

Southwest Purdue Agriculture Program Melon Variety Trial Results for 2006

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Variety trials are routinely conducted in Southwestern Indiana to evaluate new and emerging vegetables for their growth and production characteristics. Conducting these trials in Indiana's climate and soil conditions helps vegetable producers make informed decisions about which vegetable varieties will work for their farms. The melon trials presented here (seedless watermelons and eastern muskmelons) were conducted at the Southwest Purdue Agriculture Center north of Vincennes, Indiana.

Evaluating newly released varieties and advanced experimental breeding lines in an independent assessment is extremely valuable for growers and seed producers in the commercial melon industry. The objective of these trials was to comparatively evaluate and identify potential new cultivars and advanced

experimental breeding lines that may be adaptable to the growing conditions in southwestern Indiana.

All trial plots were managed according to the fertilization, and weed, disease, and insect control recommendations in the 2006 *Midwest Vegetable Production Guide for Commercial Growers* (Purdue Extension publication ID-56), and trickle irrigation lines were placed under black plastic mulch to provide water as needed during the growing season. Each trial was conducted using a randomized complete block design with three replications. All fruit in these trials were harvested by hand and data were collected in the field on individual fruit. All data were then analyzed using the Statistical Analysis Software (SAS) package (SAS Institute, Cary, NC).

We would like to express our sincere appreciation to the seed companies that provided seeds and support for these variety trials.

Seed Code	Company Name and Address
AC	Abbott and Cobb, Inc., PO Box 307, Trevoise, PA 19053-0307
HM	Harris Moran Seed Company, 3493 Riverweeds Drive, NE, Rockford, MI 49341
SM	Seminis Inc., Seneca Hybrids 2700 Camino del Sol, Oxnard, CA 93030
SVR/SE	Seneca Vegetable Research, 5267 Flat St., Hall, NY 14463; Tel.: (585) 526-7044; Fax (585) 526-7045
STS	Sutter Seeds LLC, 2854 Niagara Ave., Colusa, CA 95932; Tel.: (530) 458-2721; www.sutterseeds.com
SY/RG	Syngenta Seeds, Inc., Roger Brands, 600 North Armstrong Place (83704), P.O. Box 4188, Boise, ID 83711-4188
WI	Wilhite Seed Co., P.O. Box 23, Poolville, TX 76076
SWS	Southwestern Seeds, 5023 Hammock Trail, Lake Park, GA 31636; Tel.: (229)559-6445; Fax:(229)559-6503
NU/NH	Nunhems Seed, 1200 Anderson Corner Road, Parma, ID 83660; Tel.:(733)-9505; www.nunhems.com
KW	Keithly-Williams Seeds; 420 Palm Avenue, Holtville, CA 92250; Tel.: (800) 533-3465

WATERMELON CULTIVAR TRIALS

Seedless watermelons continue to generate grower and consumer excitement, and in many urban markets around the United States the percentage of seedless melons purchased has risen considerably. Indiana remains a strong producer of seedless (triploid) watermelons, and since 1994, we have conducted extensive annual variety trials for seedless varieties. This trial, along with the seeded (diploid) watermelon variety trial provides an objective and independent comparative assessment of new watermelons for the commercial industry. Seedless watermelons should be part of your melon production strategy as long as you have a market that will purchase the fruit at a higher price than the seeded watermelons.

This year's study included 32 seedless watermelon cultivars, two seeded watermelon cultivars, and one mini watermelon variety.

Methods

Seeds for 34 watermelon cultivars were sown in the greenhouse on April 17, and transplanted on May 16. Royal Sweet was used as the pollinator and planted in every third row and in the guard rows. Plots were single rows, 48 feet long, centered 8 feet apart, and covered with black plastic mulch that was 4 feet wide. Each plot had 12 plants four feet apart. Plots were harvested on July 27, August 3, and August 11. Yield and quality data for all varieties are presented in Tables 1 and 2.

Results and Conclusions

Yields and Quality

Yields ranged from 16.9 to 31.0 tons per acre with 1,733 to 5,462 fruit per acre harvested across all entries (Table 1). The average weight of seedless fruit was down this year to 16.1 pounds per fruit, with a range of 6.2 to 23.7 pounds per fruit.

Of particular note in this trial:

- 9570 HQ, 7167, Crunchy Red, Sweet Slice Plus, and Matrix were the highest yielding cultivars.
- Most fruits were round to oval, and medium sized.
- SW 3130, RWT 8174, and Diablo had the highest soluble solids content.
- The majority of cultivars produced fruit in the 12-18 pound range (Table 3). Matrix and ACR5534T were notable exceptions, producing 18-24 pound fruit.
- Diablo produced the largest fruit, at 24-32 pounds.
- On the opposite end of the size spectrum, most of the fruit for the mini seedless variety 2071 were in the 4-6 pound range.

WATERMELON CULTIVAR TRIALS *continued*

Table 1. Comparison of Yield of Seedless Watermelon in Southwestern Indiana, 2006.

