15.6	a	13.6	a	4.8	e-k
Arava	34313.7	a-h	29991.5	a-g	11.8	a-h	10.32	a-g	4.5	g-m
Sugar Cube	25375.2	g-j	22223.3	d-h	8.7	g-j	7.7	d-h	2.1	p
San Juan	29424.3	d-j	21955.2	e-h	10.1	d-j	7.6	e-h	3.9	l-m
Aurora	25456.5	f-j	23220.4	c-h	8.8	f-j	7.9	c-h	4.2	i-m
New Century	33215.9	b-h	30325.5	a-g	11.4	b-h	10.4	a-g	5.5	c-e
Golden Aroma	19390.9	j	17559.5	h	6.7	j	6	h	6.7	b
Napoli	42663.6	ab	36693.0	ab	14.7	ab	12.6	ab	5.1	d-g
Da Vinci	21781.9	ij	20233.1	f-h	7.5	ij	6.9	f-h	3.2	no
Eastern Crush	29862.8	d-j	24784.7	c-h	10.3	d-j	8.5	c-h	6.3	bc
<i>Smooth-skinned melons</i>										
HD150	23421.7	h-j	21474.1	e-h	8.1	h-j	7.4	e-h	4.8	e-k
HD252	34524.7	a-h	32412.5	a-e	11.9	a-h	11.2	a-e	5.9	cd
Honey Orange	29460.1	d-j	24782.7	c-h	10.1	d-j	8.5	c-h	4.7	f-l
Full Moon	38288.3	a-e	36265.2	ab	13.2	a-e	12.5	ab	4.9	e-j
Snow Leopard	34999.9	a-g	33361.2	a-d	12.1	a-g	11.5	a-d	2.5	op
Amy	30207.4	c-j	28403.1	a-h	10.4	c-j	9.8	a-h	4.1	k-m

Brilliant	28954.8	e-j	28310.1	a-h	9.9	e-j	9.7	a-h	4.9	e-j
OC164	36718.2	a-f	32286.7	a-e	12.6	a-f	11.1	a-e	9.5	a
Torpedo	33153.4	b-h	31884.3	a-e	11.4	b-h	10.9	a-e	1.1	q
Melemon	41452.7	a-c	38691.9	a	14.3	a-c	13.3	a	5.1	d-g
Lambkin	21871.9	ij	19846.9	gh	7.5	ij	6.8	gh	3.7	mn
Whatamelon	40630.8	a-d	38685.2	a	13.9	a-d	13.3	a	10.1	a

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

Table 4. Fruit length, width and flesh thickness of melon varieties in the 2019 melon variety trial at Southwest Purdue Agricultural Center in Vincennes, IN.

