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Evaluation of Several Diploid and Triploid Watermelon Cultivars for North Florida 98-13

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Purpose

This trial was conducted to evaluate several recently introduced cultivars and experimental lines of diploid and triploid watermelons for their performance in North Florida.

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. Soil samples were taken from the experimental area before fertilization and analyzed at the University of Florida Extension Soil Testing Laboratory. The soil pH was 6.2 using a 1:2 (soil to water) mixture. Soil test results using the Mehlich I extractant were 66 ppm P (very high), 28 ppm K (low), 27 ppm Mg (medium), 443 ppm Ca, 1.27 ppm Zn, 0.23 ppm Cu, and 2.82 ppm Mn.

Soil was prepared and fertilizer incorporated in the beds, 400 lbs/A of 13-4-13 (N-P_2O_5-K_2O) plus minor elements. The remaining N and K_2O was applied via the drip tape during the season, total P_2O_5 for the season was 16 lbs/A and N and K_2O was 160 lbs/A. Beds were formed on 7.5 ft centers and were fumigated with a mixture of methyl bromide and chloropicrin (98:2) at a broadcast rate of 400 lbs/A on March 3, 1998. Drip tape was applied to a center groove in the top of the bed and the beds were covered with plastic mulch. The final beds were 24 inches wide and 6 inches high.

Diploid and triploid watermelons (Table 1 and Table 2) were planted in a randomized complete-block design with four replications. Each plot had eight plants spaced 36 inches apart. All plots were established by planting transplants on March 26. Weed control in row middles was accomplished with a preplant application of ethafluralin and cultivation. Insects and diseases were managed with labeled pesticide applications.

Mature fruits were harvested (twice for diploids and three times for triploids) and weighed individually. Soluble solids determinations were made with a hand-held

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refractometer on two fruits from two harvests. Hollow-heart measurements were also made on these same fruits. Cell separations were measured at the widest opening. The data were subjected to analysis of variance.

Results and Discussion

Diploid Watermelons: Early season (first harvest only) yield ranged from about 100 to nearly 400 cwt/A (Table 3). Several entries had early yields or near or over 300 cwt/A. All early season average fruit weights were near or greater than 20 lbs.

Total season yield ranged from 394 to 711 cwt/A. The highest yield of 711 cwt/A was found in 'XWM7301' but was not significantly different from 'XWM7302', 'Stars-N-Stripes', 'Starbrite', 'HSR2261', 'Royal Star', 'Summer Flavor 810', 'Summer Flavor 800', 'RWM8036', 'Verde Grande', 'Summer Flavor 820', or 'SWM7303'. Total season average fruit weights ranged from near 19 lbs to near 24 lbs with no significant differences among cultivars. Total season soluble solids ranged from about 9 to 12% with no significant differences among entries. Hollow-heart separations ranged from none to 5.0 mm. Large hollow-hear separations were found in 'Pinata' (large seed), 'Pinata' (small seed), 'Festival', 'Fiesta', 'Bravo', 'Sultan', and 'Royal Star'.

Triploid Watermelons: Early yields ranged from 30 to 138 cwt/A with no significant differences among entries (Table 4). Early (first harvest only) average fruit weights ranged from 15.3 to 21.9 lbs with no significant differences among entries.

Total season yields ranged from 360 to 642 cwt/A with several entries over 500 cwt/A. 'Millionaire', 'Constitution', 'FS4502', and 'Gem-Dandy' each had yields over 600 cwt/A. Total season average fruit weights ranged from 12.9 to 18.2 lbs but no significant differences were detected. Soluble solids ranged from 7.7 to 12.0 but no significant difference among entries were detected. A wide range of hollow-heart measurements were found. Little or no hollow-heart was detected in 'Millionaire', 'FS4502', 'SSC46072', 'Revolution', 'HMX7928', and 'HMX6910'. The largest hollow-heart separation was found in 'Sapphire', 'Freedom', and 'Tri-X-Shadow'.

Note

The information contained in this report is a summary of experimental results and should not be used as recommendations for crop production. Where trade names are used, no discrimination is intended and no endorsement is implied.

Acknowledgement

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Table 1. Diploid watermelon entries, fruit descriptions, and seed sources. Live Oak, FL, Spring 1998.