Cultivar	Seed Source	Yield (cwt/A)	Yield ¹ (tons/A)	Fruit (#/A)	Average Fruit Weight
9570 HQ	AC	620.7	31.0 a	3,691	16.9
7167	AC	607.0	30.4 ab	3,541	17.1
Crunchy Red	HM	602.5	30.1 abc	3,390	17.8
Sweet Slice Plus	WI	595.4	29.8 abcd	3,503	17.0
Matrix	RG	577.6	28.9 abcde	2,938	19.7
Intruder	SWS	570.7	28.5 abcdef	3,465	16.5
Tri-X 313	RG	564.0	28.2 abcdef	3,541	15.9
RWT 8174	RG	561.1	28.0 abcdef	3,315	17.0
ACR 5624T	AC	560.0	28.0 abcdef	3,239	17.3
HMX 4915	HM	556.9	27.9 abcdef	3,993	13.9
Liberty	NU	552.8	27.6 abcdef	3,277	16.9
Olympia	SM	545.7	27.3 abcdef	3,503	15.6
SSX 7041	STS	545.5	27.3 abcdef	3,541	15.4
Tri-X Palomar	RG	544.1	27.2 abcdef	3,616	15.0
SW 3130	SWS	543.4	27.2 abcdef	3,578	15.3
Sweet Slice	WI	539.3	27.0 abcdef	3,390	16.0
Constitution	NU	536.0	26.8 abcdef	3,541	15.1
Revolution	NU	533.1	26.6 abcdef	2,938	18.2
Slice-N-Serve	SWS	532.4	26.6 abcdef	3,428	15.5
Tomcat	SWS	530.4	26.5 abcdefg	3,390	15.7
SW 2501	SWS	528.1	26.4 abcdefg	3,465	15.3
RWT 8173	RG	522.9	26.1 abcdefg	3,089	16.9
Triple Threat	RG	516.7	25.8 bcdefg	3,729	13.8
Cooperstown	SM	508.1	25.4 cdefgh	3,013	16.8
Independence	NU	507.7	25.4 cdefgh	3,315	15.3
Candy	WI	506.4	25.3 cdefgh	2,787	18.2
ACR 5534T	AC	500.5	25.0 defgh	2,674	18.7
Provider QV776	STS	499.9	25.0 defgh	3,239	15.3
SW 4806	SWS	481.3	24.1 efgh	3,164	15.1
5335	SM	474.5	23.7 fgh	3,691	12.9
Fenway	SM	470.4	23.5 fgh	3,691	12.9
Chiquita	WI	431.0	21.5 ghi	2,448	17.6
Diablo	WI	412.3	20.6 hi	1,733	23.7
2071	KW	337.8	16.9 i	5,462	6.2
Grand Mean		526.9	26.3	3,362	16.1
L.S.D. (5%)		100.4	5.0	669	1.4
C.V. (%)		11.7	11.7	12	5.3

¹Yield weights followed by the same letter were not significantly different.

WATERMELON CULTIVAR TRIALS *continued*

Table 2. Comparison of Quality of Seedless Watermelon in Southwestern Indiana, 2006.

Cultivar	% SS ¹	Flavor ²	Uniformity ³	Length ⁴	Width ⁵	Ratio ⁶	Shape ⁷	Flesh ⁸	Degree of Seedlessness ⁹	Pressure ¹⁰
9570 HQ	11.0	2.4	3.0	10.4	9.2	1.1	Rd	P	3	3.0
7167	12.0	3.5	2.0	10.4	9.1	1.1	Rd	DP	3	2.0
Crunchy Red	10.0	3.5	3.0	11.2	8.7	1.3	Ov	P	3	2.5
Sweet Slice Plus	9.5	3.7	3.0	10.5	9.3	1.1	Rd	R	2	2.5
Matrix	11.0	3.3	2.0	15.1	9.3	1.6	Ob	R	1	2.0
Intruder	11.5	3.0	2.0	10.3	9.6	1.1	Rd	DP	3	3.5
Tri-X 313	11.5	2.8	2.0	11.3	9.5	1.2	Ov	DP	2	2.0
RWT 8174	12.5	3.3	3.0	10.9	9.2	1.2	Ov	R	3	3.0
ACR5624T	9.0	3.0	2.0	12.4	11.0	1.1	Ov	R	3	2.0
HMX 4915	11.5	3.5	3.0	11.0	9.0	1.2	Ov	R	2	3.5
Liberty	12.0	3.0	1.0	11.0	8.9	1.2	Ov	R	3	2.0
Olympia	9.0	2.3	2.0	11.4	9.1	1.3	Rd-Ov	DP	3	2.0
SSX 7041	11.0	4.2	3.0	11.0	9.4	1.2	Ov	R	3	1.5
Tri-X-Palomar	12.0	3.7	3.0	10.2	10.0	1.0	Rd	R	3	3.0
SW 3130	13.0	4.2	1.0	11.0	8.5	1.3	Rd	R	3	2.5
Sweet Slice	10.2	3.0	3.0	10.6	9.5	1.1	Rd	DP	2	2.2
Constitution	11.0	3.8	3.0	9.9	9.1	1.1	Rd	R	3	2.0
Revolution	10.5	2.8	2.0	13.8	9.1	1.5	Ob	R	3	2.5
Slice-N-Serve	11.5	3.7	2.0	10.4	9.3	1.1	Rd	DP	2	3.0
Tomcat	11.5	3.3	3.0	12.2	9.3	1.3	Ov	DP	3	2.0
SW 2501	12.0	3.0	3.0	11.0	9.0	1.2	Rd-Ov	R	3	3.0
RWT 8173	11.0	2.8	2.0	12.0	9.7	1.2	Ov	DP	2	1.0
Triple threat	11.0	3.0	3.0	9.6	8.9	1.1	Rd	R	2	2.0
Cooperstown	10.0	3.4	1.0	11.1	9.2	1.2	Rd-Ov	R	3	3.0
Independence	11.5	3.8	3.0	10.8	9.3	1.2	Rd	R	3	2.5
Candy	7.5	2.8	1.0	11.3	9.5	1.2	Rd-Ov	R	2	2.0
ACR5534T	10.5	1.9	1.0	11.1	9.3	1.2	Ov-Ob	DP	2	2.0
Provider QV776	9.0	3.5	3.0	12.2	9.6	1.3	Ov	R	3	3.0
SW 4806	11.0	3.9	2.0	10.0	9.7	1.0	Rd	DP	3	2.0
5335	11.0	3.9	3.0	10.6	8.8	1.2	Ov	DP	2	2.0
Fenway	10.5	2.8	3.0	10.0	9.7	1.0	Rd	R	3	2.0
Chiquita	10.0	2.4	2.0	14.0	9.0	1.6	Ob	R	Seeded	2.0
Diablo	12.5	3.3	2.0	19.3	9.1	2.1	Ob	R	Seeded	2.0
2071	11.0	3.5	3.0	8.0	6.7	1.2	Rd	R	3	2.5

