UT Specialty Melon Variety Trial, 2011

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Thirty specialty melon varieties were evaluated for field performance and fruit quality when grown in the Southeast. Varieties include: Cantaloupe, Galia, Canary, Asian, Crenshaw, Ananas, Honeydew and Charentais. Melons were evaluated for yield, quality and taste.

Materials and Methods

The study was performed at the University of Tennessee Plateau AgResearch and Education Center in Crossville, Tennessee (PREC). Varieties were direct seeded into black plastic mulch on 7 June 2011. Each variety was replicated 4 times in a randomized complete block design. Plots were 20 ft. long with 10 plants/plot at an in-row spacing of 2 ft. and a between row spacing of 7 ft. Plots were spaced 10 ft. in each row.

Three hundred pounds/acre of 15-15-15 was applied and incorporated into the field prior to planting. Drip irrigation was used to provide water and fertilizer every 2 to 4 days, as needed. The first 2 fertilizer applications were of 16-16-16 to deliver 4 lb N/acre, subsequent fertilizer applications delivered 5 lb N/acre with 20-20-20, with a total of 15 applications over the season. One application of potassium nitrate and magnesium sulfate was applied on 9 August. Pre-emergent herbicides, Command, Curbit, and Roundup, were applied and incorporated between rows one day after planting. Admire Pro at a rate of 12 oz/acre, was applied through the drip line on 10 June and again on 16 July. A rotation of foliar insecticides was applied 5 times throughout the season beginning on 9 July (Sevin XLR (applied 9 July, 26 July and 19 August), Asana XL (applied 5 August), and Capture 2EC (applied 12 August)). Weekly foliar fungicides applications rotating between Quadris and Bravo Ridomil Gold began on 26 July.

The germination rate was determined on 20 June, 13 days after planting. Disease ratings were taken weekly, beginning on 7 July, until general plant dieback made it too difficult to distinguish diseases. Harvest began 8 August and was done twice weekly until 7 Sept. Three fruit from each replication were assessed for taste, soluble solids, flesh color, rind color, fruit shape and net type. For taste evaluations, ten untrained panelists evaluated the melon samples in random order. For each sample, panelists scored taste using a five-point scale (1=dislike extremely, 3=neither like nor dislike, and 5=like extremely).

Results

Melon varieties are discussed by type and are organized in Tables 1 and 2 from highest to lowest yielding within each type.

Asian. Sun Jewel was the only Asian variety of melon included in the trial and produced a large number of fruit; however, it is very susceptible to cracking which accounts for the high percentage of culls. Despite its high sugar content, it was rated only mildly favorable in taste tests.

Ananas. Ananas varieties ranged in size from 4 to over 7 lbs/fruit. Large in size, 1816AN OF and Antoinette were the highest yielding Ananas melons by weight, but had poor taste ratings. San Juan, while lowest yielding with a shorter harvest period, was higher in sugar content and was rated the highest, along with ACX 2268G, among all melons in taste tests. San Juan also had more culls, which may be attributed to over-ripening. Ananas melons ripen quickly and have a short shelf-life and, therefore, should be harvested daily.

Canary. Canary varieties ranged in size from 2 to nearly 6 lbs/fruit. ACX 2047CN, a small to medium fruit, was the highest yielding of all melons by weight and number with good sugar content equal to that of ACR 1056CN and less than that of Brilliant, which scored well in taste tests. Ripeness is difficult to determine for this melon type. Harvest should be done when rind is dark yellow, melons do not slip from vine.

Crenshaw. Lilly had the largest fruit of all melons in the trial (8 lbs/fruit) and was a high yielding melon that was well favored in taste tests for its sweet mild flavor. Melons are harvested yellow and at the forced-slip stage.

Galia. Galia varieties ranged from 2 to 6 lbs/fruit. ACX 425G and ACX2268G were similar in both yield by weight and sugar content, with ACX 2268G being more favorable in taste tests. However, at 3.2 lbs./fruit versus 5.8 lbs./fruit, ACX 425G yielded almost twice as many fruit as ACX 2268G. In taste tests ACX 2268G, along with San Juan, was rated the highest for taste among all melons. Diplomat did not rate well in taste tests and had the highest percentage of culls.

