

Project Title: Processing Cucumber Variety Evaluation

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Objective: The objectives of these studies were to evaluate new cucumber varieties for yield performance, quality, adaptability and acceptability to Ontario processors for hand-pick applications. New superior yielding cucumber varieties are required to ensure that the industry can compete effectively. New varieties are being introduced by seed companies each year, therefore, variety evaluation is essential in order to recommend the best varieties to the industry, in particular, varieties that have local adaptability and market acceptance, together with higher yields, improved fresh quality, improved brining quality and better disease tolerance are needed.

Methodology: Two cucumber variety trials were conducted at the Simcoe Research Station in 2017: Conventional Multipick (hand harvest) and Parthenocarpic Multipick (hand harvest). Varieties were evaluated to compare how these varieties perform under the same environmental conditions. Trials were set up as a randomized complete block design with three replications. The conventional multipick variety trial included 8 varieties for evaluation and the parthenocarpic multipick variety trial included 12 varieties. Both trials were seeded on June 2 using a standard cone seeder mounted on a John Deere planter. The plot size for these trials was 30 ft by 5 ft. In the multipick conventional trial, plants were thinned to 4" in the row to give a plant population of 27,000 plants/acre. In the multipick parthenocarpic trial, plants were thinned to 6" in the row to give a plant population of 18,000 plants/acre. Cucumber plots were harvested two times per week for a total of 8 and 9 harvests during the season for the conventional and parth trials respectively. The crops were grown according to accepted commercial practices used in Ontario. Data was taken on fruit length to diameter ratios (L/D – 2A, 2B, 3A) on a weekly basis. In addition, yields were measured at each harvest as fruit weights, fruit number per plant and dollar value per acre. All varieties were brined at Simcoe, for evaluation by the industry and seed companies in October, 2017.

Results:

Multipick Conventional Variety Trial: Yields shown are for grades #1 to #4 (including nubs and crooks). Peacemaker, a downy mildew tolerant variety, was the highest yielding variety with a yield of approximately US \$7,700 and 22 tons per acre. Most other varieties were in the US \$6,000 per acre range. The two lowest yielding varieties were Pickle 87 (US \$5,411) and Eureka (US \$5,211) (Table 1). LD's were taken weekly on 2A's, 2B's and 3A's (Table 2).

Multipick Parthenocarpic Variety Trial: Aristan was the highest yielding variety with approximately US \$8,400 per acre and 22 tons/acre. Most other varieties were in the US \$6,000 to US \$7,000 and 19 to 20 tons per acre range (Table 3). LD's were taken weekly on 2A's, 2B's and 3A's (Table 4).

Table 1: Yield of cucumbers harvested from the conventional multipick (hand harvest) variety trial, Simcoe, ON, 2017.

Cultivar	Source	Total Yield *		
		T/Ac	\$/Ac	Fruit/plt
Peacemaker	Seminis	22.3 a	7,673 a	22.3 a
Vlasstar	Seminis	21.4 a	6,881 abc	16.6 abc
SV5479CN	Seminis	19.0 ab	6,341 abc	19.0 abc
Citadel	Seminis	20.7 ab	6,289 abc	16.6 abc
Arabian	Seminis	17.4 ab	5,710 bc	15.4 bc
Fancipak	Seminis	17.5 ab	5,667 bc	18.7 abc
Pickle 87	Sieger Seeds	16.0 b	5,411 bc	13.8 bc
Eureka	Seminis	15.8 b	5,211 c	12.5 c
Tukey's HSD P=.05		5.36	1793.8	6.81
Standard Deviation		1.83	612.8	2.33
CV		9.52	9.7	13.4
Soil Type	: Very fine sandy loam	Fertilizer	: 700 kg/ha of 16-7-11	
Soil pH; % OM	: 6.7; 1.7	Herbicide	: Command 0.4 L/Ac	
Planting Date	: June 2			
Rows	: 5'	Harvest Dates	: July 20 - Aug 21 (8 total)	
Plants	: 4"			

* Yields are for comparative purposes only. Small plot yields may not accurately reflect commercial yields.

Note: Oversize are not included in yield data.

Means followed by same letter do not significantly differ (P=.05, Tukey's HSD)

Table 2: Length-diameter (L/D) ratio of cucumbers harvested from the conventional multipick (hand harvest) variety trial on three separate harvests, Simcoe, ON, 2017.

July 24 - Harv #2

Cultivar	Source	L/D			
		2A	2B	3A	3B
Peacemaker	Seminis	3.7	3.3	3.1	3.2
Vlasstar	Seminis	3.4	3.2	3.2	3.1
SV5479CN	Seminis	3.7	3.4	3.3	3.2
Citadel	Seminis	3.5	3.4	3.1	3.0
Arabian	Seminis	3.5	3.2	3.3	3.3
Fancipak	Seminis	3.1	3.1	3.0	2.8
Pickle 87	Sieger Seeds	3.2	3.1	3.2	2.8
Eureka	Seminis	3.3	3.3	3.1	3.4

July 31 - Harv #3

Peacemaker	Seminis	3.5	3.6	3.4
Vlasstar	Seminis	2.8	3.4	3.3
SV5479CN	Seminis	3.5	3.5	3.3
Citadel	Seminis	3.3	3.4	3.2
Arabian	Seminis	3.4	3.5	3.5
Fancipak	Seminis	3.2	3.3	2.9
Pickle 87	Sieger Seeds	3.3	3.0	2.6
Eureka	Seminis	3.5	3.3	2.6

August 14 - Harv #7

Peacemaker	Seminis	3.5	3.5	3.1
Vlasstar	Seminis	3.1	3.2	2.9
SV5479CN	Seminis	3.4	3.2	3.1
Citadel	Seminis	3.3	3.2	2.8
Arabian	Seminis	3.4	3.4	3.3
Fancipak	Seminis	3.3	3.1	2.9
Pickle 87	Sieger Seeds	2.9	3.0	2.9
Eureka	Seminis	3.3	3.1	3.0

Table 3: Yield of cucumbers harvested from the parthenocarpic multipick (hand harvest) variety trial, Simcoe, ON, 2017.

