



Cultivar and Location Affect Early Vegetative Development of Quenepa (*Melicococcus bijugatus* Jacq.)

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Introduction

Quenepa, also known as Spanish lime, kenep or mamoncillo, is an important fruit in Puerto Rico, but most of the production is from naturalized trees growing along roads and in other uncultivated areas. Adapted to hot, arid regions on the southern coastal plains and Vieques Island, the potential exists for increased fruit production, more export, and greater use in processed products, but very little work has been done in cultivar selection and evaluation (Ledin, 1957; Jackson, 1967; Campbell, 1976; Cabrera and Brunner, 2006). The objective of this research is to evaluate new quenepa germplasm for superior quality and production characteristics.



Methods

Experimental orchards of 18 quenepa cultivars were established at the Lajas Agricultural Experiment Station (AES) on 16 November 2004, and at the Juana Díaz AES on 1 December 2004. With the exception of 'José Pabón', 'Perfa' and 'Tuna', these cultivars represent new germplasm that has never been evaluated. This germplasm was obtained by contacting the suppliers who harvest fruit from wild trees, locating the original trees with superior fruit quality and/or production characteristics, and grafting scions from selected clones onto the common rootstock 'Martínez'. The experimental design is a randomized complete block with three replications and three trees per experimental unit. The soil at Lajas is a Fraternidad clay (pH 6.0, 10.5 mg kg⁻¹ P, 121 mg kg⁻¹ K, 4896 mg kg⁻¹ Ca, and 1500 mg kg⁻¹ Mg) and at Juana Díaz a Jacaguas clay loam (pH 6.1, 75.5 mg kg⁻¹ P, 405 mg kg⁻¹ K, 3797 mg kg⁻¹ Ca, and 416 mg kg⁻¹ Mg). Trees were irrigated as needed, and fertilized every 3 months. Data were recorded for tree height and trunk diameter after establishment and at approximate 6 month intervals, and canopy volume was determined approximately 1.5 years after planting.



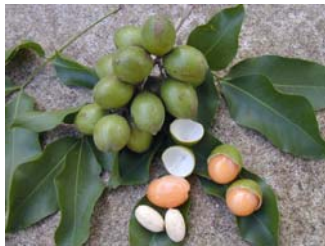
Juana Díaz planting, March 2005



Lajas planting, March 2006

Results

Significant differences were observed among cultivars for all growth parameters on all sampling dates, and between locations for the second and third sampling dates. Tree height, trunk diameter, and canopy volume were consistently greater at Juana Díaz, possibly due to the greater native soil fertility at this location (Table 1). 'Sabana Grande', 'Reyes', and 'Tuna' consistently had the greatest height, trunk diameter and canopy volume, while 'Alina', 'Ángel González' and 'María Flores' were consistently the smallest (Figs. 1-3). 'Alina' was not included in combined analyses because it was planted only at Lajas. 'Alina' was similar to 'Ángel González' for all measured growth parameters.



Fruit and foliage of 'Sasa' quenepa

Figure 1. Mean height of 17 quenepa cultivars at three sampling dates over two locations.

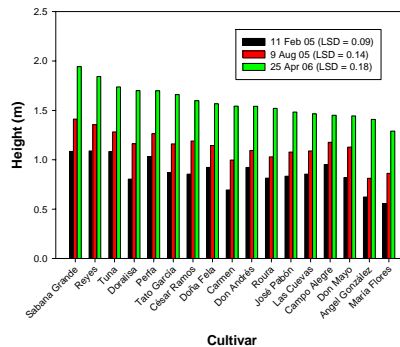


Table 1. Means for tree height, trunk diameter and crown volume at two sampling dates for quenepa trees at Juana Díaz and Lajas (average of 17 cultivars).

Location	Tree Height (m)		Trunk Diameter (cm)		Crown Volume (m ³)
	9 Aug 05	25 Apr 06	9 Aug 05	25 Apr 06	25 Apr 06
Juana Díaz	1.17a	1.72a	2.2a	4.5a	2.02a
Lajas	1.10b	1.43b	1.9b	3.5b	0.86b

Mean separation within each column by LSD at P < 0.05.

Figure 2. Mean trunk diameter of 17 quenepa cultivars at three sampling dates over two locations.

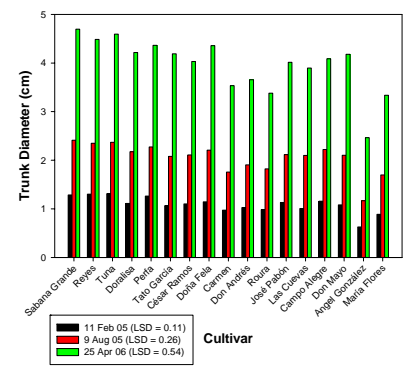
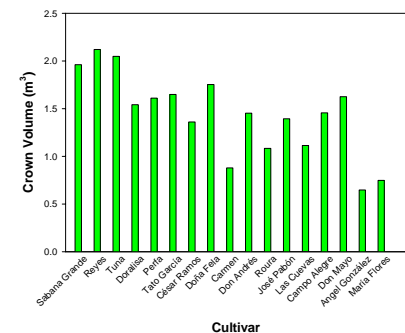


Figure 3. Mean crown volume of 17 quenepa cultivars over two locations (25 April 2006)



References

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