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2019 Seedless Pickling Cucumber Variety Trial

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A pickling cucumber variety trial was planted at the Saginaw Valley Research and Extension Center (43.399097, -83.694497, Frankenmuth, Michigan). Bejo (BJ), Nunhems (NU), and Rijk Zwaan (RZ) seed companies donated parthenocarpic (seedless) varieties.

Materials and Methods

On 19 June, 2019, 20 varieties were planted in a completely randomized block design with four replications. Seeds were pre-counted and distributed into four rows by a cone planter. Rows were 20 ft long, 20 inches on-center, with 10 inch in-row spacing targeting 30,000 seeds per acre. The soil type was a Tappan-Londo loam with a poor-moderate drainage class, typical of the pickling cucumber-growing region of the Saginaw Valley.

On 30 May 175 pounds 46-0-0 was preplant incorporated, resulting in ~80 lb N per acre. On 19 June, immediately following planting, Curbit (ethalfluralin) and Command (clomazone) preemergent herbicide was applied at 2 pints per acre and 1 pint per acre, respectively. Fungicides were not required.

Four reps of all cultivars were harvested and measured between 5-11 Aug (day 47-53). Due to the low population, all plants were destructively harvested from both of the middle rows in the 4-row plots. All fruit were removed from the plants and sent through a sorter that separated and weighed them by the following sizes: 2As (1 1/16" – 1 ¼"), 2Bs (1 ¼" – 1 ½"), 3As (1 ½" – 1 ¾"), 3Bs (1 ¾" - 2"), and 4s (> 2" in diameter). L:D ratios and hollow center percentage were measured from ten cucumbers per size class, subsampled from a combination of all reps of a variety. Hollow centers were counted if a hole larger than 1/16" could be seen in the center of the seed cavity. Three holes along the outside of the seed cavity were not counted as anything. Fruit per plant, bushels per acre of each size class and combined total bushel per acre yield calculations do not include culls.

Results and Discussion

The top five varieties with the highest combined yields of 2B and 3A fruit were V 5031, RZ 74, RZ 79, Liszt, 53050, (Table 1). Of those, V 5031 had L:D ratios the closest to 3.0 in both 3A and 2B size classes. The top five varieties with the highest combined yields of 3A and 3B were Gershwin, 53050, Liszt, RZ 74, RZ 79. Of these, Gershwin had the L:D ratios the closest to 3.0 in both size classes. Cull rates were between 0.00% and 17.04%. The five varieties with the lowest cull percentages were 53053, Bowie, RZ 79, A4374, and V 5025. The five varieties with the highest cull percentages were Aristan, 53051, V 5031, Amarok, and RZ 74.

Most Bejo, Nunhems, and Rijk Zwaan varieties were harvested by day 48, but Gershwin and A4734 were harvested on day 51, and Ansor was harvested on day 53 (Table 2). The data on Table 1 suggest that Gershwin and A4734 could have been harvested along with most other varieties for a better yield of 3A's and 2B's.

On 1 July, the plant stands were calculated. The night following planting, the site received 2 inches of rain, and the ethalfluralin herbicide damaged plots such that populations averaged 14,995 plants per acre (Table 3).

Table 1. Yield data on 20 seedless picking cucumber varieties planted at the Saginaw Valley Research and Extension Center in 2019 arranged in order of highest combined yields of 3A and 2B fruit. Values are averaged across four replicates. Values in bold indicate that the variety performed statistically similar to the variety with the highest value for that column, as determined through a Least Significant Difference test at alpha = 5% and a two-tailed t-statistic ($t_{57,0.05\%}$). NS indicates that there were no significant differences between varieties. Rows were 20 ft long, 20 inches on-center, with 10 inch in-row spacing targeting 30,000 seeds per acre and a final population of 14,995 plants per acre after ethalfluralin injury.

