

Trial Report: Watermelon Variety Evaluation 2017

Conducted by:

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Production

Location: Tifton, GA

Entries: 27 varieties and advanced selections, 3 seeded varieties

Planting Date: Seeded on into 200 cell trays 10 Feb. Transplanted 27 March.

Plant Spacing: 6' centers black TIF plastic mulch, 42" in-row spacing (2074 per acre pop.)

Plot size: 10 plants per plot (2-row plots with 5 plants per row) with 14' alleys between adjacent plots, with 3 replicates of each variety. Missing plants replaced within 1 week of planting, complete stand for harvest.

Fumigation: Paladin Pic with black TIF plastic applied in Feb.

Fertilization: 500 lbs 10-10-10 under plastic when laid. Drip irrigation applied roughly 1 inch of water per week.

Fertigation provided with 4-0-8 at a rate of 10 lbs/N/acre week for 12 weeks (170 lbs N total).

Herbicide: Row middle applications of Chateau, Goal 2XL, Curbit, and Dual Magnum.

Pest Control: Weekly fungicide and insecticide sprays according to UGA recommendations.

Pollenizer: Wingman (Seminis) placed after every 3rd and 5th plant in a plot (4 per plot, 2/row).

Pollination Services: 6 honeybee hives located approximately 500 feet from planting.

Data Collection

Harvest Dates: Seedless harvested on: 6, 19 and 28 June. Seeded harvested on: 21 and 29 June.

Fruit were harvested when tendrils had turned brown and ground-spots were yellow. Each fruit was weighed and graded into 60, 45, 36, and 30-count classes. The following classes and weights were determined by the National Watermelon Research and Development Group to be used for watermelon variety trials to aid in unifying trial results:

60 count: 9-13.5 lb, 45 count: 13.6-17.5 lb, 36 count: 17.6-21.4 lb, 30 count: 21.5+ lb

Fruit from the second harvest (5 fruit per variety per replicate) were utilized for quality measurements. Average firmness was determined using an 11 mm probe with a hand-held firmness tester from 2 locations in 4 melons (8 readings) per replication. Average brix was obtained from a teaspoon sample of flesh from each of the 5 melon subset per replicate which was crushed using a hand-held lemon press and read using a hand-held refractometer. Average number of hard seed was determined by counting the total number of hard seed per 5-melon subsample. Each melon was quartered and the number of black, hard seed counted in all 4 quarters of each melon (pips were not included in this rating).

Average hollow heart was rated by slicing melons in half (length-wise) and ranking melons on a 0-5 scale (See Figure 1 below). On this scale: 0= no visible cracking in melons; 1 < 0.25 inch-wide, cracking in one direction, still marketable; 2 =0.25-0.5 inch, cracking in a single or multiple directions marketable; 3= 0.5-1.0 cracking in one or multiple directions, not marketable; 4 > 1.0 inch cracking in multiple directions with fruit center still intact, not marketable; and 5 > 1.5 inch cracking with center cavity of fruit exposed. Statistics were conducted using SAS version 9.3. Proc GLM and Fisher's least significant test were conducted when appropriate. Subsampling procedures were used for firmness and hollow heart ratings.