¹% SS = Percent soluble solids: the higher the value, the greater the amount of total sugar.

²Flavor (1 to 5): 1=very poor, 3=acceptable, 5=great.

³Uniformity (1 to 3): 1=lacks uniformity/variable, 2=average, 3=very uniform.

⁴Length: length of fruit from stem attachment end to blossom end (in inches).

⁵Width: width of fruit as measured following a longitudinal cut from stem end to blossom end (in inches).

⁶Ratio: length divided by the width of the fruit.

⁷Shape: Rd=Round, Ov=Oval, Ob=Oblong.

⁸Flesh: LR=light red, RO=red-orange, R=red, LP=light pink, P=pink, DP=dark pink, Y=yellow.

⁹Degree of Seedlessness (1 to 3): 1=brown or black seeds present, 2=white seeds present, 3=no seeds present.

¹⁰Pressure: pressure test reading in pounds per square inch.

WATERMELON CULTIVAR TRIALS continued

Table 3. Percent of Fruit in Each Size Category.

Cultivar	<4 lbs.	4-6 lbs.	6-8 lbs.	8-12 lbs.	12-18 lbs.	18-24 lbs.	24-32 lbs.	>32 lbs.
9570 HQ				12	55	29	4	
7167				5	56	36	2	
Crunchy Red				4	54	37	4	
Sweet Slice Plus				9	60	26	5	
Matrix				5	28	51	15	
Intruder				5	65	27	2	
Tri-X 313				12	65	23		
RWT 8174				9	52	32	7	
ACR5624T				5	59	31	5	
HMX 4915				28	58	13		
Liberty				9	63	29		
Olympia				12	66	22	1	
SSX 7041				12	68	20		
Tri-X-Palomar				25	52	22	1	
SW 3130				16	65	19		
Sweet Slice				10	60	30		
Constitution				15	74	11		
Revolution				4	50	42	4	
Slice-N-Serve				20	62	18		
Tomcat				20	57	22	2	
SW 2501				8	78	14		
RWT 8173				12	51	32	5	
Triple threat				29	65	5	1	
Cooperstown				8	55	35	3	
Independence				16	64	10	10	
Candy				9	48	43		
ACR5534T				4	37	52	7	
Provider QV776				13	65	21	1	
SW 4806				19	60	21		
5335			1	38	58	3		
Fenway			2	43	52	3		
Chiquita				6	54	37	2	2
Diablo				2	20	26	43	9
2071	6	43	37	14				

