

Homozygous, Monoecious, Virescent Melon C879-J3

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The discovery of a melon virescent (*Cucumis melo* L.) marker in a 1967 field nursery led to the development and release of C879-J1 and J2 germplasm in 1984 (Nugent, 1987). At that time, C879-J2 was segregating for monoecious (A) and andromonoecious (a) flowering habits. Line C879-J3 was developed from C879-J2 through six generations of selection for uniform flowering and fruit type. It was approved for release in 1991 by the Agricultural Research Service, U.S. Dept. of Agriculture. C879-J3 supplies public and private muskmelon breeders with improved homozygous, monoecious, virescent germplasm for developing inbred lines and hybrid cultivars.

Origin

The virescent marker line was developed from a complex series of crosses and selections involving the cultivars Mainstream, Rocky Ford, Netted Gem, PMR 450, Hearts of Gold, Planters Jumbo, Georgia 47, and PMR 6 and plant introductions 124111, 124112, 164323, and 193495 (Hoffman and Nugent, 1973; Nugent, 1987). The original plant was discovered by C.F. Andrus in a field nursery in 1968, given the accession number C879, and increased by self-pollination. These original mutant seedlings (1969) were chlorophyll-deficient, and 95% of them died. The surviving seedlings developed chlorophyll slowly but grew into nearly normal plants. I made phenotypic selections and intercrosses to improve its horticultural quality and to add the monoecious flowering habit. C879-J1 and J2 were selected from C879 made in 1984. Subsequently, C879-J3, a homozygous, monoecious-flowering segregant, was selected from C879-J2 in 1989, after five cycles of fruit-to-row recurrent selection for flowering habit.

Description

Plants of C879-J2 have survival rates of 75% to 80% and produce several 1.6-kg, oval, 14×16.5-cm, high-quality sutured fruit. Their cream-colored flowers fade to white and have

yellow centers and orange stigmas. Yields of these C879-J2 plants are similar to the high-yielding parent cultivar Mainstream, with four to eight fruit per plant. C879-J3 fruit (Fig. 1) have a unique yellow flesh, with occasional orange streaks, which may be attributed to the virescent gene. C879-J3 is highly resistant to powdery mildew [*Sphaerotheca fuliginea* (Schlecht ex. Fr.) Poll.] and moderately resistant (reaction type 2) to downy mildew [*Pseudoperonospora cubensis* (Berk. & Curt.) Rostow] under natural epiphytotic conditions at Charleston, S.C.

Uses

This virescent mutant (Hoffman and Nugent, 1973; Nugent, 1987) has been used in gene-flow and pollination studies (Handel, 1982; Nugent and Hoffman, 1981) and in hybrid-seed production and species-crossing studies (Nugent, 1980, 1984; Nugent and Bhella, 1988). We have been using this line as a labor-saving device since 1969. Many hybrid seedlings can be produced in isolation (at least 150 m from any other melon) when 15-m-long pollinator rows are alternated with virescent marker rows. When seed harvested from the fruit of virescent plants are planted, at least 5% of the seedlings are normal green, which indicates that they are hybrids. C879-J3 produces an average of 8% hybrid seedlings, with a low of 0% and a high of 47%.

Culture

Because of the weak initial growth, direct seeding in field plots is not recommended. To ensure survival of virescent seedlings, seed should be sown in cellpacks or peat-pellets. A recent experiment showed that when C879-J3 seed were planted in Accelerated Propagation System-24 (Gardener's Supply Co., Burlington, Vt.) and filled with Metro-Mix 360 (Grace-Sierra, Milpitas, Calif.), seedlings were ready for transplanting in 2 weeks. With other procedures, growth is delayed by 7 to 10 days as compared to other lines.

Availability

Samples of this accession are available from P.E.N. on a pro-rata basis to breeders and other scientists. Seed recipients are asked to give appropriate recognition of the germplasm source if it is used in developing a new germplasm, parental line, or cultivar.

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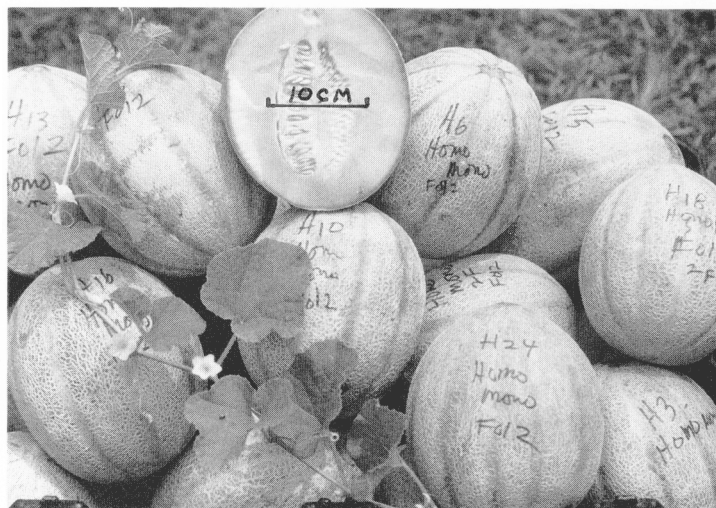


Fig. 1. Vine, flowers, and fruit of the C879-J3 melon line. Means were fruit weight, 1.6 kg; diameter, 14.0 cm, and length, 16.5 cm.

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