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PICKLING CUCUMBER CULTIVAR EVALUATION TRIALS

Dale W. Kretchman and Mark A. Jameson

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Dale W. Kretchman and Mark A. Jameson
Department of Horticulture
Ohio Agricultural Research and Development Center

The pickling cucumber cultivar evaluation trials were conducted at the OARDC Vegetable Crops Branch near Fremont. Sixteen cultivars or lines were evaluated in the replicated trial and 21 lines were evaluated in the non-replicated observational trial.

Cultural Information

The soil is classed as a sandy loam. A broadcast application of 10-20-20 at 1000 lb/A was made and incorporated prior to planting. The plants were seeded on June 13 using a Stan-Hay seeder which seeds 4 to 5 seed per ft. of row. Plants were thinned to 3 single plants per foot of row on July 1. Rows were 30 ft. long on 30-in. centers. Cultivars were replicated 4 times in the replicated trial. Vegiben 2E at 2 lb/A was applied broadcast immediately after planting. One active hive of honey bees was placed in the plot area when the plants started to bloom. All other cultural practices during the growing season were according to standard recommendations. Weed control was excellent and no serious problems with insects or diseases developed during the season.

The plots were harvested by hand and the cucumbers were graded and sized using a commercial sizer. Fruits were classed into the following sizes and values placed on each size according to the following values:

<u>Size</u>	<u>\$/ Ton*</u>	
	<u>PCIC</u>	<u>Ohio</u>
1. Less than 1 1/6 in.	120	240
2. 1 1/6 to 1 1/2 in.	60	120
3. 1 1/2 to 2 in.	40	60
4. 2 to 2 1/4 in.	20	10

Time and labor limitations prevented harvesting each cultivar or line when it had reached optimum maturity for maximum returns (a few over-sized fruits in each plot). This undoubtedly influenced the first harvest yields and values, but it was felt that data from subsequent harvests would compensate for the lack of correct timing of the first harvest. Harvest started on July 25 and continued through August 12.

Growing conditions were generally good throughout the season, although temperatures for the first part of the season were 1-2 degrees below normal. Rainfall

* PCIC values established by the Pickling Cucumber Improvement Committee of Pickle Packers International. Ohio values based upon estimated average prices in 1975-79 period.

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from planting on June 13 to the end of June was 1.87 in.; July rainfall was 4.63 in.; rainfall to August 12 was 1.64 in.

The author wishes to express appreciation to the seed companies and others who provided the seed for the trials. These included: Joseph Harris Co., Inc., Rochester, NY; Northrup, King and Co., Minneapolis, MN; Asgrow Seed Co., Kalamazoo, MI; Ferry-Morse Seed Co., Mountain View, CA; Niagara Div. FMC Corp., El Macero, CA; Petoseed Co., Inc., Saticoy, CA; Keystone Seed Co., Holister, CA; Agr. Canada, Harrow, Ontario; Dessert Seed Co., Brooks, OR; A.L. Castle, Inc., Morgan Hill, CA; Department of Horticulture, University of Wisconsin, Madison, WI; Department of Horticulture, North Carolina State University, Raleigh, NC.

TABLE 1.--First Harvest Yield From Replicated Trial of Pickling Cucumber Cultivars - 1980.

Cultivar	Source	Lot No.	Tons/A				Total	Culls
			Size = 1	2	3	4		
Calico	NSCU	--	.30	.90	.22	0	1.42	.34
Premier	Asgrow	97228-4	.37	1.20	.26	0	1.83	.36
Pioneer	Northrup-King	37559-23100	.51	.91	.07	0	1.49	.38
Carolina	Ferry-Morse	97200-13812	.41	.88	.50	0	1.79	.55
Beit Alpha MR	Dessert Seed	13-3P	.41	.58	.23	0	1.22	.56
Harrow 77.01	Agr. Canada	--	.17	.30	.02	0	.49	.21
Castlex-2003	A.L. Castle	3800-27	.38	.77	.02	0	1.17	.35
4JC2	Harris	PW 6249	.57	1.17	.51	0	2.25	.38
PSR-377	Peto Seed	--	.30	.45	.02	0	.77	.20
PSR-1579	Peto Seed	--	.22	.25	0	0	.47	.16
FX-4153	Ferry-Morse	7913583	.52	1.39	.31	0	2.22	.80
NCX-5014	Niagara	2014	.41	.95	.30	0	1.66	.50
XPH-1225	Asgrow	VG43A	.38	1.33	0	0	1.71	.43
EXP-2000	Northrup-King	38031-8040C ^{SS}	.21	.58	0	0	.79	.35
EXP-2604	Keystone	--	.26	.37	.08	0	.71	.35
1606x1589	U.Wisc.	--	.30	.35	.02	0	.67	.33
LSD .05			.16	.35	.22	-	.47	.19

TABLE 2.--Yield from Replicated Trial of Pickling Cucumber Cultivars - 1980.

