



## **Icebox Watermelon Variety Trial**

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### **Introduction**

The first icebox watermelon variety was introduced in the U.S. almost 50 years ago (Maynard, 2004), but it is only recently that icebox watermelons have become commonly available in grocery stores and farmers markets throughout the U.S. Icebox watermelon weigh between 6 and 15 pounds, they come in a variety of shapes and colors, and there are more than 100 varieties to choose from. Icebox watermelons are rapidly gaining in popularity due to their small size, which is ideal for small families and for storage in home refrigerators. With a rise in interest in local food, direct marketing and organic production, farmers in Washington are looking to diversify crop types to meet these demands. Icebox watermelons offer farmers throughout western Washington a means of producing high quality watermelons locally. The purpose of this study was to determine which varieties of icebox watermelon are most suitable for organic production in our region.

### **Methods**

This study was conducted at Washington State University Vancouver Research and Extension Unit. In 2004 we evaluated 44 varieties of icebox watermelon, and in 2005 we evaluated 101 varieties. The greenhouse for transplant production was managed organically, and varieties grown from organic and untreated seed were evaluated in a certified organic field while varieties grown from treated seed were evaluated in a neighboring field that was managed organically but was not certified. In 2004, this study included 27 varieties with untreated or organic seed and 20 varieties with treated seed. In 2005, 66 varieties of untreated or organic seed were included and 45 varieties with treated seed.

Both years the study design was a randomized complete block with three replications. Plots were single rows, 21 feet long, with 7 plants per plot. Spacing was three feet between plants in the rows, and 10 feet between rows. Varieties were seeded in the greenhouse on April 12, 2004 and April 21 2005, and were transplanted into the field on May 26, 2004 and June 6, 2005. The 2005 planting date was 2 weeks later than planned due to unfavorable weather conditions.

Plants were drip-irrigated twice weekly for 4 hour intervals for a total of 1-inch of water per week both years,. Rows were mulched with black plastic (1.0 mil polyethylene), with drip tape beneath. Plants were fertilized immediately after transplanting and four times throughout the growing season. Fertilizer was soluble fish powder (Mermaid 12-0.25-1) and soluble seaweed extract powder (Acadian 1-0-4 w/ trace minerals) applied through the irrigation system at a rate of 5 lb/A and 3 lb/A, respectively.

Ripe fruits were harvested twice weekly from August 12 to October 4, 2004, and August 22 to September 28, 2005. Due to difficulties in determining ripeness in the field in 2004, we investigated techniques for determining ripeness in the field in 2005. Techniques included evaluating optimum ground spot color, hollow sound of fruit, color/maturity of axial leaf at

harvest, and color/maturity of axial tendril at harvest. Harvested melons were measured for weight, length and width, and number of fruit per plot. After each harvest, one watermelon per plot was measured for percentage of soluble solids using a Brix meter. The percent of soluble solids is an estimate of sugars, and is used to evaluate sweetness and ripeness.

## **Results & Discussion**

Because varieties grown from treated and untreated seeds were grown separately, we evaluated them separately as well. Although this study was designed to investigate productivity of icebox watermelons (6-15 lbs), we received, planted and evaluated several mini (<6 lbs) and picnic (> 15 lbs) varieties as well. Results are presented for varieties in each market group (mini, icebox and picnic). It is interesting to note that some varieties were variable in their classification from year to year. For example, Sugar Baby produced an average fruit weight greater than 6 lbs in 2004 (thus it was classified as an icebox type), but in 2005, average fruit weight was less than 6 lbs (thus it was classified as a mini type). As a result, some varieties could vary in classification from year to year.

**2004 Yield.** There were significant differences among varieties in yield, average watermelon weight, and number of marketable watermelons (Tables 1 and 2). Of the icebox varieties planted from untreated seed, Winter King and Queen, Ultra Cool, Early Crimson Treat and Navajo Sweet produced the highest total marketable yields (Table 1). Winter King and Queen, Navajo Sweet, Tiger Baby and Early Crimson Treat produced the greatest number of fruit per plant. Of the mini varieties grown from untreated seed, Little Boy, New Queen, Yellow Doll and Belle 460 were the highest yielding, while Yellow Doll, Golden Midget and Belle 460 produced the greatest number of fruit. Thai Baby also produced a large number of fruit, but we later learned that this watermelon is not eaten as a mature fruit, but rather is harvested at an immature stage and cooked as a vegetable. Sugar Baby (icebox) and Red Doll (mini) were the least productive varieties in the plots that were planted from untreated seed, with the smallest total yield and below average number of watermelons per plot.