Entry	Description	Source
Athens (SXW5025)	Elongated/blocky. Wide dark-green stripes on light-green background. 'Allsweet' type.	Sunseeds
Bravo	Elongated. Wide dark-green stripes on light-green background. 'Allsweet' type.	Hollar
Festival	Elongated. Narrow light-green stripes on dark-green background. 'Allsweet' type.	Willhite
Fiesta	Elongated/blocky. Indistinct light-green strips on dark-green background. 'Allsweet' type.	Novartis
HSR 2261	Oval. Indistinct dark-green strips on light-green background.	Hollar
HSR 2590	Oval. Medium dark-green stripes on light-green background.	Hollar
Huck Finn	Oval. Indistinct dark-green stripes on medium-green background. 'Allsweet' type.	Harris Moran
Legacy	Elongated/oval. Wide dark-green stripes on light-green background. Open pollinated. 'Allsweet' type.	Willhite
Mardi Gras	Elongated. Indistinct light-green stripes on dark-green background. 'Allsweet' type.	Novartis
Pinata (Lg seed)	Elongated/oval. Wide dark-green strips on light-green background. 'Allsweet' type.	Willhite
Pinata (Sm seed)	Elongated/oval. Wide dark-green strips on light-green background. 'Allsweet' type.	Willhite
PS 36694	Elongated/blocky-oval. Indistinct light-green strips on dark-green background. 'Allsweet' type.	Petoseed
Regency	Oblong. Indistinct dark-green strips on light-green background.	Petoseed
Royal Flush	Elongated. Narrow light-green stripes on dark-green background. 'Allsweet' type.	Petoseed
Royal Star	Oblong/blocky. Dark-green stripes on light-green background.	Petoseed
RWM 8036	Elongated/blocky. Light-green stripes on dark-green background. 'Allsweet' type.	Novartis
RWM 8052	Blocky. Light-green stripes on dark-green background. 'Allsweet' type.	Novartis
RWM 8064	Blocky. Medium dark-green stripes on light-green background. 'Allsweet' type.	Novartis
Sangria	Elongated. Light-green stripes on dark-green background. 'Allsweet' type.	Novartis
Starbrite	Oblong. Distinct dark-green stripes on light-green background. 'Royal Sweet' type.	Asgrow
Stargazer	Elongated/blocky. Indistinct light-green stripes on dark-green background. 'Allsweet' type.	Asgrow
Stars-N-Stripes	Elongated. Indistinct light-green stripes on dark-green background. 'Allsweet' type	Asgrow
Sultan	Blocky/oval. Distinct dark-green strips on light-green background.	Harris Moran
Summer Flavor 800	Elongated/blocky. Dark-green stripes on light-green background. 'Allsweet' type.	Abbott & Cobb

Summer Flavor 810	Elongated/blocky. Dark-green stripes on light-green background. 'Allsweet' type.	Abbott & Cobb
Summer Flavor 820	Elongated. Dark-green stripes on light-green background. 'Allsweet' type.	Abbott & Cobb
Summer Flavor 900	Elongated/oval. Dark-green stripes on light-green background. 'Allsweet' type.	Abbott & Cobb
Summer Flavor 910	Elongated. Dark-green stripes on light-green background. 'Allsweet' type.	Abbott & Cobb
Sweet Amigo	Elongated/oval. Wide dark-green stripes on light-green background. 'Allsweet' type.	Florida Seed
SWM 7210 (95-60)	Elongated/blocky. Distinct dark-green stripes on light-green background. 'Allsweet' type.	Sakata
SWM 7303 (96-55)	Elongated/oval. Wide dark-green stripes on light-green background. 'Allsweet' type.	Sakata
SWM 7304 (97-03)	Elongated/oval. Wide dark-green stripes on light-green background. 'Allsweet' type.	Sakata
SXW 5045	Elongated/blocky. Wide dark-green stripes on light-green background. 'Allsweet' type.	Sunseeds
Verde Grande	Elongated/blocky. Smokey medium green overall.	Florida Seeds
XWM 7301 (94-52)	Elongated/oval. Indistinct light-green stripes on dark-green background. 'Allsweet' type.	Sakata
XWM 7302 (96-10)	Elongated/oval. Indistinct light-green stripes on dark-green background. 'Allsweet' type.	Sakata

Table 2. Triploid watermelon entries, fruit descriptions, and seed sources, Live Oak, FL. Spring 1998.

