
Evaluation of Several Seeded and Seedless Watermelon Cultivars with an "Allsweet" Rind Pattern 97-19

Robert C. Hochmuth, Jennifer Hornsby, George Hochmuth¹

Introduction

Watermelon represents the leading vegetable in terms of acreage in the state with approximately 40,000 to 50,000 acres produced annually. Several leading Florida watermelon producing counties are located in the Suwannee Valley area. Long watermelons with dark stripes on medium green background ("Allsweet types") have become very important. This trial was conducted to evaluate production and quality of several cultivars fitting this general rind pattern.

Materials and Methods

Plots were established in a Lakeland fine sand at the North Florida Research and Education Center - Suwannee Valley near Live Oak, Florida. Preplant soil tests (Mechlich-1 extract) showed 57 ppm P, 28 ppm K, 31 ppm Mg and 447 ppm Ca. Soil pH was 6.5 using a 1:2 (soil:water) solution. The soil was fertilized prior to planting by incorporation of 500 lbs/A of 13-4-13 (N-P₂O₅-K₂O) in the beds on 10 March. The crop also received an additional 90 lbs/A of N and K₂O via weekly fertigations from 15 April to 16 June. Beds were formed on 7.5 ft centers and fumigated with a mixture of 98% methyl bromide: 2% chloropicrin at a broadcast rate of 400 lbs/A on 10 March. Drip irrigation tube was laid in a 1-inch deep open groove in the center of the bed and covered with Sonoco (Sonoco, Hartville, SC) high density black plastic mulch (0.6 mil thickness). Final beds were 24 inches wide and 6 inches high.

Plots 25 ft in length were established on the beds. Treatments were arranged in a randomized complete-block design and replicated four times. The plots of all seeded cultivars were seeded on 21 March and all seedless cultivars were planted with five-week-old transplants on 27 March. One row per bed was established with 36 inches between plants. The plots were thinned to nine plants on 3 April. The crop was irrigated by drip irrigation using a tensiometer as a scheduling aid. Water was applied to maintain a soil moisture tension of -8 to -12 centibars at 12 inches deep in the soil. Insect and diseases were managed in accordance with a recommended spray program.

¹ Robert C. Hochmuth, Multi County Extension Agent, North Florida Research and Education Center - Suwannee Valley, University of Florida, IFAS, Live Oak, FL 32060
Jennifer L. Hornsby, Biological Scientist, North Florida Research and Education Center - Suwannee Valley, University of Florida, IFAS, Live Oak, FL 32060
George J. Hochmuth, Professor, Horticultural Sciences Department, University of Florida, IFAS, Gainesville, FL 32611

Mature fruit were harvest on three dates: June 16, 23, and 30. The weight of each marketable fruit was recorded. Soluble solid determinations were made with a hand-held refractometer from one fruit from each plot for the first and second harvests. Ratings for hollow heart, internal color, rind necrosis, and seed size were also taken from the same fruits. Hollow heart ratings were made on a 1-5 scale; 1 = no hollow heart, 2 = 1-5 mm separation, 3 = 5-10 mm separation, 4 = 10-20 mm separation, and 5 = over 20 mm separation. Internal color ratings were made on a 1-5 scale; 1=pale red color (poor), 5 = dark red color (excellent). Data were analyzed using analysis of variance.

Results and Discussion

Early watermelon yields (first harvest only) ranged from 63 to 281 cwt/A (Table 1). Top early yields of near 200 cwt/A or higher were found in 'Starbrite', 'RWM 8052-VP', and 'RWM8032'. Lowest early yield of less than 100 cwt/A was found in 'Ferrari' and 'ACX5451'. All other cultivars has early yield of 110 to 175 cwt/A with no significant differences among members of that group.

Total yields ranged from 302 to 888 cwt/A for the three harvests. Highest total yield was found in 'SXW0037' 'W4016', Starbrite', and 'SXW5001'. The two top yielding cultivars, 'SXW0037' and 'W4016', were seedless. Low total yields of less than 500 cwt/A were found in 'Ferrari', 'Stargazer', ACX5451', 'Summer Flavor 510', ACX5443', 'Starfire', 'Mazerati', ACX5411', SXW0086', and '96-10'. All other cultivars had intermediate yields of 500-700 cwt/A. Average fruit weights ranged from 14.7 to 20.3 lbs with no significant differences among cultivars.