Of the icebox varieties grown from treated seed, Baby Doll, Imagination, Valdoria and Tiger Baby produced the highest total marketable yields (Table 2). Mini Seedless, Extazy 6008, Valdoria and Yellow Doll produced the greatest number of fruit. Lycosweet and Jade Star were the least productive, with very low total yields and fruit numbers. Of the mini varieties, Solitaire produced the highest total marketable yield and number of fruit. The single picnic variety included was Desert King, and it produced low total marketable yield and number of fruit.

**2005 Yield.** There were no significant differences in number of fruit per 10 plants and in days to maturity for icebox-sized varieties grown from untreated seed (Table 3). Icebox varieties did differ significantly in total yield per 10 plants, and the highest yielding varieties were Imperial, Early Moonbeam, Sugar Baby, Crimson Sweet and Verona. Mini varieties differed significantly in yield and number of fruit per 10 plants. Jade Star, Yellow Doll and Sugar Baby were the highest yielding varieties, while varieties that produced the most fruit were Yellow Doll, New Hampshire Golden Midget and Diana. For picnic-sized varieties, there were no significant differences in yield, however the variety that tended to produce the highest yield and the most fruit and was HSR 2920.

There were no significant differences in yield among the icebox and mini varieties grown from treated seed (Table 4). However, for the icebox varieties, Super Crisp 85, Madrid and Quetzali tended to produce the highest yield, while SXW0017, Super Crisp 85, and Sun Ray tended to produce the most number of fruit. Of the mini varieties, Vanessa, Extazy and Mini Yellow tended to produce the highest yield, while Wonder, Vancessa and Extazy tended to produce the most number of fruit. The single picnic variety included in this portion of the trial was Desert King, and it produced low total marketable yield and number of fruit.

**Length and Width.** Varieties differed significantly in fruit length and width both years. For all three market groups, shape varied from round, to oval, to elongated. We conducted farmers market surveys in both 2004 and 2005 and found that consumers generally appeared to perceive round watermelons to be cantaloupe or other melon types. Some education including taste samples where feasible may be required to address this issue.

**Days to Maturity.** The demand for watermelon is highest in the summer, and our market surveys indicate that demand tapers off dramatically after Labor Day. Decreasing market demand in September combined with decreasing temperatures make early maturity a highly desirable trait for growers in Washington. There were no significant differences in days to maturity among types of watermelon. That is, in this study mini varieties did mature earlier than either icebox or picnic varieties. The picnic varieties that were included in this study were selected based on their early days to maturity. Within each watermelon type, varieties did not differ significantly in days after transplanting to maturity either year, but in 2004 days to maturity ranged from 82 to 103 days, and in 2005 days to maturity ranged from 82 to 110 days (Tables 1-4). In 2004, varieties that matured by 82 days after transplanting were Japanese Cream Fleshed Suika, Navajo Sweet, Small Shining Light, Cathay Belle and Golden Midget. In 2005, all the earliest maturing varieties were icebox types and included Imagination (primed), Freedom, Sunrise One, HSR 2920, Millenium, Summer Sweet #2532, Treasure Chest, and Triple Play. Of the 101 varieties included in this study in 2005, 80 matured within 100 days after transplanting, making them suitable for production in western Washington.

**Percent Soluble Solids.** Percent soluble solids in a fruit is an indicator of percent sugars and ripeness. The Brix meter is the standard tool for taking this measurement rapidly in the field. Brix readings differed significantly among varieties both years for most types of watermelons (Tables 1-4). In 2004, varieties ranged from 7–10% soluble solids at maturity. Varieties with the highest Brix readings were Fenway (10.0), Petite Perfection (9.9), Hime Kansen (9.7), and Mini Seedless (9.7). We had difficulty determining whether or not a variety was mature prior to harvest in 2004, and as a result we harvested many fruit prior to their optimum maturity. In 2005, we were able to distinguish a ripe fruit in the field prior to harvest (see Determining a Ripe Fruit below), and as a result Brix readings were generally higher than in 2004. In 2005, varieties ranged from 6–19% in soluble solids, and varieties with the highest readings were Boston (19.4), Treasure Chest (16.9), Summer Sweet (15.7), Super Crisp (14.2), and Sunrise (14.0). All varieties except 3 (Atranhanski, Jenny and Malali) had soluble solids above 8.0 and were considered sweet.

