

Mini “Personal” Watermelon Variety Trial - 2003

UC Westside Field Station – Five Points, California

UC Kearney Agricultural Center – Parlier, California

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Four types of watermelons are available in supermarkets. Older *diploid (seeded)* watermelons have been a major part of the market for many years (since 1629) and weigh 18-35 pounds. The large *seedless triploid* watermelons usually weigh 15-22 pounds and have been a popular item since 1988. The *icebox size* melons are generally 6-12 pounds each and have been available for at least five years. The newest melons in the marketplace are *seedless mini “personal”* watermelons (sometimes called “palm” melons). They offer an attractive alternative for the consumer that has limited refrigerator space or for small families. These newer triploid personal size melons, weighing 3-7 pounds each, first became widely available in markets in 2003. Besides the smaller size, advertisers also promote a thinner rind, which means more edible flesh. A trade off, however, may be a higher degree of internal bruising if not handled carefully. Varieties such as PureHeart, Petite Perfection, and Bambino are some of the first commercial varieties.

MATERIALS AND METHODS:

A trial was established in 2003 by Jesús Valencia (formerly with Cooperative Extension) at the UC Westside Research and Extension Center in Five Points, California to evaluate 12 varieties of mini watermelons. Varieties were transplanted on May 8, 2003 into beds spaced 80” from center to center with furrow irrigation. Plant spacing was 24” between the plants down the row. Plots were 58 feet long, and there were four replications initially, in a randomized complete block design. Soil type is a Panoche clay loam. A pollinator variety was transplanted at the same time as the trial entries in every third row, and honeybees were set out just prior to bloom for pollination.

An observation trial was established at the UC Kearney Agricultural Center in Parlier, CA to evaluate two additional varieties, 620 (Sandiacita) and 618, both from Corona Seed Company. Soil at this site is a Hanford fine sandy loam. A single bed on 80” centers and covered with a black plastic mulch was direct seeded on June 18. Every third plant in the row was a pollinator (#585).

The data in the replicated trial was subjected to analysis of variance and LSD mean separation.

RESULTS:

Because there were not enough plants of some of the varieties, we had to eliminate one of the four replications and two of the 12 varieties (one Liliput entry and mini triploid 2187), ending up with three replications and ten varieties. The field was harvested two times, July 24 and August 4 (78 and 89 days after transplanting). Ripe melons in each 58-foot plot were harvested based on

rind and ground spot color, counted, and weighed. Five melons from each treatment were randomly selected and cut in half for rind thickness and color determinations. A 2” plug was removed from each melon for Brix analysis.

Melons in the Kearney observation study were also harvested twice – September 16 and 23 (90 and 97 days after seeding). Differences in weather, soil type, varieties, planting date and seeding vs. transplants can account for the difference in the number of days to harvest in the different locations. The Westside has a heavier, darker soil, and the climate tends to be windier. The Parlier varieties were planted more than a month later than the Westside varieties.

Mean Number Melons per Plot: As seen in Table 1, the mean number of fruits from two harvests in the Westside trial ranged from 48 (mini triploid 2618) to 84 fruits (Petite Perfection). There was a statistically significant difference ($p \leq 0.05$) in the total count with Petite Perfection, RWT 8149, 5116, 5104, and Extazy yielding higher numbers of fruits than 2618. Petite Perfection had 73% more fruits than 2618. The number of melons harvested from Liliput, 5109, and 2132 was not significantly different from any of the other varieties. The number of fruits for mini triploid 2132 was still 29% higher than the lowest melon count with variety 2618.

Total Yield per Plot: Total weight per plot in Table 1 varied from 770 pounds per plot (variety 5104) to 528 pounds (Petite Perfection) at the Westside Research and Education Center. There was no significant difference between varieties. Petite Perfection had the highest number of harvested melons and the lowest total weight (and the smallest size). Higher market prices generally make up for the lower yields of some of the named varieties with thin rinds. These weights were converted to tons per acre in Table 1 based on the plot size to help the reader project yield potentials (30 tons per acre to 44 tons per acre).