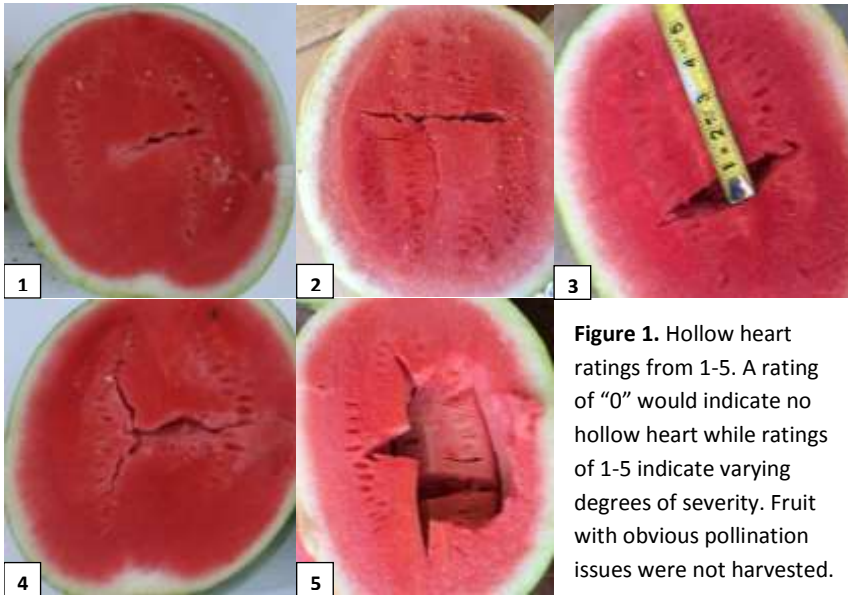


Figure 1. Hollow heart ratings from 1-5. A rating of “0” would indicate no hollow heart while ratings of 1-5 indicate varying degrees of severity. Fruit with obvious pollination issues were not harvested.

Table 1. Entries into 2017 variety trial.								
Bejo Seeds	Champion	Harris Moran	High Mark	K&B Dev.	Nunhems	Sakata	Seminis	Syngenta
Bejo 3038	Red viper	Troubadour	Wolverine	KB10770	7197 HQ	Charismatic	Bottle Rocket	Captivation
		Turnpike			9601 HQ ^z	Kingman	Joy Ride	Excursion
	Sweet Heart*				9651 HQ	Secretariat	Road Trip	Exclamation
	Sweet Pick*	Walker*			Embassy	Unbridled	Summer Breeze	Fascination ^z
					Warrior		SV0241	Sugar Fresh
							SV3105	Sweet Dawn

*Seeded melons
^z9601 HQ and Fascination were not included in the analysis due to a reduction in yield due to losses from *Phytophthora* fruit rot.

Results

Due to the presence of Phytophthora fruit rot due to heavy rains prior to harvest 2 replications of **9601 HQ** and **Fascination** produced little to no harvestable fruit resulting in having to remove these varieties from the analysis.

Overall yields were lower in 2017 than in 2016. This was due to a lower average fruit weight and fewer fruit produced. In addition, the yields from the third harvest in 2017 were lower than in 2016 likely due to heavy rain in June. Overall Summer Breeze was the highest yielding variety, though this was not different from 9 other varieties. In general those varieties with a large yield of 36-count fruit tended to be among the highest yielding varieties, as would be expected. As a percentage of total fruit harvested, Joy Ride had the highest percentage of 36 count fruit, while Secretariat had by far the highest percentage of 45 count fruit.

Overall sugar levels were reduced slightly from last year ranging from 10.1-11.8%. The firmest variety was KB10770, which also had good internal quality, with no hard seeds detected and no hollow heart. Hollow heart rates were typical and hard-seed counts were similar to other years. Kingman had the most hard seed on average and KB10770 had no detected hard seeds. It should be noted that in some cases the average hard seed count was influenced by a single fruit having a large number of hard seeds, sometimes in excess of industry accepted standards.

There were three seeded varieties planted adjacent to the seedless trial. Sweetheart was the highest yielding variety, though it had the same amount of fruit produced as Sweet Pick. Walker had the largest fruit on average but few fruit per acre resulting in lower yields.

See the proceeding tables for results.

We would like to thank participating companies for their continued support.

Table 2. Total yield and average weight for watermelons grown in Tifton, GA 2017. Ranked in descending order based on total yields.

