

When the depth of cultivation (Table 4) is considered, 'no cultivating' after the 32nd day resulted in significantly higher yield and average head weight than either cultivating at 1 to 1.5 or 4 to 5 inches deep. Shallow cultivation (1 to 1.5 inches) resulted in significantly higher yields and average head weight than deep cultivation (4 to 5 inches). The percentage of marketable heads cut on first harvest was greatest for the no cultivations and least for the deep cultivations. These results indicate that none or early cultivations will result in higher yield, average head weight, and percentage heads cut. Shallow cultivation resulted in higher yield, head weight, and percentage heads cut than deep cultivation.

Table 4. First harvest marketable yield, average marketable head weight, and per cent marketable for three planting dates of cabbage as affected by depth of cultivation.

Depth in inches	Yield*	Head wt.†	Per cent‡
None	80.8 <sup>w</sup> a	3.30 a	86
1-1.5	70.1 b	3.05 b	79
4-5	62.4 c	2.86 c	69

\*Marketable weight per plot (2.5 x 25 ft.) in pounds.

†Average marketable head weight in pounds.

‡Per cent of marketable heads on first harvest.

<sup>w</sup>Mean separation of Duncan's multiple range test, 5% level.

None or one early cultivation with sweeps had significantly higher yield than 3 or 5 cultivations (Table 5). Three cultivations had significantly higher yield and average head weight than 5 cultivations. There was no significant difference in average head weight between 1 and 3 cultivations. The percentage heads cut increased as the number of cultivations decreased. These results indicate that yield, average head weight, and percentage heads cut increases as the number of cultivations decreases.

In summary, cultivating throughout the growing season with large sweeps at 4 to 5 inches deep resulted in the low-

Table 5. First harvest marketable yield, average marketable head weight and per cent marketable for three planting dates of cabbage as affected by number of cultivations.

Number of cultivations	Yield*	Head wt.†	Per cent‡
1	80.8 <sup>w</sup> a	3.30 a	86
3	75.6 b	3.15 a	82
5	65.3 c	2.95 b	73

\*Marketable weight per plot (2.5 x 25 ft.) in pounds.

†Average marketable head weight in pounds.

‡Per cent of marketable heads on first harvest.

<sup>w</sup>Mean separation by Duncan's multiple range test, 5% level.

est yield, average head weight, and percentage heads cut. None or early cultivations resulted in the highest yield, average head weight, and per cent heads cut. Cultivating after 4 to 5 weeks after transplanting in sandy soils would be of questionable value unless crusting or weeds are problems.

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## EVALUATION OF PICKLING CUCUMBER VARIETIES FOR FLORIDA<sup>1</sup>

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**Abstract.** Due to the limited amount of recent performance information available on pickling cucumber varieties grown under Florida conditions, commercially-accepted and recently-introduced varieties and several breeding lines were tested at Leesburg and Gainesville. Black-spined, monoecious

inbred cucumber varieties have been recommended and planted in Florida for many years. Gynoecious hybrids, which were developed especially for once-over harvesting, were more productive than monoecious varieties with multiple-pick, hand harvesting. 'Explorer' is a standard gynoecious variety in many areas of the country but it was evident that even better varieties are available. 'Carolina' and 'Calypso' did well in all 3 trials and should be considered by commercial growers in Florida.

Pickling or processing cucumbers (*Cucumis sativus* L.) have not been an important commercial crop in Florida in the past. However, interest in this crop has recently increased and cucumbers for processing were planted on approximately 5000 acres in Florida in 1977. The cucumbers planted for processing in the U.S. in 1976 had a value of about \$85 million and were grown on about 135,000 acres (3). Processors in other states are looking to Florida to extend the time during which their plants can operate both in the early spring and late fall. Interest in developing a

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pickling cucumber industry extends from the northern boundary of Florida to as far south as Homestead.

Black-spined, monoecious cucumber varieties are still being planted by some Florida growers. Growers in other states plant white-spined, gynoeious varieties which are more disease resistant and productive than the monoecious, open-pollinated varieties (1, 2). Fruits with black spine color commonly turn yellow and the larger fruits soften with maturity. White spined fruits remain green, firm, and usable longer than those that are black spined. The "gynoeious" hybrids are actually predominantly female. The highly female expression of these plants concentrates the set of fruit which is useful for both multiple, hand-pick harvesting and once-over, mechanical harvesting.