Hollow hear was minimal, but present in this trial. Most rating means were in the range of 1 to 2.5 (Table 2). No significant differences among cultivars in hollow heart were found on either rating date. Soluble solids measurements were generally good on both dates. Several cultivars had soluble solids of near 11% or higher on both dates. Internal color ratings were generally higher on 23 June than 16 June. Excellent ratings on both dates were found in seedless cultivars, 'SXW0037' and W4016'. Seeded cultivars with high ratings on both dates included: 'ACX5413', 'Summer Flavor 510', 'SXW5001', 'Mardi Gras', '94-52', and 'ACX5443'. Poor internal color on both dates was found in 'Starbrite'.

Rind necrosis observations and ratings were made on all cut fruit, however, very little was found. Rind necrosis was found in only four fruit on both dates combined. One fruit each of '94-52', 'RWM8032', 'Ferrari', and 'SXW0037' were found with rind necrosis.

'Stargazer' was observed to have very small vines and low plant vigor early in the season. The seedless cultivar, 'SXW5001', had a very high number of fruits set late in

the season. These fruit were immature on the last trial harvest date of 30 June. In addition to having very small seeds, the seeds of 'SXW0086' were brown in color.

Industry Cooperators

Abbott & Cobb (Seed), Pete Suddarth, 4506 Wellington Woods Drive, Hahira GA 31632

Ferry-Morse Seed (Seed), Glenn McKay, PO Box 392, Sun Prairie WI 53590

Sakata Seed America (Seed), Howard Adams, PO Box 1118, Lehigh FL 33970-1118

Rogers Seed Co (Seed), Jonathan Stevenson, 3680 County Place Blvd, Sarasota FL 34233

Asgrow Vegetable Seed (Seed), Duaine Kief, 412 Holly Hill Ct., Tallahassee FL 32312

Shamrock Seed Co (Seed), Bill Johnson, 3832 Hanover Hill Dr., Valrico FL 33594

Sunseeds (Seed), Gary W. Elmstrom, 7087 E. Peltier Road, Acampo CA 95220

Sonoco Products Co (Mulch), Keith Williamson, PO Box 160, Hartsville SC 29550

Roberts Irrigation Products, Inc. (Drip Tape), 700 Rancheros Dr, San Marcos CA 92069

IMC Rainbow (Fertilizer), PO Box M, Tifton GA 31793

Hendrix and Dail (Fumigant), 7610 US Hwy 41 N, Palmetto FL 34221

Table 1. Early and total season yield, average fruit weight, and seed size for several watermelon cultivars at Live Oak, FL during spring 1997.

Cultivar	Type	Seed Source	Yield (cwt/A)		Average Fruit (lbs)	Seed Size ^z
			Early ^y	Total		
SXW0037	Seedless	Sunseeds	144	888	20.3	N/A
W4016	Seedless	Sunseeds	195	755	18.2	N/A
Starbrite	Seeded	Asgrow Seed Co	281	731	19.6	M
SXW5001	Seedless	Sunseeds	161	704	16.6	N/A
RMW8032	Seeded	Rogers Seed Co	194	653	18.3	M
Stars N Strips	Seeded	Asgrow Seed Co	169	633	18.8	M
RWM8036	Seeded	Rogers Seed Co	152	601	20.2	M
94-52	Seeded	Sakata	135	580	17.5	M-L
RWM8052-VP	Seeded	Rogers Seed Co	217	537	19.7	M
Fiesta	Seeded	Rogers Seed Co	134	534	14.8	M
Mardi Gras	Seeded	Rogers Seed Co	136	525	16.5	M
ACX5413	Seeded	Abbott & Cobb	126	516	18.8	M
FMX136	Seeded	Ferry Morse	122	509	19.0	M
ACX5408	Seeded	Abbott & Cobb	124	502	20.2	M
96-10	Seeded	Sakata	150	483	17.4	M
SXW0086	Seeded	Sunseeds	175	483	16.0	S
ACX5411	Seeded	Abbott & Cobb	118	475	18.5	M
Maserati	Seeded	Shamrock Seed Co	125	467	19.5	M
Starfire	Seeded	Asgrow Seed Co	155	466	18.1	M
ACX5443	Seeded	Abbott & Cobb	126	462	16.7	S-M
Summer Flavor 510	Seeded	Abbott & Cobb	144	433	16.3	M
ACX5451	Seeded	Abbott & Cobb	64	375	17.0	M
Stargazer	Seeded	Asgrow Seed Co	110	349	18.2	S-M
Ferrari	Seeded	Shamrock Seed Co	63	302	14.7	M
Significance (p=0.05) ^x			*	**	NS	
LSD ^w			88	200		

