

Research Note

AN EVALUATION OF 10 CUCUMBER (*CUCUMIS SATIVA* L.) CULTIVARS IN SOUTHERN PUERTO RICO^{1,2}

Local cucumber production in Puerto Rico for 1982-83 was 32,000 cwt, with a farm value of \$434,000³. More than half of the production comes from the southern coastal region; the rest is grown in the north central municipalities of Barranquitas, Corozal, Dorado, Trujillo Alto, Carolina, Gurabo and Caguas. In 1983-84, the southern region alone produced 37,303 cwt, with a farm value of \$448,000⁴. Although cucumbers are planted year round in Puerto Rico, planting is not advisable during the rainy season.⁵ The southern region, with a reduced rainy season but with water available for irrigation, is one of the best places to grow high quality cucumbers during most of the year.

At present, farmers are giving high priority to vegetable crops in order to increase and diversify local agricultural production. Every year, many commercial seed companies are introducing new cultivars as a result of their breeding programs. To determine which are adaptable to local growing conditions, the Agricultural Experiment Station evaluated new cultivars of different vegetable crops. As part of these efforts, Mangual⁶ and Rico-Ballester et al.⁷ evaluated pickling cucumber cultivars in

northwestern Puerto Rico at the Isabela Substation.

The cucumbers are usually classified according to their use: fresh market (slicing) or pickling.⁸ In general, fruits of fresh market (slicing) cultivars are larger than pickling cultivars and develop a darker heavier skin. Seed samples of all cultivars evaluated in this experiment were supplied by seed companies from the United States. All were classified as fresh market or slicing cucumbers.

As part of our effort to increase local cucumber production, we evaluated more than 70 cultivars in preliminary tests from the 1979 to the 1983 growing seasons. The top 10 cultivars, on the basis of their field performance and production, were selected for this study. The purpose of this experiment was to evaluate and compare the performance of these 10 commercial cucumber cultivars under the conditions of southern Puerto Rico.

A cucumber experiment consisting of 10 commercial fresh market cultivars was planted 1 June 1984 at the Fortuna Substation in southern Puerto Rico in a San Antón (Cumulic Haplustolls fine loamy mixed

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²This study was conducted under H-94-G Southern Region Research Project. Introduction and Evaluation of New Crops; Vegetables.

³Department of Agriculture, Office of Agricultural Statistics. Facts and Figures on Puerto Rico's Agriculture. 1981-82 - 1982-83.

⁴Medrano-Vaquero, H., Marzo 1985. Situación Económica Empresa de Hortalizas. Informe presentado para reunión de Empresa de Hortalizas de la Estación Experimental Agrícola.

⁵Estación Experimental Agrícola, Universidad de Puerto Rico. 1979. Conjunto Tecnológico para la producción de hortalizas. Publicación Núm. 102. 2da. ed.

⁶Mangual Crespo, G. 1982. Pickling cucumber (*Cucumis sativa* L.) Cultivar Evaluation in Northwestern Puerto Rico. *J. Agric. Univ. P. R.* 66 (3): 177-80.

⁷Rico-Ballester, M., Ramos Caro, C. and Vélez Fortuiño, I. 1962. An Evaluation of Pickling Cucumber Varieties at Isabela Substation. *J. Agric. Univ. P. R.* 46 (4): 360-62.

TABLE 1.—*Climate conditions prevailing at Fortuna Substation during the experimental period*

Period	Mean temperature		Evaporation	Rainfall
	Max	Min	Total	Total
	°C	°C	cm	cm
July 1984	31.5	232.6	18.4	3.8
July 1984	32.0	21.8	16.6	11.4
August 1984	32.8	22.1	22.1	2.6

isohyperthermic).⁸ An incomplete block design with four replications was used to evaluate the following cultivars: Sprint 440 S, Marketmore 76, Poinsett 76S, Southernsett, S1721, Roadside Fancy, Early Triumph, Gemini 7, Marketmore 70, and Dasher. All cultivars selected for this experiment came from preliminary tests conducted from 1979 to 1983.

