Cucurbita moschata Half-sib Families Collected in Puerto Rico and the Dominican Republic

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Half sib families from seed of 38 fruits originating from the Dominican Republic and 12 fruits from Puerto Rico were evaluated in replicated field trials in Puerto Rico from 1986 to 1988. In the Dominican Republic fruits were collected from farmer's field with the cooperation of the Centro Sur de Desarrollo Agropecuario (CESDA), San Cristobal, Dominican Republic. An attempt was made to collect a variety of fruit types with good pulp color (yellow-orange) and thickness. In Puerto Rico fruits were collected both from farmer's fields and markets. Fruits collected were meant to represent the types distinct in shape or skin color from the traditional Puerto Rican cultivar 'Borinquen'. 'Borinquen' from six different seed sources as well as some Puerto Rico Agricultural Experiment Station breeding lines (selected from 'Borinquen') were also included in the trials. Certain families in the first and second trials were re-evaluated in the second and third trials. Some Dominican families were eliminated due to poor germination or seedling vigor. Twenty-one to twenty three entries were evaluated in each of three trials in a randomized complete block design with three or four replicates. Three (trials 2 and 3) or four (trial 1) plants per plot were spaced 20 ft apart within rows and 25 ft apart between rows. Tropical genotypes of C. moschata are extremely large and sprawling plants with vines that easily reach 50 ft in length. To contain their growth, plants were wound around their identifying stake until female flowers appeared. Nevertheless, it was often difficult to distinguish between plants within a plot or even between plots at harvest.

From this very limited sample of genotypes we found nearly every shape and color fruit imaginable. Pear, oblong, ovate, oblancoellate, obovate, oval, cuneate, elliptic, gourd-shaped, globe, round, and flat fruits were observed among these families. Within families four or five different shapes were not uncommon. Puerto Rican consumers give little importance to fruit shape when purchasing pumpkin although round, globe, or flat shapes are preferred (1).

Skin colors ranged from nearly black to dark green to mottled green and white ("pinta" in Spanish) to mottled pale orange and white. However, not a single fruit of thousands evaluated had the buff color of 'Butternut'. In Puerto Rico skin color is somewhat important to consumers (the "pinta" color is preferred) but not nearly as important as pulp thickness and pulp color (1).

These families were very variable in terms of fruit size, yield per plant, number of fruit per plant, pulp color and pulp thickness. Mean family fruit size ranged from 2.4 kg to 6.4 kg. Some individual fruit weighed more than 10 kg. Average family yield per plant ranged from 3.8 kg to 47.1 kg. Mean number of fruit per plant varied from 1 to 9. Average family pulp thickness varied from 2.2 cm to 4.8 cm. Flesh color ranged from light yellow to dark orange.

Chi-square tests of independence in a sample of 842 fruits from all families...
indicated that there was an association between fruit shape and pulp color ($\chi^2 = 77.4$, degrees of freedom = 35, $P \leq 0.005$), between fruit shape and skin color ($\chi^2 = 146.4$, degrees of freedom = 28, $P \leq 0.005$), and between pulp color and skin color ($\chi^2 = 45.9$, degrees of freedom = 24, $P \leq 0.005$). Flat fruits were more often associated with dark green skin color than were other fruit shapes. Dark skinned fruits generally had good pulp color compared to other skin types.

Over all trials, number of fruits per plant was highly correlated with yield ($r=0.81$). Fruit size and pulp thickness were only intermediately correlated with yield ($r=0.42$ and 0.43, respectively). Increased fruit size was not associated with number of fruit per plant ($r=-0.06$). No correlation was found between pulp color and pulp thickness ($r=0.03$).

Literature Cited