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2018 Watermelon Variety Evaluation in Indiana

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Introduction

Watermelon production in Indiana ranked sixth in harvested area in the U.S. A total of 6,800 acres of watermelons were planted in Indiana in 2017 with a total production value of \$29 million (USDA 2018). Variety selection based on yield, disease resistance and fruit quality is one of the key decisions in watermelon production. The objective of this study is to provide Indiana watermelon producers, as well as seed companies, with the updated information on performances of watermelon varieties grown in Indiana.

Materials and Methods

A typical-size triploid watermelon variety trial, a personal-size watermelon variety trial and a diploid watermelon variety trial were conducted in 2018 at the Southwest Purdue Agricultural Center in Vincennes, IN. Varieties and seed sources are provided in Table 1.

Randomized complete block designs with three replications were used for the trials. Experimental plots of the typical-size triploid and diploid watermelons were comprised of 48-ft bed that was spaced on 8 ft centers. Each experimental plot included 12 watermelon plants on 4 ft in-row spacing. Pollenizers were interplanted between every two triploid plants in the same row. The experimental plot of personal-size watermelons was comprised of three 16-ft rows spaced on 6 ft centers. Plants were planted 2 ft apart for a total of 24 plants per plot. Pollenizers were planted in one row of every three rows of personal-size triploid watermelons. Pollenizer ‘SP-7’ was used for both the typical-size and personal-size watermelon trials.

All the seeds were planted in 50-cell black seeding flats filled with a peat-based potting media (Metro-Mix® 360, a mixture of sphagnum peat moss, coarse perlite, bark ash, starter fertilizer and dolomite). Transplants were grown in greenhouses at the Southwest Purdue Agricultural Center (SWPAC). Seedling dates and transplanting dates are provided in Table 2.

Soil type of the experimental field is sandy loam with 0.8 percent organic matter. Soybean was previously grown in the field in 2017. The field was fumigated with 85.5% chloropicrin (Pic Plus Fumigant®, TriEst Ag Group, Inc.) with the rate of 150 lbs/acre at 12-inch depth in fall 2017. Plants were grown on raised beds covered with black plastic mulch. Personal-size watermelon and diploid watermelon variety trials, and two of the three replications of the typical-size triploid watermelon variety trial were irrigated. Drip tape with a 12-inch emitter spacing and flow rate of 0.22 gpm/100 feet were used for irrigation. During transplanting, each plant received approximately one cup of starter fertilizer solution (Miracle-Gro®, 4.7 grams per gallon water). Fertilizers at the rate of 250 lb/acre urea (46-0-0), 100 lb/acre potash (0-0-60), 100 lb/acre diammonium phosphate (18-46-0), 200 lb/acre pelletized lime, 100 lb/acre K-Mag granular (0-0-22-11-22), 7 lb/acre boron 14.3% and 10 lb/acre Zinc 10% LS were pre-plant broadcast applied prior to laying black plastic mulch.

Diseases and insects were managed by scouting and using recommendations from Melcast (melcast.info) and the *Midwest Vegetable Production Guide for Commercial Growers* (Egel et

al., 2018). Bravo[®], Luna Experience[®] and Cabrio[®] were rotationally sprayed for disease control. No insecticides were applied during the season.

Harvests were conducted once a week. Triploid watermelons were harvested on July 19, July 26, Aug. 2 and Aug. 9. Personal-size watermelons were harvested on July 25, Aug. 1, Aug. 8, and Aug. 13. Diploid watermelons were harvested on July 16, July 23, July 30, Aug. 6 and Aug. 13. Fruit were weighed individually. Four fruit of each variety per replication were collected during peak harvest for fruit quality measurement. Fruit size and rind thickness were recorded. Total soluble solids were measured with a digital refractometer. Flesh firmness was measured using a force gauge with 11 mm diameter tip. Hollow heart severity was evaluated using a 1-5 scale: 1. none; 2. carpel separation evident; 3. one large gap evident; 4. more than 2 large gaps; 5. severe. Seedlessness was evaluated by counting black hard seeds on cutting surfaces of quartered melons.

Analysis of variance was performed using the Proc ANOVA procedure of SAS. Fisher's least significant difference test ($\alpha = 0.05$) was conducted for multiple comparisons of different measurements among watermelon varieties.

Results and Discussions

Typical-size triploid watermelons

Except varieties ORS6203 and ORS6064F, marketable yields of triploid watermelon varieties ranged from 61,658 to 40,757 lbs/acre in 2018 (Figure 1). Tailgate and Bottle Rocket yielded above 60,000 lbs/acre. Varieties that had marketable yields between 55,000 lbs/acre and 60,000 lbs/acre were Traveler, Red Amber, Orange Crisp, Wolverine, Excursion, Summer Breeze, 7187, 9651, and Embassy (Table 3). In the first harvest, varieties Bottle Rocket, Joy Ride, ORS6260d, Warrior, Kingman, Charismatic and Excursion had higher yields than the other varieties (Table 5).

Varieties that had the highest sugar content were Unbridled, Summer Breeze, Wolverine, Red Garnet, and two breeding lines (ORS6181b and ORS60.599) from Origene. However, ORS6181b and ORS60.599 showed uneven fruit ripening. Hollow heart was observed on several varieties this year. A total of 8.5 inches of rain occurred from May 29 to June 29 may have contributed to the hollow heart problem. Yellow and orange flesh watermelon varieties Amarillo, Orange Crisp and Treasure Chest had the most severe hollow heart symptoms. No hollow heart was observed on varieties Bottle Rocket, Tailgate, Exclamation, Maxima, and ORS6260d (Table 6).

Top yield triploid watermelon varieties in the 2018 variety trial:

Tailgate and Bottle Rocket are newer varieties from Seminis. Bottle Rocket was also in our evaluation in 2017. It consistently yielded well in both years. Tailgate and Bottle Rocket have dark green mottle striped rind pattern (Figure 2). Average fruit weight in this trial for Tailgate and Bottle Rocket was 18.5 and 17.4 lb (Table 4), respectively. They are relatively large size watermelons. Specifically, Tailgate that had a total of 57% fruit in 36 and 30 count categories. Sugar content for both varieties were moderately high, the values of flesh firmness were also moderately high. No hollow heart fruit was observed for either variety. Bottle Rocket had the

highest yield in the first harvest in 2018, but the trend for early ripeness of Bottle Rocket was not observed in 2017.