Mean Average Weight per Melon: This is probably one of the most critical criteria for this classification of melons. The means in Table 1 were derived by dividing the total number of melons per plot into the total weight per plot. There was a significant difference in individual melon weights ($p \leq 0.05$). Petite Perfection, RWT 8149, 5109, 5116, and Extazy were significantly smaller than all of the other varieties. All varieties with the exception of 2618 (12.8 lbs.) and 2132 (11.5 lbs.) could be classified as mini melons, though this may be influenced by a closer plant spacing to reduce the sizes of all of the varieties.

Table 2 presents average weights of five fruits from eight varieties in separate tests with slightly different results. Five melons were harvested and data collected from each of eight varieties on August 1 in preparation for a field day. Liliput was quite a bit smaller (4.4 lbs) and 2618 remained the largest at almost 15 lbs. instead of the original 12.8 lbs. Petite Perfection, 5116, 5104, and RWT 8149 were still small (7.3, 7.2, 7.4, and 7.8 lbs. respectively).

Brix Soluble Solids Determinations: Five cores from each of five melons in the plots were averaged together to give the Brix number listed in Table 1. Values were determined using a hand-held refractometer. There was no significant difference in Brix readings. The highest Brix was with Petite Perfection (11.9) and the lowest value was 10.8 with variety 5109.

Table 2 presents two different Brix determinations – near the middle heart and by the rind - this time using a portable digital refractometer. Petite Perfection remained the sweetest near the center, and 5109 was the lowest Brix as in the previous test. However, the Brix readings changed in the measurements closer to the rind.

Color and Rind Thickness: Rind thickness and color values taken at the time of harvest (data not shown) in the Westside trial were observational and subjective. Rind thickness was classified as small, medium, and large. Only Petite Perfection and RWT 8149 were determined to have thin rinds. Varieties with thick rinds were 5116 and 5109. All others were determined to have medium rinds. Flesh color was classified as pink, red, and dark red. Extazy and 5104 were classified as red flesh. All others were determined to be a dark red.

Table 2 and Figures 2 and 3 show the average rind thickness (in mm) of five melons evaluated on a different date from each of the varieties listed. The range was from 7 mm (Petite Perfection and 5116) to an almost three-fold thicker rind (20 mm) in Extazy, 5109, and 2618. Rind thickness becomes more important in long distance shipping where bruising may be a problem with thinner rind varieties. Flesh color was again subjective as discussed above, however more varieties were placed in the pink-orange-red classification than data from the field harvest above. Good red flesh color was noted in Extazy, 5116, and 5109. Rind color and striping varied from a light green, with and without stripes, to a dark green (Table 2 and Figure 1).

In a separate test, two additional varieties showed promise as mini watermelons. Table 3 presents Brix (rind and middle), fruit diameter, fruit weight, rind thickness, and inside color for Sandiacita and variety 618. Both had good color, good size, fair rind thickness, but slightly lower Brix determinations. In taste tests, they were rated quite high.

SUMMARY:

In the replicated trial, Petite Perfection, RWT 8149, and 5116 were a good size for the mini watermelon classification and had a good number of fruits per plot and a high soluble solids (Brix) rating. They all had some of the thinnest rinds – which may be either good or bad depending on how they are handled. We did observe more internal bruising near the rind with the thinner rind varieties. A closer plant spacing than the 24” used in this trial may reduce the fruit size and make them more acceptable. Sandiacita and 618 in the unreplicated trial had an acceptable color and rind thickness for this classification of melons.

The thicker rind of Extazy, 2618, 5109, 618, and 5104 make these suitable varieties where rougher handling is anticipated or long distance shipping is required. In some markets, the light green rind color of Petite Perfection, Liliput and 5104 may be objectionable. Eight people evaluated colors (rind and flesh) and taste, and most preferred a darker red flesh rather than the orange-red color of the Petite Perfection, 5104, RWT 8149, Liliput, and 2618.