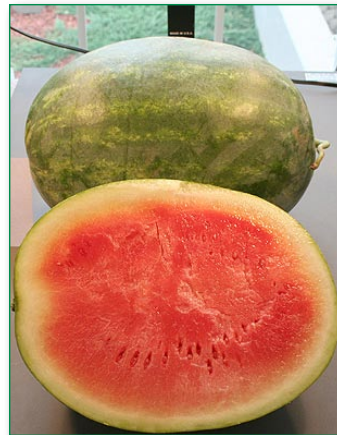
WATERMELON CULTIVAR TRIALS continued



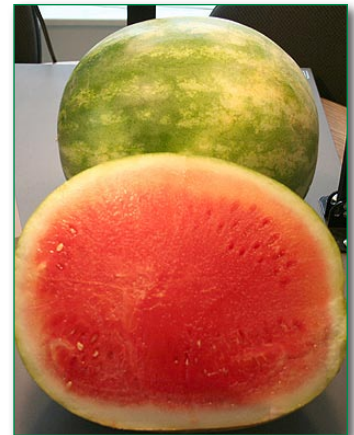
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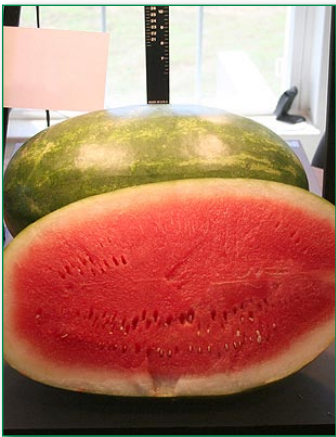
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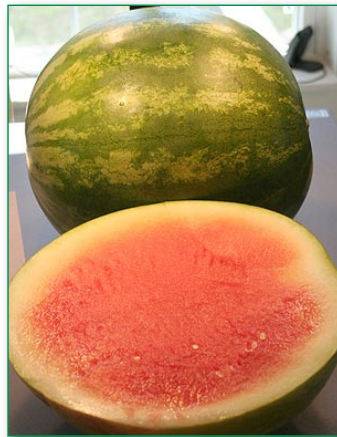
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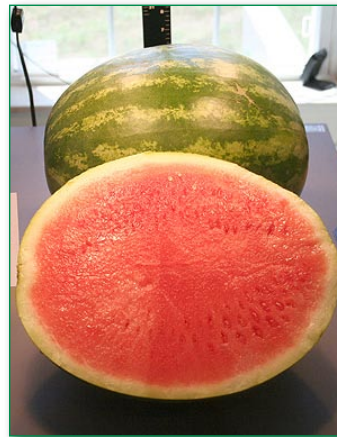
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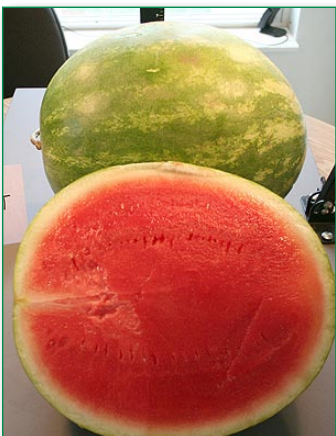
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Tri-X 313



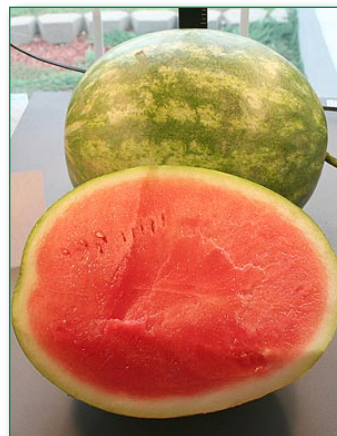
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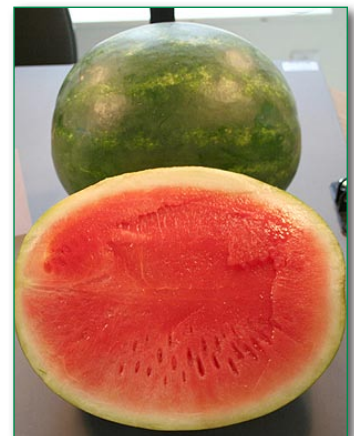
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HMX 4915



Liberty

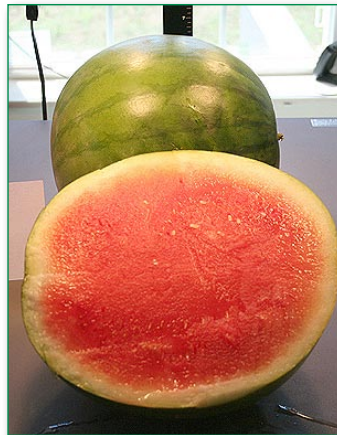


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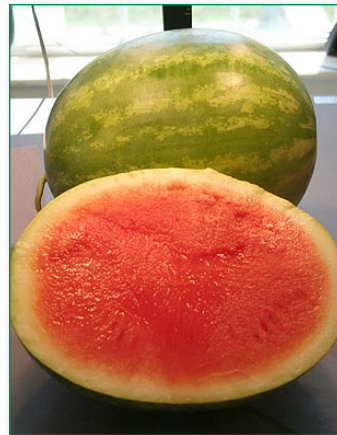
WATERMELON CULTIVAR TRIALS continued



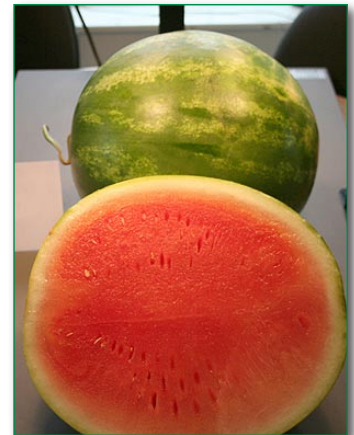
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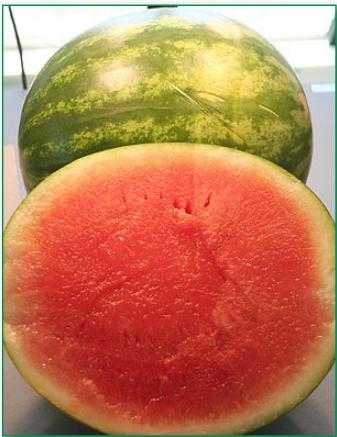
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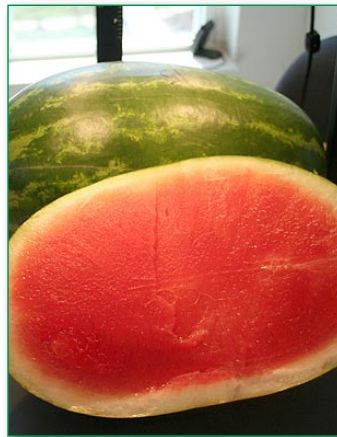
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Sweet Slice