^z Seed size was small (S), medium (M), or large (L)
^y Early yield was calculated using first harvest (16 June) only.
^x F-test for significance was either: not significant (NS), significant at the 5% level (*), or highly significant at the 1% level (**).
^w Least significant difference at the 5% level.

Table 2. Evaluation of fruit quality parameters including hollow heart, soluble solids, and internal color for several watermelon cultivars at Live Oak, FL during spring 1997.

Cultivar	Hollow Heart Rating ^z		Soluble Solids ^y		Internal Color Rating ^x	
	16 June	23 June	16 June	23 June	16 June	23 June
94-52	2.3	1.0	10.8	10.3	3.7	5.0
96-10	1.0	1.7	11.3	10.8	3.0	4.0
ACX5408	1.7	1.3	11.2	9.5	3.7	4.7
ACX5411	1.7	1.0	11.0	9.2	2.7	4.3
ACX5413	1.7	1.7	11.2	10.2	4.3	5.0
ACX5443	1.0	2.0	10.5	10.3	3.7	5.0
ACX5451	1.7	1.0	10.8	10.5	3.3	4.7
Ferrari	1.0	1.3	11.0	10.2	3.3	5.0
Fiesta	2.3	2.3	10.7	9.8	4.0	4.7
FMX136	2.3	2.3	11.5	9.7	4.0	4.7
Mardi Gras	1.7	1.7	10.3	8.5	3.7	5.0
RWM8032	2.0	1.7	10.5	9.8	3.3	4.0
RWM8036	1.0	1.3	10.5	10.0	3.0	5.0
RWM8052-VP	2.0	1.7	10.5	10.0	3.7	4.0
Summer Flavor	2.0	1.0	10.8	10.5	4.0	5.0
Maserati	3.0	2.0	11.0	10.5	2.7	4.0
Starbrite	2.3	2.7	11.0	10.7	2.7	2.7
Starfire	1.0	1.3	11.7	11.2	3.7	4.7
Stargazer	2.0	2.7	11.5	10.5	3.3	4.3
Stars N Stripes	2.0	2.0	11.0	10.3	3.0	4.3
SWX5001	3.3	2.7	10.8	10.5	3.7	5.0
SWX0037	2.3	1.3	11.5	11.0	4.3	5.0
SXW0086	2.7	2.0	12.2	11.7	3.3	4.3
W4016	1.7	1.7	11.7	11.0	4.3	5.0
Significance (p=0.05) ^w	NS	NS	**	**	**	**
LSD ^v			1.50	1.50	1.06	1.06

^z Hollow heart rating on a 1-5 scale; 1=no hollow heart, 2 = 1-5 mm separation, 3 = 5-10 mm separation, 4 = 10-20 mm separation, and 5 = over 20 mm separation.
^y soluble solids (%) as measured using a hand-held refractometer.
^w Internal color rating on 1-5 scale; 1 = pale red color (poor) and 5 = deep red color (excellent).
^w F-test for significance was either: not significant (NS), significant at the 5% level (*), or highly significant at the 1% level (**).
^v Least significant difference at the 5% level.