

Registration of Pearl Millet Parental Lines ICMA 89111 and ICMB 89111

ICMB 89111 (Reg. no. PL-34, PI 599191) pearl millet [*Pennisetum glaucum* (L.) R. Br.] is the maintainer line of ICMA 89111 (Reg. no. PL-35, PI 599192). ICMA 89111 and ICMB 89111 were released in 1997 by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Andhra Pradesh, India.

The male-sterile line, ICMA 89111, derives its A1 cytoplasm from ICMA-1 (1). ICMB 89111 was developed by crossing 843B (BKM 2068) with a high-tillering inbred line resistant to downy mildew [caused by *Sclerospora graminicola* (Sacc.) J. Schröt.] derived from a cross between a Gero New Strain and an S₃ progeny from Saria Synthetic, both from western Africa. The 843B was introduced from Fort Hays Experiment Station, Kansas State University, in the USA. The parental cross for ICMB 89111 was made during the 1983 dry season, and the F₁ was planted in the 1983 rainy season. Pedigree selection was made for high grain yield, high tillering, large seed size, good exertion, and increased downy mildew resistance at Patancheru, which subsequently produced a maintainer F₆ progeny. Its male-sterile hybrid developed onto 861A, which derives its cytoplasm from ICMA-1, and the F₇ progeny were established as an A-B pair during the 1987 rainy season. Seven generations of backcrossing using bulk pollen from the maintainer line and concurrent pedigree bulk breeding in the maintainer line produced the male-sterile line ICMA 89111 and its maintainer counterpart ICMB 89111. ICMA 89111 is similar to ICMB 89111 for all characteristics except for the male sterility and earlier maturity (1 to 2 fewer days to reach 50% flowering).

In yield trials conducted in 11 year × location environments in India, the dwarf male-sterile line, ICMA 89111, had 1.94 t ha⁻¹ mean grain yield, 17% higher than the dwarf commercial male-sterile line, ICMA-1 (2). ICMA 89111 had a mean plant height of

1.1 m and required 54 d to 50% flowering, which were similar to ICMA-1. ICMA 89111 had 3.7 panicles plant⁻¹ (85% higher than ICMA-1) and 1000-seed mass of 8.7 g (26% higher than ICMA-1). Downy mildew incidence in a field downy mildew nursery and a greenhouse inoculation test at Patancheru varied from 3 to 5% in ICMA 89111, compared with 40 to 42% in ICMA-1. General combining ability of ICMA 89111 for grain yield is similar to that of ICMA-1. Due to its excellent tillering ability, ICMA 89111 has good potential for breeding forage hybrids as well.

The male sterility of ICMA 89111 is stable across seasons and sites. ICMB 89111 is a prolific pollen producer. ICMA 89111 has stigmas that remain receptive for 3 to 4 d, similar to ICMA-1. It has thin stems, with green stem bases. Anther color is light brick. Panicles are semicompact, candle-shaped, and short (16 to 18 cm). Seeds have globular shape and gray color.

Seed of ICMA 89111 and ICMB 89111 will be maintained by ICRISAT Center, Patancheru. Small quantities of seed will be provided upon request.

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References and Notes

1. Anand Kumar, D.J. Andrews, R.P. Jain, and S.D. Singh. 1984. ICMA-1 and ICMB-1 pearl millet parental lines with A1 cytoplasmic-genic male sterility system. *Crop Sci.* 24:832.
2. Rai, K.N., and A.S. Rao. 1994. Performance of three diverse male-sterile lines in pearl millet. *Crop Improv.* 21:1-8.
3. ICRISAT Center, Patancheru 502 324, AP, India. Journal Article no. 2092. Registration by CSSA. Accepted 31 Jan. 1998. *Corresponding author (k.raai@cgnet.com) (1998 only: krai@unlvm.unl.edu).

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