**Flesh Color.** The majority of the varieties included in this study, and the majority of icebox watermelon varieties that are commercially available, are red fleshed. There was much variation

among these varieties in shape, size, rind color, and seed content. There was also much variation in sweetness and flavor quality. Most of the varieties evaluated in this trial had excellent color, flavor, and appearance.

In 2004, 5 varieties were yellow flesh, and 2 of these were icebox types (Baby Doll and Orchid Sweet) while 3 were mini types (Gold Baby, New Queen, and Yellow Doll). In 2005, 25 varieties had yellow or orange flesh, and of these, 18 were icebox types: Butterball, Buttercup, Early Moonbeam, Golden Honey, New Orchid, New Queen, Orange Julius, Orange Sweet, Orangelo, Solid Gold, Sorbet Swirl, Summer Sweet #3521Y, Sun Ray, Sunshine, Treasure Chest, Yellow Bird, WT-04-65, and Yellow Petite. Six varieties were mini types: 41020016, Amarillo, Gold Flower, Golden Sunrise, Mini Yellow, and Yellow Doll; and 1 variety was a picnic type: Yellow Shipper (Daisy). Yellow and orange flesh watermelons tended to have average Brix readings (around 10%), and did well in our taste tests.

In 2004, 3 varieties had cream-colored flesh: Cream of Saskatchewan, Desert King and Japanese Cream-Fleshed Suika. In 2005, only 2 varieties had cream-colored flesh: Cream of Saskatchewan and White Wonder. All of these varieties had below average Brix readings, and tended to be mildly sweet and/or slightly tart. Japanese Cream Fleshed Suika was the best overall in terms of flavor, yield and days to maturity. These watermelons were preferred by some people in farmers market taste tests, and some suggested eating them with lime and salt.

**Seedless Varieties.** In 2004, this trial included 10 seedless varieties: Bobbie, Extazy, Gypsy, Lycosweet, Mini Seedless, Orchid Sweet, Solitaire, Ultra Cool, Valdoria and Vanessa. All were red-fleshed except for Orchid Sweet, which was yellow fleshed. In 2005, this trial included 43 seedless varieties: 7167, 7177 HQ, 7187 HQ, ACX 601T, ACX 651T, Afternoon Delight, Amarillo, Betsy 8103, Bobbie 8101, Boston, Butterball, Buttercup, Constitution, Demi-Sweet, Extazy, Freedom, Imagination, Independence, Liberty, Millenium, Millionaire, Mini Yellow, Orange Julius, Orange Sweet, Petite Treat, Promise, Solid Gold, Solitaire, Summer Sweet #2532, Summer Sweet #3521Y, Sun Ray, Super Crisp 85, Sweet Delight, Sweet Eat'n, SXW 0016, SWX 0017, Treasure Chest, Triple Play, Valdoria, Vanessa, Wonder, WT-04-65, and Yellow Bird. Of these varieties, 12 were yellow fleshed: Amarillo, Butterball, Buttercup, Mini Yellow, Orange Julius, Orange Sweet, Solid Gold, Summer Sweet #3521Y, Sun Ray, Treasure Chest, WT-04-65, and Yellow Bird.

**Determining a Ripe Fruit.** Perhaps one of the biggest challenges we faced in this study was determining a ripe fruit in the field. In 2004, we were not able to determine if a fruit was fully mature prior to harvest and this resulted in our harvesting many fruit that were not fully mature. As a result, fruit weight and Brix readings were not as great as they could have been. In 2005, we investigated the four common techniques used for determining fruit ripeness in the field: ground spot color, hollow sound of fruit, color/maturity of axial leaf, and color/maturity of axial tendril. We found that a brown axial leaf in combination with a brown axial tendril was the most consistent and reliable indicator of fruit ripeness. A few varieties, however, tended to ripen before their leaf and/or tendril had fully turned brown.

