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'Najd I' and 'Najd II', Two Sour-sweet Melon Cultivars

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'Najd I' and 'Najd II' are two sour-sweet melons (*Cucumis melo* L.) released from the breeding program at the National Agriculture and Water Research Center under the auspices of the Saudi Arabia/USA Joint Economic Commission.

Tolerance to high summer temperatures and high levels of salinity in irrigation water are important goals for melon breeding in Saudi Arabia. These tolerances must be incorporated into local sour-sweet-type melons. Sour-sweet may be described as a sweet taste followed by a sharp acidic aftertaste. Other important goals are suitability for shipping and storage ability and uniform size, shape, and color. 'Najd I' and 'Najd II' are the first two cultivars from this program (Fig. 1).

Origin

'Najd I' and 'Najd II' originated from crosses made in 1983 between a wild *C. melo* (Fig. 2) and a collection of local melons from various locations in Saudi Arabia. The wild melon was collected from the Eastern Province, near the Gulf, an area with salty water (≥ 4 dSm), high relative humidity (averaging $\approx 90\%$), and summer temperatures of $\approx 40^\circ\text{C}$. It was found to be resistant to salinity and high temperature. Local melons vary in size, shape, and color (Fig. 3), but have the desired sour-sweet taste in common. Local melons also have relatively thin flesh, averaging 2.2 cm in thickness. They have poor shipping quality and short shelf life and must, therefore, be harvested green or sold locally within 2 to 3 days if harvested ripe.

Crosses were made with 47 local melon plants used as females. (When the wild melon was used as the female, F_1 fruits tended to crack.) Twenty seeds were taken from each female plant and planted for the F_2 generation, which consisted of 940 plants. Thirty-two F_2 plants were selected and used to produce an F_3 population of 640 plants. Forty seeds from each of 10 F_2 plants were selected for an F_3 population of 400 plants. From this

group, seven outstanding plants were selected and 40 seeds were taken from each. In the F_4 population, two sister lines were established, based on flesh color (white and orange), and parallel selection was continued through F_8 . The white flesh line Q-16-A was reproduced in F_9 by open-pollination and named 'Najd I'. The orange flesh line Q-16-

B was also reproduced one more generation and named 'Najd II' (Fig. 4).

High-temperature tolerance was indicated by satisfactory growth in July and August, when maxima average 44°C and minima average 27°C . Salinity tolerance was evaluated, with the use of irrigation water averaging 6 to 7 dSm.

Description

'Najd I' has large spherical fruits, averaging ≈ 5 kg, with thick white flesh (≈ 4 cm). The skin is smooth, similar to that of the 'Honey Dew' in appearance, and develops yellowish spots when mature. Fruits are uniform in size and color and have the characteristic sour-sweet taste. Plants are vigor-

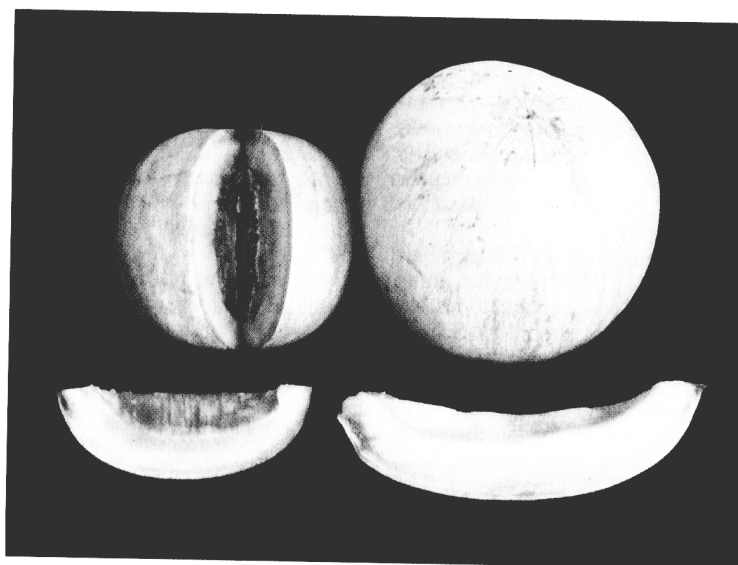


Fig. 1. (left) 'Najd II', (right) 'Najd I'.



Fig. 2. Wild melons, small size and uniform shape and color.

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Table 1. Performance of fruit of several melon cultivars as compared to 'Najd I' and 'Najd II' in Riyadh, Saudi Arabia.

Cultivar	Wt (kg)	Flesh thickness (cm)	Diam (cm)	Soluble solids concn (%)	Total yield (Mg·ha ⁻¹)
Najd I	4.9	3.9	22	8	11.0
Najd II	3.0	3.1	19	8	10.3
Local	5.0	1.9	36	4	8.5
PSR 8676	2.5	3.8	17	11	11.2
Basusi	1.6	3.0	13	5	7.2
Ananas	2.0	3.0	11	12	9.2
Yellow Canary	2.4	5.0	15	12	10.3

