1000-seed mass). The seed is light gray and hexagonal in shape. Both populations have mixed anthers of purple and cream color.

Seed of NCD$_2$A$_4$ and NCD$_2$B$_4$ will be maintained and distributed upon request in germplasm quantities by ICRISAT, Patancheru under the terms and conditions of the ICRISAT Breeding Materials Transfer Agreement.

References


ICMR 98001: A Restorer Stock of A$_5$
Cytoplasmic-nuclear Male Sterility in Pearl Millet

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ICMR 98001 pearl millet (Pennisetum glaucum) restorer stock is a highly male-fertile inbred line in the A$_5$ cytoplasmic background. This line was developed at ICRISAT, Patancheru, India from one of the several pollen-fertile plants identified in a topcross hybrid produced by crossing Large-seeded Genepool-1 (LSGP-1) developed at ICRISAT, Patancheru (Rai et al. 1999) with male-sterile line 81A$_5$ that possesses the A$_5$ cytoplasm. LSGP-1 was developed by random mating 959 large-seeded (>10 g 1000-seed mass) germplasm accessions from 23 countries (Rai et al. 1999). The line 81A$_5$ was developed by seven generations of backcrossing of a d$_2$ dwarf maintainer line 81B (Anand Kumar et al. 1984) into the A$_5$ male-sterility-inducing cytoplasm identified from one of the 67 pollen-sterile plants of LSGP-1 (Rai and Rao 1998).

During the 1995 postrainy hot summer (hereafter referred to as 'dry') season, 81A$_5$ was crossed using the bulk pollen from 140 plants of LSGP-1. Of the 645 plants of the resulting topcross hybrid grown at Patancheru during the 1995 rainy season, six were pollen-fertile. Two generations of head-to-row evaluation, using seeds from open-pollinated panicles of the pollen-fertile plants in the A$_5$ cytoplasmic background, concomitant with selection for high levels of pollen fertility, was followed by one generation of selfing of pollen-fertile plants to produce six $S_1$ progenies, one $S_1$ from each of the six rows. Six fertile plants in each $S_1$ were selfed to produce $S_2$ progenies and also testcrossed onto 81A$_5$. During the 1997 dry season, it was observed that all plants in one $S_2$ progeny were pollen-fertile and they had 65-95% selfed seedset. Similarly, all the plants in the corresponding testcross were pollen fertile and they had 75-95% selfed seedset. Further selfing in this $S_2$ produced $S_3$ progenies. An additional selfing in this $S_3$ produced $S_4$ progenies and testcrossing of those selfed plants onto 81A$_5$ produced testcross hybrids.

Evaluation during the 1998 dry season at Patancheru showed that all plants in one $S_4$ progeny and its corresponding testcross were pollen-fertile and they had 90-100% selfed seedset. A $S_5$ progeny (ICMA$_5$R-1) produced from this $S_4$ progeny was designated as ICMR 98001. It was evaluated in a yield trial along with three other restorer stocks during the rainy season in 1998 and 1999 at Patancheru. ICMR 98001 gave a mean grain yield of 201 g m$^{-2}$ compared to 264 g m$^{-2}$ for an A$_1$-system restorer line (ICRM 356) of a commercial hybrid ICMH 356. In this trial, ICMR 98001 grew 1.6 m tall, produced 1.4 panicles plant$^{-1}$, and took 54 days to 50% flowering (6 days later than ICMR 356). ICMR 98001 has short (21 cm), cylindrical and compact panicles with tufted tip. It has hairy leaf blade and leaf sheath, and yellow anthers. It is a prolific pollen producer with plants having 85-100% selfed seedset. The seed is small (7.2 g 1000-seed mass), gray in color, hexagonal in shape and has spiny outer surface.

Seed of ICMR 98001 will be maintained and distributed in germplasm quantities on request by ICRISAT, Patancheru, under the terms and conditions of ICRISAT Breeding Materials Transfer Agreement.

References

