

## Research Note

### EXTERNAL FRUIT CHARACTERISTICS OF CHAYOTE LANDRACES COLLECTED IN PUERTO RICO<sup>1</sup>

Carlos E. Ortiz<sup>2</sup> and Agenol González<sup>3</sup>

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Chayote [*Sechium edule* Jacq. (Sw.)] is a tropical plant used for food, fiber, medicine, animal feed, erosion control and as an ornamental (Aung et al., 1990; Costales and Ramírez, 1983). This crop is cultivated throughout the tropics and subtropics worldwide. In the United States, chayote is a minor crop grown in California, Florida and Louisiana. Its potential as an agricultural enterprise for the mountainous region of Puerto Rico was recognized at the beginning of this century (Cook, 1901). Chayote is well adapted to cultivation in hilly areas because of its semiperennial growth habit, its adaptability to low-fertility soils and its proven crop hardiness.

Despite its importance for local communities and its potential, only limited systematic efforts have been made to identify the fruit characteristics that fulfill the requirements for fresh consumption and for industrialization. Compared to other cucurbitaceous crops, chayote has not been subjected to intense selection for commercial production (Newstrom, 1985). The lack of improved cultivars may have contributed to the limited expansion, quality and acceptability of this crop in Puerto Rico. Thus it is important to maintain and describe local landraces and determine whether they can be used as genetic resources. The objective of this study was to collect landraces of chayote and describe the variation in external fruit characteristics.

Thirteen landraces were collected throughout the central mountainous region of Puerto Rico during 1993. Collection sites included family gardens and commercial plantations. For propagation, fruits were placed in polyethylene bags filled with a 50:50 mixture of soil and commercial soil replacer. Four weeks after emergence, six plants per landrace were transplanted into 12-m<sup>2</sup> trellised plots. The soil was of the Corozal series (Aquic Haplohumults) with a pH of 5.0, 2.1% organic matter and 20% slope. Standardized management practices were used. Irrigation was provided by a low pressure drip irrigation system. Over a two-year period, landraces were compared for external fruit characteristics by using the descriptors developed by Newstrom (1985).

Landraces differed in fruit color, shape, profile, spine density and distribution, and presence of ridges (Table 1). Except for exocarp color, the characteristics tended toward continuous variation. This group of landraces does not demonstrate as wide a variability as that reported for other collections. There have been reports of wide phenotypic representation for external fruit characteristics among chayote accessions collected throughout Mesoamerica (Engels 1983; Newstrom, 1985).

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<sup>2</sup>Assistant Plant Breeder, Agricultural Experiment Station, P.O. Box 21360, Río Piedras, P.R. 00928.

<sup>3</sup>Associate Horticulturist.

TABLE 1.—Description for the external fruit characteristics of chayote landraces collected in Puerto Rico.

Landrace	Exocarp color	Profile		Spines		
		Longitudinal	Cross-section	Density	Distribution	Number ridges
				no./fruit		no./fruit
93-01	Light green	Pyriform	Flattened	20-100	Entire fruit	6-10
93-02	Cream	"	Round	<20	Distal	<6
93-03	Light green	"	"	<20	Distal	6-10
93-04 <sup>1</sup>	Cream	"	Flattened	None	—	"
93-05 <sup>1</sup>	Cream	"	"	<20	Distal and proximal	"
93-06 <sup>1</sup>	Cream	"	"	20-100	Distal and proximal	"
93-07 <sup>1</sup>	Cream	"	Oval	>100	Entire fruit aligned	<6
93-08	Light green	"	Flattened	<20	Distal	6-10
93-09 <sup>1</sup>	Cream	Narrow pyriform	Oval	>100	Entire fruit	"
93-10 <sup>1</sup>	Cream	Pyriform	Flattened	<20	Distal	"
93-11	Cream	"	"	>100	Entire fruit non-aligned	None
93-12	Cream	"	Oval	None	—	>10
93-13	Cream	"	Round	20-100	Entire fruit	6-10

<sup>1</sup>Cultivated commercially.

External fruit characteristics, such as the absence of spines and ridges, are important for the enhancement of cultivars for fresh consumption. These characteristics are expressed among the locally collected landraces, but a more detailed description for the chemical composition of the fruits is needed for a better understanding of the usefulness of these genotypes as genetic resource in breeding programs.

#### LITERATURE CITED

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