Table 1. Field Harvest Data - Five Points, California (July 24 and August 4, 2003)

Variety	Individ. Melon Weights (lbs.) ¹	Mean Number Melons/Plot ²	Total Yield/Plot (lbs.) ²	Calculated Yield/Plot (T/Acre) ³	Brix Soluble Solids ⁴
Petite Perfection	6.3 a Smallest	83.7 a highest	528 lowest	30	11.9 highest
RWT 8149	6.9 a	82.0 a	563	32	11.5
5109	7.6 ab	69.7 abc	534	30.3	10.8 lowest
5116	8.3 b	75.7 a	626	35.6	11.3
Extazy	8.5 b	70.3 ab	588	33.4	10.9
Liliput	10.3 c	64.7 abc	662	37.6	11.3
5104	10.4 c	74.3 ab	770 highest	43.7	11.3
Mini triploid 2308	10.4 c	52.0 bc	535	30.4	11.0
Mini triploid 2132	11.5 cd	62.0 abc	713	40.1	10.9
Mini triploid 2618	12.8 d largest	47.7 c lowest	612	34.8	11.8
LSD (0.05)	1.4	22.4	ns		ns
CV (%)	8.9	19.1			

“Means with no letters in common are significantly different on Fisher’s Protected LSD test at P = 0.05”

¹ Determined from total melon weight divided by total melon count

² Total plot length was 58 feet

³ Calculated from total yield and plot size

⁴ Average of five core samples using a hand-held refractometer

Table 2. Additional Data – Melons from Five Points (August 1, 2003)

Variety	Melon Weight (lbs.)	Diameter (cm)	Rind (mm) Thickness	Rind Color ¹	Flesh Color ²	Brix		Comments
						Rind	Center	
P. Perfection	7.3	18	7	lt green-s	o-red	9.8	12.2	color/flavor undesirable
Extazy	9.6	20	20	dk green-s	red	9.7	11.2	dense texture, good color
RWT 8149	7.8	18.5	10	dk green	o-red	9.1	11.9	
5116	7.2	18	7	dk green	red	9.2	11.2	soft texture/sweet
Liliput	4.4	15	10	lt green	o-red	10.5	11.0	
2618	14.8	22.5	20	dk green	p-red	10.5	12.0	
5104	7.4	18.5	15	lt green-s	o-red	10.0	11.0	soft texture
5109	8.8	19	20	dk green	red	10.2	10.5	good flavor, thick rind