Traveler from Harris Moran has been in our evaluations since 2013. It was the third highest yielding variety in the 2018 trial. It was also one of the top yielding varieties in 2016 variety trial. In the 2015 variety trial in which Fusarium wilt affected the yields of many watermelon varieties, Traveler showed better tolerance to the disease and yielded well. Regardless of the high yield potential, sugar content of this variety was moderately low in 2018 as well as in previous trials. Fruit size of Traveler was smaller compared with other high yielding varieties. Average fruit weights ranged from 12.9 to 15.1 lb in our evaluations, most of the fruit were in 60 and 45 count categories.

Red Amber is a relatively new variety developed by Enza Zaden. It was evaluated in our trials in 2017 and 2018. Two entries of Red Amber were received in 2018. Data presented in this report were averages from the two entries. Red Amber was the highest yield variety in 2017 variety trial. It consistently yielded well in the 2018 trial. Red Amber has medium green mottle striped rind pattern. Average fruit size in 2017 and 2018 trial were 16.1 and 16.6 lb, respectively. Majority of the fruit were in 45 count category. Sugar content of Red Amber was moderately low in both 2017 and 2018 trials.

Excursion is a relatively newer variety from Syngenta. It was evaluated in our trials in 2016, 2017 and 2018, and it was consistently ranked among the top yield varieties in the three years. Excursion produced large size watermelons, average fruit weight ranged from 17.4 to 17.7 lb in our evaluations. More than 50% fruit were in 36 count category or larger. Excursion was approved to be an early-ripening variety in our trials. It had consistently high yields in the first harvest in the three years. Sugar content of Excursion was in the lower range in our evaluations.

9651 (Nunhems) is a sugar baby type watermelon with solid green background and very faint stripes. Variety 9651 consistently had high yield in the 2017 and 2018 trials. Average fruit weight was 17 and 15.7 lb in 2018 and 2017 trial, respectively. It had medium sugar content.

Embassy (Nunhems) is another variety that had consistently high yield in our trials in the past three years. Average fruit size ranged from 14.6 to 16.7 lb. Majority of the fruit was in 45 count category. Embassy had the dark green mottle striped rind. It had medium sugar content.

Wolverine (Highmark) has been in our evaluations since 2013. It was one of the top yielding varieties in the 2018 trial, but high yield potential was not consistent in the previous trials. Average fruit weight for Wolverine ranged from 14.5 to 16.6 lb in our evaluations. Majority of the fruit was in 60 count category in the current trial. Sugar content and flesh firmness were relatively high for Wolverine compared to other watermelon varieties. However, hollow heart was severe on Wolverine in the 2018 trial. About half of the 12 evaluated fruit exhibited hollow heart symptoms.

Personal-size watermelons

Yield of personal-size watermelons ranged from 75,927 to 49,543 lbs/acre (Table 7). The highest yield variety was Tigris, followed by Sirius Mini, and Extazy. Sirius Mini had more black seeds than other varieties (Table 9). Premium is a diploid variety.

Tigris, Premium and Sirius Mini had the largest fruit size with average fruit weight more than 9 lb (Table 8). Ocelot and Ladybelle had more than 20% fruit less than 6 lb and average fruit weight were significantly less compared to other varieties. Extazy had thicker rind compared to other varieties. Ocelot and Premium had the highest sugar content while Tigris, 50025 and Headstart Mini Bee had relatively lower sugar content. No hollow heart symptoms were detected on variety 50025, 50027, Cheetah, and Tigris.

Diploid watermelons

Santa Matilde had the highest marketable yield among diploid watermelons, but it was not significantly different from other red flesh diploid watermelons (Table 10). Santa Matilde also had the highest value on average fruit weight. Yield of Sorbet Swirl was the lowest. Sorbet Swirl and Black Seeded Ice Cream had the smallest fruit size. Orangeglo had the most severe hollow heart symptoms among all the diploid watermelons (Table 11).

References

Egel, D., R. Foster, E. Maynard, R., et al. 2018 *Midwest Vegetable Production Guide for Commercial Growers*, 2018 (ID-56). Purdue University.

USDA, 2018. National Agricultural Statistics Service. Vegetables 2017 Summary. <<http://usda.mannlib.cornell.edu/usda/current/VegeSumm/VegeSumm-02-13-2018.pdf>>.

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Table 1. Varieties and seed sources for typical-size triploid watermelon, personal-size watermelon, and diploid watermelon in the 2018 watermelon variety trials in Indiana.

Watermelon Variety	Seed Source
<i>Typical-size triploid watermelon varieties</i>	
7187	Nunhems/Bayer
7197	Nunhems/Bayer
9651	Nunhems/Bayer
51019	Hazera
Amarillo	Southwest Purdue Agricultural Center
Bottle Rocket	Seminis
Captivation	Syngenta
Charismatic	Sakata
Embassy	Nunhems/Bayer
Exclamation	Syngenta
Excursion	Syngenta
Fascination	Syngenta
Fenway	Southwest Purdue Agricultural Center
Joy Ride	Seminis
Kingman	Sakata
Maxima	Origene
Orange Crisp	Southwest Purdue Agricultural Center
ORS60.599	Origene
ORS6064F	Origene
ORS6151	Origene
ORS6181b	Origene
ORS6203	Origene
ORS6260d	Origene
Red Amber	Enza Zaden and Seedway
Red Garnet	Enza Zaden
Red Opal	Seedway
Road Trip	Seminis
Secretariat	Sakata
Summer Breeze	Seminis
SV0241WA	Seminis
Tailgate	Seminis
Traveler	Harris Moran
Treasure Chest	Southwest Purdue Agricultural Center

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Turnpike	Harris Moran
Unbridled	Sakata
USAW 16095	US Agriseeds
Warrior	Nunhems/Bayer
Wolverine	HighMark
<i>Personal-size watermelons</i>	
Extazy	Hazera
Tigris	Hazera
Ocelot	Hazera
Cheetah	Hazera
50025	Hazera
50027	Hazera
Premium *	Nunhems/Bayer
Ladybelle	Nunhems/Bayer
Headstart Mini Bee	Seedway
Sirus Mini	Seedway
<i>Diploid watermelons</i>	
Reya	Seminis
Santa Matilde	Seminis
Zeugma	Seminis
Sentinel	Seminis
Sangria	Southwest Purdue Agricultural Center
Crimson Sweet	Southwest Purdue Agricultural Center
Baby Doll	Southwest Purdue Agricultural Center
Orangeglo	Southwest Purdue Agricultural Center
Sorbet Swirl	Southwest Purdue Agricultural Center
Black Seeded Ice Cream	Southwest Purdue Agricultural Center

* Premium is a diploid watermelon, the other personal-size watermelons are triploid.

