

Midwest Triploid Watermelon Variety Trial in Southwest Indiana — 2011

Shubin K. Saha, Vegetable Extension Specialist, Department of Horticulture and Landscape Architecture

**Sara Hoke, Agriculture Technician, Department of Botany and Plant Pathology
Southwest Purdue Agricultural Center, Vincennes, IN, 47591**

Introduction

In Indiana, watermelons (*Citrullus lanatus* L.) are the largest fresh market vegetable crop with regards to total acres in 2010 relative to all other fresh market vegetables. As an industry it had a value of more than \$32 million. In 2010, Indiana ranked sixth in the United States for total area harvested (7,100 acres) of watermelon and third for average yield (40,000 lbs/acre) (USDA, 2011).

Watermelons are an important commodity in Indiana, therefore improving production practices for increased sustainability and profitability is of great importance. There are various practices in commercial watermelon that can affect yield and quality. One of the fundamental starting points is the selection of a variety with good yield, desirable fruit quality traits, and one that is suited to growing under local conditions. The objective of this study was to evaluate yield and internal quality of 25 triploid watermelon varieties grown under southwestern Indiana conditions.

Materials and Methods

On April 14, 2011, the experiment was established when 250 seeds of each of the 25 varieties were sown. Seeds were planted in 50-cell black seedling flats (Crop Tech, Vincennes, IN) using a peat-based soilless media: Jiffy-Mix Grower's Choice Plus (Jiffy Products of America, Lorain, Ohio). The pollenizer utilized for the trial was SP-5 and transplants of this variety were produced in the same manner.

The field location was prepared by cultivating and forming raised beds covered with black plastic mulch with drip tape in the bed. Plants were irrigated as needed when rainfall was insufficient. Prior to bed formation, fertilizer materials were applied preplant, including 350 lbs. (46-0-0), 100 lbs. (0-0-60), and 200 lbs. of pelletized lime. The transplants were taken to the field on May 13, 2011, and planted in the designated locations based on the randomized complete block design with three replications. Row spacing was 8 feet center to center with 4-foot spacing between plants within the row. Experimental plots were 48 feet in length, which led to a planting density of 12 triploid plants and six pollenizers per plot. Pollenizers were interplanted in the same row as the triploid varieties arranged between each pair of triploid plants.

Fruit were harvested on a weekly basis for a total of four pickings on July 26, August 2, August 9, and August 16. Aside from harvest data, fruit quality data were also collected for nine fruit from each variety for such parameters such as brix, fruit firmness, and presence of hollow heart. Yield data were analyzed by Fisher's least significant difference test using SAS statistical programs (SAS Institute, Cary, NC).

Results

In 2011, there were no statistically significant differences in harvest data among the 25 varieties with the exception of average fruit size. WDL9408 had the highest numerical average weight (18.3 lbs); however, statistically it had greater average fruit weight than nine of the 25 varieties (Table 1). The other 14 varieties did not differ from WDL9408 with respect to average fruit weight. Average fruit size ranged from 12.8-18.3 lbs (Table 1). As previously indicated, yield in pounds per acre did not differ statistically among the varieties in 2011, but overall the yields were slightly greater than in 2010 (Saha and Egel, 2010). In 2011 yields of fruit ranged from 42,000 to 60,000 lbs/acre (Table 1). Numerically the three varieties with the highest yield were AC7187 (59,799 lbs/acre), Troubadour (54,461 lbs/acre), and AC7267 (54,402 lbs/acre) (Table 1).

RWT8231 had higher soluble solids content (11.8%) than 21 of the 25 varieties (Table 2). The other varieties that did not differ with regards to soluble solids content included Indiana, Wrigley, and Affirmed. Although RWT8231 had high soluble solids, it was one of the lowest yielding varieties numerically (43,980 lbs/acre) (Table 1). Fruit firmness of the varieties was not statistically significant. Super Seedless 7197 had the highest numerical firmness of flesh (7.7 lbs-force) (Table 2). There was some statistical variation with regards to degree of seedlessness, however they all fell in the range of no seeds with the exception of ACX6177FR (Table 2). Presence of hollow heart this season was also very minimal (Table 2). Of all the varieties, AC7267 had both relatively high sugar content and was one of the highest yielding varieties (Table 1 and 2).

Acknowledgements

The authors would like to extend their appreciation to the following individuals for all their help and assistance with the completion of the variety trials this year: Bill Davis, Dennis Nowaskie, and Angie Thompson.

Literature Cited

Saha, S.K. and D. Egel, 2010. Evaluation of seedless watermelon varieties for production in southwest Indiana, 2010. Midwest Vegetable Trial Report for 2010.

