

REGISTRATION OF FIVE PEARL MILLET GERMPLASM SOURCES WITH STABLE RESISTANCE TO DOWNY MILDEW

FIVE pearl millet [*Pennisetum glaucum* (L.) R.Br.] germplasm accessions; ICML 12 (IP 6118, P7) (Reg. no. GP-15, PI 537577), ICML 13 (IP 8215, SDN 503) (Reg. no. GP-16, PI 537578), ICML 14 (IP 4984, 700251) (Reg. no. GP-17, PI 537579), ICML 15 (IP 5082, 700516) (Reg. no. GP-18, PI 537580), and ICML 16 (IP 8198, 700651) (Reg. no. GP-19, PI 537581); with stable resistance to downy mildew caused by *Sclerospora graminicola* (Sacc.) Schroet. in India, Burkina Faso, and Senegal were identified and made available by the ICRISAT in 1985. These lines also possess moderate levels of resistance to rust caused by *Puccinia penniseti* Zimm. in India.

ICML 12 was selected at the ICRISAT Center from bulk germplasm obtained from Mali and ICML 13, 14, 15, and 16 were selected from bulk germplasm obtained from Nigeria. During 1976 and 1977, bulked seed from the original sources were planted and tested for downy mildew resistance at 8 to 12 locations in India, Burkina Faso, and Senegal in the International Pearl Millet Downy Mildew Nursery (IPMDMN). Percent downy mildew severity was recorded using a 1 to 5 rating scale (1). In the 1977 rainy season, single plant selections of downy mildew-free plants were made, and the progenies were evaluated during the 1977-1978 post-rainy season. Progenies with similar height, maturity, panicle shape and size, and seed color were selected. Bulked seed from selfing each accession were tested in the IPMDMN in the 1978 rainy season. The seed was maintained by sibbing phenotypically similar, disease-free plants in the downy mildew nursery at the ICRISAT Center. Testing in the

IPMDMN was continued each year through 1983. High levels of downy mildew resistance were shown by these accessions across locations from 1976 to 1983 (downy mildew severity on accessions ranged from <1 to 7% as compared to 42 to 69% on the susceptible check NHB-3 across the tests). In 1982 and 1983 these accessions were also evaluated for their rust reactions at two locations in India, ICRISAT Center and Bhavanisagar, where rust occurs in moderate to severe form every year. The accessions developed from 14 to 18% mean rust severity, compared to 33% in the susceptible check.

ICML 12, 13, 14, 15, and 16 are the first pearl millet accessions identified as having stable resistance to downy mildew. At the ICRISAT Center they are 1.5- to 2-m tall, produce a moderate number of tillers (2 to 4), flower 50 to 60 d after planting, and have panicles 22 to 40-cm long. Seed color is grey to grey brown; seed shape is globular, hexagonal, obovate, or lanceolate; and seed mass ranges from 6.1 to 7.8 g per 1000 seed.

Seed stocks of ICML 12, 13, 14, 15, and 16 are being maintained and distributed by ICRISAT, Patancheru, A.P. 502 324, India.

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References and Notes

1. Singh, S.D. 1983. Variable cultivar response to metalaxyl treatment in pearl millet. *Plant Dis.* 67:1013-1015.
2. Cereals Program, ICRISAT, Patancheru. A.P., 502 324, India. Submitted as Journal Article no. 879 by ICRISAT. Registration by CSSA. Accepted 31 Jan. 1990. *Corresponding author.

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