Wisconsin 1983 Cucumber

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Wisconsin 1983 cucumber (Cucumis sativus L.) was released in Feb. 1984 by the USDA and the Univ. of Wisconsin--Madison to provide breeders with a line having high fruit quality and multiple-disease resistance to produce hybrid cultivars and germplasm for breeding purposes. (Resistance identified in green house evaluation for anthracnose and downy mildew was confirmed in field tests conducted by E.V. Wann, U.S. Vegetable Laboratory, ARS/USDA, Charleston, S.C.)

Additional sources of resistance to powdery mildew from PI 212233 and cucumber mosaic virus resistance from Wisc. SMI-18, which traces to 'Chinese Long' and 'Tokyo Long Green'. The gynoecious sex expression of WI 3122 was obtained from PI 220860, parthenocarpy from the Dutch glasshouse cv. Spotvrije, and nonbitter fruit character from a Dutch accession ILG 58049. WI 1983 also has resistance to angular leaf spot [Pseudomonas lachrymans (E.F. Smith and Bryan) Carsner], and Fusarium wilt [Fusarium oxysporum (Schlecht.) Synd. & Hans. f.sp. cucumerinum Owen]. Sources of these disease resistances are derived from complicated lineages that can be obtained from the authors on request.

Two forms of the line were released: WI 1983G (gynoecious) and WI 1983A (andro­monoecious). Wisconsin 1983 is a parent of 2 recently released USDA hybrids, 'Fremont' (WI 1983G x Clinton) and 'County Fair 83' (WI 1701 x WI 1983A). Limited seed of 'Fremont', a commercial processing type, and 'County Fair 83', a home garden cultivar, were available in 1985.

Origin

Wisconsin 1983G originated from a cross, made in 1971 at the Univ. of Wisconsin, between inbreds WI 3121 and WI 3122, each with a complicated pedigree involving domestic and exotic germplasm. Involved in the parentage of WI 3121 was GY-14 from Clemson Univ. in South Carolina, which has resistance to anthracnose [Colletotrichum lagenarium (Ross.) Ellis & Halst], downy mildew [Pseudoperonospora cubensis (Berk. & Curt) Rostow], and powdery mildew [Sphaerotheca fuliginea (Schl. ex Fr.) Poll.] provided by use of PI 197087 in the parentage. In the pedigree of WI 3122, there are additional sources of resistance to powdery mildew from PI 212233 and cucumber mosaic virus resistance from Wisc. SMI-18, which traces to 'Chinese Long' and 'Tokyo Long Green'. The gynoecious sex expression of WI 3122 was obtained from PI 220860, parthenocarpy from the Dutch glasshouse cv. Spotvrije, and nonbitter fruit character from a Dutch accession ILG 58049. WI 1983 also has resistance to angular leaf spot [Pseudomonas lachrymans (E.F. Smith and Bryan) Carsner], and Fusarium wilt [Fusarium oxysporum (Schlecht.) Synd. & Hans. f.sp. cucumerinum Owen]. Sources of these disease resistances are derived from complicated lineages that can be obtained from the authors on request.

The andromonoecious companion line (WI 1983A) was developed by using WI 2189, a bacterial wilt [Erwinia tracheiphila (E.F. Smith) Holland] resistant, hermaphrodite line, as the donor parent in initial matings with WI 1983G. Bacterial wilt resistance in WI 2189 came from accession PI 200818 from Burma and hermaphroditic sex from Polish breeding line K743. After 5 direct backcrosses to WI 1983G and 3 subsequent generations of self-pollination, the andromonoecious line (WI 1983A), was established and increased under screen isolation. It differs phenotypically from WI 1983G 3 subsequent generations of self-pollination, the andromonoecious line (WI 1983A), was established and increased under screen isolation. It differs phenotypically from WI 1983G only in sex expression and resistance to bacterial wilt resulting from a tight linkage between the gene controlling resistance (Bw) and the recessive m gene for bisexual sex expression (1). Consequently, WI 1983A is homozygous dominant for bacterial
wilt resistance and will thus transmit resistance to its hybrid progeny.

Description

Vines. Foliage is vigorous, dark green, indeterminate, and multiple branching.

Flowering and fruiting. WI 1983G normally bears only pistillate flowers (98–100% gynoecious), with occasional staminate flowers borne on the lower nodes (nodes 1 to 3). Fruits (Fig. 1) are white spined, non-bitter, slightly tapered to the blossom end, with a length : diameter ratio of 2.8 to 2.9. WI 1983A bears both staminate and hermaphroditic flowers which produce typically small, round fruits (5 to 8 cm in diameter at mature seed stage).

Processing quality. Fruit color and brining quality of WI 1983G has been acceptable in 3 years of testing in Wisconsin, Ohio, and North Carolina. Plants are parthenocarpic and will bear seedless fruits if isolated properly from pollen-bearing cucumbers.

Availability

Seed of WI 1983G and 1983A from plants under screen isolation cages may be secured by addressing requests to J.E. Staub, ARS/USDA, Dept. of Horticulture, Univ. of Wisconsin, Madison, WI 53706.

Literature Cited