Seeds were planted by hand approximately 1.8 m apart within the row, in rows 0.60 m apart and 7.25 m long. Each experimental plot consisted of four rows. Nap-talam was applied as a preemergent herbicide immediately after planting at the rate of 23.8 L/ha. To reduce damage by insects

and diseases, we sprayed Diazinon AG 500 weekly, at the insecticide rate of 1.2 L/ha, Benomyl fungicide at the rate of 630 g/ha, and Bravo 500 fungicide at the rate of 3.5 L/ha. Irrigation was applied as necessary. Table 1 shows the climatic conditions which prevailed during the experiment.

Field plots were harvested six times from 19 July 1984 to 16 August 1984. For every harvested plot, marketable fruit yield and number of fruits were recorded. Samples from each plot were used to determine average fruit length, diameter, and weight.

Dasher and Marketmore 76 had the highest and lowest marketable yield (53,357 and 16,756 kg/ha), respectively (table 2).

TABLE 2.—*Cucumber cultivars, their seed source, marketable yield and fruits per hectare*

Cultivar	Source	Marketable yield	Fruits/ha
		kg/ha	
Dasher	Petoseed	53,357 a ¹	166,154 a
Sprint 440 S	Asgrow Seed	51,251 a	155,164 a
S 1721	J. Harris Seed	50,427 a	164,854 a
Early Triumph	Petoseed	46,916 ab	137,515 ab
Roodside Fancy	Agway Seed	42,339 abc	139,648 ab
Gemini 7	Petoseed	39,209 abcd	117,365 abc
Marketmore 70	Petoseed	32,591 bcd	116,092 abc
Ponsett 76 S	J. Harris Seed	27,973 cd	99,923 bc
Southernsett	J. Harris Seed	24,944 d	83,900 c
Marketmore 76	J. Harris Seed	16,756 e	73,712 c

¹Means followed by the same letter do not differ significantly at the P = 0.05 probability level.

⁸Lugo-López, M. A., Bartelli, L. and F. Abruña. 1973. An overview of the soils of Puerto Rico. Classification and Physical Chemical and Mineralogical properties. Agric. Exp. Stn., Univ. P. R. Publ. 79.

TABLE 3.—*Cucumber cultivars and their means for fruit length, diameter, and weight*

Cultivar	Length	Diameter	Weight
	<i>cm</i>	<i>cm</i>	<i>g</i>
Dasher	20.0 bcd ¹	5.1 a	326 abc
Sprint 440 S	21.6 ab	5.4 a	370 a
S 1721	20.8 a	4.9 a	328 ab
Early Triumph	19.3 de	5.1 a	376 a
Roadside Fancy	19.3 bc	4.9 a	307 abc
Gemini 7	19.3 bc	4.8 a	368 a
Marketmore 70	17.8 g	4.7 a	302 bc
Poinsett 76 S	19.0 def	4.8 a	297 bc
Southernsett	18.9 ef	4.7 a	284 bc
Marketmore 76	18.3 f	4.5 b	266 d

¹Means followed by the same letter do not differ significantly at the $P = 0.05$ probability level.

Dasher, Sprint 440 S, S-1721, Early Triumph, Roadside Fancy, and Gemini 7 showed no statistical difference in marketable yield. They were significantly superior to Marketmore 76. Dasher and Marketmore 76 showed the highest and lowest values for fruits per hectare, respectively. In the amount of fruit per hectare Dasher, Sprint 440 S, and S-1721 did not differ significantly among themselves, but differed significantly from Poinsett 76 S, Southernsett, and Marketmore 76.

Cultivars S-1721 and Sprint 440 S had the longest fruits (table 3). The shortest fruits were those of Marketmore 76. There were no significant differences among cultivars for fruit diameter, except for Marketmore 76, which showed the lowest value.

There were significant differences among cultivars as to fruit weight. Early Triumph, Sprint 440 S and Gemini 7 showed the highest values; Marketmore 76 weighed least (table 3). Overall cultivars Dasher, Spirit 440 S and S1721 had the best values for fruit size, marketable yield and fruits per hectare.

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