## **Conclusions**

Preliminary results of this study indicate that over 80 varieties of icebox watermelon produce well when grown organically in our region. There is great diversity among these varieties in fruit yield, number, color, sugar content, flavor, size, and length of growing season. Preferences for fruit taste and appearance vary among different consumer groups, and growers who are considering production should test several varieties for productivity and taste preferences in their area.

Another major accomplishment of this study has been to determine how to identify a ripe fruit in the field prior to harvest. We found that a brown axial leaf in combination with a brown axial tendril was the most consistent and reliable indicator of fruit ripeness. However, a few varieties tended to ripen before their leaf and/or tendril had fully turned brown. We recommend that growers test this method in their own field with every variety they grow.

Watermelon weight has generally been used to distinguish between market groups of watermelon (mini, icebox, or picnic), and traditionally, icebox watermelons are considered to be between 8 and 12 lbs. However, in this study we found that a large number of varieties produced an average watermelon weight between 6 and 8 lbs, but showed average lengths and widths that correspond with the general size concept of an icebox type. Additionally, several varieties produced an average watermelon weight of between 12 and 15 lbs, but were small enough in terms of length and width to be considered an icebox type. Based on these results, we suggest that the categories for watermelon should be: mini (<6 lbs), icebox (6-15 lbs), and picnic (>15 lbs).

A major challenge faced by organic growers is obtaining organic or untreated seed. Although placing a seed order early may help to ensure that untreated seed will be available, it is no guarantee. It is only through increased demand for untreated and organic seed that seed companies will begin to fill this need. It is work such as this study that has the potential to help increase demand for seed which will then result in increased availability of untreated and organic seed.

## **References:**

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**Table 1.** Marketable yield of icebox and mini watermelon varieties grown from untreated seeds at Washington State University Vancouver REU in 2004.

ICEBOX TYPE Variety	Total Watermelon		Mean Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Blacktail Mountain	18.6	85.4	8	8.1	7.6	7.3	85.3
Cream of Saskatchewan	12.4	78	8.9	7.4	7.6	7.7	85.3
Early Crimson Treat	20.8	106.8	9.4	8.1	7.4	9	85.3
Genesis	14	84.7	8.9	8.1	7.5	9.3	83.5
Japanese Cream Fleshed Suika	15.1	89.5	10.1	8.3	7.9	8.5	81.7
Jubilee	19	67.9	9.1	7.5	7.2	8.6	84
Melitopolski	10.5	75.9	11.5	9	8.9	6.5	85.3
Navajo Sweet	23.8	102.4	10.6	8.2	8.2	8.6	81.7
Orchid Sweet	17.1	92.8	9.4	8.3	8.1	9.1	83
Small Shining Light	17.1	81	7.8	7.1	7.5	7.4	81.7
Southern Light	13.2	58.1	7	7.3	6.7	8.1	84
Sugar Baby <sup>z</sup>	10.5	36.2	8.7	7	7.4	7.7	83
Sweet Beauty	19	65.8	6.5	9.7	5.5	9.4	83
Tiger Baby	22.9	68.2	7.6	7.3	6.9	9.3	89
Ultra Cool	11.9	108.3	11	8.7	8.3	8.3	83
Winter King & Queen	24.8	120.4	9.3	7.6	7.2	7.9	93.3
<b>Mean</b>	<b>16.9</b>	<b>82.6</b>	<b>9.0</b>	<b>8.0</b>	<b>7.5</b>	<b>8.3</b>	<b>84.5</b>
<b>P Value</b>	<b>0.5151</b>	<b>0.0392</b>	<b>0.0482</b>	<b>0.0226</b>	<b>0.0055</b>	<b>0.000</b>	<b>0.7591</b>