Honeydew. Honeydew varieties ranged from 3 to 6 lbs/fruit. Summer Dew 262HQ was the top yielding hybrid honeydew by weight. Snow Leopard, a specialty honeydew with variegated cream and speckled dark green rind, was the highest yielder by number of fruit with over 11,000 fruit/acre. Honey Yellow and Honey Orange had the highest yields by weight for the specialty honeydews with the lowest percentage of culls. Honey Yellow and Honey Pearl had exceptional sugar content and rated well in taste tests. All were difficult to determine ripeness, so actual days to harvest may be sooner than what is reported here. When ripe, melons turn from a light green to white to a darkish cream color that is difficult to discern. They do not slip from vine.

Muskmelon. Edens Gem, a small attractive fruit (1.5 lbs/fruit) with low soluble solids content, was rated the poorest tasting melon in the trial. However, it was the highest yielding melon by number of fruit/acre (17,733 fruit/acre) in the trial. Harvest timing is difficult, when melons easily slip from vine they are yellowish-orange in color but at this point are past the edible ripe stage. Harvest should be done when the green heavily netted fruit are just beginning to lighten and have to be forced from vine.

Charentais. Savor, a small attractive fruit (~2 lbs/acare), had good sugar content and was favored in taste tests. However, it had a high percentage of culls. Similar to Edens Gem, Savor was also difficult to discern optimum harvest timing. Once it slips easily from the vine it is cream in color with light green sutures and over-ripe with mushy bland flesh. Harvest should be done when rind is grayish green with dark green sutures, slightly lighter in color than its unripe stage.

Cantaloupe (Eastern and Western Shippers, LSL, and Harper). Cantaloupe varieties ranged from 3.5 to 6 lbs/fruit. XLT 9276 was the highest yielding cantaloupe by weight, as well as one of the top yielding melons overall. Samoa, a Harper Long Shelf Life (LSL) type, had the largest fruit. But Samoa, along with Origami, had the lowest taste ratings among cantaloupes. ACR-4249 had the highest yield by number with over 10,000 fruit/acre and along with ACR-7609 ranked the highest among LSL types for taste. Sweet Granite, while low yielding and not a LSL, was rated the best tasting cantaloupe and one of the top tasting melons overall.

Disease Ratings

With the spray schedule, disease and insect pressure was minimal until the last couple weeks of the season when powdery mildew greatly impacted some varieties, notably Lilly, Edens Gem , Sweet Granite and Honey Pearl (Table 3). Ten varieties showed tolerance to powdery mildew throughout the season: 1816AN OF, San Juan, Gallipoli, XLT 9276, ACX 145HD XOF, Samoa, XLT 9000, Origami, ACR-4249 and ACR-7609. Bacterial wilt was present in a few varieties (San Juan, Honey Orange, and ACR-7609) beginning mid-season, however, it was not statistically significant and did not greatly affect the overall plot or yield. Septoria leaf spot damage remained minor (<5%) throughout the season and did not progress after the second evaluation day on 13 July.

TABLE 1. SPECIALTY MELON VARIETY TRIAL YIELD RESULTS, CROSSVILLE, TN, 2011.