Variety	Bushels Per Acre						% Cull	Fruit Per Plant
	Total	**4**	**3B**	3A	2B	2A		
V 5031	**316.0**	0.0	23.3	**174.7**	**99.6**	18.5	9.1	**2.3**
RZ 74	**331.3**	0.0	52.5	**170.8**	**100.5**	7.4	6.5	**2.3**
RZ 79	**322.4**	3.1	68.6	**144.7**	**90.4**	15.6	0.0	**2.0**
Liszt	**335.8**	8.6	92.2	**142.5**	**80.8**	11.8	5.4	**2.3**
53050	**324.6**	13.1	81.2	**160.9**	57.9	11.4	4.2	1.8
V 5025	248.8	4.1	13.3	106.1	**106.3**	19.0	0.8	**2.2**
Bowie	258.7	0.0	33.6	**123.8**	**85.3**	16.1	0.0	1.4
Absolut	279.6	0.0	60.1	**141.5**	65.3	12.7	5.7	1.7
Aristan	279.2	11.3	48.5	**118.6**	**82.3**	18.6	**17.0**	1.7
Amarok	**309.3**	11.5	86.8	**114.3**	**83.4**	13.3	7.1	1.8
53054	**291.2**	3.8	70.5	**123.9**	**71.4**	21.5	3.9	**2.2**
53051	231.6	0.0	31.4	**111.2**	**76.0**	13.0	**11.4**	1.8
53053	234.3	3.3	65.9	104.4	55.0	5.6	0.0	1.6
RZ 80	206.6	0.0	37.5	105.4	51.5	12.2	1.2	1.3
Ansor	256.9	59.5	41.9	61.4	69.8	24.3	1.7	**2.1**
Gershwin	**385.1**	66.0	**198.0**	73.3	27.8	20.0	4.2	1.7
RZ 21	209.2	32.9	73.2	79.6	11.6	11.9	5.8	1.3
53052	128.0	0.0	31.7	41.5	40.6	14.3	1.1	1.1
A4737	189.8	27.3	77.6	55.4	20.8	8.6	5.4	1.1
A4734	**301.2**	**123.5**	100.4	24.9	29.0	23.5	0.5	1.3
Mean	272.0	18.4	64.4	108.9	65.3	15.0	4.6	1.7
CV	26.1	113.4	51.8	41.5	38.7	54.4	112.4	16.0
LSD	100.7	29.6	47.3	64.0	35.7	NS	7.2	0.4
p-value	<0.0001	<0.0001	<0.0001	0.00	<0.0001	0.08	0.0009	<0.0001

Table 2. Quality data on 20 seedless picking cucumber varieties planted at the Saginaw Valley Research and Extension Center in 2019 arranged in the same order as Table 1. Values are averaged across four replicates. No statistics were performed on quality data. Rows were 20 ft

long, 20 inches on-center, with 10 inch in-row spacing targeting 30,000 seeds per acre and a final population of 14,995 plants per acre after ethalfluralin injury.

Variety	Company	L:D Ratios				% Hollow Centers	Days after planting	Harvest Population
		3B	3A	2B	2A			
V 5031	NU	2.7	2.9	3.1	3.2	0.0	47	14702
RZ 74	RZ	2.6	2.7	2.8	3.0	0.0	47	13558
RZ 79	RZ	2.7	2.8	3.1	3.1	0.0	47	15845
Liszt	RZ	2.6	2.8	2.9	3.1	0.0	47	13231
53050	NU	2.6	2.8	2.8	3.0	0.0	47	16335
V 5025	NU	2.7	3.0	3.2	3.2	0.0	47	13068
Bowie	RZ	2.7	3.0	2.9	3.5	0.0	48	17642
Absolut	BJ	2.6	2.8	3.1	3.1	0.0	47	16008
Aristan	BJ	2.4	2.8	2.9	3.2	0.0	48	16498
Amarok	BJ	2.5	2.7	2.8	2.9	0.0	48	17969
53054	NU	2.7	3.0	3.0	3.2	0.0	47	13068
53051	NU	2.7	2.8	2.9	3.1	0.0	47	13721
53053	NU	2.7	2.9	2.8	3.4	0.0	48	14702
RZ 80	RZ	2.8	2.9	3.0	3.4	0.0	48	15518
Ansor	BJ	2.5	2.9	3.1	3.1	0.0	53	11925
Gershwin	RZ	2.8	2.9	3.2	3.3	0.0	51	16662
RZ 21	RZ	2.7	2.8	2.8	3.2	0.0	48	13231
53052	NU	2.8	3.0	3.0	3.3	0.0	48	12415
A4737	BJ	2.7	2.8	2.9	3.1	2.5	48	15028
A4734	BJ	2.5	2.5	3.0	3.2	0.0	51	18785
Mean	-	2.6	2.8	3.0	3.2	0.1	48.1	14995.5
StDev	-	0.1	0.1	0.1	0.1	0.6	1.7	1955.6
CV	-	3.9	4.0	4.4	4.6	447.2	3.4	13.0

Table 3. Weather data summarized by weeks during the planting at the Saginaw Valley Research and Extension Center in 2019. Temperatures were averaged by week, and precipitation is accumulated inches. No statistics were performed on weather data. Ethalfluralin injury occurred in the first two days of the planting after 2 inches of rain.

Week	Max Air Temp	Min Air Temp	Max Soil Temp	Min Soil Temp	Precipitation (accumulated inches)
1	76.6	56.5	65.3	63.6	2.4
2	84.9	64.6	71.1	69.3	0.3
3	83.9	58.9	73.7	71.7	0.6
4	84.0	60.3	73.5	71.9	0.2
5	83.7	62.3	75.4	73.6	0.9
6	83.0	62.9	74.8	73.3	0.4
7	82.5	57.0	75.8	73.9	0.1
8	80.2	54.4	74.8	73.0	0.2
Mean	82.3	59.6	73.1	71.3	0.6
StDev	2.7	3.6	3.4	3.4	0.7
CV	3.3	6.0	4.7	4.8	117.6

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