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W1, W3, W4, W5, and W6 Multidisease-resistant Muskmelon Breeding Lines¹

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Muskmelon (cantaloupe), *Cucumis melo* L., lines W1, W3, W4, W5, and W6 released by the Southern and Northeastern Regions, Agricultural Research, Science and Education Administration, U.S. Department of Agriculture represent multidisease-resistant advanced breeding lines with high-quality attributes suited to the development of cultivars for long-distance shipping as well as for small farm and home garden production. They were selected under severe epiphytotic conditions in South Texas for resistance to downy mildew, *Pseudoperonospora cubensis* (Berk.) Rostow.; powdery mildew, *Sphaerotheca fuliginea* (Schlecht. ex Fr.) Poll.; *Alternaria* leaf-blight, *Alternaria cucumerina* (Ell. & Ev.) Elliot; and watermelon mosaic virus 1 (WMV-1). In extensive, replicated, repeated field studies, these lines were consistently found to possess a high level of resistance to all of these diseases, enabling production of a marketable crop under severe disease stress, often without application of fungicides. W4, W5, and W6 exhibit a higher level of resistance to downy mildew and *Alternaria* leaf-blight than do the more moderately resistant W1 and W3 lines. All 5 lines are highly resist-

ant to powdery mildew and have excellent resistance to natural infections of WMV-1.

Origin

These breeding lines were derived from complex pedigrees developed by R. E. Webb, Vegetable Laboratory, Beltsville Agriculture Research Center, Beltsville, Maryland involving the initial cross between WMV-1 resistant selections from the wild type *Cucumis melo*, PI 180280 (1, 2, 3), and the powdery mildew and *Alternaria* leaf-blight tolerant cultivar, 'PMR 45'. Greenhouse-tested resistant plants were backcrossed to 'PMR 45' and outcrossed to commercial cultivars ('Perlita', 'Dulce', 'Edisto', and 'Georgia 47') resistant or tolerant to downy mildew; *Fusarium* wilt, *Fusarium oxysporum* f. sp. *melonis* (L.&C.) Snyder & Hansen; *Alternaria* leaf-blight; and races 1 and 2 of powdery mildew 4 times and then alternately handselfed and interpollinated, screened for disease resist-

ance, and open pollinated for 5 generations. Sequential selections for multiple disease resistance and horticultural characteristics were made from field-planted mass populations for 10 generations by C. E. Thomas, U. S. Fruit, Vegetable, Soil and Water Laboratory, Weslaco, Texas.

Description

All lines have moderately sized, vigorous vines. W1 and W5 mature 5–7 days later than do W3, W4, and W6. Fruit are well covered with an attractive prominent net, vary in size from 0.68 to 2.29 kg, and are round to oval-oblong (Fig. 1). Average soluble solids at full slip maturity range from 9.0 to 11.0%. Seed cavities are dry, and flesh color ranges from light to deep orange. Fruit of lines W1 and W3 slip at full ripeness and are suited to small farms for local markets and home gardens; those of W4, W5, and W6 slip on approaching maturity and keep well for long-distance shipping.

Availability

Breeder seed is available on a pro-rata basis to both public and private breeders who request it. Requests should be addressed to the senior author at USDA-SEA-AR Subtropical Fruit and Vegetable Research, P.O. Box 267, Weslaco, TX 78596.

Literature Cited

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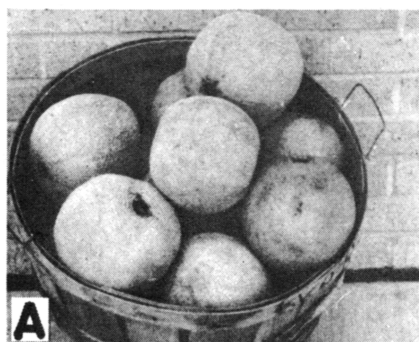


Fig. 1. Fruits of lines W1 (A) and W3 (B).

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