REGISTRATION OF PARENTAL LINES

Registration of Pearl Millet Parental Lines

ICMA 88004 and ICMB 88004

ICMB 88004 (Reg. no. PL-24, PI 583799) pearl millet [Pennisetum glaucum (L.) R. Br.] is the maintainer line of ICMA 88004 (Reg. no. PL-25, PI 583798), which is the seed parent of the single-cross grain hybrid ICMH 356. ICMB 88004 and ICMA 88004 were released in January 1993 by the Ministry of Agriculture, Government of India. ICMB 88004 and ICMA 88004 were developed by the Genetic Enhancement Division, Asia Center, of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Andhra Pradesh, India.

The male-sterile line ICMA 88004 derives its A\textsubscript{i} cytoplasm from 81A (ICMA 1) (1). ICMB 88004 was developed by 10 generations of selfing in a half-sib progeny (Togo-11) of the same early-maturing, large-seeded landrace from northern Togo that was the source of the commercial open-pollinated cultivar ICEPT 8203 (2). During the process of inbreeding, visual selection was made for high seed yield potential, large seed size, good selfed seedset, earliness, and high level of resistance to downy mildew [caused by Sclerospora graminicola (Sacc.) J. Schröt.]. An S\textsubscript{i} progeny (Togo-11-5) derived from the half-sib progeny and its corresponding male-sterile hybrid (81A × Togo-11-5) was established as an A-B pair during the 1981 postrainy season. Individual plants selected from the S\textsubscript{i} progeny were further selfed and backcrossed onto individual plants of the sterile hybrid. This scheme of selection and selfing in the maintainer progeny with concurrent backcrossing onto individual plants of the sterile backcross progeny led to the identification of four pairs of BC\textsubscript{2}S\textsubscript{0} progenies. On the basis of a higher level of downy mildew resistance and greater general combining ability, one pair, ICMA 88004 and ICMB 88004, was selected in 1988.

In yield trials conducted in 11 year × location environments, ICMA 88004 had a mean seed yield of 1.91 t ha\textsuperscript{-1}, required 49 d to 50% flowering, and had a mean plant height of 1.4 m, which were similar to the highest-yielding commercial male-sterile line, ICMA 841 (3). The 1000-seed mass of ICMA 88004 (12.5 g) is 52% higher than that of 841A. During the February 1993 postrainy season planting at ICRISAT Asia Center, flowering of ICMA 88004 under an extended daylength of 15.5 h was delayed by 18 d compared with flowering under the normal daylength of 12.5 h. ICMA 88004 is highly resistant to downy mildew.

Disease incidence in 15 downy mildew nurseries in India and in greenhouse inoculation tests at ICRISAT Asia Center varied from 0 to 10% for ICMA 88004, compared with 0 to 25% for ICMA 841 and 29 to 96% in the susceptible hybrid, NKB 3. ICMB 88004 is similar to the normal daylength of 12.5 h. ICMA 88004 had a mean seed yield of 1.91 t ha\textsuperscript{-1}, required 1 to 2 d less than ICMA 841. The most distinguishing feature of ICMA 88004 and ICMB 88004 is yellowish seedling foliage color. This is expressed well when daily maximum temperatures >40°C. Recessive inheritance of this trait permits early detection and removal of offtype plants from seed production plots. The purple color of nodes, basal internodes, flag leaf sheath margin, and glumes is a combination of characters unique to these lines. All of these characters are dominant and hence are expressed in their hybrids. These lines have candle-shaped panicles, 13 to 16 cm in length. Seeds are globular in shape and deep gray in color. Under daily maximum temperatures >40°C, the flag leaves of these lines may display a firing symptom.

Breeder seed of ICMA 88004 and ICMB 88004 will be maintained by the Genetic Enhancement Division, ICRISAT Asia Center, and have been made available to several seed-producing agencies in India. Germplasm quantities of these two lines will be provided for research purposes upon request.


References and Notes


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Registration of H125 Yellow-Endosperm Parental Inbred Line of Maize

H125 (Reg. no. PL-173, PI 583847) is a dent yellow-endosperm inbred line developed by the Agricultural Research Programs, Purdue University, West Lafayette, IN. H125 was released in May 1994 for its potential value as a parent in hybrids intended for production of grain for use by the dry-milling industry, and as a source of germplasm in development of proprietary inbred lines by the hybrid seed industry.

H125 was developed from Cycle 2 of S, recurrent selection in H5yn73, an unregistered population released by the Purdue Agricultural Experiment Station (1). H5yn73 was created by crossing inbred line B73 with each of eight inbred lines: B84, A641, A634, N28, CM105, B68, H93, and A632. Resulting F\textsubscript{1} hybrids were intermated in all possible combinations, followed by two generations of random mating. Subsequent recurrent selection of individual ears for increased kernel hardness was performed using visual evaluation as the primary selection criteria. Development of H125 was through self-pollination, with ear-to-row selection for vitreous grain type and for desired ear and plant traits. Mass selection in early generations of inbreeding (S\textsubscript{0} to S\textsubscript{4}) involved individual ear selection for increased endosperm hardness (based on visual judgment) after individual plant selection for reduced leaf blight disease lesions, reduced ear rot, and overall plant health. Release of H125 was at a level of inbreeding > S\textsubscript{5} generation. Field observations resulting from artificial inoculation of H125 indicated a moderate level of tolerance to northern corn leaf blight [caused by Exserohilum turcicum (Pass.) K.J. Leonard & E.G. Suggs], southern corn leaf blight [caused by Bipolaris maydis (Nisikado & Miyake) Shoemaker], and northern corn leaf spot [caused by B. zeicola (G.L. Stout) Shoemaker].

H125 was included in testcross performance trials from