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MSU 2016 Seedless Pickling Cucumber Variety Trial

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A pickling cucumber variety trial was planted at LaRaCha Farms (43.405717, -83.742582, Reese, Michigan). Rijk Zwaan seed company donated parthenocarpic (seedless) cucumber seeds for the trial.

On 10 June, 2016, 12 varieties were randomized, and planted side-by-side in three, 235 ft passes through a 12-row wing section of a 36-row John Deere DB-60 planter. The remaining 24 rows were filled with other seedless varieties. The planter was set for 20 inch between row spacing and 10 inch in row spacing, targeting 27000 seeds per acre. The soil type was a loam-loamy sand complex with 0-3% slope, typical of the pickling cucumber-growing region of Michigan's Saginaw Valley. Previous crop was sugar beets.

Curbit (2pt/a), and 50 lb of N from 28% urea was applied to the disced field approximately two weeks before planting. An additional 11 lb of N was injected 2 x 2 at planting in a liquid starter fertilizer blend. The cucumbers were cultivated 4 July, before tip-over. One protective downy mildew spray occurred 12 July (Orondia A 2 oz/a + Orondis B 32 oz/a).

Cultivars RZ68, RZ69, RZ65, RZ62, and RZ60 were harvested on 26 July (day 46), and the remaining varieties were harvested on 29 July (day 49). Harvest transects were 20 ft long sections of rows that were measured inside each of the three 235 ft subplots. Transects were determined by scouting each row for the most uniform stand. Each transect was destructively harvested by hand, and all fruit were sent through a sorter to separate into size classes: 4s (> 2" in diameter), 3Bs (1.75 - 2"), 3As (1.5 - 1.75"), 2Bs (1.25 - 1.5"), 2As (1.0625 - 1.25"), and 1s (0.5 - 1.0625"). Harvest weights, L:D ratios, and cull tallies of each size class were measured. Fruit per plant, and total bushel/acre yield calculations includes culls. L:D ratios were measured from ten cucumbers per size class. If there were fewer than ten cucumbers in a size class, they were all measured. Hollow centers were measured on 3Bs, and 3As by cutting cucumbers transversally in three places; stem end, center, and flower end. Gross revenue estimates were calculated using the following prices: \$409.06/ton of 2A,Bs, \$273.46/ton of 3A,Bs, and \$22.60/ton of 4s).

Results

In general, the germination of all varieties was poor due to dry weather after planting. Harvests were taken where the most uniform stand occurred, and the third replication was omitted because of poor stand. Conclusions should be drawn cautiously.

RZ65 was the highest yielding variety in the 3A and 2B size classes, and was the highest yielder overall with the most fruit per plant (Table 1). Cull rates were between 9% and 40%, depending on the variety (Table 2). Culls were primarily from crooked fruit across all varieties. However, 'Bowie', RZ64, RZ66 and RZ61 had a disproportionately high level of hollow centers compared to other varieties.

Table 1 Performance in fruit per plant, plants per acre, and bushels per acre of twelve pickling cucumber cultivars planted at LaRaCha Farms, Reese, Michigan. ¹ Fruit/plant and total bushels/acre includes culls, but excludes 1s. ² Means differing by more than this amount are significantly different at $\alpha=0.05$, based on Fisher's LSD.

2016 Variety	\$/Acre	Total ¹	Bushels/Acre					Fruit/ Plant ¹	Plants/ Acre
			4	3B	3A	2B	2A		
RZ65	\$4407	604	16.7	176	244	143	24.1	3.62	27918
RZ60	\$3669	488	0.00	132	212	118	26.6	3.14	27918
RZ67	\$2700	452	61.3	212	147	29.7	2.48	2.56	25542
RZ62	\$3142	441	5.57	166	184	79.2	6.81	3.00	25542
RZ61	\$2880	431	27.8	130	207	46.4	20.4	2.48	27324
Gershwin	\$2859	412	27.8	142	142	81.1	19.2	2.37	26136
RZ63	\$2542	359	11.1	131	139	74.9	3.09	2.41	25542
RZ66	\$2304	357	39.0	137	121	49.5	10.5	2.24	26136
Bowie	\$1895	282	11.1	92.2	145	24.1	9.90	1.91	25542
RZ64	\$1560	248	33.4	108	65.6	32.2	8.66	1.69	22572
RZ68	\$1753	228	5.57	66.8	67.4	68.1	20.4	2.10	22572
RZ69	\$1466	191	0.00	18.6	106	48.9	17.3	2.61	26730
<i>Average</i>	<i>\$2598</i>	<i>374</i>	<i>20.0</i>	<i>126</i>	<i>148</i>	<i>66.2</i>	<i>14.3</i>	<i>2.51</i>	<i>25790</i>
<i>LSD 5%²</i>	<i>-</i>	<i>238</i>	<i>34.0</i>	<i>145</i>	<i>82.4</i>	<i>51.2</i>	<i>23.8</i>	<i>1.39</i>	<i>4193</i>

Table 2. Length and diameter (L:D) ratios, and cull data from twelve pickling cucumber cultivars planted at LaRaCha Farms, Reese, Michigan. ¹ Type of fruit skin: American (Am), or European (Eur). ² Bushels/Acre after culls were determined by taking the percentage of culls from the Total Bushels/Acre from Table 1. ³ Means differing by more than this amount are significantly different at $\alpha=0.05$, based on Fisher's LSD.

2016 Variety	Skin type ¹	L:D ratios				Cull%			Bushels/Acre after culls ²
		3B	3A	2B	2A	Crooks	Nubs	Hollow	
RZ65	Am	4.62	3.13	3.40	3.09	12.8	2.31	1.18	557
RZ60	Am	2.79	2.89	3.19	3.43	16.6	0.60	0.00	446
RZ67	Eur	2.93	2.98	2.77	2.89	14.6	3.67	1.82	424
RZ61	Am	3.04	3.06	3.21	3.45	18.9	0.00	15.8	412
RZ62	Eur	2.87	2.99	3.04	3.41	13.9	3.62	0.00	410
Gershwin	Am	2.99	3.16	3.04	2.94	16.3	6.75	7.14	392
RZ66	Am	2.96	3.03	3.10	3.47	18.0	5.24	23.6	346
RZ63	Am	2.81	2.91	2.95	3.13	13.5	0.00	3.07	333
Bowie	Am	2.78	3.04	3.16	3.15	9.45	6.31	20.9	271
RZ64	Am	2.76	3.05	2.69	3.00	18.6	3.21	12.8	238
RZ68	Eur	1.32	2.91	3.00	3.17	7.15	1.09	1.09	197
RZ69	Eur	2.25	2.60	2.75	3.01	0.61	3.15	1.32	151
<i>Average</i>	<i>-</i>	<i>2.91</i>	<i>2.98</i>	<i>3.02</i>	<i>3.20</i>	<i>13.4</i>	<i>2.99</i>	<i>7.39</i>	<i>348</i>
<i>LSD 5%³</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>7.05</i>	<i>13.2</i>	<i>13.2</i>	<i>226</i>

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