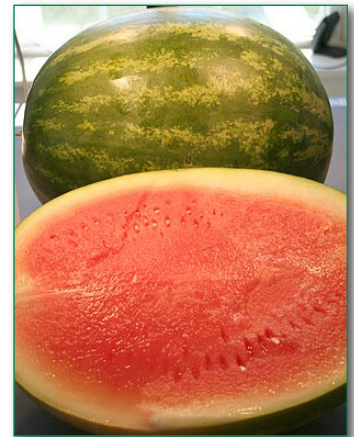
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Revolution



Slice-N-Serve



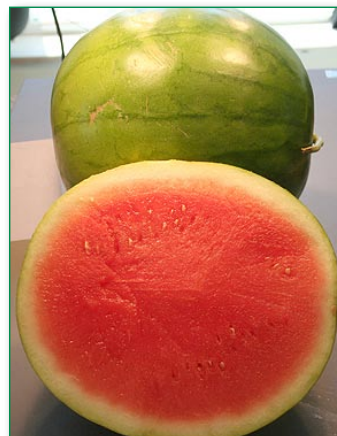
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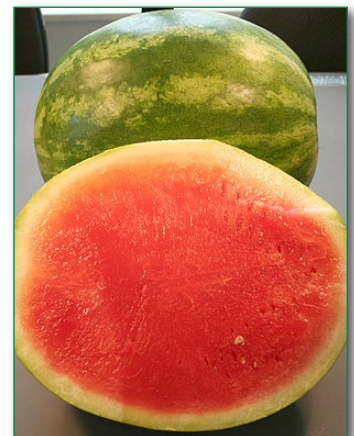
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RWT 8173

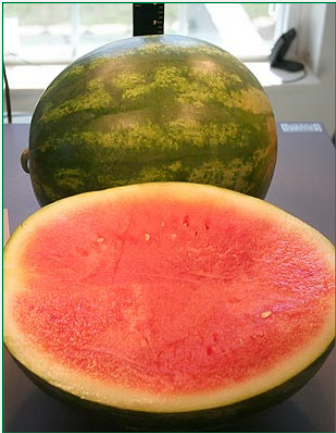


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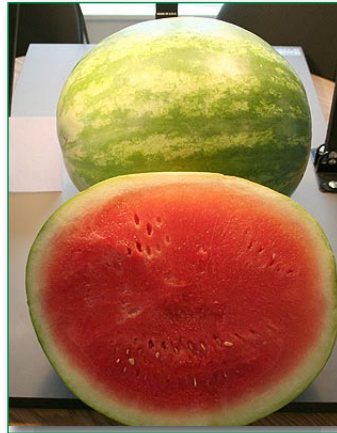


Cooperstown

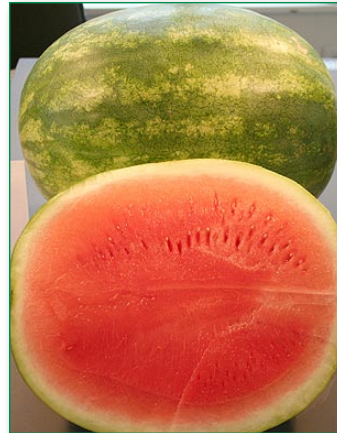
WATERMELON CULTIVAR TRIALS continued



Independence



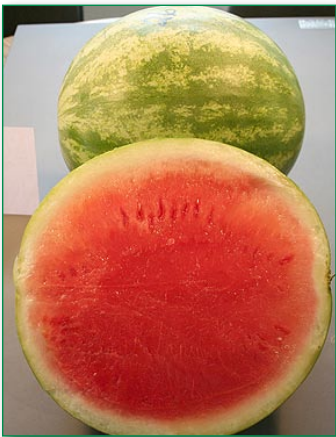
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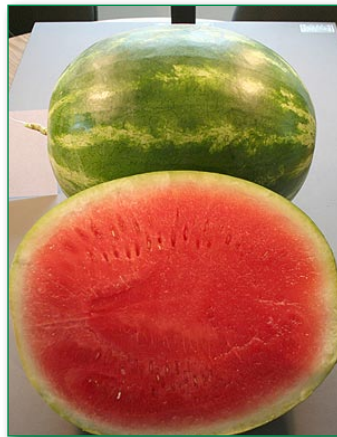
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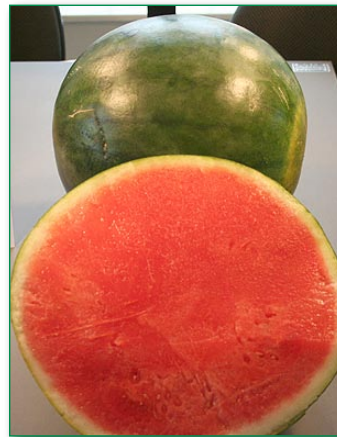
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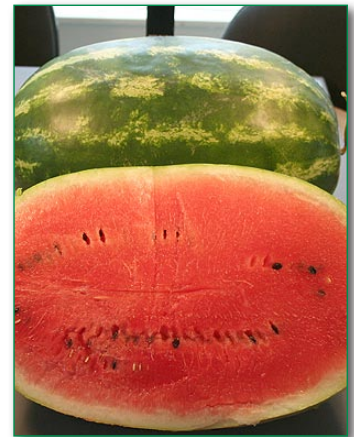
SW 4806



5335



Fenway



Chiquita



Diablo



2071

Indiana is a leader in the production of eastern muskmelon with Knox, Sullivan, and Gibson counties ranking in the top 100 melon producing counties in the country. Eastern muskmelon growers are seeking high yielding, high quality, early maturing types with excellent disease resistance and acceptable keeping quality during shipping and storage. Fruit need to be medium to large and have high uniformity in both size and shape. Traditionally, markets have demanded fruit with heavy netting and distinct ridges. Melons that can be stored and held easily for longer periods of time, and those that can be harvested at a slightly earlier slip-stage and still retain acceptable quality would also be desirable.

