

Eastern Muskmelon Trials for Southwestern Indiana, 2006

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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:

Fifteen 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 May 19, 2006 and transplanted into the field on June 5, 2006. 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, 2006). Trickle irrigation lines placed beneath the plastic mulch provided water as needed. Fruits were harvested three times a week by hand from July 26, 2006 through August 11, 2006. Data were analyzed with the SAS Software package (SAS Corp., Cary, NC).

Results:

High Yield, Earliness, and Internal Quality Rating: The average yield was 16.5 tons/acre with a range of 13.6 to 21.4 tons/acre (Table 1). The mean fruit weight was 7.2 lbs/fruit with a range of 4.1 to 11.3 lbs/fruit. This translated to 2992 to 7304 fruit/acre with a mean fruit number of 4840 fruit/acre. HMX 4587 had the highest yield in this year's trial followed by Crescent Moon, Eclipse, and SV04H154. The earliest fruit in this trial were harvested at 98 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: ES-253, HMX 2607, and 9101 Max all had soluble solids at or above 10% (brix). The highest flavor ratings in this trial were 9101 Max, ES-253, and Aphrodite. Most fruit were medium to large sized with average uniformity. Heavy netting and a thick rind are also desirable characteristics and ES-253 and ACX 2100 exhibited both of these characteristics.

Table 1. Yield comparison of Eastern muskmelon cultivars in Southwestern Indiana, 2006.

| 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 |
| HMX 4587 | HM | 101 | 427.9 | 21.4 | a | 4620 | 9.3 | 1.9 | 88.7 | 9.5 |
| Crescent Moon | SE | 103 | 380.6 | 19.0 | ab | 4488 | 8.4 | 0.0 | 87.0 | 13.0 |
| Eclipse | SM | 99 | 378.7 | 18.9 | abc | 6072 | 6.3 | 4.4 | 87.6 | 8.0 |
| SV04H154 | SE | 98 | 348.4 | 17.4 | abcd | 6468 | 5.4 | 22.2 | 71.2 | 6.6 |
| HMX 2607 | HM | 100 | 337.8 | 16.9 | bcd | 4620 | 7.3 | 1.8 | 91.0 | 7.2 |
| ES-293 | AC | 103 | 337.2 | 16.9 | bcd | 2992 | 11.3 | 1.3 | 40.0 | 58.6 |
| Jaipur | SM | 103 | 332.1 | 16.6 | bcd | 5104 | 6.6 | 0.0 | 86.6 | 13.4 |
| Aphrodite | RG | 98 | 320.0 | 16.0 | bcd | 4620 | 6.9 | 19.5 | 72.1 | 8.4 |
| Minerva | RG | 102 | 319.9 | 16.0 | bcd | 3608 | 8.8 | 2.8 | 87.3 | 9.9 |
| SSX 1268 | STS | 102 | 318.0 | 15.9 | bcd | 5808 | 5.5 | 1.3 | 95.8 | 3.0 |
| 4099 | SM | 104 | 302.5 | 15.1 | bcd | 7304 | 4.1 | 0.0 | 95.7 | 4.3 |
| ACX 2100 | AC | 107 | 297.0 | 14.8 | cd | 3784 | 7.8 | 0.0 | 49.5 | 50.5 |
| ES-253 | AC | 104 | 294.0 | 14.7 | d | 3432 | 8.5 | 0.0 | 91.4 | 8.6 |
| 9101 Max | AC | 107 | 276.5 | 13.8 | d | 4400 | 6.5 | 0.0 | 58.4 | 41.6 |
| Athena | RG | 98 | 271.8 | 13.6 | d | 5280 | 5.1 | 14.2 | 83.4 | 2.5 |
| Grand Mean | | 102.0 | 329.5 | 16.5 | | 4840 | 7.2 | 4.6 | 79.0 | 16.3 |
| LSD (5%) | | 2.8 | 82.0 | 4.1 | | 1332 | 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 |

Table 2. Quality comparison of Eastern muskmelon cultivars in Southwestern Indiana, 2006.

| Cultivar | Seed | | Shape ^r | Size ^s | Uniformity ^t | Flavor ^u | Netting ^v | Ridges ^w | Rind ^x | Seed | |
|---------------|--------|-------------------|--------------------|-------------------|-------------------------|---------------------|----------------------|---------------------|-------------------|---------------------|-----------------------|
| | Source | % SS ^q | | | | | | | | Cavity ^y | Pressure ^z |
| HMX 4587 | 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 |

^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