MINI TYPE Variety	Total Watermelon		Mean Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Belle 460	20.7	50.8	5.3	7.8	5.8	9.2	86.7
Cathay Belle	13.6	39.6	4.5	6.8	5.9	7.9	81.7
Gold Baby	15.2	41.7	5	6.8	6.4	9.1	91.3
Golden Midget <sup>z</sup>	24.9	32.7	3.8	6.4	5.4	7.4	81.8
Hime Kansen	18.6	32.6	3.6	6.2	5.1	9.7	90
Little Boy	17.6	57.1	5.7	7.6	6.2	9.6	83
New Queen	16.7	55	5.6	7.3	5.7	8.5	86.7
Petite Perfection	14.1	43.5	5.6	7	6.3	9.9	85.3
Red Doll	14.8	27.8	3.5	6.6	5.7	9.2	89.7
Thai Baby	27.1	36.2	4	5.9	4.4	6.3	86.7
Yellow Doll	25.7	54.9	5.6	7.6	6.7	9.3	85.3
<b>Mean</b>	<b>19.0</b>	<b>42.9</b>	<b>4.7</b>	<b>6.9</b>	<b>5.8</b>	<b>8.7</b>	<b>86.2</b>
<b>P Value</b>	<b>0.5418</b>	<b>0.3096</b>	<b>0.0272</b>	<b>0.0884</b>	<b>0.0121</b>	<b>0.000</b>	<b>0.2729</b>

x Number of watermelons and total yield of 10 plants

y Days to maturity from transplanting

z Values are the mean of two replications.

<b>Comparison of types: P Value</b>	<b>0.2749</b>	<b>0.000</b>	<b>0.000</b>	<b>0.0006</b>	<b>0.000</b>	<b>0.249</b>	<b>0.1744</b>
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**Table 2.** Marketable yield of icebox, mini and picnic watermelon varieties grown from treated seeds at Washington State University Vancouver REU in 2004.

ICEBOX TYPE Variety	Total Watermelon		Mean Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Baby Doll	15.3	222.6	14.6	9.8	8.8	8	87.7
Bobbie (8101)	15.7	100.8	6.2	6.8	6.6	8.4	97
Extazy (6008)	17.9	125.1	7	7.2	7.1	8.6	92.3
Fenway	13.3	114	8.5	7.6	7.5	10	87.7
Gypsy	9.5	116.2	12.2	9.1	8.8	9.5	91.3
Imagination	17.9	182.6	10.1	8.6	8.1	8.8	90.7
Jade Star	7.3	73.8	9.4	8.3	7.5	8	96
Lycosweet (5109)	7.7	72.1	7.9	7.4	7	9.3	100.3
Mini Seedless	18.4	117.8	6.4	6.9	6.1	9.7	91
Nova	10.5	110.4	10.4	8	7.8	9	90
Quetzali	11.9	124.1	9.3	7.6	6.8	8.7	97
Sugar Baby	14.4	120.4	8.3	7.6	7.3	7.6	94.7
Thai Black	9	89.6	8.2	7.2	6.8	7.2	96
Tiger Baby	16.2	139.2	7.8	7.9	7.3	9.1	92.3
Valdoria	17.5	161.6	8.6	7	7.1	8.3	91
Yellow Doll	17.4	131	7.7	7.9	7.3	8.7	85.3
<b>Mean</b>	<b>13.7</b>	<b>125.1</b>	<b>8.9</b>	<b>7.8</b>	<b>7.4</b>	<b>8.7</b>	<b>92.5</b>
<b>P Value</b>	<b>0.6721</b>	<b>0.7578</b>	<b>0.0043</b>	<b>0.0004</b>	<b>0.0022</b>	<b>0.0003</b>	<b>0.3466</b>

MINI TYPE Variety	Total Watermelon		Mean Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Precious Petite	12.7	74.7	4.9	6.5	6	8.3	103
Vanessa	12.7	68.3	5.2	6.7	6.4	9.1	96.7
Solitaire	20	119.3	5.9	6.9	6.8	8.9	86.7
<b>Mean</b>	<b>15.1</b>	<b>87.4</b>	<b>5.4</b>	<b>6.7</b>	<b>6.4</b>	<b>8.8</b>	<b>95.4</b>
<b>P Value</b>	<b>0.5196</b>	<b>0.5252</b>	<b>0.7926</b>	<b>0.8973</b>	<b>0.5466</b>	<b>0.5982</b>	<b>0.3083</b>

PICNIC TYPE Variety	Total Watermelon		Average Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Desert King	4	71.2	18.6	10.5	9.6	7.4	91

x Number of watermelons and total yield of 10 plants

y Days to maturity from transplanting

<b>Comparison of types: P Value</b>	<b>0.0675</b>	<b>0.1574</b>	<b>0.0001</b>	<b>0.0025</b>	<b>0.0032</b>	<b>0.246</b>	<b>0.5773</b>
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**Table 3.** Marketable yield of icebox, mini and picnic watermelon varieties grown from untreated seeds at Washington State University Vancouver REU in 2005.