Entry	Description	Source
Constitution (SXW3053)	Blocky. Indistinct, wide, medium-green stripes on light-green background. Similar to 'Tiffany'.	Sunseeds
Crimson Trio	Oval. Indistinct, wide, medium-green stripes on light-green background. Similar to 'Tri-X-313'.	Novartis
Freedom (SXW3022)	Elongated/blocky. Distinct dark-green strips on light-green background. 'Jubilee' type.	Sunseeds
FS 4502	Blocky/oval. Indistinct, wide, medium-green stripes on light-green background. Similar to 'Tri-X-313'.	Florida Seeds
Gem-Dandy	Oval. Indistinct, wide, medium dark-green stripes on light-green background. Similar to 'Tri-X-313'.	Willhite
Genesis	Oval. Indistinct, wide, dark-green stripes on light-green background. Similar to 'Sugar Baby'.	Shamrock
HMX 7928	Oval. Indistinct, very dark-green stripes on dark-green background. Similar to 'Sugar Baby'.	Harris Moran
HMX 6910	Blocky. Distinct, dark-green stripes on light-green background. Similar to 'Queen of Hearts'.	Harris Moran
Millionaire	Oval. Indistinct, wide, dark-green stripes on light-green background. Similar to 'Tri-X-313'.	Harris Moran
Revolution (SXW4034)	Elongated. Wide dark-green stripes alternating with narrow light-green stripes. 'Allsweet' type.	Sunseeds
RWM 8073	Oval. Distinct medium-green stripes on light-green background. Similar to 'Tri-X-313'.	Novartis
Sapphire	Oval. Distinct, wide medium-green stripes on light-green background. Similar to 'Tri-X-313'.	American Sunmelon
SSC 46072	Oval/round. Indistinct, wide, medium-green stripes on light-green background. Similar to 'Tri-X-313'.	Shamrock
Sterling (HSR1599)	Blocky/oblong. Indistinct, wide, medium-green stripes on light-green background. 'Allsweet' type.	Hollar
Tri-X-Carousel	Oval. Broad, green stripes on light-green background. Similar to 'Tri-X-313'.	American Sunmelon
Tri-X-Palomar	Round. Indistinct, narrow, dark-green stripes on medium-green background.	American Sunmelon
Tri-X-Shadow	Round/oval. Distinct, dark-green stripes on medium-green background.	American Sunmelon
Tri-X-313	Oval. Indistinct, broad, medium-green stripes on light-green background	American Sunmelon
XWM 7703	Oval/blocky. Indistinct, wide, dark-green stripes on light-green background. Similar to 'Tri-X-313'.	Sakata
95-11	Blocky/oval. Narrow, distinct, dark-green stripes on light-green background. Similar to 'Queen of Hearts'.	Sakata
95-14	Oval. Wide, indistinct, dark-green stripes on light-green background. Similar to 'Tri-X-313'.	Sakata

Table 3. Early and total yields, average fruit weight, soluble solids, and severity of hollow-heart of diploid watermelons, Live Oak, FL. Spring 1998.