Due to the limited amount of performance information available on pickling cucumber varieties grown under Florida conditions, commercially-accepted and recently-introduced varieties and various breeding lines were tested at Leesburg and at Gainesville.

### Materials and Methods

Pickling cucumber variety evaluations were conducted on Apopka sand in 1976 and 1977 at the Agricultural Research Center, Leesburg and on Myakka fine sand at the Horticultural Unit in Gainesville in 1977. Relative dollar value per acre following Pickle Cucumber Improvement Committee (PCIC) standards was determined.

Grade	Size in diameter	\$ per cwt
1	less than 1 1/16 inches	6
2	1 1/16 to 1 1/2 inches	3
3	1 1/2 to 2 inches	2
4	over 2 inches	1

*Leesburg, 1976.* Ten entries were included in a 4-replicate trial and 15 entries were planted in an observational (unreplicated) trial. Seed were planted August 23 in single-row plots 24 ft long and 10 ft wide. Plant population was 9000 per acre. The pre-plant fertilizer, 1000 lb 4-12-4/acre, was incorporated in the row prior to bedding. Supplemental fertilizer, 100 lb 15-0-14/acre at emergence and 550 lb 14-0-14/acre at layby, was also applied.

Overall foliar disease resistance was rated October 11 using a scale of 1, susceptible, to 5, resistant. The 2 major foliar diseases present were downy mildew, *Pseudoperonospora cubensis* (B. & C.) Rostow, and gummy stem blight, *Mycosphaerella citrullina* (C. O. Sm.) Gross. Fruit were harvested 10 times between September 29 and October 25.

*Leesburg, 1977.* Sixteen varieties were included in a 4-replicate trial and an additional 20 entries were planted in observational rows. Seeds were planted March 15 in single-row plots 25 ft long and 5 ft wide resulting in a population of approximately 26,000 plants/acre. A preplant fertilizer application of 1600 lb 5-15-8/acre was incorporated in the row prior to bedding. Additional fertilizer, 200 lb 15-0-14/acre at emergence and 400 lb 15-0-15/acre at layby, was applied. Fruit were harvested 8 times between April 30 and May 19.

*Gainesville, 1977.* Thirteen varieties were planted in 3 replications and 27 entries were planted in observational rows. Seeds were planted April 6 in single-row plots 25 ft long and 4 ft wide. The population was approximately 35,000 plants per acre. Preplant fertilizer, 830 lb 12-16-16/acre, was incorporated into the beds and an additional 100 lb 34-0-0/acre was applied as the vines began to run. Fruit were harvested 6 times between May 20 and June 1.

The length to diam ratio was determined for the fruit of all entries at Gainesville. Other fruit quality features

were rated on a scale of 1, poor, to 5, excellent. Included in these ratings were color, color uniformity, shoulder and stem attachment, blossom taper, and ridging and spines.

### Results and Discussion

*Leesburg, 1976.* The plant population in the 1976 (fall) planting was quite low and resulted in yields with a low dollar-value per acre. However, the values provide a relative basis for evaluating the entries. In the replicated trial the 5 varieties with the highest early yields also had the highest total yields (Table 1). 'Carolina', 'Calypso', and 'Pickmore' produced the highest yields. The two monoecious varieties, 'Sumter' and 'Wisc. SMR 18' and the Dutch entry, 75484, had the lowest yields. The most promising entries in the unreplicated trial were 38C2, 'Lucky Strike', C589, and 'Triplemech'. Overall foliar disease resistance was low in 'SMR 18' and only moderate in 'Pickmore', 'Peppi', 1189, and 'Piccadilly'.

Table 1. Early and total yields and foliar disease resistance of pickling cucumbers at Leesburg, fall 1976.

Entry	Source	Yield (\$/acre)		Foliar disease resistance*
		Early	Total	
Replicated				
Carolina	Asgrow	112 ab <sup>y</sup>	244 a	4
Calypso	Peto	118 a	231 ab	4
Pickmore	Harris	108 ab	221 ab	3
Premier	Asgrow	103 ab	203 b	4
Explorer	Northrup King	98b	202 b	4
Bravo	Peto	66 c	165 c	4
Triple Cross	Harris	65 c	154 c	4
Sumter	Asgrow	46 d	136 c	4
Wisc. SMR 18	Harris	30 d	102 d	2
75484	Vander Ploeg	36 d	98 d	4
Unreplicated				
38C2	Harris	148	292	4
Lucky Strike	Peto	136	283	4
C589	Harris	116	275	4
Triplemech	Peto	22	262	4
C541C2	Harris	130	250	4
Salty	Peto	117	249	4
C559	Harris	120	244	4
No. 130	Vander Ploeg	48	170	4
Peppi	Peto	64	168	3
1189	Harris	79	158	3
Pioneer	Peto	49	148	4
Picadilly	Twilley	39	126	3
Score	Leatherman	47	117	4
Milglass	Vander Ploeg	37	104	4
Domino	Vander Ploeg	28	84	4

\*Resistance rated on a scale of 1, extremely low, to 5, high.

