

Pickling Cucumber (*Cucumis sativus* L.) Cultivar Evaluation in Northwestern Puerto Rico¹

*Gerardo Mangual Crespo*²

ABSTRACT

Variety Sumter scored the highest yield (40,753 kg/ha) of all the cultivars evaluated, and Premier scored the highest among the hybrids (35,000 kg/ha). Bounty, the lowest yielder, with 13,639 kg/ha, was statistically inferior to all other cultivars.

None of the entries showed disqualifying characteristics according to the processor's expectations for each cultivar.

INTRODUCTION

Cucumber varieties are usually classified according to their use: fresh market or pickling (6). Pickling is a method of preserving foods in vinegar and a way to add zip and zest to meals, snacks and refreshments (7). In general, the fruits of fresh market varieties are larger than pickling varieties and develop a darker, heavier skin.

Present day pickling varieties develop shorter vines than fresh market varieties. They are also more prolific. The fruits are smaller and the seed cavity develops more slowly, important characteristics affecting suitability for storage in brine. Pickling varieties with a light color skin are preferred, chiefly for aesthetic reasons.

The introduction for widespread commercial use of gynococious hybrids has occurred in recent years by means of utilizing an abnormal genetic trait of cucumber plants to produce only female blossoms. The gynococious flowering habit makes possible the production of large amounts of hybrid seed without the heavy expense of hand pollination. Gynococious hybrids are often more productive than monoecious varieties because they usually produce very few male flowers at the beginning of the flowering period.

Because of the limited amount of information available on the performance of pickling cucumber varieties grown under Puerto Rico conditions, various commercially accepted cultivars were evaluated at Isabela, in northwestern Puerto Rico.

MATERIALS AND METHODS

Pickling cucumber cultivars were evaluated on a Coto clay soil, an Oxisol (5) at the Isabela Agricultural Experiment Substation farm in 1979. Five cultivars were planted May 16, 1979: hybrids Bounty, Carolina, Premier and Score; and variety Sumter. A complete randomized block

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² Assistant Agronomist, Agricultural Experiment Station, Mayagüez Campus, University of Puerto Rico, Río Piedras, P.R.

design with four replications was used. Seed was planted on hills 15 cm apart in plots of four rows 2 m apart and 4.6 m long. Plant population was estimated at 127,600/ha.

Naptalam (Alanap 250 g/l)³ was used as a preemergent herbicide, applied immediately after planting at the rate of 28.5 l/ha. Tok E-50 (Nitrofen), at the rate of 9 kg/ha as a post-emergence herbicide was applied 4 weeks after planting. A 10-10-8 fertilizer was sidedressed 2 days after planting at the rate of 1136 kg/ha.

A preventive weekly spraying program was followed with 1168 ml/ha of Diazinon AG 500 and 2.2 kg/ha of Thiodan 50 WP to control insects and diseases.

The length/diameter ratio was determined for the fruit of all cultivars. Other fruit quality features were rated on a scale of 1 (poor), to 5 (excellent). Included in these ratings were color, color uniformity, blossom taper, ridging and spines.

Fruits were picked 13 times between June 28 and August 2, 1979.

RESULTS AND CONCLUSIONS

Table 1 shows the marketable yield of the five cultivars. Premier, Score and Carolina scored the highest yields among the hybrids, outyielding Bounty significantly. Variety Sumter registered the best yield of all the entries evaluated, but its yield was statistically superior only to that of Bounty.

Cuéllar (3) reported yields of almost 20,000 kg/ha of good quality fruit for hybrid Carolina, whereas an excellent yield of 28,855 kg/ha was obtained with the same hybrid in this trial. Cantliffe et al. (2), evaluating eight population densities ranging from 50,000 to 850,000 plants/ha, found that yields as dollars/ha and tons/ha increased with increasing plant population densities from 50,000 to 100,000 and from 250,000 to 500,000. The number of fruits/plant decreased with increasing plant density. Length to diameter ratio of Premier was lower at the lowest plant density, but in Bounty ratios were not affected by plant population.

Elmstron et al. (4) reported good yields for Carolina in three trials, while Premier and Sumter registered low yields. In terms of dollars/ha their findings were \$1,914, \$1,408 and \$1,252 for Carolina, Premier and Sumter, respectively. Carolina performed quite similarly under conditions at Isabela, but Premier and Sumter yielded differently.

All yields recorded in this trial were excellent, except that of Bounty, which, although lower than the rest, compared favorably with the mean

³ Trade names in this publication are used only to provide specific information. Mention of a trade name does not constitute a warranty of equipment or materials by the Agricultural Experiment Station of the University of Puerto Rico, nor is this mention a statement of preference over other equipment or materials.

yield of 12 tons/ha reported for 1978 in the United States by the USDA Agricultural Statistics (1).

Table 2 shows several fruit quality ratings of the cultivars evaluated. None of the entries studied showed characteristics which would disqualify them according to criteria based on the processor's expectations for each cultivar.

Of all the entries evaluated for pickling purposes, variety Sumter and hybrid Premier yielded highest. In addition, they have other characteristics which make them suitable for processing under our environmental conditions (table 2).

TABLE 1.—*Marketable yield of five pickling cucumber cultivars and length (L)/diameter (D) ratios of fruit, Isabela, P.R., 1979. Mean of 4 replicates.*

Cultivar	Marketable yield <i>kg/ha</i>	L:D
Premier	35,000 a ¹	3.1
Score	32,703 a	3.0
Carolina	28,855 a	3.0
Bounty	13,639 b	3.1
Sumter	40,753 a	3.0

¹ Means followed by the same letter do not differ significantly at the 5% probability level.

TABLE 2.—*Evaluation of pickling cucumber fruit characteristics at Isabela, 1979.*

Cultivar	Fruit quality ratings ¹			
	Color	Color uniformity	Blossom end taper	Ridging and spines
Premier	4.2	4.2	3.9	3.9
Score	3.8	3.6	3.4	3.8
Carolina	3.9	3.8	3.9	3.8
Bounty	3.8	3.8	3.9	3.7
Sumter	4.0	4.0	3.8	3.8

¹ Rated on a scale of 1 (poor) to 5 (excellent).

Apparently, all the cultivars studied, except Bounty, could be planted for pickling purposes and expected to perform well under the conditions prevailing in northwestern Puerto Rico.

RESUMEN

Variedades de pepinillo para encurtido se sembraron en la Subestación de Isabela con el fin de evaluar sus rendimientos y otras características hortícolas. Se incluyeron los híbridos Premier, Score, Carolina y Bounty y la variedad Sumter. Sumter produjo el rendimiento más alto. Los

híbridos Premier, Score y Carolina produjeron rendimientos significativamente más altos que el híbrido Bounty.

No se encontraron características indeseables que los descualificaran para encurtir.

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