Cultivar	Yield at 6 Harvest Dates - Tons/A						Total	
	7/25	7/29	8/1	8/5	8/8	8/12		
Calico	1.42	2.00	.99	2.11	2.71	3.61	12.84	
Premier	1.83	1.60	1.20	2.06	1.71	2.55	10.95	
Pioneer	1.49	2.24	.91	1.30	1.93	2.24	10.11	
Carolina	1.79	1.90	1.01	2.59	1.88	3.06	12.23	
Beit Alpha M.R.	1.22	1.10	.45	1.50	1.22	3.26	8.75	
Harrow 77.01	.49	1.49	1.03	3.08	2.08	4.25	12.42	
Castlex-2003	1.17	1.57	.92	1.60	2.32	2.66	10.24	
4JC2	2.25	2.17	1.52	3.19	2.48	3.29	14.90	
PSR-377	.77	1.60	1.10	2.20	2.54	2.90	11.11	
PSR-1579	.47	1.41	.60	1.89	1.90	3.97	10.24	
FX-4153	2.22	1.45	1.04	2.36	2.75	3.47	13.29	
NCX-5014	1.66	1.59	.93	1.82	1.93	3.11	11.04	
XPH-1225	1.71	2.12	1.65	2.21	2.31	2.48	12.48	
EXP-2000	.79	1.15	.94	1.69	2.29	3.16	10.02	
EXP-2604	.71	.87	.66	1.18	1.52	2.29	7.23	
1606x1589	.67	1.24	.97	2.01	2.11	2.41	9.41	
LSD .05		.47	.61	.45	.77	----	.95	2.25

TABLE 3.--Values of Harvested Cucumbers from Replicated Trial Based on PCIC Values - 1980.

Cultivar	Value of 6 Harvest Dates - \$/A						Total
	7/25	7/29	8/1	8/5	8/8	8/12	
Calico	98	138	86	123	154	196	795
Premier	127	121	99	121	130	167	765
Pioneer	118	148	83	72	123	115	659
Carolina	122	138	94	141	148	156	799
Beit Alpha M.R.	93	89	38	95	105	193	613
Harrow 77.01	39	110	88	165	123	211	736
Castlex-2003	93	128	93	96	161	155	726
4JC2	158	166	133	171	185	183	996
PSR-377	63	119	102	122	159	170	735
PSR-1579	41	110	57	106	132	214	660
FX-4153	158	121	92	128	185	202	886
NCX-5014	118	115	85	106	133	164	721
XPH-1225	125	155	144	130	169	155	878
EXP-2000	60	88	85	93	156	177	659
EXP-2604	57	70	57	61	101	134	480
1606x1589	58	94	94	116	150	145	657
LSD .05	30	37	36	37	47	43	128

TABLE 4.--Values of Harvested Cucumbers from Replicated Trial Based on Estimated Ohio Values - 1980.

Cultivar	Value of 6 Harvest Dates - \$/A						Total
	7/25	7/29	8/1	8/5	8/8	8/12	
Calico	192	269	170	231	273	349	1484
Premier	248	235	193	222	252	315	1465
Pioneer	236	284	164	131	225	198	1238
Carolina	234	264	186	254	285	271	1494
Beit Alpha M.R.	181	178	74	183	206	356	1178
Harrow 77.01	77	214	174	299	225	364	1353
Castlex-2003	186	253	185	182	306	279	1391
4JC2	307	324	262	306	358	333	1890
PSR-377	126	232	203	221	292	309	1383
PSR-1579	82	219	114	197	252	379	1243
FX-4153	310	239	182	231	351	367	1680
NCX-5014	230	223	168	198	249	285	1353
XPH-1225	250	300	284	246	323	286	1689
EXP-2000	120	172	168	167	294	312	1233
RXP-2604	112	138	112	106	189	243	900
1606x1589	116	185	188	212	284	267	1252
LSD .05	59	72	70	65	85	79	240

TABLE 5.--First Harvest Yield from Observation Trial of Pickling Cucumbers - 1980