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Table 2. Seedling and transplanting dates of triploid watermelons, personal-size watermelons, diploid watermelons and pollenizers in the 2018 watermelon variety trials in Indiana.

Watermelons	Seedling Dates	Transplanting Dates
Typical size triploid watermelon	April 19	May 15
Personal size watermelon	April 20	May 16
Diploid watermelon	April 17	May 16
Pollenizer	April 16	May 15 and May 16

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Table 3. Marketable and total yields of **typical-size triploid watermelons** in the 2018 watermelon variety trial in Indiana.

Variety	Marketable weight (lbs/acre)		Marketable number per acre		Total weight (lbs/acre)		Total number per acre	
7187	55,282	abcdef ^z	3,289.8	abcdef	55,282	abcdefg	3,289.8	bcdef
7197	48,893	bcdefgh	3,025.1	cdefg	49,548	bcdefghi	3,062.9	defg
9651	55,255	abcdef	3,251.9	abcdef	56,069	abcdefg	3,327.6	bcdef
51019	50,636	bcdefgh	3,025.1	cdefg	50,636	bcdefghi	3,025.1	defg
Amarillo	53,561	abcdefg	3,630.1	abc	55,682	abcdefg	3,819.1	abc
Bottle Rocket	61,640	a	3,554.5	abcd	62,349	a	3,592.3	abcde
Captivation	48,589	bcdefgh	3,062.9	cdefg	49,951	bcdefghi	3,138.5	def
Charismatic	54,753	abcdef	3,478.8	abcdef	55,120	abcdefg	3,516.6	abcdef
Embassy	55,173	abcdef	3,289.8	abcdef	55,520	abcdefg	3,327.6	bcdef
Exclamation	48,791	bcdefgh	2,911.6	defgh	49,098	cdefghi	2,949.4	efg
Excursion	57,968	abcd	3,289.8	abcdef	58,406	abcde	3,327.6	bcdef
Fascination	47,051	cdefgh	2,873.8	efgh	47,051	efghi	2,873.8	fg
Fenway	42,718	gh	3,289.8	abcdef	42,718	hi	3,289.8	bcdef
Joy Ride	54,729	abcdef	3,251.9	abcdef	56,368	abcdefg	3,365.4	abcdef
Kingman	53,281	abcdefg	3,516.6	abcde	54,587	abcdefg	3,630.1	abcd
Maxima	43,802	fgh	2,344.4	hi	44,712	ghi	2,420.1	gh
Orange Crisp	58,368	abcd	3,819.1	ab	59,148	abcd	3,894.8	ab
ORS60.599	40,757	h	1,928.5	i	41,165	i	1,966.3	h
ORS6064F	17,685	i	1,247.8	j	17,991	j	1,285.7	i
ORS6151	48,015	cdefgh	3,062.9	cdefg	48,015	defghi	3,062.9	defg
ORS6181b	46,826	defgh	2,457.9	ghi	46,826	efghi	2,457.9	gh
ORS6203	10,700	i	680.6	j	12,577	j	831.9	i
ORS6260d	52,633	abcdefg	2,836.0	fgh	53,690	abcdefgh	2,911.6	fg
Red Amber	58,433	abc	3,516.5	abcde	59,208	abc	3,592.0	abcde
Red Garnet	46,911	defgh	3,062.9	cdefg	46,911	efghi	3,062.9	defg

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Red Opal	54,118	abcdefg	3,365.4	abcdef	54,410	abcdefg	3,406.2	abcdef
Road Trip	51,555	abcdefgh	3,251.9	abcdef	51,925	abcdefghi	3,289.8	bcdef
Secretariat	44,493	fgh	3,062.9	cdefg	45,347	ghi	3,138.5	def
Summer Breeze	57,482	abcde	3,592.3	abc	58,471	abcde	3,667.9	abcd
SV0241WA	45,983	efgh	3,138.5	cdef	46,445	fghi	3,176.3	cdef
Tailgate	61,658	a	3,327.6	abcdef	62,394	a	3,406.2	abcdef
Traveler	58,703	abc	3,894.8	a	60,157	abc	4,008.2	a
Treasure Chest	53,884	abcdefg	3,214.1	bcdef	53,884	abcdefgh	3,214.1	cdef
Turnpike	53,653	abcdefg	3,176.3	bcdef	53,653	abcdefgh	3,176.3	cdef
Unbridled	49,905	bcdefgh	3,025.1	cdefg	50,950	abcdefghi	3,138.5	def
USAW 16095	44,309	fgh	3,251.9	abcdef	45,399	ghi	3,365.4	abcdef
Warrior	53,343	abcdefg	3,176.3	bcdef	53,343	abcdefgh	3,176.3	cdef
Wolverine	58,257	abcd	3,516.6	abcde	58,818	abcd	3,592.3	abcde

^z Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

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Table 4. Average fruit weight and percentages of fruit in weight categories of **typical-size triploid watermelons** in the 2018 watermelon variety trial in Indiana.