ICEBOX TYPE Variety	Total Watermelon		Mean Watermelon				Days to Maturity <sup>y</sup>
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	
7167	6.4	91.6	9.2	8.9	7.6	9.6	105
7177 HQ	9.3	96	9.6	8.6	7.7	11.9	96
7187 HQ	15.5	102.3	10.2	8.7	8	10.2	95
ACX 601T	8.6	128.5	12.8	8.7	8.5	9.7	85
ACX 651T	10.1	110.3	11	8.5	8.2	10.4	93
Asian (HSR 2866)	8.6	97.1	9.7	9.5	8.8	9.3	95
Atranhanski	10.1	118.7	11.9	8.7	8.4	6.8	106
Blacktail Mountain	10	82.5	8.2	8	7.7	10.2	90
Butterball	11.3	85.4	8.5	7.6	7.9	9.3	94
Cream of Saskatchewan	11.9	89.3	8.9	7.9	7.9	9.7	88
Crimson Sweet	6.5	144.5	14.5	9.8	9.1	9.4	91
Demi-Sweet	11.4	98.5	9.8	8.3	8.4	10.7	92
Early Crimson Treat	11.1	80.8	8.1	7.8	7.3	10.4	90
Early Moonbeam	19	64.6	6.5	7.4	7	11	88
Early Moonbeam (black seed)	11.1	62.9	6.3	8.7	8.3	9.1	92
Early Moonbeam (brown seed)	9	144.7	14.5	8.6	8.8	10.4	99
Festival	6.4	101	10.1	8	7.9	10.8	94
Golden Honey	9	94.1	9.4	8.7	7.9	10.1	100
Imperial	9.2	144.8	14.5	10.7	8.3	9.4	96
Jubilee	9.5	102.7	10.3	8	7.8	11.9	102
Malali	14.2	66.6	6.7	7.1	7.3	6.3	106
Melitopolski	10.2	98.4	9.8	8.4	8	8.8	105
Millenium	8.6	79	7.9	8.1	7.7	11.1	83
Millionaire	9.5	80.8	8.1	7.9	7.5	11.2	103
Moon and Stars	9	134.7	13.5	9.7	8.8	10.2	95
Navajo Sweet	9.5	94.3	9.4	8	8	10.7	97
New Orchid	11	105.3	10.5	7.5	6.9	10.4	99
New Queen	19.2	61	6.1	7.7	6.4	11.3	87
Orange Sweet	9	111.4	11.1	8.7	8.9	8.4	101
Orangeglo	7.1	94.5	9.4	12.1	8.6		99
Osh Kirgizia	9	86	8.6	7.9	7.6	10.1	98
Quetzali	9.8	82.2	8.2	8.2	7.5	10.3	91
Sangria	8.1	118.8	11.9	12.7	6.9	9.8	102
Sorbet Swirl F1	19	82.9	8.3	7.9	7.3	13	88
Sugar Baby	6.7	144.6	14.5	10	9.1	10.3	97
Sugar Baby (HSR 2945)	7.1	79.8	8	8	7.7	8.9	102
Summer Sweet #2532	11.7	129.1	12.9	16.2	15.5	15.7	83
Summer Sweet #3521Y	16.7	75.1	7.5	7.5	7.4	10.4	99
Sunrise One	11.4	76.6	7.7	7.8	7.3	14	82
Sunshine	9.8	85	8.5	8.5	7.3	9.9	103
Sweet Diane	10.9	90.5	9	8.7	7.4	9.5	97
Sweet Favorite	7.1	124	12.4	11.6	7.8	10.6	110