United States Department of Agriculture, 2011. National Agricultural Statistics Service. Vegetables 2010 Summary. <http://usda01.library.cornell.edu/usda/current/VegeSumm/VegeSumm-01-27-2011.pdf>.

Table 1. Yield of seedless watermelon varieties, 2011.

Variety	Seed Company	Average Weight (lbs) ¹	Total Fruit Weight per Plot ² (lbs)	Weight per Acre (lbs)	Total Fruit Number per Plot	Total Fruit Number per Acre	% 1st Harvest	% 2nd Harvest	% 3rd Harvest	% 4th Harvest
WDL 9408	Syngenta	18.3 a	412.5	46,791	22.3	2,533.4	22.4	22.4	32.8	22.4
Super Seedless 7187 HQ	Abbott & Cobb	17.6 a	527.2	59,799	30.7	3,478.8	7.6	15.2	55.4	21.7
ACX 7387 HQ	Abbott & Cobb	17.5 a	450.6	51,113	25.7	2,911.6	11.7	23.4	45.5	19.5
Distinction	Syngenta	17.5 a	447.7	50,782	25.7	2,911.6	11.7	27.3	41.6	19.5
Liberator (ACX 4106 T)	Abbott & Cobb	17.4 ab	452.3	51,312	26.3	2,987.2	11.4	21.5	38.0	29.1
ACX 5727 T FR	Abbott & Cobb	17.0 abc	455.6	51,686	27.3	3,100.6	4.9	20.7	51.2	23.2
Troubadour	Harris Moran	16.9 abcd	480.1	54,461	27.0	3,062.8	13.6	27.2	48.1	11.1
Tri-X 313	Syngenta	16.9 abcd	451.7	51,241	28.3	3,214.1	7.1	18.8	45.9	28.2
Affirmed	Sakata	16.8 abcd	439.6	49,872	27.7	3,138.5	7.2	21.7	41.0	30.1
WDL 9409	Syngenta	16.6 abcd	395.9	44,913	23.7	2,684.7	14.1	33.8	38.0	14.1
Cooperstown	Seminis	16.4 abcd	434.9	49,333	27.0	3,062.8	4.9	23.5	46.9	24.7
ACX 6177 FR	Abbott & Cobb	16.3 abcd	415.5	47,132	25.3	2,873.7	6.6	31.6	34.2	27.6
Majestic	Seminis	16.3 abcd	452.2	51,300	29.3	3,327.5	6.8	18.2	39.8	35.2
Fascination	Syngenta	16.1 abcd	437.4	49,621	27.7	3,138.5	13.3	26.5	32.5	27.7
Tri-X Palomar	Syngenta	16.1 abcd	419.8	47,624	27.0	3,062.8	16.0	18.5	32.1	33.3
Wrigley	Seminis	16.0 abcd	407.5	46,225	26.0	2,949.4	10.3	21.8	38.5	29.5
Summer Sweet 5234 Plus	Abbott & Cobb	15.0 bcde	414.0	46,961	26.0	2,949.4	6.4	12.8	41.0	39.7
Crunchy Red	Harris Moran	15.0 cde	414.0	46,962	29.3	3,327.5	6.8	11.4	34.1	47.7
WDL 9405	Syngenta	15.0 cde	369.0	41,864	23.7	2,684.7	7.0	23.9	35.2	33.8
RWT 8231	Syngenta	14.9 cde	387.7	43,980	26.3	2,987.2	13.9	26.6	35.4	24.1
HMX 9911	Harris Moran	14.7 cde	463.3	52,552	30.7	3,478.8	4.3	16.3	42.4	37.0
Indiana	Seedway	14.6 de	361.0	40,954	25.7	4,008.1	7.8	16.9	45.5	29.9
Super Seedless 7197	Abbott & Cobb	13.5 e	461.0	52,289	27.7	3,138.4	1.2	20.5	54.2	24.1
Super Seedless 7267 HQ	Abbott & Cobb	13.4 e	479.6	54,402	28.7	3,251.9	2.3	19.8	62.8	15.1
Imagination	Syngenta	12.8 e	377.1	42,773	30.0	3,403.1	16.7	23.3	31.1	28.9

¹Means in columns separated by Fisher's least significant difference test ($P \leq 0.05$), means with same letter are not significantly different.

²Plot size = 384ft².

Table 2. Internal fruit quality of seedless watermelon varieties, 2011.