Typical size triploid watermelon varieties	Average fruit weight (lb) ^z	< 9 lb ^y	9-13.5 lb (60 count)	13.6-17.5 lb (45 count)	17.6-21.4 lb (36 count)	> 21.5 lb (30 count)	
7187	16.8	defg ^x	0	24	29	33	14
7197	16.2	defghi	0	27	33	17	23
9651	17.0	def	0	22	34	36	7
51019	16.7	defgh	0	11	41	41	7
Amarillo	14.7	jklm	0	39	33	24	3
Bottle Rocket	17.4	cde	0	12	40	32	15
Captivation	15.9	fghijk	0	24	31	35	9
Charismatic	15.8	fghijk	0	33	44	21	2
Embassy	16.7	defgh	0	11	43	32	13
Exclamation	16.8	defg	0	20	37	25	18
Excursion	17.6	bcd	0	14	32	30	24
Fascination	16.3	defghi	0	20	39	35	6
Fenway	13.0	n	0	63	30	7	0
Joy Ride	16.8	defgh	0	10	50	32	8
Kingman	15.1	ijkl	2	34	47	14	3
Maxima	18.6	bc	0	9	28	35	28
Orange Crisp	15.4	ghijkl	0	24	47	26	3
ORS60.599	20.8	a	0	5	16	37	42
ORS6064F	14.1	lmn	0	60	25	15	0
ORS6151	15.7	fghijk	0	30	37	27	7
ORS6181b	19.0	b	0	11	24	33	33
ORS6203	15.8	fghijk	0	25	50	25	0
ORS6260d	18.6	bc	0	8	37	31	24
Red Amber	16.6	defgh	0	20	43	22	13
Red Garnet	15.3	hijkl	0	30	42	25	2
Red Opal	16.1	efghij	0	31	36	24	9
Road Trip	15.9	fghijk	0	33	33	20	14
Secretariat	14.5	klm	0	37	55	5	2
Summer Breeze	16.0	fghijk	0	19	48	26	6
SV0241WA	14.6	klm	2	31	54	9	4
Tailgate	18.5	bc	0	6	37	37	20

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Traveler	15.1	ijklm	0	34	42	18	5
Treasure Chest	16.8	defg	0	16	38	34	11
Turnpike	16.9	def	0	17	40	24	17
Unbridled	16.4	defghi	0	16	43	20	20
USAW 16095	13.6	mn	0	42	49	9	0
Warrior	16.9	def	0	15	46	27	10
Wolverine	16.6	defgh	0	31	26	28	14

^z Average fruit weight was calculated by marketable fruit weight divide marketable fruit number, using data from three replications.

^y Percentages of fruit in weight categories were calculated using data collected in irrigated field.

^x Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

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Table 5. Marketable yield of **typical-size triploid watermelons** in the first harvest in the 2018 watermelon variety trial in Indiana.

Typical size triploid watermelon variety	Weight (lb) per acre		Number of fruit per acre	
7187	7,075	bcdefgh ^z	376.7	bcdef
7197	6,218	cdefghi	301.3	bcdefgh
9651	2,930	ghij	150.7	efgh
51019	5,884	defghij	339.0	bcdefg
Amarillo	5,411	defghij	301.3	bcdefgh
Bottle Rocket	15,071	a	791.0	a
Captivation	8,183	bcdefg	414.3	bcde
Charismatic	9,420	abcde	565.0	abc
Embassy	5,303	defghij	263.7	cdefgh
Exclamation	5,393	defghij	301.3	bcdefgh
Excursion	9,243	abcdef	414.3	bcde
Fascination	7,398	bcdefg	452.0	bcde
Fenway	7,200	bcdefgh	527.3	abcd
Joy Ride	12,291	ab	602.7	ab
Kingman	9,449	abcde	527.3	abcd
Maxima	5,368	defghij	263.7	cdefgh
Orange Crisp	3,193	ghij	188.3	efgh
ORS60.599	3,679	efghij	188.3	efgh
ORS6064F	0	j	0.0	h
ORS6151	3,379	fghij	188.3	efgh
ORS6181b	6,600	bcdefghi	339.0	bcdefg
ORS6203	601	ij	37.7	gh
ORS6260d	12,114	abc	565.0	abc
Red Amber	6,825	bcdefgh	357.8	bcdef
Red Garnet	3,293	fghij	226.0	defgh
Red Opal	5,785	defghij	339.0	bcdefgh
Road Trip	6,802	bcdefgh	376.7	bcdef
Secretariat	3,538	efghij	226.0	defgh
Summer Breeze	7,336	bcdefgh	376.7	bcdef
SV0241WA	4,467	defghij	301.3	bcdefgh

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Tailgate	8,189	bcdefg	414.3	bcde
Traveler	2,274	ghij	150.7	efgh
Treasure Chest	6,837	bcdefgh	339.0	bcdefg
Turnpike	6,561	bcdefghi	339.0	bcdefg
Unbridled	1,348	hij	75.3	fgh
USAW 16095	3,914	efghij	263.7	cdefgh
Warrior	10,332	abcd	565.0	abc
Wolverine	6,436	bcdefghi	376.7	bcdef

^z Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

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Table 6. Fruit quality of **typical-size triploid watermelons** in the 2018 watermelon variety trial in Indiana.

Variety	Length (cm)		Width (cm)		Rind thickness (cm)		Firmness (lbs-force)		Total soluble solids (°Brix)		Hollow heart ^z		Black seeds ^x	
7187	29.9	abcde ^y	23.5	fghijkl	2.1	bcde	3.2	bcd	11.2	abcdefg	1.2	fgh	0.3	d
7197	30.0	abcd	23.8	efghijk	2.1	bcde	2.8	cdefg	11.0	abcdefgh	1.8	bcdef	4.6	ab
9651	27.8	fghijkl	24.3	cdefghi	1.9	defg	2.9	cdefg	10.8	bcdefgh	1.3	fgh	0.4	d
51019	27.0	ijkl	24.1	cdefghi	1.8	efghi	3.0	bcdef	10.7	cdefghi	1.5	efgh	0.0	d
Amarillo	26.4	jklm	25.0	bcdef	1.8	efgh	2.1	h	10.6	cdefghi	2.5	a	0.1	d
Bottle Rocket	29.4	bcdef	23.8	efghijkl	1.8	efghi	3.2	bcd	11.2	abcdefg	1.0	h	0.6	cd
Captivation	27.4	ghijkl	23.8	efghijkl	1.7	efghi	3.0	bcdef	10.3	efghi	1.3	fgh	0.3	d
Charismatic	27.1	hijkl	24.3	cdefghi	2.3	abc	2.4	fgh	10.6	cdefghi	2.5	a	1.1	cd
Embassy	30.4	abc	24.4	cdefghi	1.9	defgh	3.0	bcdef	10.2	ghi	1.3	fgh	1.4	cd
Exclamation	27.0	ijkl	24.5	bcdefgh	1.9	efgh	3.0	bcdef	10.2	fghi	1.0	h	3.5	abc
Excursion	31.3	a	25.4	abcd	1.7	efghi	3.4	bc	9.9	hi	1.5	efgh	0.6	cd
Fascination	28.1	efghijk	23.1	ghijklm	1.7	ghi	3.0	bcdef	10.7	bcdefghi	1.6	cdefgh	5.4	a
Fenway	24.0	n	22.3	lmn	1.4	i	2.3	gh	10.6	cdefghi	2.2	abcd	1.3	cd
Joy Ride	31.4	a	24.3	cdefghi	1.8	efghi	2.9	bcdefg	10.7	bcdefghi	1.2	fgh	0.3	d
Kingman	28.6	cdefghi	23.6	efghijkl	2.1	bcde	2.7	cdefgh	10.2	ghi	2.3	abc	4.7	ab
Maxima	28.2	defghij	25.9	ab	2.0	cdefgh	3.1	bcdef	11.3	abcdefg	1.0	h	0.6	cd
Orange Crisp	26.2	klm	25.2	abcde	1.8	efgh	2.7	defgh	11.4	abcde	2.1	abcde	1.3	cd
ORS60.599	29.3	bcdef	26.6	a	2.4	ab	3.0	bcdef	11.7	ac	1.2	fgh	0.3	d
ORS6064F	28.2	defghij	20.9	n	1.4	i	4.5	a	9.6	i	1.2	fgh	1.8	bcd
ORS6151	27.4	ghijkl	24.8	bcdef	2.0	cdefgh	3.0	bcdef	11.2	abcdefg	1.8	bcdef	1.4	cd