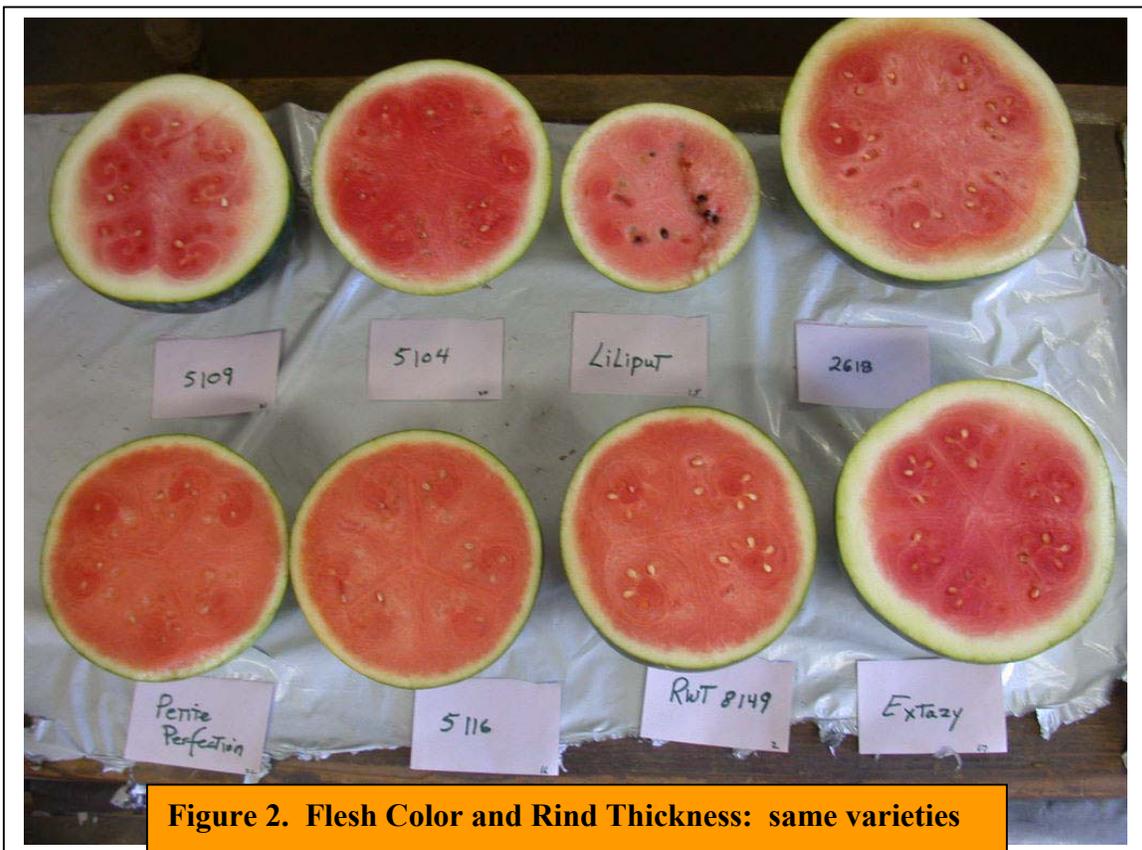
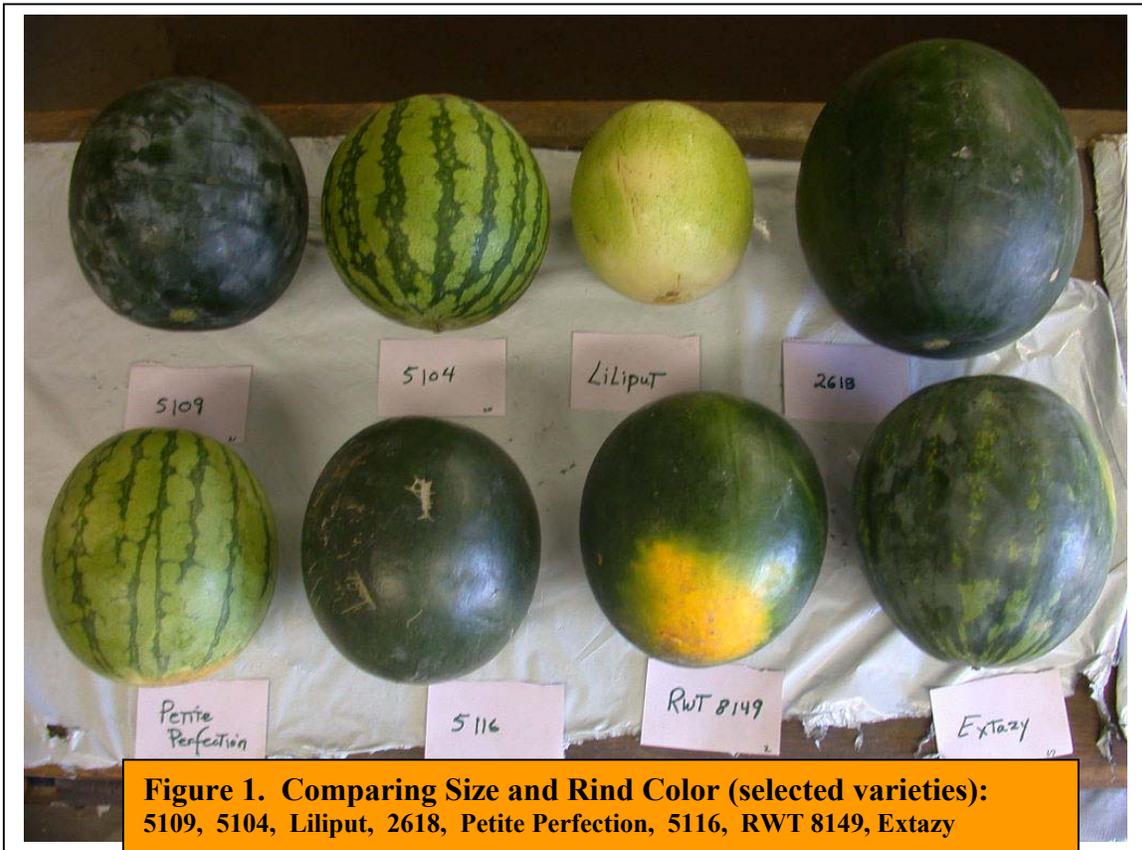
¹ Color, s = stripe present, lt=light, dk=dark

