

REGISTRATION OF PARENTAL LINES

Registration of ICMP 423 Parental Line of Pearl Millet

ICMP 423 pearl millet [*Pennisetum glaucum* (L.) R. Br.] (Reg. no. PL-22, PI 572306) is the downy mildew resistant restorer line of a single-cross grain hybrid cultivar, ICMH 423. ICMP 423 was developed by the Cereals Program of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Andhra Pradesh, India, and released on 1 Jan. 1988 by the Ministry of Agriculture, Government of India. ICMP 423 traces to Cycle 1 (C1) of the ICRISAT Early Composite (EC) population of pearl millet. The EC was constituted by random mating 194 geographically diverse lines, mostly of Indian origin, that flowered in <45 d from seeding at the ICRISAT Center, Patancheru, during the 1973 rainy season. ICMP 423 was derived from an S₂ progeny (EC 211-1) of the C1 bulk that produced a fertile, high-yielding hybrid when crossed with cytoplasmic-genic type inbred male-sterile line 5141A. The S₃ progeny was produced by the bulk pedigree method from EC 211-1. The S₃ progeny was further advanced to the S₅ stage by bulking the selfed seeds of plants selected for phenotypic similarity and resistance to downy mildew [caused by *Sclerospora graminicola* (Sacc.) J. Schröt.]. This was followed by two generations of single-plant selection and pedigree breeding to produce S₇ progeny. The S₇ progenies were then subjected to two generations of random mating in isolation. A total of 2378 selfed progenies were derived from the random-mated bulk, sown head-to-row in isolation during the 1987 hot-dry season, and simultaneously inoculated and screened for seedling downy mildew resistance in the greenhouse. Of these, 808 progenies developed >20% downy mildew. (The susceptible check 'HB 3' exhibited >90% downy mildew.) Progenies with downy mildew symptoms were removed from the isolation nursery before flowering, and the remaining 1570 progenies were allowed to random mate. The seeds from the random mating were bulked and designated ICMP 423.

ICMP 423 is an elite restorer line with mean grain yield

of 1750 kg ha⁻¹, medium height (147 cm), and a flowering requirement of 49 to 57 d from time of planting. ICMP 423 produces 3 to 7 tillers plant⁻¹. Anthers are creamy yellow in color. Panicles are compact, candle-shaped, and short (16 to 17 cm), with purple glumes. Grains are medium-sized (7.5 g 1000 grain⁻¹), globular to obovate in shape, and slate-gray in color.

ICMP 423 was tested for resistance to downy mildew in 11 disease nurseries in India and western Africa; ICMP 423 had higher levels of downy mildew resistance than the resistant check, 'P7-4'. Means and ranges of downy mildew severity on ICMP 423 were 4% and 0 to 23%, respectively, compared with 7% and 0 to 49%, respectively, for P7-4. ICMP 423 can be used in breeding programs as a source of stable downy mildew resistance in an elite agronomic background.

Breeder seed of ICMP 423 has been made available to many public and private sector institutions in India, and will be maintained by the Cereals Program, ICRISAT, Patancheru, AP, India. A sample of the original seed is permanently preserved in the ICRISAT gene bank.

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References and Notes

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2. K.N. Rai, B.S. Talukdar, S.D. Singh (Plant Protection Div.), and A.S. Rao (Genetic Enhancement Div.), ICRISAT Asia Center, Patancheru, AP 502 324, India; A.M. Rao, Duncans Biotech Ltd., Flat-C III, Block 'A', Kundan Towers, Mayur Marg, Begumpet, Hyderabad, AP 500 016, India; and D.J. Andrews, Dep. of Agronomy, 279 Plant Science Bldg., Univ. of Nebraska, Lincoln, NE 68583-0915. Approved as Journal Article no. 1488 by ICRISAT. Registration by CSSA. Accepted 28 Feb. 1994. *Corresponding author.

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