Variety	Length (cm)		Width (cm)		Flesh thickness (cm)	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
<i>Muskmelon</i>						
Aphrodite	19.18	(17.82,20.54)	18.89	(18.13,19.65)	7.32	(6.73,7.90)
Astound	17.93	(16.81,19.05)	16.08	(15.62,16.55)	7.64	(7.05,8.24)
Accolade	17.56	(16.39,18.72)	15.91	(15.34,16.48)	7.19	(6.81,7.59)
Sweet Sunrise	17.99	(17.2,18.79)	16.51	(15.99,17.04)	6.75	(6.44,7.05)
Infinite Gold	17.12	(16.29,17.95)	15.41	(14.83,15.99)	6.81	(6.44,7.18)
F-39	17.04	(16.42,17.67)	15.12	(14.73,15.51)	7.07	(6.78,7.37)
Alaniz Gold	17.13	(15.86,18.39)	15.81	(15.12,16.49)	6.94	(6.42,7.46)
Sheba	17.32	(16.42,18.22)	15.67	(15.16,16.17)	6.00	(5.73,6.28)
Golden Crush	17.39	(16.76,18.02)	15.47	(14.97,15.98)	7.40	(7.12,7.68)
Arava	14.18	(13.17,15.18)	15.91	(15.10,16.72)	6.31	(5.92,6.70)
Sugar Cube	12.17	(11.69,12.65)	12.05	(11.59,12.51)	5.66	(5.36,5.95)
San Juan	16.71	(15.53,17.89)	15.33	(14.46,16.20)	7.14	(6.76,7.51)
Aurora	18.51	(17.64,19.37)	14.66	(14.27,15.06)	6.06	(5.78,6.33)
New Century	21.09	(19.74,22.43)	15.97	(15.35,16.58)	4.64	(.15,9.14)
Golden Aroma	19.82	(18.61,21.03)	17.8	(16.79,18.80)	8.11	(7.57,8.66)
Napoli	16.89	(15.87,17.89)	16.34	(15.50,17.18)	7.26	(6.87,7.65)
Da Vinci	16.80	(15.99,17.61)	13.66	(13.03,14.29)	6.45	(6.12,6.78)
Eastern Crush	20.88	(19.41,22.35)	17.03	(16.47,17.59)	7.60	(6.85,8.36)
<i>Smooth-skinned melon</i>						
HD150	19.95	(19.49,20.41)	14.81	(13.58,16.05)	6.46	(5.74,7.17)
HD252	18.84	(17.89,19.79)	17.26	(16.38,18.13)	6.95	(6.58,7.32)
Honey Orange	18.32	(17.58,19.06)	16.2	(15.65,16.75)	6.26	(5.87,6.65)
Full Moon	16.85	(15.83,17.88)	16.4	(14.19,17.88)	6.63	(5.95,7.30)
Snow Leopard	14.96	(14.37,15.55)	12.87	(12.44,13.29)	5.71	(5.41,6.01)
Amy	17.99	(17.21,18.77)	15.69	(15.02,16.37)	6.36	(5.75,6.96)
Brilliant	20.96	(20.05,21.86)	16.06	(15.38,16.75)	6.79	(6.39,7.18)
OC164	25.78	(24.17,27.39)	22.36	(19.12,25.61)	8.09	(6.30,9.88)
Torpedo	13.65	(13.33,13.96)	9.50	(9.21,9.79)	3.54	(3.35,3.73)
Melemon	17.06	(16.02,18.07)	17.72	(16.87,18.56)	6.58	(6.32,6.84)
Lambkin	19.57	(18.83,20.31)	14.61	(14.08,15.14)	6.53	(6.22,6.84)
Whatamelon	29.92	(28.19,31.65)	19.40	(18.43,20.37)	9.51	(8.97,10.04)

Table 5. Soluble solids contents (SSC%), flesh firmness and pH of melon varieties in the 2019 melon variety trial at Southwest Purdue Agricultural Center in Vincennes, IN.