ICEBOX TYPE (cont'd) Variety	Total Watermelon		Mean Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Tiger Baby	12.4	74.9	7.5	7.6	6.9	10.1	96
Treasure Chest	12.5	114.2	11.4	8.7	8.4	16.9	83
Triple Play	22	106.5	10.7	8.3	8.1	13.3	83
Verona	9.5	142.6	14.3	10	8.2	8.6	97
White Wonder	11.2	83.2	8.3	7.8	7.6	10.3	100
Winter King & Queen	11	78	7.8	7.1	7.1	8.3	107
WT-04-68	6.7	90.9	9.1	9.1	7	10.1	96
Yellow Bird	12.9	114.8	11.5	7.8	7.9	10.6	90
Yellow Petite	9.3	106.9	10.7	8.8	8.1	9.6	100
<b>Mean</b>	<b>10.4</b>	<b>99.8</b>	<b>10.0</b>	<b>8.8</b>	<b>8.04</b>	<b>10.3</b>	<b>95.7</b>
<b>P Value</b>	<b>0.1761</b>	<b>0.0015</b>	<b>0.0044</b>	<b>0.000</b>	<b>0.000</b>	<b>0.033</b>	<b>0.4049</b>

MINI TYPE Variety	Total Watermelon		Mean Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Diana	16.2	49.1	4.9	8.6	5.7	10.6	86
Gold Flower	14.8	53.3	5.3	9.6	4.3	10	92
Golden Sunrise	8.6	45.8	4.6	6.7	6	9.6	96
Hime Kansen	6.9	29.6	3	6	5.3	9.8	105
Jade Star	13.8	59.9	6	7.1	7.1	8	105
New Hampshire Golden Midget	23.9	39.8	4	6.2	6.1	8.8	88
Red Doll	12.9	37	3.7	6.3	5.4	10	93
Solitaire (GV)	11	44.2	4.4	6.3	6.1	9.3	96
Sugar Baby	7.9	54	5.4	6.9	6.8	8	95
Sweet Beauty	5.3	53.5	5.4	9.6	5.4	10.5	107
Yellow Doll	24.3	55.4	5.5	7.3	6.6	10.4	92
Yellow Jubilee	15.1	50.1	5	6.8	6.6	10.6	91
<b>Mean</b>	<b>13.8</b>	<b>48.7</b>	<b>4.9</b>	<b>7.3</b>	<b>6.0</b>	<b>9.7</b>	<b>94.9</b>
<b>P Value</b>	<b>0.0003</b>	<b>0.0021</b>	<b>0.291</b>	<b>0.000</b>	<b>0.000</b>	<b>0.4474</b>	<b>0.2044</b>

PICNIC TYPE Variety	Total Watermelon		Mean Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Crimson Sweet	6.5	159.9	16	9.7	9.6	9.2	95
HSR 2920	10	200.1	20	7.1	7.2	12.1	83
Moon and Stars	6.6	174.3	17.4	10.4	9.7	9.1	88
Sultan	7.5	154	15.4	10.2	7.1	13.5	99
Yellow Shipper (Daisy)	10	162.3	16.2	12	9.1	8.6	90
<b>Mean</b>	<b>8.1</b>	<b>170.1</b>	<b>17.0</b>	<b>9.9</b>	<b>8.5</b>	<b>10.5</b>	<b>91</b>
<b>P Value</b>	<b>0.129</b>	<b>0.7377</b>	<b>0.8012</b>	<b>0.5164</b>	<b>0.0822</b>	<b>0.1894</b>	<b>0.5073</b>

x Number of watermelons and total yield of 10 plants

y Days to maturity from transplanting

<b>Comparison of Types: P Value</b>	<b>0.0066</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.0022</b>	<b>0.000</b>	<b>0.7587</b>
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**Table 4.** Marketable yield of icebox, mini and picnic watermelon varieties grown from treated seeds at Washington State University Vancouver REU in 2005.