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ORS6181b	29.2	bcdefg	25.9	ab	2.6	a	2.8	cdefg	11.8	ab	2.3	abc	0.9	cd
ORS6203	28.7	cdefghi	22.4	klmn	1.6	ghi	3.2	bcd	10.8	bcdefgh	1.7	bcdefg	1.0	cd
ORS6260d	28.6	cdefghi	24.6	bcdefg	2.3	abcd	2.9	bcdefg	11.1	abcdefg	1.0	h	0.1	d
Red Amber	30.5	ab	23.7	efghijkl	1.8	efgh	2.9	bcdefg	10.7	bcdefghi	1.2	fgh	0.5	d
Red Garnet	27.5	fghijkl	21.8	mn	1.7	efghi	3.1	bcde	11.5	abcde	1.1	gh	0.3	d
Red Opal	29.0	cdefgh	22.5	jklm	1.8	efghi	3.2	bcde	10.8	bcdefgh	1.4	fgh	0.7	cd
Road Trip	29.8	abcde	23.8	efghijkl	1.7	fghi	3.0	bcdef	11.0	abcdefgh	1.2	fgh	0.4	d
Secretariat	26.6	jklm	22.0	mn	2.0	cdef	2.7	cdefgh	11.3	abcdef	1.4	fgh	5.3	a
Summer Breeze	28.2	defghij	24.9	bcdef	1.7	efghi	2.8	cdefg	11.7	abc	1.3	fgh	0.3	d
SV0241WA	28.5	cdefghi	22.5	jklm	1.8	efghi	3.1	bcdef	11.2	abcdefg	1.5	efgh	0.8	cd
Tailgate	31.0	ab	24.3	cdefghi	1.8	efghi	3.6	b	11.3	abcdefg	1.0	h	0.6	cd
Traveler	26.1	lm	22.9	ijklm	1.7	efghi	2.6	cdefgh	10.7	cdefghi	1.1	gh	0.3	d
Treasure Chest	27.6	fghijkl	25.6	abc	1.8	efghi	2.6	defgh	11.3	abcdef	2.4	a	1.2	cd
Turnpike	28.5	cdefghi	25.5	abcd	1.5	hi	2.9	cdefg	11.4	abcde	1.3	fgh	0.3	d
Unbridled	26.4	jklm	24.7	bcdef	1.9	defg	3.0	bcdef	12.1	a	1.8	bcdef	0.6	cd
USAW 16095	25.1	mn	23.1	hijklm	1.7	fghi	2.5	efgh	10.0	hi	1.6	defgh	0.7	cd
Warrior	29.4	bcdef	24.0	defghij	1.9	defg	2.8	cdefg	10.9	abcdefgh	1.5	efgh	0.4	d
Wolverine	27.8	fghijkl	25.4	abcd	2.3	abc	3.2	bcde	11.5	abcd	2.3	ab	0.1	d

^z Hollow heart severity was evaluated using a 1-5 scale: 1. None; 2. Carpel separation evident; 3. One large gap evident; 4. More than 2 large gaps; 5. Severe.

^x Black seeds was evaluated on counting the total number of black seeds on cutting surfaces of quartered melons.