This year's study included 15 eastern muskmelon cultivars and experimental lines.

Methods

Each entry was first direct seeded in the greenhouse on May 19, and transplanted into the field on June 5. Plots were single 55-foot long rows, covered with black plastic mulch that was 4 feet wide. Rows were centered 6 feet apart, and between plant spacing (within a row) was 2.5 feet, allowing 22 plants per row. Fruits were harvested three times a week by hand from July 26 through August 11. Yield and quality data for all varieties are presented in Tables 4 and 5.

Results and Conclusions

Yields and Quality

The average yield was 16.5 tons per acre, with a range of 13.6 to 21.4 tons per acre (Table 4). The mean weight was 7.2 pounds per fruit, with a range of 4.1 to 11.3 pounds per fruit. This translated to 2,992 to 7,304 fruit per acre, with a mean of 4,840 fruit per acre.

Of particular note in this trial:

- Diva had the highest yield, followed by Crescent Moon, Eclipse, and SV04H154.
- The earliest fruit in this trial were harvested at 98 days.
- The quality ratings of each tested variety or advanced experimental line showed variability in soluble solids, shape, size, uniformity, flavor, netting, and the degree of ridges on the fruit surface (Table 5).
- ES-253, HMX 2607, and 9101 Max had soluble solids at or above 10 percent (brix).
- 9101 Max, ES-253, and Aphrodite had the highest flavor ratings.
- Most fruit were medium to large sized with average uniformity.
- ES-253 and ACX 2100 exhibited the desirable characteristics of heavy netting and a thick rind.

EASTERN MUSKMELON TRIALS continued

Table 4. Yield comparison of Eastern muskmelon cultivars in Southwestern Indiana, 2006.

Cultivar	Seed Source	Days to Harvest	Yield (cwt./A)	Yield (tons/A) ¹	Fruit (#/A)	Average Fruit Weight (lbs.)	% of fruit harvested between		
							July 5-11	July 12-27	July 28-August 5
Diva	HM	101	427.9	21.4 a	4,620	9.3	1.9	88.7	9.5
Crescent Moon	SE	103	380.6	19.0 ab	4,488	8.4	0.0	87.0	13.0
Eclipse	SM	99	378.7	18.9 abc	6,072	6.3	4.4	87.6	8.0
SV04H154	SE	98	348.4	17.4 abcd	6,468	5.4	22.2	71.2	6.6
HMX 2607	HM	100	337.8	16.9 bcd	4,620	7.3	1.8	91.0	7.2
ES-293	AC	103	337.2	16.9 bcd	2,992	11.3	1.3	40.0	58.6
Jaipur	SM	103	332.1	16.6 bcd	5,104	6.6	0.0	86.6	13.4
Aphrodite	RG	98	320.0	16.0 bcd	4,620	6.9	19.5	72.1	8.4
Minerva	RG	102	319.9	16.0 bcd	3,608	8.8	2.8	87.3	9.9
SSX 1268	STS	102	318.0	15.9 bcd	5,808	5.5	1.3	95.8	3.0
4099	SM	104	302.5	15.1 bcd	7,304	4.1	0.0	95.7	4.3
ACX 2100	AC	107	297.0	14.8 cd	3,784	7.8	0.0	49.5	50.5
ES-253	AC	104	294.0	14.7 d	3,432	8.5	0.0	91.4	8.6
9101 Max	AC	107	276.5	13.8 d	4,400	6.5	0.0	58.4	41.6
Athena	RG	98	271.8	13.6 d	5,280	5.1	14.2	83.4	2.5
Grand Mean		102.0	329.5	16.5	4,840	7.2	4.6	79.0	16.3
LSD (5%)		2.8	82.0	4.1	1,332	1.0	7.9	17.7	17.0
C.V. (%)		1.6	14.9	15.0	16	8.4	103.1	13.4	61.3

EASTERN MUSKMELON TRIALS continued

Table 5. Quality comparison of Eastern muskmelon cultivars in Southwestern Indiana, 2006.

Cultivar	Seed Source	% SS ¹	Shape ²	Size ³	Uniformity ⁴	Flavor ⁵	Netting ⁶	Ridges ⁷	Rind ⁸	Seed Cavity ⁹	Pressure ¹⁰
Diva	HM	9.0	R-Ob	M-L	1	2.7	3	0	2	Med	3.5
Crescent Moon	SE	9.0	Ov	L	2	2.0	2	2	1	Med	3.3
Eclipse	SM	7.0	R	M	3	2.5	3	1	2	Sm	3.0
SV04H154	SE	7.0	R	M-L	2	3.5	2	0	1	Sm	3.5
HMX 2607	HM	10.2	Ov	M	2	3.1	3	1	1	Sm	4.5
ES-293	AC	6.5	Ov	M	3	3.3	3	1	3	Med	4.5
Jaipur	SM	9.5	Ov	L-VL	2	3.5	3	1	2	Med	3.7
Aphrodite	RG	9.5	R	M	3	3.7	3	2	1	Med	3.0
Minerva	RG	9.0	Ov	M	3	2.0	2	1	1	Med	6.8
SSX 1268	STS	7.5	R	S	3	1.3	2	0	2	Sm	3.0
4099	SM	7.0	Ov	M	2	2.3	3	0	1	Sm	6.5
ACX 2100	AC	8.0	Ob	L-VL	2	3.3	3	1	3	Med	3.5
ES-253	AC	10.8	Ov	M	2	3.8	3	0	1	Sm	3.4
9101 Max	AC	10.0	Ov	M	3	4.2	3	1	2	Med	5.0
Athena	RG	9.0	R-Ob	M-L	1	2.7	3	0	2	Med	3.5