Line	Source	Lot No.	Total T/A				Total	Culls
			Size = 1	2	3	4		
PSR 1479	Peto Seed	--	.41	.99	0	0	1.40	.29
PSR-13076	Peto Seed	--	.32	.87	.06	0	1.25	.46
XPH-1191	Asgrow	VGR-7070	.41	1.83	.26	0	2.50	1.48
XPH-1225	Asgrow	VGR-7071	.29	1.71	.17	0	2.17	.49
XPH-1210	Asgrow	VGR-7080	.55	.90	0	0	1.45	.29
PSR-1679	Peto Seed	--	.23	.55	0	0	.78	.29
Target	Peto Seed	4001002	.41	.49	0	0	.90	.26
Salvo	Peto Seed	3931002	.43	1.22	.41	0	2.06	.12
Commander	Peto Seed	3801002	.46	.87	.17	0	1.50	.90
Peppi	Peto Seed	3501002	.35	1.31	.49	0	2.15	.75
Calico	Peto Seed	4061000	.29	.17	0	0	.46	.32
Castlex-2010	A.L. Castle	9C21ACD	.46	.61	0	0	1.07	.52
4J73	Harris	PW6029	.90	1.28	.09	0	2.27	.41
C573	Harris	PW6009	.61	1.51	.29	0	2.41	.38
EXP-2608	Keystone	--	.20	.23	0	0	.43	.23
EXP-2607	Keystone	--	.23	.41	0	0	.64	.20
EXP-2606	Keystone	--	.67	1.10	.09	0	1.86	.29
EXP-2605	Keystone	--	.70	.61	0	0	1.31	.12
EXP-2602	Keystone	--	.23	.49	0	0	.72	.17
EXP-2603	Keystone	--	.29	.55	0	0	.84	.35
EXP-823	Northrup King	38031-78300	.29	.20	0	0	.49	.09

TABLE 6.--Yield from Observation Trial of Pickling Cucumbers - 1980.

Line	Yield of 6 Harvest Dates						Total
	7/25	7/29	8/1	8/5	8/8	8/12	
PSR-1479	1.40	1.63	1.13	1.89	2.32	2.35	10.72
PSR-13076	1.25	2.26	1.36	2.06	2.09	2.47	11.49
XPH-1191	2.50	1.94	1.19	1.51	1.45	1.68	10.27
XPH-1225	2.17	1.48	1.65	2.53	2.29	2.15	12.27
XPH-1210	1.45	3.37	1.42	2.96	1.83	2.61	13.64
PSR-1679	.78	1.39	1.16	1.80	1.83	2.61	9.57
Target	.90	1.60	.58	2.35	1.60	3.68	10.71
Salvo	2.06	1.36	.78	1.39	1.85	1.97	9.41
Commander	1.50	1.89	1.45	2.82	2.61	2.26	12.53
Peppi	2.15	2.18	2.18	2.00	2.55	3.66	14.72
Calico	.46	1.68	.87	2.50	1.68	4.70	11.89
Castlex-2010	1.07	1.54	.84	.87	2.21	2.58	9.11
4J73	2.27	2.50	1.36	2.64	2.52	4.59	15.88
C573	2.41	1.60	.99	2.41	1.22	3.04	11.67
EXP-2608	.43	1.04	.58	1.10	.64	1.97	5.76
EXP-2607	.64	1.13	.81	1.48	3.19	2.21	9.46
EXP-2606	1.86	1.36	1.39	1.45	1.62	2.99	10.67
EXP-2605	1.31	1.13	1.21	.96	2.06	2.24	8.91
EXP-2602	.72	1.31	1.19	.87	1.94	2.61	8.64
EXP-2603	.84	.96	.46	1.33	1.74	2.18	7.51
EXP-823	.49	1.16	.93	1.77	2.26	2.06	8.67

TABLE 7.--Value of Harvested Cucumbers from Observation Trial Based on PCIC Values - 1980.

Lines	Values of 6 Harvest Dates - \$/A						Total
	7/25	7/29	8/1	8/5	8/8	8/12	
PSR-1478	108	122	98	109	172	165	774
PSR-13076	93	154	122	129	150	157	805
XPH-1191	169	161	125	122	121	118	816
XPH-1225	144	113	133	152	147	165	854
XPH-1210	120	227	138	172	140	133	930
PSR-1679	61	97	82	95	124	177	636
Target	78	126	61	137	145	168	715
Salvo	141	98	70	86	135	129	659
Commander	114	163	129	149	204	146	905
Peppi	140	148	173	132	151	160	904
Calico	45	129	80	133	104	235	726
Castlex-2010	92	124	97	57	142	147	659
4J73	188	187	131	145	189	210	1050
C573	175	149	103	139	104	165	835
EXP-2608	38	62	49	52	49	95	345
EXP-2607	52	74	84	74	176	110	570
EXP-2606	149	99	131	84	118	125	706
EXP-2605	120	87	108	59	112	127	613
EXP-2602	57	92	99	48	131	153	580
EXP-2603	68	71	50	62	137	125	513
EXP-823	47	73	73	99	176	111	579

TABLE 8.--Values of Harvested Cucumbers from Observation Trial Based on Estimated Ohio Values -1980.