^y Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

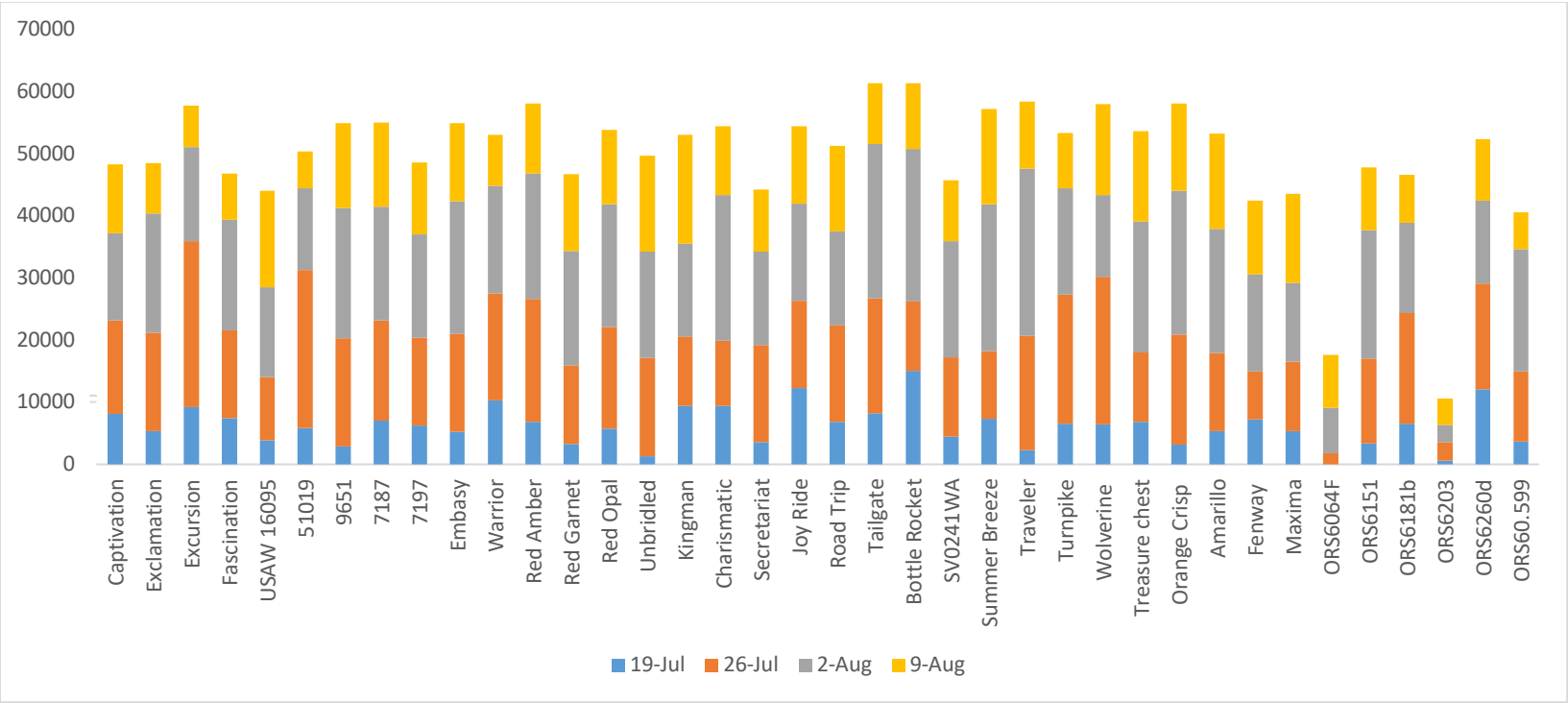


Figure 1. Marketable yield (lbs/acre) of typical-size triploid watermelons on each harvest date in the 2018 watermelon variety trial in Indiana

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Table 7. Marketable yield of **personal-size watermelons** in the 2018 watermelon variety trial in Indiana.

Personal-size watermelon variety	Marketable weight (lbs/acre)		Marketable number per care	
Extazy	64,416	ab ^z	7,222.2	ab
50025	60,653	bc	7,411.3	ab
50027	56,783	bc	7,108.8	ab
Cheetah	61,683	bc	7,146.6	ab
Headstart Mini Bee	49,543	cd	6,050.0	b
Ladybelle	60,897	bc	8,318.8	a
Ocelot	43,339	d	6,012.2	b
Premium	63,888	ab	6,692.8	b
Sirus Mini	65,680	ab	7,260.0	ab
Tigris	75,927	a	7,260.0	ab

^z Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

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Table 8. Average fruit weight and percentages of watermelons in fruit weight categories of **personal-size watermelon** in the 2018 watermelon variety trial in Indiana.

Personal-size watermelon variety	Average fruit weight (lb)		<6 lb	6-8 lb	8-10 lb	10-12 lb	> 12 lb
Extazy	8.09	c ^z	6	30	38	16	9
50025	8.19	de	12	37	34	14	2
50027	7.94	e	16	48	18	8	9
Cheetah	8.60	cd	4	36	37	15	7
Headstart Mini Bee	8.19	de	9	40	36	12	2
Ladybelle	7.32	f	28	36	26	8	1
Ocelot	7.21	f	21	49	28	2	1
Premium	9.53	b	5	21	32	30	12
Sirus Mini	9.06	bc	4	32	35	19	9
Tigris	10.46	a	4	12	30	26	28

^z Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

Table 9. Fruit quality of **personal-size watermelons** in the 2018 watermelon variety trial in Indiana.

Personal-size watermelon variety	Length (cm)		Width (cm)		Rind thickness (cm)		Firmness (lbs-force)		Total soluble solids (°Brix)		Hollow heart ^z		Black seeds ^y	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Extazy	21.06	bc ^x	18.83	cd	2.83	a	4.51	a	11.23	cd	1.25	ab	1.17	c
50025	21.00	bc	19.32	bcd	1.40	b	3.64	abc	11.03	de	1.00	b	0.83	c
50027	20.29	c	19.11	bcd	1.30	b	4.10	ab	11.45	cd	1.00	b	0.17	c
Cheetah	20.56	c	19.11	bcd	1.39	b	3.48	abc	11.28	cd	1.00	b	3.42	c
Headstart Mini Bee	20.24	c	18.74	d	1.38	b	4.11	ab	11.06	de	1.08	b	1.83	c
Ladybelle	20.87	bc	19.85	abc	1.42	b	3.06	bc	11.91	bc	1.42	ab	5.11	bc
Ocelot	20.27	c	18.43	d	1.29	b	4.32	a	13.13	a	1.28	ab	1.33	c
Premium	24.18	a	20.11	ab	1.12	b	3.07	bc	12.46	ab	1.63	ab	47.00	a
Sirus Mini	22.05	b	20.12	ab	1.46	b	2.84	c	11.80	bcd	1.88	a	11.75	b
Tigris	21.98	b	20.83	a	1.48	b	4.01	abc	10.33	e	1.00	b	0.67	c

^z Hollow heart severity was evaluated using a 1-5 scale: 1. None; 2. Carpel separation evident; 3. One large gap evident; 4. More than 2 large gaps; 5. Severe.

^y Black seeds was evaluated on counting the total number of black seeds on cutting surfaces of quartered melons. Premium is a diploid watermelon while others are triploid.

^x Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

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Table 10. Marketable and total yields of **diploid watermelons** in the 2018 watermelon variety trial in Indiana.