<sup>y</sup>Mean separation by Duncan's multiple range test, 5% level.

*Leesburg, 1977.* In the 1977 (spring) trial the plant population was almost 3 times what it was in the 1976 (fall) trial and resulted in a 3 fold increase in yield (Tables 2 and 3). Total yields of 'Carolina' and 'Calypso' were high again in the spring trial and 'Compass' and 'Greenpak' also ranked high. Once again the monoecious varieties ranked lowest in early and total yields indicating that even with multiple, hand-pick operations, which are most common in Florida, the gynoeious hybrids are superior to the monoecious inbreds.

The 2 entries from Niagara Seed Company, NCX 5009 and NCX 5010, had the highest yields in the observational trial (Table 3).

*Gainesville, 1977.* 'Triplemech' and 'Trispear' were the most productive varieties in the replicated test at Gaines-

Table 2. Early and total yields of pickling cucumbers in a replicated trial at Leesburg, spring 1977.

Entry	Source	Yield (\$/acre) PCIC Standard	
		Early	Total
Carolina	Asgrow	358 ab*	775 a
Compass	Harris	402 a	746 a
Calypso	Harris	351 abc	738 a
Greenpak	Harris	375 ab	737 ab
Lucky Strike	Peto	366 ab	720 ab
Green Star	Harris	335 bcd	719 ab
Score	Asgrow	280 de	704 ab
Triple Cross	Harris	349 abc	703 ab
Greenspear	Northrup King	351 abc	695 ab
Trispear	Northrup King	288 de	686 ab
Pickmore	Harris	380 ab	673 ab
Triplemech	Peto	358 ab	665 ab
Explorer	Peto	294 cde	653 ab
Premier	Asgrow	260 e	570 bc
Sumter	Asgrow	141 f	507 c
SMR 18	Harris	188 f	493 c

\*Mean separation by Duncan's multiple range test, 5% level.

ville (Table 4). 'Calypso', 'Carolina', and 'Greenpak' also ranked high in yield. 'Greenspear' and 'Trispear' with length to diameter (L-D) ratios of 4.0 and 3.5, respectively had the most elongated fruits. 'Calypso' and 'Greenspear' were darkest green; 'Compass' and 'Greenpak' were pale and lacked color uniformity (Table 5). 'Calypso', 'Lucky Strike', and 'Greenspear' ranked highest in shoulder conformity and stem attachment. With the exception of 'Greenpak' the varieties in the replicated trial did not have excessive blossom-end taper. None of the varieties in the replicated trial had unsatisfactory ribbing and spines.

NCX 5009 was one of the most productive entries in the observational trial at Gainesville as it was also at Leesburg (Table 6). Other promising entries in the observational trial at Gainesville were NCSU 77-637h, C 10C2, Exp Hyb 2667, and 3 entries from Northrup King including 'Perfecto Verde', Exp 808, and 'Early Pik 14'. An L-D ratio of 4.2 for 'Goddess' indicated an extremely long fruit, probably longer than would be acceptable by most processors. Flesh color was poor in 'Capir', 'Femprom', and 'Liberty Bell' and color uniformity was unacceptable in Exp Hyb 2667,

Table 3. Early and total yields of pickling cucumbers in an observational trial at Leesburg, spring 1977.

Entry	Source	Yield (\$/acre) PCIC Standard	
		Early	Total
NCX 5009	Niagara	424	841
NCX 5010	Niagara	482	815
FX 4153	Ferry Morse	398	802
XP 1152	Asgrow	408	770
Earlipik 14	Northrup King	392	748
C589	Harris	283	726
Exp 808	Northrup King	341	719
Exp Hyb 2667	Keystone	436	713
C 10C2	Harris	361	707
XP 1151	Asgrow	403	640
Liberty Bell	Dessert	324	637
Bravo	Peto	308	632
Castlex 2004	Castle	318	631
Galaxy	Asgrow	271	622
FX 4169	Ferry Morse	328	589
Sampson	Peto	260	558
Goddess	Keystone	296	532
Perfecto Verde	Northrup King	272	485
XP 1149	Asgrow	127	421
Philly	Dessert	234	415

Table 4. Total yields of pickling cucumbers and length (L) to diameter (D) ratios of fruit in a replicated trial at Gainesville, spring 1977.