Lines	Value - 6 Harvest Dates - \$/A						Total
	7/25	7/29	8/1	8/5	8/8	8/12	
PSR-1478	216	244	192	204	334	312	1502
PSR-13076	185	296	240	246	281	292	1540
XPH-1191	333	319	247	239	232	226	1596
XPH-1225	286	216	261	282	272	314	1631
XPH-1210	240	441	275	326	266	227	1775
PSR-1679	122	190	157	174	235	334	1212
Target	157	249	122	253	289	274	1344
Salvo	275	192	139	163	260	239	1268
Commander	226	324	258	272	393	279	1752
Peppi	270	280	343	254	271	253	1671
Calico	91	254	160	242	190	406	1343
Castlex-2010	185	247	195	110	266	266	1269
4J73	375	355	261	266	362	339	1958
C573	345	295	206	256	202	294	1599
EXP-2608	77	115	97	84	92	159	624
EXP-2607	104	138	167	129	312	186	1036
EXP-2606	298	190	261	153	225	190	1317
EXP-2605	240	172	216	111	199	221	1159
EXP-2602	115	185	192	84	253	275	1104
EXP-2603	136	143	101	103	266	225	974
EXP-823	94	141	143	176	347	193	1094

TABLE 9.--Observations on Plant Type and Fruit Characteristics From Replicated Trial - 1980.

Cultivars	Plant			Fruit									
	Vigor	PF	Gen. appear.	L/D	Good fruit	Mis-shapen fruit	Unif. color	Pres-sure test	Carpel separation	Placental cavities	Inside seed cell	pH det.	Spine color
Calico	9.0	7.0	9.0	3.0	7	8	4	17.85	0	10	10	5.45	WS
Premier	9.0	5.5	9.0	2.8	6	6	3	14.45	4	9	8	6.15	WS
Pioneer	9.0	7.5	9.0	2.9	5	6	3	19.40	0	9	9	5.79	BS
Carolina	9.0	7.5	9.0	2.8	6	6	4	14.10	0	10	10	6.01	WS
Beitalpha MR	9.0	1.0	9.0	3.1	3	6	4	15.45	0	10	8	6.10	WS
Harrow 77.01	9.0	7.5	9.0	2.8	4	3	4	19.60	0	9	9	5.74	WS
Castlex-2003	9.0	5.0	9.0	2.9	5	4	5	15.90	2	9	8	6.11	WS
4JC2	9.0	7.5	9.0	2.7	7	8	4	20.65	4	10	8	6.45	WS
PSR-377	9.0	8.0	9.0	2.8	5	5	5	15.30	0	9	9	5.90	WS
PSR-1579	9.0	8.0	9.0	2.8	5	5	4	19.00	2	9	10	6.39	WS
FX-4153	9.0	7.0	9.0	2.9	5	5	5	18.10	0	10	10	5.56	WS
NCX-5014	9.0	9.5	9.0	3.1	5	6	5	17.35	0	10	8	5.64	WS
XPH-1225	9.0	9.5	9.0	3.1	6	5	5	18.65	0	7	10	6.23	WS
EXP-2000	9.0	10.0	9.0	3.0	6	5	5	18.55	4	10	8	6.38	WS
EXP-2604	9.0	6.0	9.0	2.8	5	2	3	18.25	0	9	10	6.32	WS
1605 x 1589	9.0	10.0	9.0	3.0	4	8	4	15.95	0	10	8	6.47	WS