Variety	Average Weight		Total Yield	60 Count	45 Count	36 Count	30 Count					
	(lbs)											
	(lbs/acre)											
Summer Breeze	17.4	b-f	95,003	a	10,350	c-f	34,780	abc	31,500	a-d	18,380	b
Charismatic	17.2	b-f	90,140	ab	10,560	c-f	28,950	a-d	36,990	a	13,650	bcd
Exclamation	19.1	ab	87,740	abc	7,670	def	19,430	cde	26,220	a-e	34,430	a
Embassy	18.7	abc	86,750	a-d	13,000	bcd	38,550	ab	25,730	a-f	9,470	bcd
9601	18.0	b-e	82,200	a-e	6,810	def	22,270	b-e	34,710	ab	18,410	b
Road Trip	17.3	b-f	75,310	a-f	6,750	def	20,780	cde	31,720	abc	16,060	bc
Wolverine	15.6	e-h	69,770	a-g	14,070	bcd	30,180	a-d	22,380	a-f	3,150	cd
Red Viper	16.4	c-h	69,000	a-g	11,880	c-e	27,490	a-d	19,540	a-f	10,090	bcd
Warrior	18.0	b-e	67,250	a-g	4,230	ef	23,960	a-e	21,360	a-f	17,710	b
SV3105	21.0	a	65,090	a-g	7,230	def	18,790	cde	28,450	a-e	10,630	bcd
Kingman	16.0	d-h	62,500	b-g	6,430	def	28,870	a-d	21,760	a-f	5,450	bcd
Troubadour	14.4	hi	60,920	b-g	17,930	abc	28,390	a-d	14,610	c-f	0	d
Secretariat	15.4	f-i	60,020	b-g	6,600	def	39,680	a	10,520	ef	3,210	cd
Sugar Fresh	17.1	b-f	59,170	b-g	7,560	def	16,960	de	25,020	a-f	9,640	bcd
KB10770	17.3	b-f	58,170	c-g	4,160	ef	20,130	cde	23,980	a-f	9,900	bcd
Excursion	17.0	b-g	56,270	d-g	9,900	c-f	20,330	cde	12,260	def	13,770	bcd
Bejo 3038	13.1	i	52,330	efg	25,100	a	20,640	cde	6,600	f	0	d
7197 HQ	16.3	c-h	51,470	efg	10,390	c-f	20,430	cde	15,950	b-f	4,700	bcd
Captivation	16.8	b-h	51,280	efg	8,570	def	18,420	cde	24,300	a-f	0	d
SV0241	14.6	ghi	50,670	fg	18,940	ab	17,730	de	11,670	ef	2,330	cd
Bottle Rocket	17.7	b-f	47,970	fg	2,570	f	18,100	de	17,610	a-f	9,700	bcd
Joy Ride	17.8	b-f	47,490	fg	2,540	f	14,440	de	25,800	a-f	4,710	bcd
Unbridled	16.5	c-h	47,060	fg	3,540	f	20,630	cde	15,990	b-f	6,910	bcd
Turn Pike	17.4	b-f	43,310	g	4,220	ef	17,730	de	14,840	c-f	6,520	bcd
Sweet Dawn	18.1	bcd	39,430	g	3,420	f	8,190	e	16,150	b-f	11,670	bcd

^zNumbers within the same column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD test P<0.05.

Table 3. Yield of varieties for harvests 1 and 2 only ranked in descending order based on total yield.

	Total	60 ct	45 ct	36 ct	30 ct
Variety	(lb/acre)				
Charismatic	49133	2537	15299	22876	8420
Embassy	41988	3878	17536	15845	4729
Road Trip	41985	2544	5074	19910	14456
Exclamation	41210	892	5600	11559	23160
Summer Breeze	40249	6028	10854	13115	10252
Warrior	34518	1777	14546	10460	7736
WDL2413	33509	3291	11863	7930	10425
7197 HQ	31400	5175	9540	11988	4698
Sugar Fresh	29119	3464	5676	11877	8102
KB10770	28234	0	9692	10640	7902
9601 HQ	28193	0	5344	9430	13419
Bejo 3038	28096	10702	13440	3954	0
Captivation	27646	1172	10183	16291	0
SV0241	27055	9063	10017	5641	2333
Turnpike	26305	0	6664	14836	4805
Sweet Dawn	25272	0	1680	14290	9302
Secretariat	24162	864	15023	6741	1535
Wolverine	23561	913	12983	8061	1604
Kingman	23322	0	11013	9779	2530
Joy Ride	23177	0	5185	15721	2271
Unbridled	22078	0	9769	10080	2230
Bottle Rocket	21964	1296	5123	5849	9696
SV3105	21134	0	6792	6378	7964
Red Viper	20719	850	10702	4017	5150
Troubadour	19509	6360	9305	3844	0

Table 4. Total yield and percentage of fruit in all counts for all harvests ranked in order of percent 45 count fruit.