Variety	Seed Company	Brix ^{1,2}		Degree of Seedlessness ³		Hollow Heart ⁴	Rind Thickness (in)	Firmness (lbs-force) ⁵	Fruit Length (in)	Fruit Width (in)				
RWT 8231	Syngenta	11.8	a	0.1	e	0.0	c	0.66	efgh	2.9	9.9	ijk	9.5	bcde
Indiana	Seedway	11.7	ab	0.0	e	0.1	bc	0.64	efgh	3.2	9.5	k	9.3	cde
Wrigley	Seminis	11.3	abc	0.2	e	0.4	a	0.66	efgh	2.8	11.1	bcdefgh	9.3	cde
Affirmed	Sakata	11.1	abcd	0.1	e	0.1	bc	0.84	abc	2.5	11.3	abcd	9.6	bcd
Crunchy Red	Harris Moran	10.93	bcde	0.3	de	0.0	c	0.55	h	4.0	10.4	ghij	8.9	e
Super Seedless 7267 HQ	Abbott & Cobb	10.9	cde	0.23	de	0.2	abc	0.75	abcdef	3.1	10.9	bcdefgh	9.7	bcd
Majestic	Seminis	10.8	cdef	0.1	e	0.3	ab	0.66	efgh	3.2	11.6	abc	9.5	cde
WDL 9408	Syngenta	10.73	cdef	0.9	b	0.2	abc	0.74	bcdefg	3.3	11.4	abcd	9.9	bc
WDL 9405	Syngenta	10.7	cdefg	0.33	cde	0.0	c	0.59	gh	3.5	11.2	bcdefg	9.6	bcd
Tri-X Palomar	Syngenta	10.7	cdefg	0.0	e	0.0	c	0.75	abcdef	2.9	9.9	ijk	9.6	bcd
Tri-X 313	Syngenta	10.6	cdefgh	0.1	e	0.1	bc	0.79	abcde	2.8	11.3	bcd	9.8	bcd
Cooperstown	Seminis	10.53	cdefgh	0.0	e	0.2	abc	0.72	bcdefg	3.4	10.8	defgh	9.3	cde
Liberator (ACX 4106 T)	Abbott & Cobb	10.5	cdefghi	0.2	e	0.0	c	0.75	abcdef	3.8	11.5	abcd	9.5	bcde
ACX 7387 HQ	Abbott & Cobb	10.3	defghij	0.2	e	0.2	abc	0.66	efgh	3.4	12.1	a	9.4	cde
ACX 5727 T FR	Abbott & Cobb	10.3	defghij	0.1	e	0.3	ab	0.87	ab	3.4	10.5	efghi	9.9	bc
Fascination	Syngenta	10.2	efghijk	0.9	b	0.1	bc	0.66	efgh	3.8	10.9	cdefgh	9.4	cde
ACX 6177 FR	Abbott & Cobb	10.0	fghijkl	1.4	a	0.0	c	0.63	fgh	3.4	10.4	fghi	9.8	bcd
Imagination	Syngenta	9.9	ghijkl	0.0	e	0.0	c	0.67	defgh	2.5	9.6	jk	9.2	de
Super Seedless 7187 HQ	Abbott & Cobb	9.8	hijkl	0.4	cde	0.3	ab	0.81	abcd	3.2	11.3	bcd	9.6	bcd
Super Seedless 7197	Abbott & Cobb	9.7	ijkl	0.4	cde	0.0	c	0.67	defgh	7.7	11.2	bcdef	9.6	bcd
WDL 9409	Syngenta	9.67	jkl	0.77	bc	0.0	c	0.70	cdefgh	3.9	11.3	bcde	9.7	bcd
Distinction	Syngenta	9.67	jkl	0.0	e	0.0	c	0.75	abcdef	3.5	10.3	hijk	10.2	ab
Troubadour	Harris Moran	9.63	jkl	0.23	de	0.1	bc	0.91	a	4.7	11.7	ab	9.7	bcd
Summer Sweet 5234	Abbott & Cobb	9.4	kl	0.67	bcd	0.1	bc	0.72	bcdefg	3.3	11.2	bcdefg	10.7	a
HMX 9911	Harris Moran	9.3	L	0.33	cde	0.1	bc	0.64		4.8	10.4	hij	9.9	bc

¹Brix: percent soluble solids. Higher values related to higher sugar content in the fruit.

²Means in columns separated by Fisher's least significant difference test ($P \leq 0.05$), means with same letter are not significantly different

³Degree of Seedlessness: 1=0 seeds; 2=1-5 seeds; 3=> 5 seeds.

⁴Hollow Heart: 0=no hollow heart; 1=hollow heart present.

⁵Pressure: firmness of the flesh of the melon. Higher values are associated with higher firmness.