Entry	Source	Yield (\$/acre) PCIC Standard	L:D
Trispear	Northrup King	912 a	3.5 b
Calypso	Harris	875 ab	3.3 bc
Carolina	Asgrow	809 abc	2.9 c
Greenpak	Harris	804 abc	3.3 bc
Triple Cross	Harris	759 bc	3.2 bc
Compass	Harris	732 cd	3.2 bc
Explorer	Peto	709 cd	2.9 c
Premier	Asgrow	705 cd	3.1 bc
Lucky Strike	Peto	697 cd	3.3 bc
Greenspear	Northrup King	697 cd	4.0 a
Green Star	Harris	692 cd	3.0 bc
Score	Asgrow	603 d	3.1 bc

\*Mean separation by Duncan's multiple range test, 5% level.

Table 5. Evaluation of pickling cucumber fruit characteristics in a replicated trial at Gainesville, spring 1977.

Entry	Fruit quality ratings*				
	Color	Color uniformity	Shoulder & stem†	Blossom-end taper	Ridging & spines
Triplemech	4.1 ab*	3.8 a	3.9 ab	3.5 abc	4.0 a
Trispear	3.8 abc	3.3 abc	3.9 ab	3.2 bcd	4.0 a
Calypso	4.0 abc	4.0 a	4.0 a	3.8 ab	3.8 ab
Carolina	3.6 bc	3.6 abc	3.6 abc	3.7 abc	3.7 ab
Greenpak	2.8 d	2.7 bc	3.4 bc	2.5 d	3.1 c
Triple Cross	3.5 c	3.4 abc	3.8 ab	3.6 abc	3.8 ab
Compass	2.6 d	2.6 c	3.1 c	3.3 abc	3.4 bc
Explorer	3.8 abc	3.7 a	3.7 ab	3.2 bc	3.8 ab
Premier	3.9 abc	3.7 ab	3.9 ab	3.8 ab	3.8 ab
Lucky Strike	4.0 abc	3.6 abc	4.0 a	4.0 a	4.0 a
Greenspear	4.2 a	3.8 a	4.0 a	3.1 bcd	4.0 a
Green Star	4.1 ab	3.8 a	3.6 abc	3.0 cd	4.1 a
Score	3.6 bc	3.4 abc	3.7 ab	3.2 bc	3.9 ab

\*Rated on a scale of 1, poorest quality, to 5, best quality.

†Shoulder conformity and stem attachment.

\*Mean separation by Duncan's multiple range test, 5% level.

Table 6. Total yields of pickling cucumbers and length (L) to diameter (D) ratios of fruit in an observational trial at Gainesville, spring 1977.

Entry	Source	Yield (\$/acre) PCIC Standard	L:D
NCX 5009	Niagara	784	3.5
Perfecto Verde	Northrup King	758	3.4
C 10C2	Harris	692	3.2
Exp 808	Northrup King	690	3.1
Exp Hyb 2667	Keystone	681	3.4
Earlipik 14	Northrup King	672	3.3
XP 1154	Asgrow	638	3.3
C 589	Harris	636	3.1
XP 1149	Asgrow	606	3.0
NCX 5010	Niagara	567	3.5
FX 4169	Ferry Morse	567	3.4
Castlex 2003	Castle	548	3.1
Castlex 2004	Castle	532	3.5
FX 4153	Ferry Morse	522	3.0
XP 1152	Asgrow	491	3.5
Capir	Vander Ploeg	489	2.8
Femprom	Vander Ploeg	480	2.9
Liberty Bell	Dessert	474	3.8
Galaxy	Asgrow	468	2.9
Salty	Peto	443	3.3
Philly	Dessert	442	3.4
Bravo	Peto	408	3.4
Femglos	Vander Ploeg	377	—
Goddess	Keystone	376	4.2
Femcap	Vander Ploeg	211	—
Femplus	Vander Ploeg	187	3.0

Table 7. Evaluation of pickling cucumber fruit characteristics in an observational trial at Gainesville, spring 1977.