¹% SS = Percent Soluble Solids: the higher the value, the greater the amount of total sugar.

²Shape: Rd=round, Ov=oval, Ob=oblong.

³Size: S=small, M=medium, L=large, VL=very large.

⁴Uniformity (1 to 3): 1=lack all uniform/variable, 2=average, 3=very uniform.

⁵Flavor (1 to 5): 1=very poor, 3=acceptable, 5=great.

⁶Netting (1 to 3): 1=weak, 2=moderate, 3=heavy.

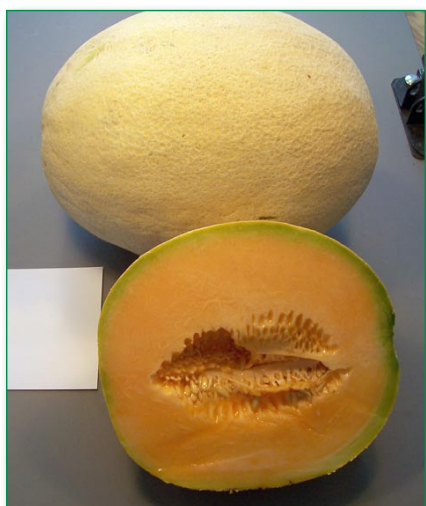
⁷Ridges (0 to 3): 0=absent, 1=light, 2=moderate, 3=heavy/large.

⁸Rind (1 to 3): 1=thin, 2=moderate, 3=thick.

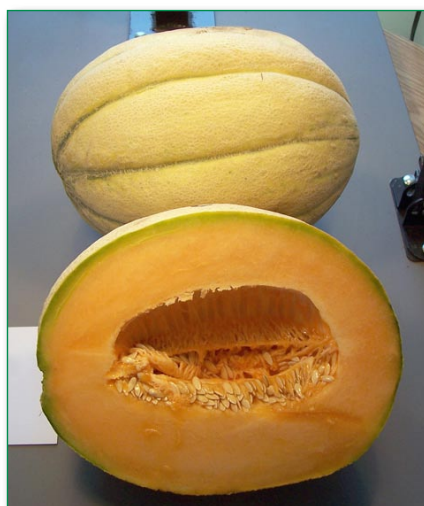
⁹Seed cavity: S=small, M=medium, L=large, VL=very large.

¹⁰Pressure: pressure test reading in pounds per square inch.

EASTERN MUSKMELON TRIALS continued



Diva



Crescent Moon



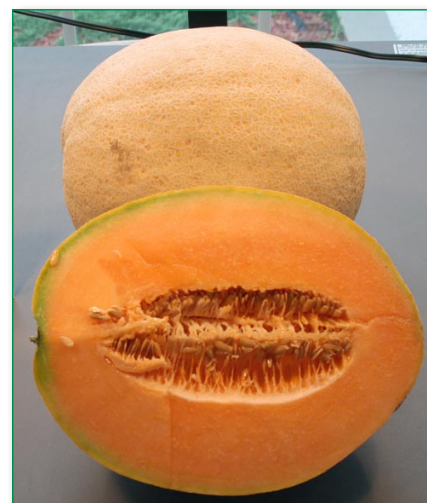
Eclipse



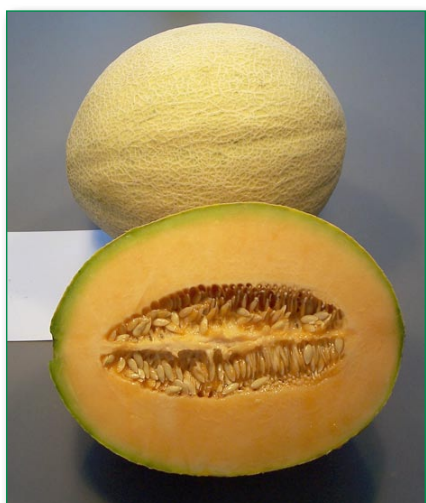
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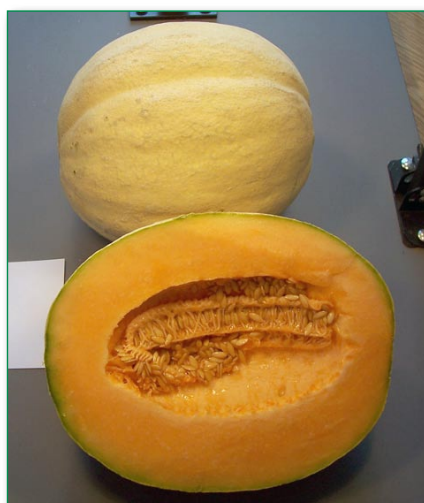
HMX 2607