Variety	SSC% (°Brix)		Flesh firmness (lbs-force)		pH	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
<i>Muskmelon</i>						
Aphrodite	11.12	(10.43,11.81)	2.99	(2.62,3.36)	6.30	NA
Astound	10.44	(9.81,11.08)	4.12	(3.63,4.61)	6.12	(5.98,6.26)
Accolade	10.65	(10.09,11.21)	4.66	(4.13,5.19)	6.25	(6.13,6.38)
Sweet Sunrise	11.59	(10.61,12.57)	7.03	(6.19,7.86)	6.07	(5.96,6.17)
Infinite Gold	10.39	(9.62,11.16)	5.55	(4.65,6.45)	6.17	(6.09,6.24)
F-39	9.56	(9.09,10.02)	3.62	(2.49,4.75)	6.14	(6.04,6.25)
Alaniz Gold	10.22	(9.53,10.92)	5.12	(4.19,6.04)	6.14	(6.02,6.25)
Sheba	12.80	(11.87,13.73)	4.26	(3.55,4.97)	5.85	(5.76,5.94)
Golden Crush	9.82	(9.21,10.43)	5.88	(5.46,6.29)	5.94	(5.82,6.06)
Arava	10.34	(9.79,10.89)	2.73	(2.29,3.17)	6.07	(5.69,6.45)
Sugar Cube	12.43	(11.78,13.08)	2.57	(1.98,3.16)	6.22	(6.04,6.40)
San Juan	10.18	(9.67,10.70)	2.49	(2.03,2.96)	5.92	(5.68,6.16)
Aurora	10.59	(9.73,11.46)	3.74	(3.26,4.21)	5.79	(5.67,5.90)
New Century	11.52	(10.38,12.66)	4.74	(4.23,5.25)	5.96	(5.88,6.03)
Golden Aroma	11.26	(10.33,12.19)	5.30	(4.66,5.94)	5.98	(5.90,6.05)
Napoli	10.64	(10.10,11.17)	3.11	(2.81,3.41)	NA	NA
Da Vinci	11.52	(10.89,12.15)	5.14	(3.96,6.33)	6.05	(5.82,6.29)
Eastern Crush	9.75	(9.06,10.45)	6.32	(5.51,7.13)	6.18	(6.08,6.29)
<i>Smooth-skinned melon</i>						
HD150	10.76	(9.50,12.02)	4.43	(2.18,6.69)	5.42	(5.20,5.63)
HD252	11.09	(10.25,11.93)	5.41	(4.31,6.51)	5.75	(5.62,5.88)
Honey Orange	11.47	(10.65,12.29)	6.87	(6.41,7.33)	5.95	(5.77,6.12)
Full Moon	10.90	(9.82,11.99)	7.18	(6.36,7.99)	5.71	(5.57,5.85)
Snow Leopard	10.67	(9.93,11.42)	4.51	(4.02,5.01)	5.90	(5.75,6.05)
Amy	11.83	(11.10,12.57)	4.53	(4.07,5.00)	5.71	(5.61,5.81)
Brilliant	12.19	(11.67,12.72)	4.80	(4.21,5.39)	5.84	(5.77,5.89)
OC164	10.45	(9.68,11.21)	5.02	(4.18,5.87)	5.91	(5.84,5.98)
Torpedo	10.55	(10.01,11.10)	7.79	(7.21,8.37)	5.53	(5.43,5.63)
Melemon	10.85	(9.92,11.77)	5.17	(4.46,5.89)	4.72	(4.56,4.87)
Lambkin	11.82	(11.15,12.50)	5.45	(4.69,6.21)	5.89	(5.75,6.03)
Whatamelon	8.95	(8.41,9.49)	3.07	(2.61,3.53)	5.40	(5.33,5.47)