Variety	Total Yield	60 Count	45 Count	36 Count	30 Count
	(lbs/acre)	(%)			
Secretariat	60,020	11%	66%	18%	5%
Troubadour	60,920	29%	47%	24%	0%
Kingman	62,500	10%	46%	35%	9%
Embassy	86,750	15%	44%	30%	11%
Unbridled	47,060	8%	44%	34%	15%
Wolverine	69,770	20%	43%	32%	5%
Turn Pike	43,310	10%	41%	34%	15%
Red Viper	69,000	17%	40%	28%	15%
7197 HQ	51,470	20%	40%	31%	9%
Bejo 3038	52,330	48%	39%	13%	0%
Bottle Rocket	47,970	5%	38%	37%	20%
Summer Breeze	95,003	11%	37%	33%	19%
Warrior	67,250	6%	36%	32%	26%
Excursion	56,270	18%	36%	22%	24%
Captivation	51,280	17%	36%	47%	0%
KB10770	58,170	7%	35%	41%	17%
SV0241	50,670	37%	35%	23%	5%
Charismatic	90,140	12%	32%	41%	15%
Joy Ride	47,490	5%	30%	54%	10%
SV3105	65,090	11%	29%	44%	16%
Sugar Fresh	59,170	128%	29%	42%	16%
Road Trip	75,310	9%	28%	42%	21%
9601 HQ	82,200	8%	27%	42%	22%
Exclamation	87,740	9%	22%	30%	39%
Sweet Dawn	39,430	9%	21%	41%	30%

Table 5. Total yield and percentage of fruit in all counts for all harvests ranked in order of percent 36 count fruit.

Variety	Total Yield	60 Count	45 Count	36 Count	30 Count
	(lbs/acre)	(%)			
Joy Ride	47,490	5%	30%	54%	10%
Captivation	51,280	17%	36%	47%	0%
SV3105	65,090	11%	29%	44%	16%
Sugar Fresh	59,170	128%	29%	42%	16%
Road Trip	75,310	9%	28%	42%	21%
9601 HQ	82,200	8%	27%	42%	22%
KB10770	58,170	7%	35%	41%	17%
Charismatic	90,140	12%	32%	41%	15%
Sweet Dawn	39,430	9%	21%	41%	30%
Bottle Rocket	47,970	5%	38%	37%	20%
Kingman	62,500	10%	46%	35%	9%
Unbridled	47,060	8%	44%	34%	15%
Turn Pike	43,310	10%	41%	34%	15%
Summer Breeze	95,003	11%	37%	33%	19%
Wolverine	69,770	20%	43%	32%	5%
Warrior	67,250	6%	36%	32%	26%
7197 HQ	51,470	20%	40%	31%	9%
Embassy	86,750	15%	44%	30%	11%
Exclamation	87,740	9%	22%	30%	39%
Red Viper	69,000	17%	40%	28%	15%
Troubadour	60,920	29%	47%	24%	0%
SV0241	50,670	37%	35%	23%	5%
Excursion	56,270	18%	36%	22%	24%
Secretariat	60,020	11%	66%	18%	5%
Bejo 3038	52,330	48%	39%	13%	0%

Table 6. Average fruit weight and percentage count for harvests 1 & 2 and 3. Ranked in order of average fruit weight.

		(%)								
		1 st and 2 nd Harvest				3 rd Harvest				
Row Labels	(Lbs per fruit)		60 ct	45 ct	36 ct	30 ct	60 ct	45 ct	36 ct	30 ct
	Avg. Wt (1 st & 2 nd pick)	Avg. Wt (3 rd pick)								
Exclamation	20.9	17.6	2%	15%	31%	52%	15%	29%	32%	24%
9601 HQ	20.7	16.9	0%	20%	30%	50%	18%	30%	39%	14%
Sweet Dawn	20.5	15.2	0%	5%	55%	40%	16%	65%	8%	11%
SV3105	19.7	19.0	0%	38%	39%	23%	20%	29%	47%	4%
Road Trip	19.4	15.9	4%	15%	42%	40%	15%	50%	31%	4%
Bottle Rocket	19.3	16.7	4%	33%	18%	44%	4%	52%	44%	0%
Turnpike	19.0	15.9	0%	26%	52%	22%	21%	64%	0%	15%
Joy Ride	18.6	17.2	0%	22%	70%	8%	9%	37%	42%	12%
KB10770	18.4	16.5	0%	33%	47%	20%	16%	40%	40%	4%
Charismatic	18.3	16.0	5%	31%	47%	17%	20%	33%	35%	12%
Sugar Fresh	18.1	16.3	13%	22%	42%	23%	13%	35%	47%	5%
Excursion	18.0	15.7	10%	35%	24%	31%	29%	38%	16%	16%
Unbridled	17.7	15.6	0%	44%	46%	10%	15%	43%	23%	19%
Summer Breeze	17.7	17.1	14%	29%	30%	27%	10%	43%	35%	12%
Warrior	17.7	18.2	5%	46%	28%	21%	8%	29%	34%	30%
Captivation	17.7	16.1	6%	36%	58%	0%	44%	24%	32%	0%
7197 HQ	17.6	13.9	16%	30%	40%	14%	58%	31%	11%	0%
Red Viper	17.3	16.0	7%	57%	15%	21%	23%	35%	32%	10%
Wolverine	17.0	14.9	3%	56%	35%	6%	31%	35%	30%	3%
Kingman	17.0	15.4	0%	55%	38%	8%	34%	42%	19%	5%
Embassy	16.8	19.5	9%	44%	37%	9%	21%	47%	22%	9%
Secretariat	16.6	14.7	5%	59%	30%	5%	18%	69%	10%	3%
SV0241	15.3	14.0	34%	38%	17%	11%	42%	32%	26%	0%
Troubadour	14.5	14.6	23%	60%	17%	0%	29%	46%	25%	0%
Bejo 3038	13.8	12.4	40%	48%	12%	0%	58%	33%	9%	0%

