Registration of MSIRI 3B Streak-Resistant Maize Germplasm

MSIRI 3B maize (Zea mays L.) (Reg. no. GP-328, PI 587038) was developed by the Mauritius Sugar Industry Research Institute (MSIRI), Reduit, Mauritius, and released in 1992 (1). It is a short-statured and early-maturing (55 d to 50% anthesis) tropical composite with orange-yellow flint kernels.

MSIRI 3B is the result of six cycles of recurrent mass selection in MSIRI 3A for resistance to Maize Streak Virus (MSV) (2). MSIRI 3A is a composite variety derived from 13 ecotypes collected from the island of Rodrigues in Mauritius. Selection was carried out in the field under artificial epiphytotics by the hot-spot method: a high level of inoculum was maintained by continuously cropping a susceptible variety around and within the selection plot. The disease was transmitted naturally by insect vectors of the genus Cicadulina. In the composite variety, only plants showing one or few short, discontinuous streaks on one or two leaves were selected; all others were removed prior to anthesis. This procedure eliminated the problem of disease escape and ensured that only truly resistant plants were selected. About 5000 plants were used in each cycle. The number of selected plants varied from about 500 in C0 to about 4500 in C6 as the percentage of resistant plants in the composite increased with each selection cycle.

In two trials with six replicates in Mauritius and in three others with four replicates in Rodrigues, MSIRI 3B showed more resistance to MSV than EV 84 SR BC 4, a variety improved for MSV resistance by the International Institute of Tropical Agriculture (IITA), Nigeria. On a symptom severity scale ranging from 0 to 9 (0 = immunity, 9 = susceptibility) and under artificial epiphytotics, C6 yielded 15 to 30% more grain than C0 (3). In the absence of MSV, in two trials with four replicates in Mauritius and another in Rodrigues, CE rated 2.1, Qj rated 7.7, A4 Pearl Millet

Registration of Cytoplasmic Male-Sterile Inbred Tift 85D2A4 Pearl Millet

Tift 85D2A4 pearl millet [Pennisetum glaucum (L.) R. Br.] cytoplasmic–nuclear male-sterile parental inbred line (Reg no. GS-1, PI 591427) was cooperatively released by the USDA-ARS and the University of Georgia Coastal Plain Experiment Station in April 1994.

The A4 cytoplasm was transferred from a wild subspecies of pearl millet (assigned Tifton number PS34) [P. violaceum (Lam.) Rich.; syn. P. americanum subsp. monodii (Maire) Brunken] obtained from A. Lambert, a pearl millet breeder in Senegal (1). Tift PS34 was pollinated with Tift 23B and then backcrossed to Tiff 23B (as male parent) until the BC2 generation. A cytoplasmic-nuclear male-sterile parental inbred line (Reg no. GP-155, P1587032) was used to maintain the sterility of Tift 85D2A4.

The A4 male-sterility-inducing cytoplasm produced no male-fertile revertants similar to those previously observed (1). Male- and female-fertile Tift 85D2A4 plants in adjacent plots exhibited quantities of fertile revertants similar to those previously observed (1).

The A1 male-sterility-inducing cytoplasm contaminates all commercial pearl millet forage and grain hybrids around the world. The A1 cytoplasm produces male-fertile revertants that can contaminate hybrid production fields, if not carefully rogued. The A4 cytoplasm makes available a stable, male-sterility-inducing cytoplasm for commercial hybrid seed production.

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