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 epidemics 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 epidemics, Ce rated 1.8, EV 84 SR BC 4 rated 5.3. In the absence of MSV, in two trials with four replicates in Mauritius and another in Rodrigues, Ce yielded 15 to 30% more grain than C0 (3). It is expected to be useful in the islands of the same MSV strains as in Mauritius may be present. The composite has already been successfully adopted on the island of Rodrigues.

Breeder seed will be maintained by the MSIRI. Quantities may be obtained from the corresponding author. Recipients of seed are requested to acknowledge the germplasm contributors to the development of this cultivar.

N. Govinden*

References and Notes


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REGISTRATION OF GENETIC STOCKS

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 Tift 85D2A1 plants in adjacent plots exhibiting revertants similar to those previously observed.

The A1 male-sterility-inducing cytoplasm is used to produce 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.

Breeder seed of this parental line will be maintained by the author. Small quantities of seed are available upon request that appropriate recognition be made if this cytoplasm or inbred contributes to the development of a new cultivar.