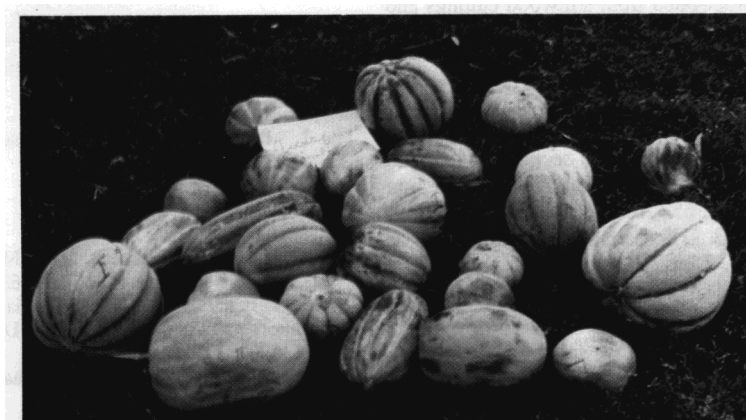


Fig. 3. A collection of local melon, variation in size, color, and shape.

ous, and leaves are broad. 'Najd I' has good keeping quality and can be shipped in open trucks, up to 1000 km, and held up to 10 days after shipping. It matures in 84 days and is resistant to sudden wilt, a destructive disorder of melons for which the cause is obscure.

'Najd II' has spherical fruit, smaller than 'Najd I', with orange flesh averaging 3.1 cm in thickness. Skin color is similar to that of 'Honey Dew', with sparse netting and yellowish spots at maturity. It is tolerant to heat and salinity. Plants grow vigorously and produce large, broad leaves. It is much later than 'Najd I', maturing in 140 days. It also has similar shipping quality to 'Najd I', but will keep up to 20 days (Table 1).

Availability

Small quantities of seed are available for breeders on request from the National Agriculture and Water Research Center, P.O. Box 17285 Riyadh, Saudi Arabia 11484.

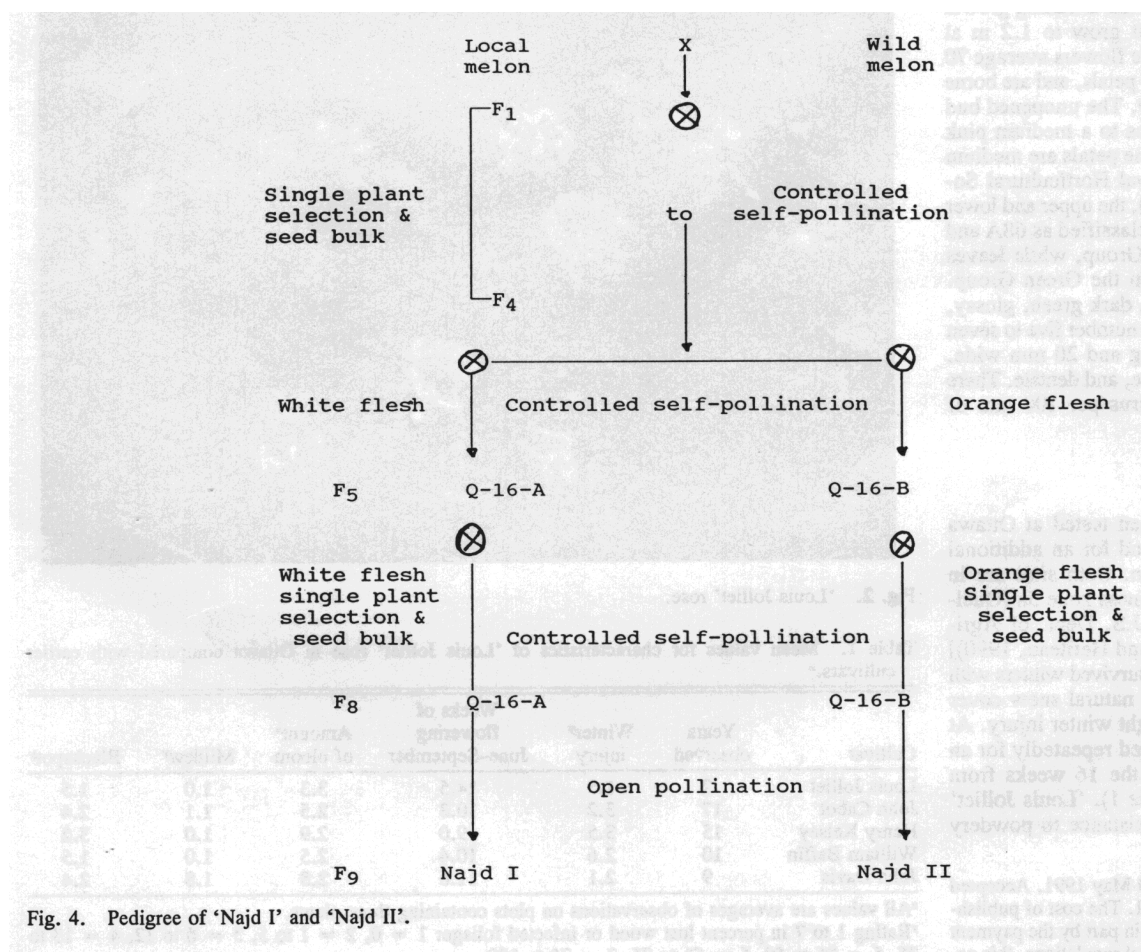


Fig. 4. Pedigree of 'Najd I' and 'Najd II'.