

medium-loose head types that discourage damage by the corn earworm [*Helicoverpa zea* (Boddie)], and GT-IR6 also has excellent panicle exertion.

The three germplasm lines are similar to previous releases in their reaction to leaf diseases and sustain less leaf-feeding damage by the fall armyworm (1.5 vs. 1.9). GT-IR7 demonstrates resistance to the sorghum midge that is equivalent to previous releases (1.70 vs. 1.75), while midge ratings of GT-IR6 and GT-IR8 are slightly higher, but have significantly more resistance than the commercial hybrid checks (<3.0 vs. >5.0). Replicated experiments of test crosses with related testers, over a 3-yr period, produced yields that were 65 to 75% of the average for commercial hybrids and yields of GT-IR6 and GT-IR7 test crosses outyielded those of previous releases by more than 10%.

Breeder seed of these germplasm lines will be maintained by the author and can be obtained in small quantities upon request. It is requested that appropriate recognition be made of the source of these germplasm lines when they contribute to the development of a line or hybrid.

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#### References and Notes

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### Registration of ICMP 94001 Pearl Millet Germplasm

ICMP 94001 pearl millet [*Pennisetum glaucum* (L.) R. Br.] (Reg. no. GP-37, PI 597748) is a mass-selected Cycle-1 bulk of an extra-early-maturing and nearly daylength-insensitive maintainer (B) composite (EEBC). ICMP 94001 was developed for use as parental germplasm for breeding early-maturing maintainer (B) lines of the A1 and A4 cytoplasmic-nuclear male-sterility systems in pearl millet. It was released in 1996 by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Andhra Pradesh, India. ICMP 94001 was tested under the designation EEBC C1.

EEBC is based on Iniadi germplasm accessions originating from the Togo-Ghana-Benin area of western Africa (1). Iniadi germplasm is characterized by relatively daylength-insensitive early flowering (70 to 85 d to maturity), short grain-filling period (23 to 25 d), low-tillering (1 to 2 tillers plant<sup>-1</sup>), compact and conical panicles, good panicle exertion, and large grain size (15 to 20 g 1000 grain<sup>-1</sup>).

The first random mating in the development of the EEBC from which ICMP 94001 was selected involved 286 S<sub>2</sub> progenies tracing to 43 Iniadi accessions. These S<sub>2</sub> progenies were derived from 188 S<sub>1</sub> progenies that flowered no later than the earliest-maturing, commercial male-sterile line, 843A (AKM 2068). Both S<sub>0</sub> plants and S<sub>1</sub> progenies were selected for early flowering under extended daylength (14.5 h) at Patancheru during the rainy seasons. The extended daylength conditions were created using 100-W incandescent bulbs fixed at a grid of 3 by 5 m at the height of 1.5 m above the soil surface. The S<sub>2</sub> progenies involved in the first random

mating were crossed by hand in a disease nursery, where they were also selected for resistance to downy mildew [caused by *Sclerospora graminicola* (Sacc.) J. Schröt.]. The two subsequent random matings were done in isolation with a population size of approximately 10 000 plants, of which nearly half were randomly harvested each time. ICMP 94001 was developed by bulk harvesting 200 open-pollinated plants selected from the third random mating of the EEBC in an isolation plot during the 1994 dry season. Selection criteria for these plants were visual assessment for high grain yield, compact panicles, synchronous tillering, and improved standability.

In a yield trial conducted in six year-location environments in southern and northwestern India, ICMP 94001 had a mean grain yield of 2.65 t ha<sup>-1</sup>, approximately 12% more than the unselected C0 bulk of EEBC (EEBC C0) and 13% less than HHB 67, the earliest-maturing commercial grain hybrid in India. Both ICMP 94001 and EEBC C0 bulks required 39 d to 50% flowering (2 d less than HHB 67) and had a mean plant height of 1.6 m (0.1 m more than HHB 67). ICMP 94001 and HHB 67 had similar panicle lengths (17-18 cm) and dry stover yields (2.3 t ha<sup>-1</sup>). Under normal daylengths of 13.5 h during the 1994 rainy season and 12.5 h during the 1995 dry season at Patancheru, mean 50% flowering date of ICMP 94001 was 37 d, compared with 39 d for HHB 67. Under extended daylengths of 14.2 h during the 1994 rainy season and 14.7 h during the 1995 dry season, mean 50% flowering date of ICMP 94001 was 40 d, compared with 47 d for HHB 67. ICMP 94001 has large grain size, with a 1000-grain mass of 14 g, compared with 10 g for HHB 67. ICMP 94001 is highly resistant to downy mildew. In greenhouse inoculation tests at Patancheru, ICMP 94001 had 8% disease incidence, compared with 82% incidence for HHB 67 when inoculated with Patancheru isolate. ICMP 94001 had 11% incidence and HHB 67 had 41% incidence when inoculated with Mysore isolate.

ICMP 94001 was developed to serve as a pool of variability to provide parental materials for breeding B-lines flowering in <40 d. The S<sub>2</sub> progenies used to constitute this composite were not tested for male-sterility maintenance ability; however, the Iniadi landrace is known to contain a high frequency of plants with the sterility-maintainer gene or genes for the A1 system of cytoplasmic-nuclear male sterility (2). An evaluation of 160 topcross hybrid plants made by crossing EEBC C0 onto ICMA-1 (81A1) indicated that 72% of the plants were largely sterile, with 28% setting no seed and 44% setting 1 to 5% seed under selfing. A similar evaluation of topcross hybrid plants developed onto 81A4 indicated that 88% of the plants were largely sterile, with 41% setting no seed and 47% setting 1 to 5% seed under selfing. Assuming that no major shift in the frequency of sterility maintainer gene or genes has occurred from the C0 bulk to the C1 bulk, ICMP 94001 could be used to develop B-lines of both the A1 and the A4 male sterility systems.

Seed of ICMP 94001 will be maintained by ICRISAT Center, Patancheru, Andhra Pradesh, India. Small quantities of seed are available upon request.

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#### References and Notes

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