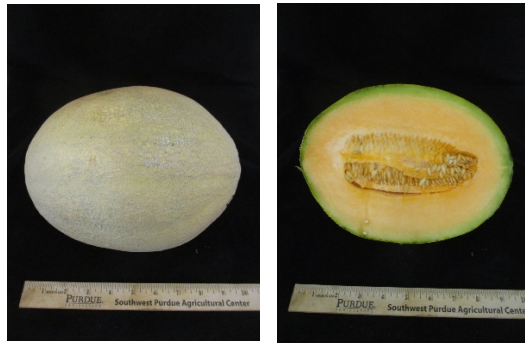
Aphrodite



Astound



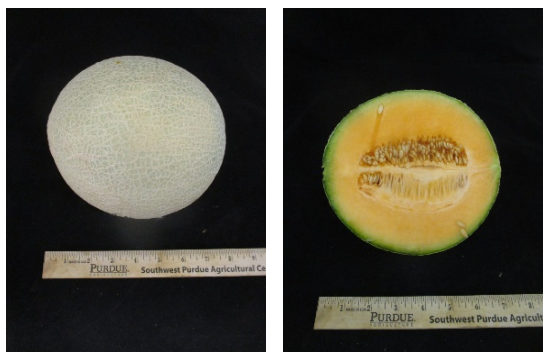
Accolade



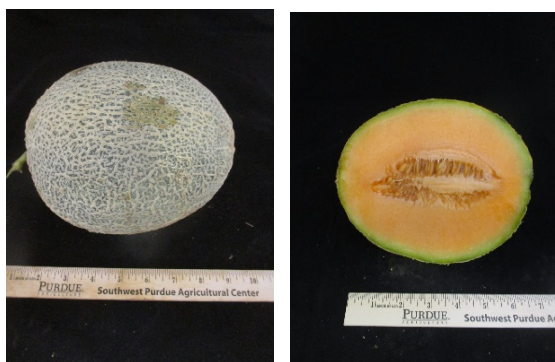
Sweet Sunrise



Infinite Gold



F-39



Alaniz Gold



Sheba



Golden Crush



Arava



Sugar Cube



San Juan



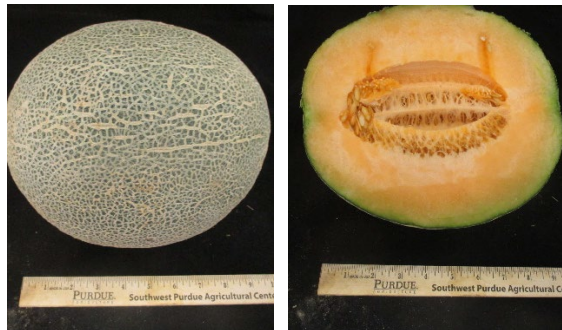
Aurora



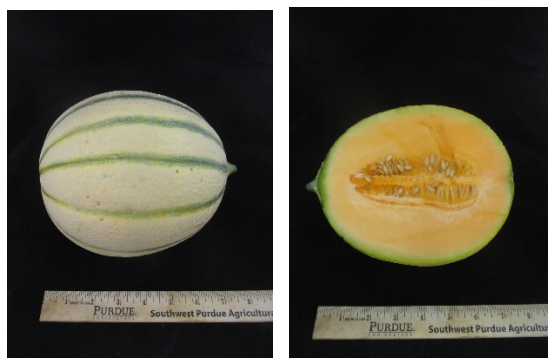
New Century



Golden Aroma



Napoli



Da Vinci



Eastern Crush



HD150



HD252



Honey Orange



Full moon



Snow Leopard



Amy



Brilliant



OC164



Torpedo



Melemon



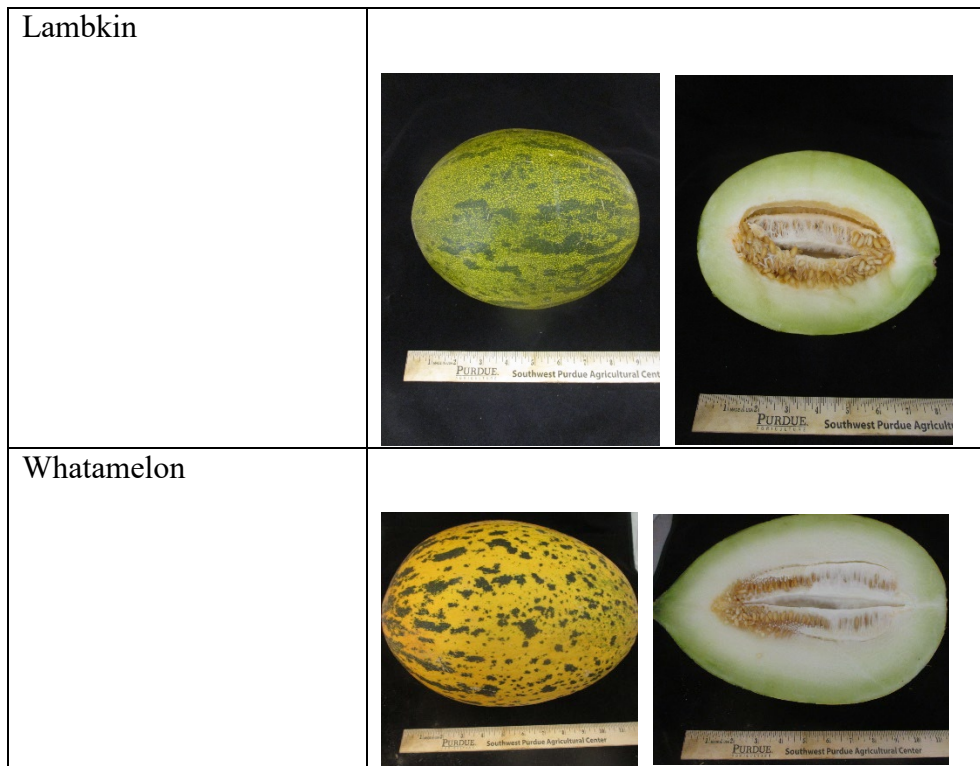


Figure 1. Exterior and interior of melon varieties in the 2019 variety trial in Indiana.