Variety	Melon Type[1]	Seed Source[2]	Germ. Rate (%)	DTH	Yield (cwt/A)[3]		Avg. No. Melons/A	Avg. Wt./Fruit (lbs)	Culls (%)[5]
1816AN OF	AN	AC	97.5	72	448.6	bcdef[4]	8573	5.7	7.5
Antoinette	AN	AC	97.5	66	440.1	bcdefg	5980	7.3	9.9
Anastasia	AN	AC	100	66	315.1	ghijkl	8750	4.2	15.6
San Juan	AN	JS	100	66	312.5	ghijkl	6533	4.9	18.3
Sun Jewel	AS	JS	100	66	271.3	ijkl	13572	2.0	32.0
ACX 2047CN	CA	AC	100	80	599.6	a	15477	3.9	7.8
ACR 1056CN	CA	AC	100	76	412.9	bcdefgh	7069	5.9	22.8
Brilliant	CA	JS	100	80	305.7	hijkl	5833	5.2	12.9
Savor	CH	JS	100	76	218.3	l	9644	2.3	30.1
Lilly	CR	JS	100	72	500.1	abcd	6455	8.0	14.1
ACX 425G	GA	AC	100	76	395.3	cdefghij	12211	3.2	12.5
ACX 2268G	GA	AC	100	76	381.6	defghij	6591	5.8	16.9
Diplomat	GA	JS	100	66	355.1	efghijk	7553	4.7	20.2
Gallipoli	GA	AC	97.5	72	248.6	kl	13879	1.8	18.4
Honey Yellow	HD	JS	100	72	436.1	bcdefg	9411	4.6	7.6
Honey Orange	HD	JS	100	76	423.0	bcdefgh	8322	5.1	8.8
Honey Pearl	HD	JS	95	72	348.6	efghijk	7233	4.8	15.6
Snow Leopard	HD	JS	97.5	72	320.1	fghijkl	11217	3.0	11.6
Summer Dew 262 HQ	HH	AC	100	80	452.3	bcde	7622	6.0	5.0
ACX 145HD XOF	HH	AC	100	87	366.6	efghijk	8244	4.5	14.3
Summer Dew 252 HQ	HH	AC	100	80	359.6	efghijk	6222	5.6	13.0
Summer Dew 3000 OF	HH	AC	100	80	343.2	efghijkl	11121	3.2	6.5
Edens Gem	MM	JS	100	72	267.7	jkl	17733	1.5	9.2
Samoa	COHL	HM	100	80	521.6	abc	8555	6.0	16.1
XLT 9000	COL	AC	95	80	421.5	bcdefgh	9178	4.5	6.2
XLT 9276	COL	AC	100	76	541.5	ab	9722	5.6	7.7
Origami	COEL	HM	100	69	398.6	cdefghi	6844	5.8	16.1
ACR-4249	COWL	AC	97.5	80	385.4	defghij	10828	3.5	2.9
ACR-7609	COWL	AC	100	76	323.9	efghijkl	6844	4.7	12.0
Sweet Granite	CO	JS	97.5	66	294.9	hijkl	7121	4.4	22.7

[1] Melon type: AN = Ananas, AS = Asian, CA = Canary, CR = Crenshaw, GA = Galia, HD = Honeydew, MM = Muskmelon, CH = Charentais, HH = Hybrid Honeydew, CO = Cantaloupe (W=Western Shipper, E=Eastern Shipper, L=LSL, H=Harper)

[2] Seed source: HM = Harris Moran, AC = Abbott and Cobb, JS = Johnny's Selected Seed Company

[3] Yield per acre was calculated assuming 3,111 plants per acre with an in-row spacing of 2 ft and a between row spacing of 7 ft.

[4] Yield means followed by the same letter are not significantly different at $P < 0.05$ by LSD

[5] Cull percent by weight

TABLE 2. SPECIALTY MELON VARIETY TRIAL QUALITY ATTRIBUTES, 2011.

Variety	Taste Ratings (1-5)	Soluble Solids (%)	Flesh Color	Rind Color	Fruit Shape	Net Type
1816AN OF	2.9	6.9	lt. or.	or. with gr. mottling	oblong	medium to heavy
Antoinette	4.0	9.0	lt. or.	yl-or.	oblong	medium
Anastasia	1.6	6.9	lt. or.	yl.	oblong	fine
San Juan	4.8	10.9	cr. with or. tint	yl-or.	round to oval	medium
Sun Jewel	3.0	13.3	wh.	dk. yl.	oblong	none
ACX 2047CN	3.2	11.7	wh.	dk. yl.	oval-round	none
ACR 1056CN	3.0	11.7	lt. gr. with or. tint	dk. yl.	round but slight point at end	none
Brilliant	4.0	14.6	wh. with or. tint	dk. yl.	round oval	none
Savor	4.0	9.8	or.	cr. gr.	round	none - green sutures
Lilly	4.5	10.5	lt. or.	yl.	oblong	none
ACX 425G	3.8	10.1	wh.	yl-or.	oval	medium
ACX 2268G	4.8	9.6	wh. with or. tint	lt. yl.	oval	medium
Diplomat	2.3	8.8	lt. gr. - wh.	yl.	round-oval	fine-medium
Gallipoli	3.2	7.9	lt. gr.	yl-or.	oval	fine-medium
Honey Yellow	3.8	15.3	lt. or.	dk. Yl.	round	none
Honey Orange	3.0	11.1	lt. or.	cr.	oval	none
Honey Pearl	4.3	16.0	cr.	cr.	round-oval	light markings on end
Snow Leopard	3.5	9.0	wh.	cr. with gr. Specks	oval	none
Summer Dew 262 HQ	3.1	12.1	lt. gr.	cr.	oval	none
ACX 145HD XOF	3.2	14.1	or.	cr.	oval	none
Summer Dew 252 HQ	3.3	14.5	lt. gr. - cr.	cr.	round-oval	none
Summer Dew 3000	3.0	11.8	or.	cr.	oval-round	none
Edens Gem	1.0	6.2	lt. or.	lt. gr.-yl.	round	heavy
Samoa	1.7	7.8	or.	cr.	oval	heavy
XLT 9000	2	11.6	or.	green	round	heavy/thick
XLT 9276	3.3	10.1	or.	gr.	oval	heavy
Origami	1.7	8.5	or.	cr.	oval	medium-heavy
ACR-4249	3.3	11.6	or.	cr.	round	heavy
ACR-7609	3.5	10.0	or.	cr.	round-oval	heavy
Sweet Granite	4.0	9.9	or.	yl-or.	oval	medium-heavy