Table 7. Average firmness, brix, hollow heart and hard seed ratings for watermelons grown in Tifton, GA in Spring 2017. Highest and lowest values highlighted.

Variety	Brix (%)	Firmness ^z (lbs)	Hollow Heart ^y (0-5)	Hard Seed ^x (Avg. no per fruit)
Embassy	11.8 a ^w	3.8 bcd	0.1 bc	0.8 b
Joy Ride	11.7 ab	3.8 bcd	0.2 bc	0.4 b
Sweet Dawn	11.7 ab	3.1 fg	0 c	1.3 b
Wolverine	11.7 ab	3.4 b-g	0.3 bc	2.2 ab
9601 HQ	11.6 ab	3.7 b-f	0.5 bc	0.5 b
Road Trip	11.6 ab	4.0 bc	0 c	1.3 b
Excursion	11.5 ab	3.1 efg	0.2 bc	1.3 b
Bottle Rocket	11.5 abc	3.6 b-g	0 c	1.4 b
Red Viper	11.5 abc	2.9 g	0.3 bc	0.7 b
Summer Breeze	11.4 abc	3.6 b-g	0 c	1.1 b
Troubadour	11.3 a-d	4.1 b	0.3 bc	0.6 b
Secretariat	11.3 a-d	3.6 b-g	0.3 bc	1.7 ab
Warrior	11.2 a-d	3.4 b-g	0.3 bc	0.6 b
Sugar Fresh	11.1 a-e	3.6 b-g	0.1 bc	0.4 b
Exclamation	11.1 a-e	3.7 b-f	0.1 bc	1.6 b
Captivation	11.1 a-e	3.2 d-g	0 c	0.8 b
Bejo 3038	10.9 a-e	3.2 d-g	0.1 bc	0.3 b
Kingman	10.9 a-e	3.7 b-f	0.5 b	4.0 a
7197 HQ	10.8 a-e	3.4 b-g	0.1 bc	1.6 b
SV0241	10.8 a-e	3.3 c-g	0.4 bc	1.4 b
Unbridled	10.8 a-e	3.5 b-g	0.3 bc	0.8 b
Charismatic	10.7 b-e	3.8 b-e	1.1 a	2.1 a
KB10770	10.5 cde	4.9 a	0 c	0.0 b
Turnpike	10.3 de	3.9 bcd	0 c	0.8 b
SV3105	10.1 e	3.8 bcd	0 c	0.8 b

^zFirmness is the average of 8 readings per replication and 3 replications (24 total readings per variety) using a Wagner hand-held firmness tester.

^yHollow Heart determined using the rating scale in Figure 1. Values represent the average of 5 fruit per replication and 3 replicates (15 fruit total).

^xHard seed counts represent the *average* number of seed counted in 4 quarters of 5 melons per replicate with 3 replicates (60 quarters of fruit).

^zNumbers within the same column followed by the same letter(s) are not significantly different according to Fisher's Protected LSD test P<0.05.

Table 8. Total yield and average weight for seeded watermelons grown in Tifton, GA 2017.					
Variety	Average Weight	Total Yield	Total Yield	Range (Min-Max)	Brix
	(lbs)	(lbs/acre)	(no./acre)	(lbs)	(%)
Walker	31.6	65,550	2070	19.4-48.2	9.8
Sweetheart	30.0	99,610	3320	18.5-44.0	10.7
Sweet Pick	22.5	74,710	3320	16.6-30.4	11.5