ICEBOX TYPE Variety	Total Watermelon		Mean Watermelon				Days to
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	Maturity <sup>y</sup>
Boston	8.1	71.1	8.5	7.9	7.7	19.4	87
Buttercup	9.2	82	9.1	7.8	8.2	9.5	94
Constitution	6.7	51.4	7.7	8.1	7.6	9.7	92
Crimson Tide	5.7	49.1	8.8	6.4	7.4	8.8	91
Freedom	9.3	83.1	8.9	9.3	6.9	9.9	82
HSR 2695	3.3	30.4	9.2	9.7	9.4	8.5	99
HSR 2698	10	63.2	6.3	7.5	7	9.2	84
Imagination (primed)	10	73.6	7.4	7.4	7.2	9.4	77
Independence	7.1	58.1	8.1	8.4	7.6	10.5	92
Jade Star	7.6	62.4	8	8.7	8.4	9.1	89
Liberty	9.3	83.8	8.3	8.1	7.3	10.1	89
Madrid	7.9	90.8	11.8	12.1	7.2	9.4	102
Montreal	5.7	55.3	9.6	10.2	7.2	8	105
Orange Julius	9.3	79.9	8.7	7.5	8	9.9	91
Petite Treat	7.1	43.7	6.1	7.3	6.9	8.7	87
Promise	10	74.4	7.7	8.5	7.3	9.2	88
Quetzali	10	86.2	8.6	7.7	7.8	10	94
Revolution	5.7	54.5	9.5	9.4	7.1	10.2	87
Ruby	2.9	21.2	7.3	7.5	7.3	10	95
Solid Gold	7.1	62.8	8.8	8.8	8.4	9.3	91
Sugar baby	9	56.1	6.6	4.7	4.6	8.4	89
Sun Ray	10.5	66.6	6.6	7.1	7.3	10	91
Super Crisp 85	10.7	95	8.8	8.3	7.7	14.2	84
Sweet Delight (primed)	10	81.7	8.2	8.1	7.5	9.8	87
Sweet Eat'n	6	64.1	10.6	8.9	7.9	10.2	92
SXW 0016	7.6	62	8	8	7.5	10.2	89
SXW 0017	11.7	83.4	7.2	7	7.3	10.3	89
Vista	5.2	65.8	12.8	10.5	8.3	9.9	97
WT-04-65	10	71.4	8	7.4	7.8	10.5	88
<b>Mean</b>	<b>8.0</b>	<b>65.6</b>	<b>8.4</b>	<b>8.2</b>	<b>7.5</b>	<b>10.1</b>	<b>90.0</b>
<b>P Value</b>	<b>0.1259</b>	<b>0.207</b>	<b>0.006</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.894</b>	<b>0.1165</b>

MINI TYPE Variety	Total Watermelon		Mean Watermelon				Days to Maturity <sup>y</sup>
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	
41020016	5.7	28.3	4.9	8.4	5.6	9.5	100
Afternoon Delight	5.7	23.6	4.1	6.2	5.9	8.9	87
Amarillo	10.7	62.2	5.6	7.9	8.1	10	88
Betsy (8103)	15	49.4	3.3	4.9	4.7	9.3	98
Bobbie (8101)	10	52.4	5.2	6.7	6.5	10.6	86
Extazy	12.4	65.9	5.3	6.6	6.4	9.8	89
Jenny	6.9	36.7	5.4	7.1	6.4	7.8	87
Mickylee	9.5	50.1	5.3	6.7	6.3	8.3	94
Mini Yellow	12.1	63.4	5.2	8.3	8.2	9.7	84
Solitaire	9.3	47.6	5.2	7	6.9	9.6	88
Sweet Beauty	10	41.2	4.2	7.8	5.8	9.5	87
Valdoria	10.5	53.4	5.1	6.6	6.6	9.9	99
Vanessa	13.8	69.2	5	6.3	6.5	9.5	92
Wonder	14.3	57.7	4.1	5.5	5.7	9.7	87
Yellow Doll	8.7	36.9	5	6.9	6.2	10.4	102
<b>Mean</b>	<b>10.3</b>	<b>49.2</b>	<b>4.9</b>	<b>6.9</b>	<b>6.4</b>	<b>9.5</b>	<b>91</b>
<b>P Value</b>	<b>0.1003</b>	<b>0.2248</b>	<b>0.001</b>	<b>0.019</b>	<b>0.021</b>	<b>0.029</b>	<b>0.1431</b>

PICNIC TYPE Variety	Total Watermelon		Mean Watermelon				Days to Maturity <sup>y</sup>
	Number <sup>x</sup>	Yield (lb) <sup>x</sup>	Weight (lb)	Length (in)	Width (in)	BRIX	
Sangria	5.2	75.8	24.2	11.4	6.7	9.2	99

x Number of watermelons and total yield of 10 plants

y Days to maturity from transplanting

Comparison of Types:							
<b>P Value</b>	<b>0.007</b>	<b>0.008</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.542</b>	<b>0.293</b>