

Eastern Muskmelon Trials for Southwestern Indiana, 2005

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Indiana is a leader in the nation for production of eastern muskmelon with Knox, Sullivan, and Gibson counties ranking in the top 100 melon producing counties. The evaluation of 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 this study 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. 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 could be harvested at a slightly earlier slip-stage and still retain acceptable quality would also be desirable.

Experimental Setup:

Twenty one eastern muskmelon cultivars and advanced experimental lines were evaluated in a randomized complete block design with three replications. Each entry was first direct seeded in the greenhouse on April 15, 2005 and transplanted into the field on May 10, 2005. Plots consisted of single 55-foot long rows, covered with 4 ft. wide black plastic mulch. Rows were centered six feet apart, and between plant spacing (within a row) was 2.5 ft., allowing 22 plants per row. Each variety and experimental line was grown in accordance with the recommendations outlined in the Midwest Vegetable Production Guide for Commercial Growers (ID-56, 2005). Trickle irrigation lines placed beneath the plastic mulch provided water as needed. Fruits were harvested three times a week by hand from July 5, 2005 through August 5, 2005. Data were analyzed with the SAS Software package (SAS Corp., Cary, NC).

Results:

High Yield, Earliness, and Internal Quality Rating: The average yield was 27.5 tons/acre with a range of 18.3 to 35.7 tons/acre (Table 1). The mean fruit weight was 8.3 lbs/fruit with a range of 5.8 to 10.3 lbs/fruit. This translated to 5324 to 8360 fruit/acre with a mean fruit number of 6650 fruit/acre. Eclipse had the highest yield in this years trial followed by Crescent Moon, Minerva, Orange Star, and HSR 4272. The earliest fruit in this trial were harvested at 88 days. 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 2). Selected comments noted during quality evaluation are mentioned here: HSR 4272, Athena, ACX 351, and SSX 1255 all had soluble solids measured above 11% (brix). The highest flavor ratings in this trial were Orange Star, ACX 351, and Crescent Moon. Most fruit were medium to large sized with good uniformity. Heavy netting and a thick rind are also desirable characteristics and only Crescent Moon exhibited both of these characteristics.

Table 1. Yield comparison of Eastern muskmelon cultivars in Southwestern Indiana, 2005.

Cultivar	Seed Source	Days to Harvest	Yield Cwt./A	Yield Tons/A		Fruit No./A	Average Fruit Weight (lbs)	% of fruit harvested between		
								7-5 7-11	7-12 7-27	7-28 8-5
Eclipse	SM	94.7	713.8	35.7	a	8360	8.5	7.5	76.8	15.8
Crescent Moon	SE	89.3	650.7	32.5	ab	6292	10.3	14.9	73.4	11.7
Minerva	SY	97.3	619.5	31.0	abc	6336	9.8	0.0	81.8	18.2
Orange Star	SM	88.7	606.8	30.4	abc	7612	7.9	11.9	76.8	11.3
HSR 4272	HL	89.3	591.1	29.6	abcd	7084	8.3	25.8	69.4	4.9
ACX 2100	AC	94.7	584.0	29.2	abcd	6028	10.0	2.3	83.6	14.0
Aphrodite	SY	88.7	563.8	28.2	bcde	6424	8.7	13.3	69.3	9.0
SSX 1268	STS	92.0	563.2	28.2	bcde	6644	8.4	8.9	82.2	9.0
ACX 351	AC	96.7	540.6	27.0	bcde	5632	9.6	0.0	88.3	11.7
Athena	SY	89.3	494.6	24.7	cdef	6820	7.2	15.6	74.0	10.4
SSX 1255	STS	91.3	493.9	24.7	cdef	6204	7.9	15.9	73.0	11.2
4099	SM	91.3	467.7	23.4	def	8052	5.8	7.0	67.6	25.3
Goddess	SE	94.0	439.9	22.0	ef	6292	7.0	28.0	70.1	1.9
HSR 4276	HL	88.0	366.6	18.3	f	5324	6.8	41.1	48.8	10.1
Grand Mean		91.8	549.7	27.5		6650	8.3	13.7	73.9	12.3
LSD (5%)		2.6	139.4	7.0		1339	1.0	12.0	14.8	10.0
C.V. (%)		1.7	15.2	15.1		12	7.2	52.2	11.9	48.2

Table 2. Quality comparison of Eastern muskmelon cultivars in Southwestern Indiana, 2005.

Cultivar	Seed		Shape ^r	Size ^s	Uniformity ^t	Flavor ^u	Netting ^v	Ridges ^w	Rind ^x	Seed	
	Source	% SS ^q								Cavity ^y	Pressure ^z
HSR 4272	HL	11.8	Ov	M	3	3.5	2	0	1	3	2.8
HSR 4276	HL	10.2	Ov	M	2	3.9	2	1	1	2	3.1
Orange Star	SM	10.5	Rd	S	3	4.0	2	1	1	3	1.5
4099	SM	10.8	Rd	S	3	2.2	3	0	2	3	1.6
Athena	SY	11.1	Ov	S-M	3	3.0	1	1	2	2	1.4
Aphrodite	SY	8.3	Rd	L	3	2.9	2	1	2	2	1.6
Minerva	SY	9.2	Ov	VL	2	2.3	3	2	1	3	2.0
ACX 2100	AC	10.6	Ov	L	2	3.0	3	1	1	2	4.1
ACX 351	AC	11.2	Ov	M	2	4.2	3	1	2	3	2.3
Crescent Moon	SE	7.9	Rd	L	3	4.0	3	3	3	2	1.0
Goddess	SE	7.9	Ov	S-M	2	2.5	1	0	2	3	2.0
SSX 1255	STS	11.1	Ov	M	2	3.8	3	0	2	3	2.6
SSX 1268	STS	9.2	Ov	M	2	1.5	2	1	1	2	1.8
Eclipse	SM	10.6	Rd	L	3	3.4	2	2	2	2	1.4

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

^r Shape: Rd=round, Ov=oval, Ob=oblong.

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

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

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

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

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

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

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

^z Pressure = Pressure test reading in pounds per square inch