² o = orange, p = pink

Table 3. Observation Study of Two Varieties - UC Kearney Agricultural Center (Sept. 23, 2003)

Variety	Weight (lbs.)	Diameter (cm)	Rind Thickness (mm)	Flesh Color	Brix	
					Rind	Center
620 Sandiacita	6.6	17.9	10	Red	8.1	9.6
618	7.2	15.7	14	Red	8.8	10.8

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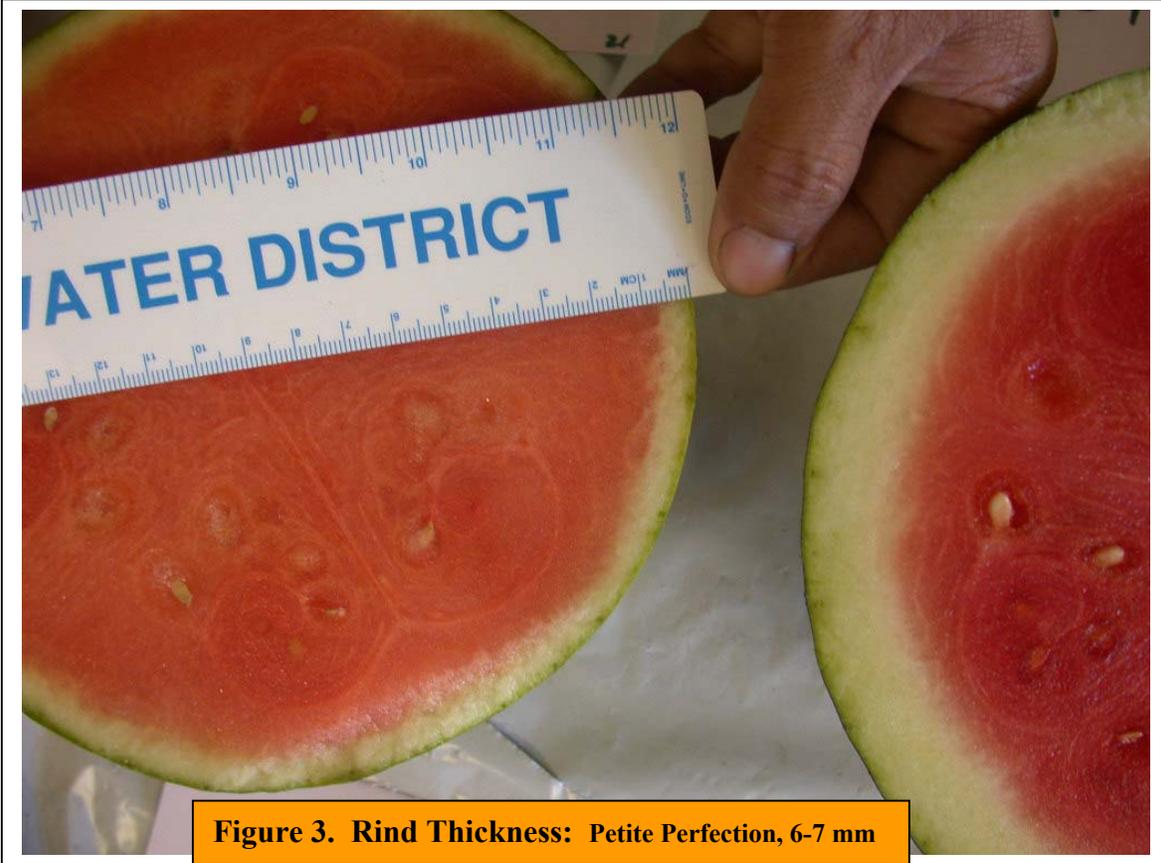


Figure 3. Rind Thickness: Petite Perfection, 6-7 mm