Diploid watermelon variety	Marketable yield (lbs/acre)		Marketable yield number per acre		Total yield (lbs/acre)		Total yield number per acre	
Reya	55,362	ab ^z	2,647	c	58,189	ab	2,647	c
Santa Matilde	59,818	a	2,571	c	61,620	a	2,571	c
Zeugma	55,648	ab	2,533	c	58,184	ab	2,533	c
Sentinel	56,444	ab	2,723	c	56,444	ab	2,723	c
Sangria	53,021	ab	2,760	c	56,459	ab	2,760	c
Crimson Sweet	56,058	ab	3,025	bc	58,993	a	3,025	bc
Baby Doll	55,801	ab	3,554	b	56,334	ab	3,554	b
Orangeglo	51,231	ab	2,533	c	53,429	ab	2,533	c
Sorbet Swirl	35,716	c	2,798	c	37,041	c	2,798	c
Black Seeded Ice Cream	49,556	b	4,273	a	49,556	b	4,273	a





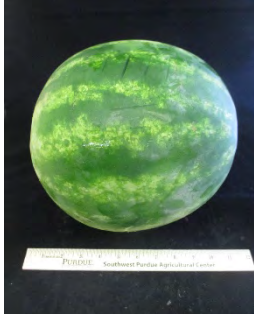



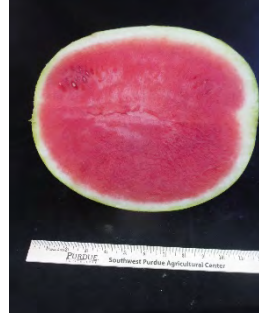


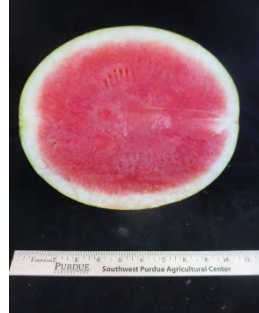
^z Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

Table 11. Average fruit weight and fruit quality of **diploid watermelons** in the 2018 watermelon variety trial in Indiana.













Diploid watermelon variety	Average fruit weight (lb)		Length (cm)		Width (cm)		Rind thickness (cm)		Firmness (lbs-force)		Total soluble solids (°Brix)		Hollow heart ^z	
Reya	20.90	bc ^y	34.5	b	24.3	cd	1.89	ab	3.30	a	10.27	bc	1.0	c
Santa Matilde	23.28	a	39.1	a	24.7	c	1.95	a	3.21	a	10.27	bc	1.0	c
Zeugma	21.97	ab	33.3	bc	26.4	a	2.0	a	3.02	ab	9.52	cd	1.0	c
Sentinel	20.74	bc	36.3	ab	24.0	cd	1.77	abc	2.77	abcd	11.22	ab	1.2	bc
Sangria	19.30	cd	36.6	ab	20.5	e	1.59	cde	2.50	bcde	10.42	abc	1.2	bc
Crimson Sweet	18.55	d	29.5	cd	26.1	ab	1.82	abc	2.32	de	9.76	cd	1.5	b
Baby Doll	15.68	e	28.9	cd	24.9	bc	1.38	de	2.97	abc	8.97	d	1.2	bc
Orangeglo	20.15	cd	39.1	a	23.4	d	1.65	bcd	1.98	e	11.6	a	3.2	a
Sorbet Swirl	12.77	f	26.0	d	23.3	d	1.35	e	2.47	cde	10.73	abc	1.5	b
Black Seeded Ice Cream	11.64	f	21.5	e	21.5	e	1.80	abc	2.56	bcd	10.49	abc	1.0	c









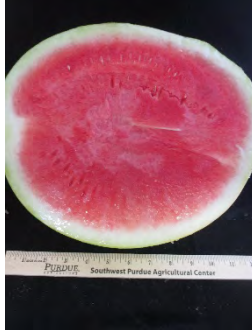



^zHollow heart severity was evaluated using a 1-5 scale: 1. None; 2. Carpel separation evident; 3. One large gap evident; 4. More than 2 large gaps; 5. Severe.













^yMeans within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.













<p>Captivation</p>			
<p>Exclamation</p>			
<p>Excursion</p>			
<p>Fascination</p>			






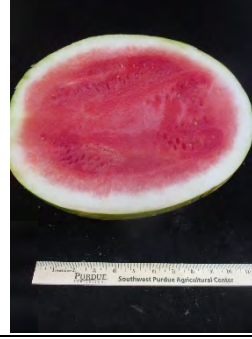






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<p>USAW 16095</p>			
<p>51019</p>			
<p>9651</p>			
<p>7187</p>			


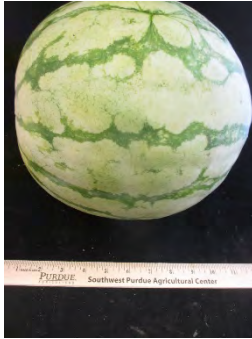






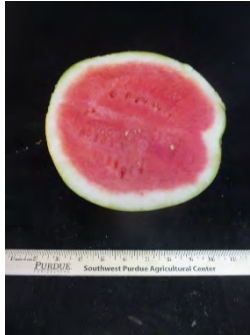


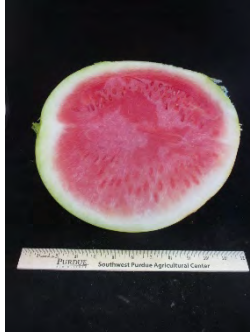
<p>7197</p>			
<p>Embassy</p>			
<p>Warrior</p>			
<p>Red Amber</p>			












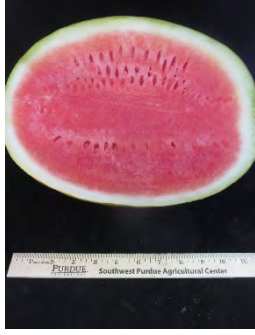
<p>Red Garnet</p>			
<p>Red Opal</p>			
<p>Unbridled</p>			
<p>Kingman</p>			

<p>Charismatic</p>			
<p>Secretariat</p>			
<p>Joy Ride</p>			
<p>Road Trip</p>			

<p>Tailgate</p>			
<p>Bottle Rocket</p>			
<p>SV0241WA</p>			
<p>Summer Breeze</p>			