* Subjective Ratings: Vigor: 1 = Very low vigor; 10 = Highly vigorous
 PF: 1 = Monoecious; 10 = Very predominately female in sex expression.
 General Appearance: 1 = Very poor, weak plants; 10 = Vigorous plants with 3 or more fruits developing per plant.
 L/D: Length/Diameter ratio
 Good Fruit: 1 = Tendency for constricted ends; 10 = Good shape, slightly rounded ends.
 Misshapen Fruit: 1 = 10 or more nubs; 10 = 0 nubs per sample of 20 fruits.
 Uniformity or Color: 1 = Wide color variance and/or heavy mottling; 10 = Solid one color green end to end.
 Pressure Test: Actual pressure using a 5/16 in. tip on a Magness-Taylor pressure tester.
 Carpel Separation: 1 = 5 carpel separations or more; 10 = 0 carpel separations per sample of 20 fruits.
 Placental Cavities: 1 = 10 or more placental cavities; 10 = 0 placental cavities per sample of 20 fruits.
 Inside Seed Cell: 1 = Extremely large seed cell; 10 = Very small seed cell.
 pH: Actual pH of expressed juice of size 3A fruits.
 Spine Color: WS = White spine; BS = Black spine.

TABLE 10.--Observations on Plant Type and Fruit Characteristics from Observation Trial - 1980*

Line	Plant			Fruit								
	Vigor	PF	Gen. appear.	Good fruit	Mis-shapen fruit	Unif. color	Pres-sure test	Carpel separation	Placental cavities	Inside seed cell	pH det.	Spine color
PSR-1479	9.0	9.0	9.0	6	4	7	17.5	0	10	10	5.40	WS
PSR-13076	9.0	9.5	9.0	9	6	4	16.9	0	10	10	5.54	WS
XPH-1191	9.0	8.0	9.0	8	3	5	17.5	0	10	9	4.37	WS
XPH-1225	9.0	9.0	9.0	9	7	4	16.2	0	10	10	5.39	WS
XPH-1210	9.0	8.5	9.0	8	3	5	13.8	0	10	9	5.52	WS
PSR-1679	9.0	8.0	9.0	7	2	5	17.8	0	10	9	5.50	WS
Target	9.0	4.0	9.0	6	7	5	15.5	0	10	10	5.49	WS
Salvo	9.0	3.0	9.0	6	5	6	17.3	0	10	9	5.45	WS
Commander	9.0	5.0	9.0	5	4	4	16.7	0	10	10	5.40	WS
Peppi	9.0	2.0	9.0	4	2	5	16.3	0	10	8	5.55	WS
Calico	9.0	3.0	9.0	4	4	6	18.7	0	10	10	5.44	WS
Castlex-2010	9.0	7.5	9.0	5	2	5	18.7	0	10	10	5.40	WS
4J73	9.0	8.5	9.0	7	3	5	15.8	0	10	10	5.39	WS
C573	9.0	9.0	9.0	7	6	3	16.2	8	10	7	5.60	WS
EXP-2608	10.0	5.0	9.0	6	5	3	15.2	0	10	8	5.49	BS
EXP-2607	8.0	9.5	9.0	5	4	6	17.2	0	10	8	5.41	WS
EXP-2606	9.0	9.0	9.0	6	10	5	16.0	0	10	9	5.38	WS
EXP-2605	9.0	5.0	9.0	3	2	3	16.5	0	10	10	5.53	WS
EXP-2602	9.0	2.0	9.0	9	6	4	16.3	0	10	9	5.57	WS
EXP-2603	9.0	2.0	9.0	5	3	4	16.5	0	10	10	5.64	WS
EXP-823	10.0	2.0	9.0	6	2	4	17.9	0	10	10	5.59	WS

* Subjective Ratings: Vigor: 1 = Very low vigor; 10 = Highly vigorous
 PF: 1 = Monoecious; 10 = Very predominately female in sex expression.
 General Appearance: 1 = Very poor, weak plants; 10 = Vigorous plants with 3 or more fruits developing per plant.
 L/D: Data were inadvertently omitted in this study.
 Good Fruit: 1 = Tendency for constricted ends; 1- = Good shape, slightly rounded ends.
 Misshapen Fruit: 1 = 10 or more numbs; 10 = 0 nubs per sample of 20 fruits.
 Uniformity or Color: 1 = Wide color variance and/or heavy mottling; 10 = Solid one color green end to end.
 Pressure Test: Actual pressure using a 5/16 in. tip on a Magness-Taylor presser tester.
 Carpel Separation: 1 = 5 carpel separations or more; 10 = 0 carpel separations per sample of 20 fruits.
 Placental Cavities: 1 = 10 or more placental cavities; 10 = 0 placental cavities per sample of 20 fruits.
 Inside Seed Cell: 1 = Extremely large seed cell; 10 = Very small seed cell.
 pH: Actual pH of expressed juice of size 3A fruits.
 Spine Color: WS = White spine; BS = Black spine.

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