Cultivar	Source	Total Yield *		
		T/Ac	\$/Ac	Fruit/pt
Aristan	Bejo	21.6 ab	8,419 a	24.7 a
Bowie	Rijk Zwaan	19.2 a-d	7,349 a-d	27.7 a
Amarok	Bejo	18.1 a-d	7,018 a-d	23.3 a
Rubinstein	Rijk Zwaan	18.9 a-d	6,929 a-d	27.0 a
Liszt	Rijk Zwaan	19.2 a-d	6,535 a-e	24.3 a
Merengue	Seminis	18.4 a-d	6,524 a-e	21.0 a
Bernstein	Rijk Zwaan	16.4 bcd	6,331 a-e	27.0 a
Artist	Bejo	17.7 a-d	6,150 a-e	27.0 a
Gershwin	Rijk Zwaan	16.9 bcd	6,030 b-e	25.7 a
Maresa	Seminis	18.3 a-d	5,983 b-e	24.7 a
Puccini	Rijk Zwaan	14.7 d	5,617 de	22.0 a
Vesta 5016	Nunhems	15.0 d	5,374 de	22.3 a
Tukey's HSD (P = 0.05)		0.1319t	0.14t	1.584
Standard Deviation		0.0429t	0.05t	0.516
CV		3.36t	1.18t	17.66
Soil Type	: Loamy fine sand	Fertilizer	: 700 kg/ha of 16-7-11	
Soil pH; % OM	: 6.2; 2.0	Herbicide	: Command 0.4 L/Ac	
Planting Date	: June 2			
Rows	: 5'	Harvest Dates	: July 18 - Aug 23 (9 total)	
Plants	: 6"			

* Yields are for comparative purposes only. Small plot yields may not accurately reflect commercial yields. Note: Oversize are not included in yield data.

Means followed by same letter do not significantly differ (P=.05, Tukey's HSD)

t=Mean descriptions are reported in transformed data units, and are not de-transformed.

Table 4: Length-diameter (L/D) ratio of cucumbers harvested from the parthenocarpic multipick (hand harvest) variety trial on three separate harvests, Simcoe, ON, 2017.

July 25 - Harvest #3

Cultivar	Source	L/D		
		2A	2B	3A
Aristan	Bejo	3.3	2.9	*
Bowie	Rijk Zwaan	3.6	3.4	3.1
Amarok	Bejo	3.5	3.0	3.0
Rubinstein	Rijk Zwaan	3.7	3.3	3.6
Liszt	Rijk Zwaan	3.3	3.3	3.0
Merengue	Seminis	3.6	3.5	*
Bernstein	Rijk Zwaan	3.3	3.1	*
Artist	Bejo	3.5	3.5	*
Gershwin	Rijk Zwaan	3.6	3.5	*
Maresa	Seminis	3.2	3.2	2.9
Puccini	Rijk Zwaan	3.4	3.1	3.5
Vesta 5016	Nunhems	3.8	3.7	*

* Low fruit samples at this size, and in some cases no fruit at this size

July 31 - Harvest #4

Cultivar	Source	L/D		
		2A	2B	3A
Aristan	Bejo	3.2	3.2	2.9
Bowie	Rijk Zwaan	3.8	3.8	3.0
Amarok	Bejo	3.1	3.0	*
Rubinstein	Rijk Zwaan	2.8	3.3	3.1
Liszt	Rijk Zwaan	3.5	3.1	3.0
Merengue	Seminis	3.6	3.5	3.1
Bernstein	Rijk Zwaan	3.4	3.3	3.1
Artist	Bejo	3.3	3.3	3.5
Gershwin	Rijk Zwaan	3.5	3.5	3.2
Maresa	Seminis	3.3	3.3	3.1
Puccini	Rijk Zwaan	3.3	3.3	*
Vesta 5016	Nunhems	3.4	3.5	3.2

* Low fruit samples at this size, and in some cases no fruit at this size

August 14 - Harvest #7

Cultivar	Source	L/D		
		2A	2B	3A
Aristan	Bejo	3.8	3.6	3.3
Bowie	Rijk Zwaan	3.7	3.8	3.3
Amarok	Bejo	3.5	3.2	3.0
Rubinstein	Rijk Zwaan	3.9	3.6	3.0
Liszt	Rijk Zwaan	3.5	3.3	3.2
Merengue	Seminis	3.8	3.5	3.2
Bernstein	Rijk Zwaan	3.7	3.4	3.2
Artist	Bejo	3.8	3.5	3.5
Gershwin	Rijk Zwaan	3.8	3.6	3.4
Maresa	Seminis	3.4	3.4	3.2
Puccini	Rijk Zwaan	3.8	3.5	3.2
Vesta 5016	Nunhems	3.8	3.5	3.3