<p>Traveler</p>	 A photograph showing four green watermelons with dark green stripes, growing in a field with some weeds and soil visible.	 A photograph of a single whole Traveler watermelon, showing its characteristic green and dark green striped pattern. A ruler is placed below it for scale.	 A photograph of a sliced Traveler watermelon, showing a thick, bright red flesh and a white rind. A ruler is placed below it for scale.
<p>Turnpike</p>	 A photograph showing a cluster of several green watermelons with dark green stripes, growing in a field.	 A photograph of a single whole Turnpike watermelon, showing its green and dark green striped pattern. A ruler is placed below it for scale.	 A photograph of a sliced Turnpike watermelon, showing a thick, bright red flesh and a white rind. A ruler is placed below it for scale.
<p>Wolverine</p>	 A photograph showing a cluster of several green watermelons with dark green stripes, growing in a field.	 A photograph of a single whole Wolverine watermelon, showing its green and dark green striped pattern. A ruler is placed below it for scale.	 A photograph of a sliced Wolverine watermelon, showing a thick, bright red flesh and a white rind. A ruler is placed below it for scale.
<p>Treasure Chest</p>	 A photograph showing a cluster of several green watermelons with dark green stripes, growing in a field.	 A photograph of a single whole Treasure Chest watermelon, showing its green and dark green striped pattern. A ruler is placed below it for scale.	 A photograph of a sliced Treasure Chest watermelon, showing a thick, pale yellow flesh and a white rind. A ruler is placed below it for scale.

<p>Orange Crisp</p>			
<p>Amarillo</p>			
<p>Fenway</p>			
<p>Maxima</p>			

<p>ORS6064F</p>			
<p>ORS6151</p>			
<p>ORS6181b</p>			
<p>ORS 6203</p>			

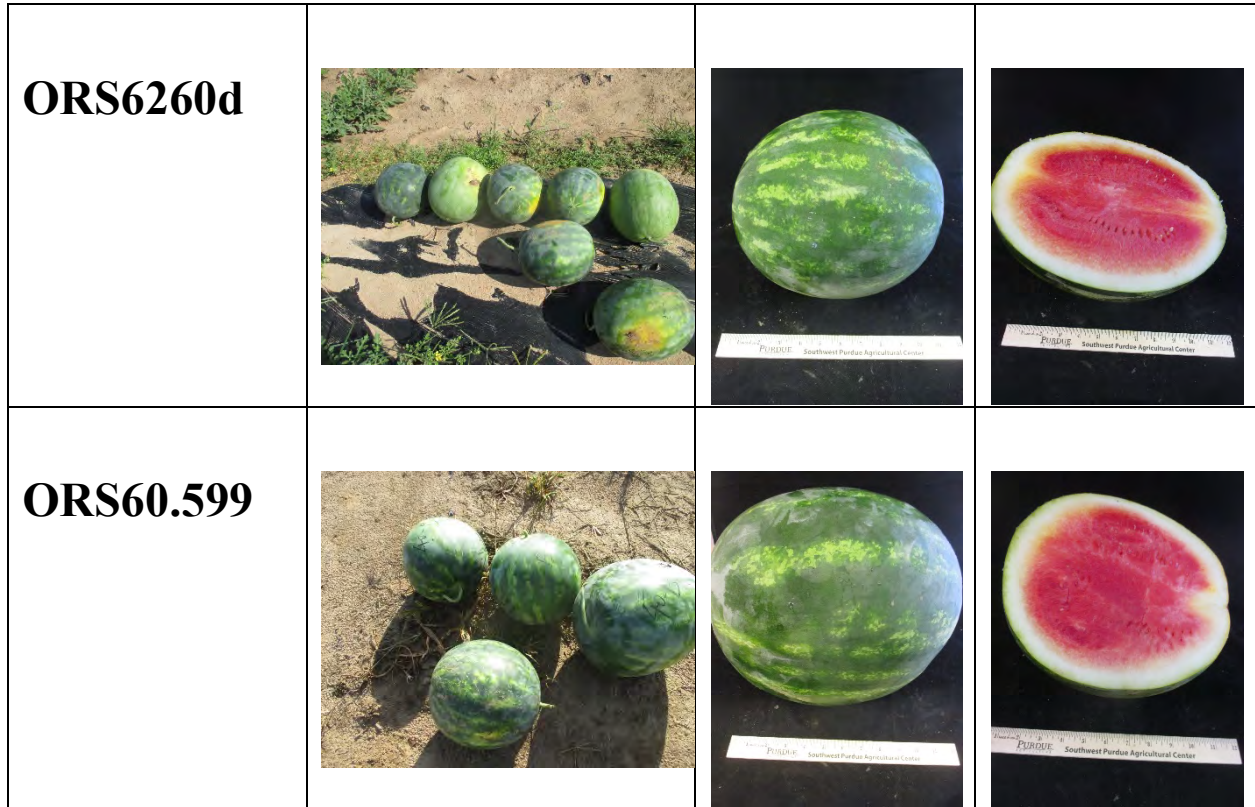


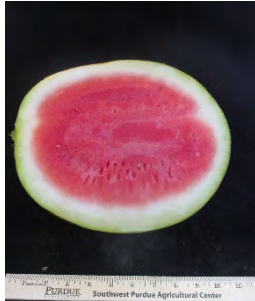








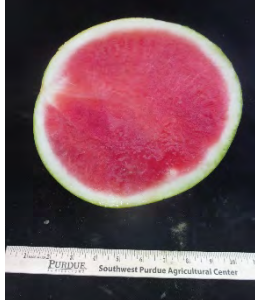


Figure 2. Exterior and interior of typical-size triploid watermelon varieties in the 2018 triploid watermelon variety trial in Indiana.

<p>Extazy</p>			
<p>Tigris</p>			
<p>Ocelot</p>			
<p>Cheetah</p>			

























<p>50025</p>			
<p>50027</p>			
<p>Premium</p>			
<p>Ladybelle</p>			



Figure 3. Exterior and interior of personal-size watermelon varieties in the 2018 watermelon variety trial in Indiana.

<p>Reya</p>			
<p>Santa Matilde</p>			
<p>Zeugma</p>			
<p>Sentinel</p>			



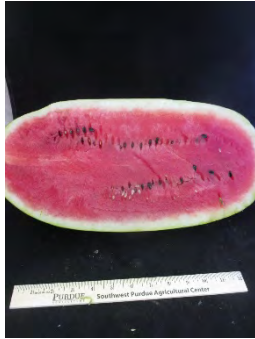









<p>Sangria</p>			
<p>Crimson Sweet</p>			
<p>Baby Doll</p>			
<p>Orangeglo</p>			



Figure 4. Exterior and interior of diploid watermelon varieties in the 2018 watermelon variety trial in Indiana.