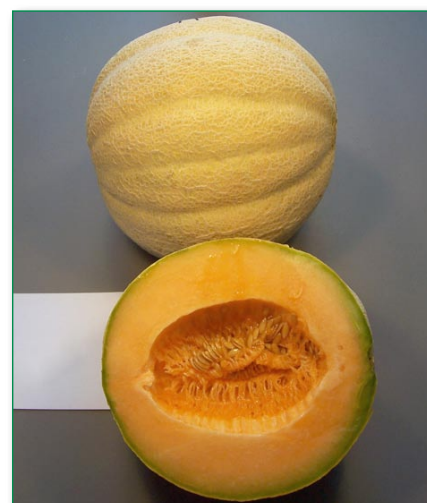
ES-293



Jaipur

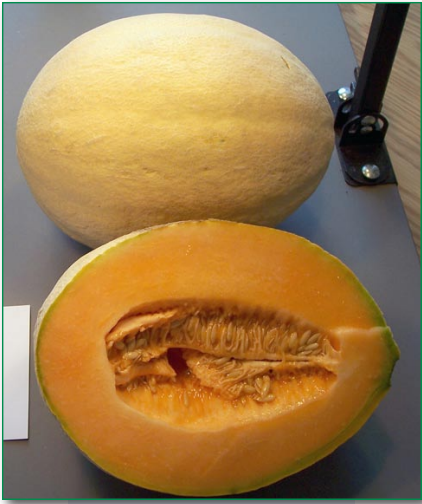


Aphrodite

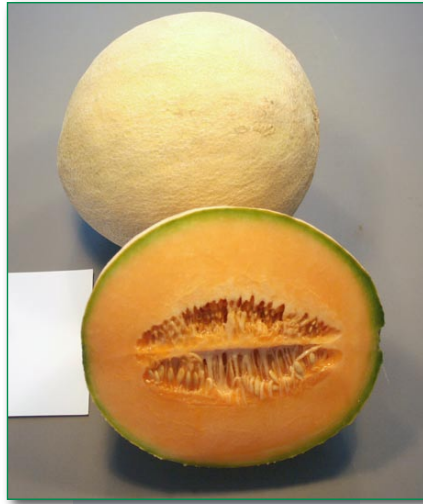


Minerva

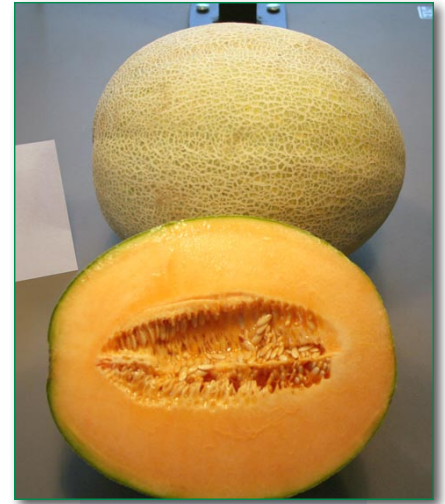
EASTERN MUSKMELON TRIALS continued



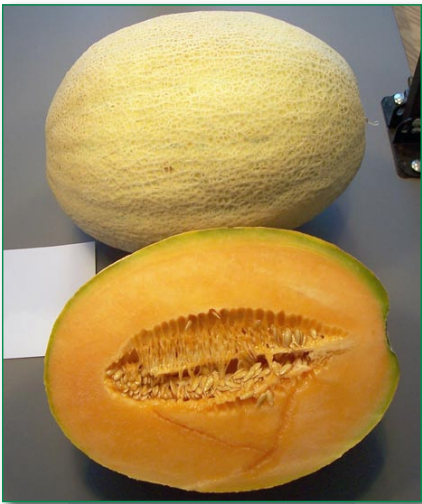
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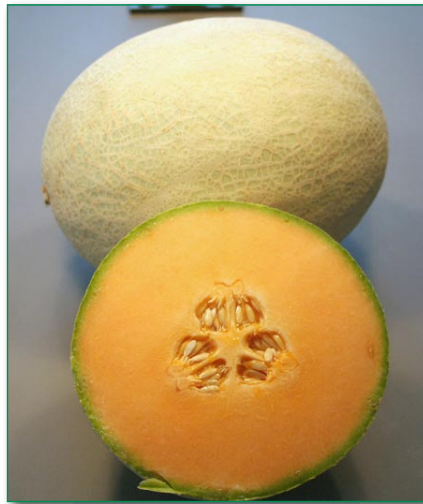
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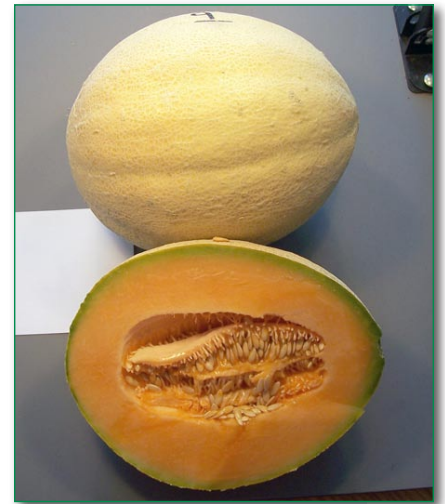
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ES-253



9101 Max



Athena

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