Entry	Total Season				Early Season (1st harvest)	
	Yield (cwt/A)	Avg Wt. (lb)	Soluble Solids (%)	Hollow Heart (mm)[z]	Yield (cwt/A)	Avg Wt (lb)
XMW 7301	711	20.3	11.1	1.3	216	22.1
XWM 7302	685	20.7	11.4	0.1	218	22.3
Stars-N-Stripes	653	19.9	10.7	1.3	244	21.7
Starbrite	653	21.1	10.9	0.6	3.7	23.0
HSR 2261	615	20.1	10.8	0.0	244	21.4
Royal Star	613	21.6	10.6	1.6	321	23.5
Summer Flavor 810	603	23.5	11.0	0.9	268	23.9
Summer Flavor 800	594	20.1	10.9	0.1	182	20.9
RWM 8036	590	22.5	10.5	0.5	211	24.8
Verde Grande	589	23.2	10.3	0.0	363	24.8
SWM 7303	571	20.6	11.7	0.9	193	22.7
Mardi Gras	549	217	10.0	0.0	253	22.9
Athens (SXW 5025)	548	23.7	10.5	0.4	310	26.8
Huck Finn	544	20.5	10.8	0.8	261	21.8
SWM 7201	543	21.4	11.0	1.0	346	22.8
HSR 2590	541	20.9	10.7	0.6	241	22.2
Royal Flush	538	18.9	11.1	1.5	153	20.4
RWM 8064	537	23.9	10.3	0.0	312	26.5
Summer Flavor 910	528	20.4	11.1	0.1	215	20.7
Regency	525	19.5	10.5	0.0	307	21.1
Summer Flavor 900	517	21.7	10.8	0.6	139	24.3
Legacy	515	23.7	8.9	0.9	387	25.6
Sweet Amigo	513	20.4	9.9	0.1	98	20.4
Fiesta	510	19.0	9.3	2.1	99	19.4
Pinata (Large Seed)	503	21.6	10.3	5.0	339	25.0
SXW 5045	497	21.3	10.4	0.0	217	24.4
Festival	495	21.2	9.8	2.8	235	23.4
PS 36694	494	21.8	11.3	0.0	180	23.5
Bravo	484	20.1	11.2	1.9	203	23.1
RWM 8052	470	20.5	9.8	0.6	261	23.8
Stargazer	469	19.6	10.6	0.8	173	21.0
Sultan	463	21.6	12.0	1.9	221	22.9
Pinata (Small seed)	455	18.9	9.3	3.4	316	22.9
SWM 7034	431	19.6	9.8	0.3	307	22.9
Sangria	394	20.0	11.1	0.0	181	22.6

Significance[y]	**	NS	NS	*	**	*
LSD (p=0.05)[x]	140			3.5	127	3.8

[z] Mean separation of those fruits sampled.
[y] Level of significance was either 5% (*), 1% (**), or not significant (NS).
[x] Least significant difference, p=0.05.

Table 4. Early and total yields, average fruit weight, soluble solids, and severity of hollow heart of triploid watermelons, Live Oak, FL. Spring 1998.

Entry	Total Season				Early Season (1st harvest)	
	Yield (cwt/A)	Avg Wt. (lb)	Soluble Solids (%)	Hollow Heart (mm)[z]	Yield (cwt/A)	Avg Wt (lb)
Millionaire	642	12.9	7.7	0.0	30	17.0
Constitution	629	15.7	10.1	3.6	118	16.6
FS 4502	619	13.8	8.0	1.1	103	17.7
Gem-Dandy	613	15.5	11.0	6.3	123	17.7
Crimson Trio	592	16.2	10.8	3.9	132	17.9
Tri-X-Carousel	589	17.8	11.4	5.6	138	21.6
RWM 8073	577	16.1	11.7	3.3	121	18.7
95-14	563	14.7	10.0	8.6	121	18.7
Revolution	558	16.6	11.8	2.9	111	21.4
Tri-X-Shadow	553	13.2	10.1	10.0	66	19.3
HMX 7928	551	14.1	10.6	2.9	85	15.3
Tri-X-313	544	16.8	8.2	5.1	134	19.6
Tri-X-Palomar	534	13.7	8.2	3.5	81	19.5
XWM 7703	516	14.7	10.4	7.3	127	18.1
95-11	502	14.7	9.1	4.5	127	16.0
SSC 46072	498	17.3	10.8	2.4	92	20.5
HMX 6910	491	13.8	10.2	2.9	64	16.4
Sapphire	478	14.9	12.3	15.1	154	18.4
Genesis	434	13.3	10.5	3.1	81	15.8
Freedom	405	18.2	12.0	12.3	87	21.9
Sterling	360	15.8	8.5	6.6	75	21.8
Significance[y]	**	NS	NS	*	NS	NS
LSD (p=0.05)[x]	140			11.1		

[z] Mean separation of those fruits sampled.
[y] Level of significance was either 5% (*), 1% (**), or not significant (NS).
[x] Least significant difference, p=0.05.