

EVALUATION OF 'ORO' AND 'TROMPO' CANISTEL (*POUTERIA CAMPECHIANA* BAEHNI) AT THE UNIVERSITY OF FLORIDA TROPICAL RESEARCH AND EDUCATION CENTER, HOMESTEAD

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Abstract. Fruit of two canistel selections SES#9680 and SES#9681 described in this paper as 'Oro' and 'Trompo', respectively, were evaluated at the Tropical Research and Education Center. Sixteen to 27 fruit were harvested from grafted trees on 8 Feb. 2001 and allowed to slowly ripen at room temperature (24-29°C). Fruit of 'Oro' and 'Trompo' were conical-shaped and had a deep yellow flesh and peel color. After they were harvested, 'Oro' fruit took 5 to 6 days and 'Trompo' took 4 to 18 days to ripen. The mean fruit weight for 'Oro' was 385.2 g at harvest and 350.3 g at ripening, an average of 9% moisture loss. Mean fruit length was 107.2 mm, diameter was 93.6 mm, and peel weight was 58 g, with 75.6% edible flesh, and total soluble solids content was 23.8°Brix. 'Oro' had an average of 2.1 seeds per fruit. In contrast, 'Trompo' had a mean fruit weight of 292.0 g at harvest and 255.6 g at ripening; an average of 12.6% moisture loss. Mean fruit length was 99.7 mm, diameter was 82.7 mm, and peel weight was 36.6 g, with 74.5% edible flesh, and soluble solids content of 25.3°Brix. 'Trompo' had an average of 2.5 seeds per fruit. The ripened flesh of both selections was slightly moist, very sweet, and had good flavor.

The canistel is commercially a minor fruit crop in Florida and the Caribbean region. This is partly due to the lack of selection and dissemination of superior cultivars and unfamiliarity to most of the U.S. population. However, its attractive color, high carotene content (0.32 mg/100 g fresh weight), moist flesh texture, and the sweet flavor of superior types increase the potential that canistel may be grown on a larger commercial scale in the future (Morton, 1983; Morton, 1987).

The canistel is a member of the Sapotaceae and is indigenous to the tropical lowlands of southern Mexico, Belize, Guatemala, and El Salvador (Martin et al., 1987; Morton, 1987; Mowry et al., 1967). Canistel trees appear best adapted to tropical and warm subtropical areas without freezing temperatures (Sauls and Campbell, 1980). Young trees are seriously damaged at 29°F (-2°C), although large trees may withstand a short time at as low as 23°F (-5°C) (Campbell et al., 1977).

Canistel was first introduced into the U.S. sometime prior to 1887 as trees were listed for sale by the Royal Palm Nursery catalog of 1887 (Royal Palm Nurseries, 1887; Morton, 1983; Morton, 1987). Morton (1983; 1987) and Popenoe (1974) report that large, productive seedling trees could be found growing in home plantings along the southeast coast and Keys of Florida during the 1940s and 1950s, and throughout the Caribbean in the 1920s.

From 1930 to 1968, numerous canistel seedlings and/or seed were introduced by researchers at the University of Florida Sub-Tropical Experiment Station (SES) (now called Tropical Research and Education Center = TREC) in Homestead. Over the past 33 years seeds and budwood from these SES introductions have been distributed to nurseries and individuals throughout Florida, California, the Caribbean, and Latin America.

In a previous evaluation of canistel cultivars and selections, SES#9680 ('Oro') fruit had a mean fresh weight of 395 g (190-715 g range), a mean of 1.7 seeds per fruit (1-4 range), an average seed weight of 12 g, and fruit/seed ratio of 19.4 (Wasielewski and Campbell, 1997). In contrast, selection SES#9681 ('Trompo') fruit had a mean fresh weight of 245 g (142-272 g range), a mean of 2.2 seeds per fruit (1-4 range), an average seed weight of 11.5 g, and fruit/seed ratio of 9.7.

Canistel is an attractive fruit that may be eaten fresh and as a component of desserts and milk shakes. Its high carotene content (0.35 mg/100 g pulp) (Morton, 1987), thin peel, and soft flesh may make extraction of the flesh and processing of this fruit relatively easy. Harvesting and handling of fruit for processing has potential to be mechanized, in contrast to the blemish-free fruit demanded for fresh markets. This paper describes the 'Oro' and 'Trompo' canistels, products of the TREC fruit improvement program.

Origin and Fruit Evaluation

In 1941, canistel seeds of unknown origin were introduced by the SES (SES#2364) and seven seedlings were planted at TREC in 1942. One of those seedlings produced superior fruit. Seeds from this tree were planted in 1954. From these seedlings, two superior types were selected and given SES numbers (#9680, #9681). Grafted trees on seedling canistel of SES#9680 and SES#9681 were then planted in 1968 and again in 1975 and described in this paper as the cultivars 'Oro' and 'Trompo', respectively. The Spanish name for gold is 'oro' and this name was chosen because of origin of the species and the color of the mature canistel fruit. As

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Table 1. Quality determinants for 'Oro' and 'Trompo' canistel fruit.

