'Gylan'—A Gynoecious Muskmelon

Yigal Cohen, Helena Eyal, and Avraham Cohen

Department of Life Sciences, Bar-Ilan University, Ramat-Gan 52900, Israel

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The gynoecious muskmelon (*Cucumis melo* L.) breeding line GY-4 was derived from a segregating population (gynoecious: gyno-monoecious) of Wisconsin 998 (Peterson et al., 1983). Line GY-4 is a stable, gynoecious line carrying two pairs of recessive genes for gynoecy: *g* and *m* (Kenigsbuch and Cohen, 1990). Line GY-4 was crossed with line 36 to introduce resistance against downy mildew [*Pseudoperonospora cubensis* (Berk and M.A. Curtis) Rostovtzev], powdery mildew [*Sphaerotheca fuliginea* (Schlechtend.: Fr.) Pollaci], and fusarium wilt [*Fusarium oxysporum* f.sp. *melonis* (Syder and Hansen)]. Line 36 was developed from a cross between plant introduction 124111F, which carries the resistance genes *Pcl* and *Pc2* against downy mildew, *Pm3* and *Pm6* against powdery mildew, and *Fom1* and *Fom2* against fusarium wilt (Cohen and Eyal, 1987; Kenigsbuch and Cohen, 1989a, 1989b; Pitrat, 1990; Thomas et al., 1987a), and 'Hemed', which was, at the F₅, outcrossed to 'Perlita'. The F₂ population of GY-4 × 36 segregated for the following sex types: monoecious, and romonoecious, gynomonoecious, trimonoecious, hermaphroditic, and gynoecious.

The proportion of gynoecious plants among the F₂ population was 3:64 (Kenigsbuch and Cohen, 1990). F₂ gynoecious plants were propagated vegetatively from cuttings, sprayed with AgNO₃ (Kenigsbuch and Cohen, 1987; Peterson et al., 1983), and selfed. A few of the F₂ plants gave rise to gynoecious F₃ progeny (Kenigsbuch and Cohen, 1990). Some F₃ gynoecious plants remained homozygous gynoecious through the F₇ generation. One of the F₇ progenies, E6/4/4, which had good horticultural traits, was selected for further use and named 'Gylan' (Figs. 1 and 2). Examining all flowers and flower buds of a vine daily for 3 months was necessary in this breeding program to obtain a reliable indication of sex type.

Description

'Gylan' plants are vigorous, with typical muskmelon foliage and vining habits. The population shows no segregation for either sex expression (all gynoecious) or fruit shape. Plants produce pistillate flowers on every internode, starting from the third or fourth one. Fruit are round to slightly oval; their diameter

Fig. 1. 'Gylan' muskmelon breeding line pedigree.

ranges from 12 to 14 cm and weight ranges from 0.9 to 1.1 kg. Fruit have vein tracts and moderately netted skin. The flesh is orange, sweet, and aromatic. 'Gylan' muskmelon is resistant to pathotype 3 of *Pseudoperonospora cubensis* (Thomas et al., 1987b) and races 1 and 2 of *Sphaerotheca fuliginea*. We did not evaluate its resistance to fusarium wilt.

Performance

'Gylan' produced good F₁ hybrid fruit with the and romonoecious 'Vedrantais' (Fig. 3) and 'Tam-Uvalde' (Fig. 4). F₁ hybrid plants were all monoecious (Kenigsbuch and Cohen, 1990).

'Gylan' plants can be propagated by inducing perfect flowers with three or four applications of 200 to 300 ppm AgNO₃ or Ag₂(S₂O₃)₂ (silver thiosulfate) beginning at the five- to six-leaf stage and successively at weekly intervals. Perfect flowers produced can be used for self- or sib-pollination (Kenigsbuch and Cohen, 1987; Peterson et al., 1983). Seed produced this way yielded gynoecious plants in the field.

Availability

Interested breeders and seed producers may contact Y.C. or The Research Authority, Bar-Ilan Univ., Ramat-Gan 52900, Israel.

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Fig. 2. 'Gylan' muskmelon fruit of a single vine.

Fig. 3. F₁ hybrid 'Gylan' × Vedrantais (gynoecious × andromonoecious) muskmelon fruit. Fruit diameter = 11 to 13 cm; fruit weight = 0.8 to 1 kg.

Fig. 4. F₁ hybrid 'Gylan' × 'Tam-Uvalde' (gynoecious × andromonoecious) muskmelon fruit. Fruit diameter = 12 to 14 cm; fruit weight = 1 to 1.2 kg.

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