Entry	Fruit quality rating*				
	Color	Color uni-formity	Shoulder & stem†	Blossom-end taper	Ridging & spines
NCSU77-637h	3.8	3.8	4.0	4.0	3.8
NCX 5009	4.0	4.0	4.5	4.0	4.5
Perfecto Verde	3.5	2.0	3.0	3.0	3.5
C 10C2	4.2	4.0	4.0	3.0	4.0
Exp 808	4.0	4.5	3.8	4.0	3.5
Exp Hyb 2667	3.0	2.5	3.8	3.8	4.1
Earlipik 14	4.0	4.0	3.5	4.0	4.0
XP 1154	4.0	3.0	3.0	3.0	3.8
C 589	4.0	4.0	4.0	4.0	4.0
XP 1149	4.0	4.0	2.8	2.8	3.5
NCX 5010	3.8	3.8	3.8	3.0	4.0
FX 4169	4.0	4.0	4.0	3.8	4.0
Castlex 2003	3.5	3.0	4.0	4.0	4.2
Castlex 2004	4.0	4.0	3.9	3.8	4.0
FX 4153	3.8	3.8	3.0	3.0	3.8
XP 1152	3.8	4.0	4.0	4.0	4.0
Capir	1.0	2.0	3.0	2.0	2.8
Femprom	1.0	4.0	1.0	1.0	1.0
Liberty Bell	2.0	2.5	3.0	3.0	3.0
Galaxy	4.0	3.0	3.5	3.8	4.0
Salty	3.5	3.0	3.0	4.2	4.0
Philly	3.5	3.5	4.0	3.0	3.8
Bravo	4.5	5.0	3.5	3.0	4.5
Femglos	—	—	—	—	—
Goddess	3.8	3.0	3.8	3.8	3.0
Femcap	—	—	—	—	—
Femplus	3.0	2.0	3.0	3.0	2.0

\*Rated on a scale of 1, poorest quality, to 5, best quality.

†Shoulder conformity and stem attachment.

'Perfecto Verde', 'Capir', 'Liberty Bell', and 'Femplus' (Table 7). Entries with unsatisfactory fruit conformity were XP1149, 'Capir', 'Femprom', and 'Femplus'.

Florida growers who have multiple-pick, hand harvesting operations and are still planting monoecious inbred varieties such as 'Wisc. SMR 18' and 'Sumter' would be well advised to switch to the gynoecious hybrids. Not only are the fruit more satisfactory from a quality standpoint since they are generally white spined, but the gynoecious varieties are also more productive. 'Explorer' might be considered a standard gynoecious variety but it was evident from all 3 trials that better varieties are now available. 'Carolina' and 'Calypso' did well in all three trials and probably should be considered by commercial growers in Florida.

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## 'ATLANTIC': A NEW POTATO CULTIVAR FOR NORTH FLORIDA<sup>1</sup>

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**Abstract.** A new potato (*Solanum tuberosum* L.) cv. **Atlantic**, has been released by the USDA, the Florida Agricultural Experiment Station, and experiment stations located in Virginia, New Jersey, and Maine. 'Atlantic' has been tested

by the Agricultural Research Center at Hastings, Florida, for 5 years and the Vegetable Crops Department at Gainesville, Florida for 2 years. These tests, in concert with north Florida (NF) grower trials, have shown 'Atlantic' to be superior to 'Sebago' (standard cultivar grown in NF) in both tuber yield production and total solids content. The color of chips processed from 'Atlantic' tubers was equal to that of 'Sebago.' 'Atlantic' was moderately resistant to corky ringspot disease. In both years at Gainesville and in 1977 at Hastings, some indications of hollow heart were observed in oversized 'Atlantic' tubers. The adaptability and processing potential, cultural and disease recommendations, and seed availability of 'Atlantic' are discussed.

'Atlantic,' a new potato cultivar, was released July 16, 1976, by the Agricultural Research Service of the USDA (1), the Florida Agricultural Experiment Station, and experiment stations located in Virginia, New Jersey, and Maine. 'Atlantic,' was selected from the progeny of 'Wauseon' x B5141-6 and was tested under the pedigree number B6987-56. The official description and characteristics of 'Atlantic' are most adequately presented elsewhere (5). However, some bear repeating here. 'Atlantic' plants are medium late maturing and medium large in size with an upright growth habit. Tubers are medium late maturing, white, oval to round, smooth, with a light to heavy scaly net skin. 'Atlantic'

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