Parameter	'Oro'		'Trompo'	
	Mean	Range	Mean	Range
Days to ripen	6	5-6	11	4-18
Fruit length (mm)	107.2	97.2-114.0	99.7	83.0-111.7
Fruit diameter (mm)	93.6	83.7-103.1	82.7	68.9-96
Whole fruit weight at harvest (g)	385.2	194.6-496.6	292.0	226.3
Whole fruit weight at ripening (g)	350.3	280.7-452.7	255.6	132.2-387.2
Percent fresh weight loss during ripening (%)	9.4	6.9-11.1	12.6	6.1-22.3
Peel weight (g)	58.0	43.5-81.4	36.6	19.0-56.1
Percent edible flesh (g)	75.6	69.1-79.9	74.5	54.1-84.5
Flesh °Brix	23.8	22.0-26.8	25.3	20.4-31.2
Number of seeds	2.1	1-4	2.5	1-4
Seed weight (g)	12.3	9.0-16.0	13.0	6.0-17.1
Seed length (mm)	38.3	34.5-41.7	33.9	29.0-46.4
Seed width (mm)	31.4	26.2-39.2	31.9	18.9-35.8
Fruit/seed ratio	13.6	—	7.9	—

with 'Oro', the name 'Trompo' was chosen because of the specie's Latin American heritage. In addition, 'trompo' is Spanish for top, which the shape of this fruit resembles.

On 8 Feb. 2001, 16 to 27 mature fruit were harvest from single 'Oro' and 'Trompo' trees located at the TREC. Fruit maturity was indicated by uniform, bright orange-yellow peel color. Fruit were taken to the laboratory and immediately weighed and allowed to ripen at room temperature (24-29°C; 75-84°F). Upon ripening, the following measurements were made: whole fruit, peel, and seed weights, length and width, total soluble solids of the flesh (measured as °Brix), and peel and flesh color. Because the flesh of canistel is moderately dry, extracting enough liquid for testing the °Brix is difficult. Therefore, a sample from a mixture of 5 g of canistel flesh plus 5 ml deionized water was used to determine °Brix using a hand held refractometer. The percent fresh weight loss from harvest to ripening, percent edible flesh, and fruit ratio [whole fruit weight at ripening/(mean number of seeds × mean seed weight)] was calculated. Means and ranges for each parameter are reported.

Results and Discussion

The mean number of days from harvest to ripening was 6 and 11 d for 'Oro' and 'Trompo', respectively (Table 1). On average, 'Oro' fruit length and diameter were greater than those of 'Trompo'. Both cultivars have large fruit; however, mean fresh weight of 'Oro' at harvest and after ripening was about 100 g greater than that of 'Trompo'. 'Oro' fruit lost less fresh weight (9.4%) than 'Trompo' (12.6%) from harvest to ripening (Table 1). The mean number of seeds and seed weight for 'Trompo' fruit (2.5 seeds/fruit and 13.0 g) was slightly greater than that of 'Oro' (2.1 seeds/fruit and 12.3 g) and nearly twice the percentage of the fruit's weight (12.7%) as 'Oro' (7.4%). Peel weight was similar for the two cultivars. The percent edible flesh was also similar (74.5-75.6%) for 'Oro' and 'Trompo'. 'Oro' seed length (38.3 mm) was less than 'Trompo' (33.9 mm), and the width of 'Oro' (31.4 mm) slightly less than that of 'Trompo' (31.9 mm). Both cultivars were sweet (23.8-25.3

°Brix) and had moderately moist flesh with pleasant flavor. Flesh color at ripening was deep yellow for both cultivars. The fruit to seed ratio of 'Oro' (13.6) was nearly twice that of 'Trompo' (7.9). These values were slightly less than those observed previously (Wasielewski and Campbell, 1997).

Fresh weight, seed number, and seed weight that we observed are in general agreement with those found previously for 'Oro' and 'Trompo' (labeled TREC 9680 and TREC 9681; Wasielewski and Campbell, 1997). Yield information is lacking for 'Trompo' and was not documented for either cultivar in the present evaluation. However, Wasielewski and Campbell (1997) reported a yield of 125 kg per tree for 'Oro'.

Both cultivars have a good percentage of edible flesh (>74%), a paste-like dense flesh, and a deep yellow flesh color, which may be important in processing. A number of canistel cultivars have been selected and fruit quality evaluated (Wasielewski and Campbell, 1997). Further selection and evaluation of superior germplasm along with research into the postharvest handling, value-added processing, and marketing of this valuable fruit are warranted.

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