TABLE 3. MELON VARIETY TRIAL POWDERY MILDEW RATINGS, CROSSVILLE, TN, 2011.

Variety	Melon Type[1]	Powdery Mildew % Severity				
		13 July[2]	July 20	July 28	3 August	18 August
1816AN OF	AN	0.0	0.0	0.0 d[3]	0.0 c	0.0 f
Antionette	AN	0.0	0.0	1.1 bcd	1.1 bc	0.0 f
Anastasia	AN	0.0	0.0	0.0 d	0.0 c	15.6 def
San Juan	AN	0.0	0.0	0.0 d	0.0 c	0.0 f
Sun Jewel	AS	0.0	0.0	1.1 bcd	0.5 c	18.7 def
ACX 2047CN	CA	0.0	0.0	1.1 bcd	1.1 bc	0.0 f
ACR 1056CN	CA	0.0	0.0	1.0 bcd	1.0 bc	0.0 f
Brilliant	CA	0.0	0.0	1.0 bcd	1.0 bc	15.1 def
Savor	CH	0.0	0.0	0.0 d	0.0 c	25.6 cde
Lilly	CR	0.0	0.0	1.1 bcd	1.1 bc	65.5 a
ACX 425G	GA	0.0	0.0	1.0 bcd	0.5 c	0.0 f
ACX 2268G	GA	0.0	0.0	1.0 bcd	1.0 bc	0.0 f
Diplomat	GA	0.0	0.0	2.6 b	2.6 b	9.4 ef
Gallipoli	GA	0.0	0.0	0.0 d	0.0 c	0.0 f
Honey Yellow	HD	0.0	0.0	0.0 d	0.0 c	29.6 bcde
Honey Orange	HD	0.0	0.0	1.1 bcd	1.1 bc	18.7 def
Honey Pearl	HD	0.0	0.0	1.1 bcd	1.1 bc	43.7 abc
Snow Leopard	HD	0.0	0.0	1.1 bcd	1.1 bc	36.6bcd
Summer Dew 262 HQ	HH	0.0	0.0	2.1 bc	1.5 bc	0.0 f
ACX 145HD XOF	HH	0.0	0.0	0.5 cd	0.5 c	2.2 f
Summer Dew 252 HQ	HH	0.0	0.0	5.6 a	4.4 a	0.0 f
Summer Dew 3000	HH	0.0	0.0	1.0 bcd	1.0 bc	0.0 f
Edens Gem	MM	0.0	0.0	0.0 d	0.0 c	51.5 ab
Samoa	COHL	0.0	0.0	0.0 d	0.0 c	0.0 f
XLT 9000	COL	0.0	0.0	0.0 d	0.0 c	0.0 f
XLT 9276	COL	0.0	0.0	0.0 d	0.0 c	0.0 f
Origami	COEL	0.0	0.0	0.0 d	0.0 c	0.0 f
ACR-4249	COWL	0.0	0.0	0.5 cd	0.5 c	0.0 f
ACR-7609	COWL	0.0	0.0	2.3 bc	0.5 c	0.0 f
Sweet Granite	CO	0.0	0.0	0.5 cd	0.5 c	47.5 abc

[1] Melon type: AN = Ananas, AS = Asian, CA = Canary, CR = Crenshaw, GA = Galia, HD = Honeydew, MM = Muskmelon, CH = Charentais, HH = Hybrid Honeydew, CO = Cantaloupe (W=Western Shipper, E=Eastern Shipper, L=LSL, H=Harper)

[2] Represent disease evaluation dates

[3] Means within columns followed by the same letter are not significantly different at $P < 0.05$ by LSD