Registration of LAMD 609 Tobacco Germplasm

LAMD 609 (Reg. no. GP-52, PI 599689) is a germplasm line of Maryland tobacco (Nicotiana tabacum L.) developed by the Maryland Agricultural Experiment Station and released in 1994 (1). LAMD 609 is a genetically stable breeding line with an extremely low alkaloid content. This line will offer new germplasm for developing improved breeding material in Maryland tobacco with varying levels of total alkaloids for the mid-Atlantic region.

LAMD 609 originated from a 1970 cross between ‘MD 609’ (4) and LA Burley 21 (3). The backcross breeding method was used to incorporate the two nonlinked, low-alkaloid genes (2) from LA Burley 21 into the standard MD 609 cultivar. After six backcross cycles with MD 609 as the recurrent parent and five generations of self-pollination, LAMD 609 was released as a stable line in the BC2F5 generation.

In a 2-yr (1991 and 1992) field study with four replications at the Upper Marlboro Facility of the Central Maryland Research and Education Center, LAMD 609, MD 609, and LA Burley 21 were evaluated for agronomic performance and chemical content. Averaged over the 2 yr, LAMD 609 had a total alkaloid content of 0.06%, compared with 1.93% for MD 609. Total N content was similar, with LAMD 609 and MD 609 producing levels of 3.80 and 4.01%, respectively. Additional chemical analyses of cured leaf samples obtained from a separate field planting in 1991 indicated that the primary alkaloid in LAMD 609 and MD 609 was nicotine, with a small trace of secondary alkaloids. In the 2-yr study, LAMD 609 had a lower yield per hectare (1542 kg) than MD 609 (1978 kg). The quality index of 25 for LAMD 609 was lower than the 51.6 value observed for MD 609. The lower quality leaf was due, in part, to a higher percentage of undesirable green color in the cured leaf. LAMD 609 and MD 609 had similar maturity, with both lines flowering approximately 70 d after transplanting. Additional information on the development and performance of LAMD 609 has been published (1).

Registration of ICMP 85410: Dwarf, Downy Mildew Resistant, Restorer Parental Line of Pearl Millet

ICMP 85410 (Reg. no. PL-36, PI 597490) is the restorer line of the single-cross grain hybrid ICMP 85410 (ICMA 2/ICMP 85410). It was developed by the Genetic Enhancement Division, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) Asia Center (IAC), Patancheru, India, and released on 21 December 1994.

ICMP 85410 is a dh/dh dwarf inbred pollinator derived from one cycle of recurrent selection for combining ability within an F2 population obtained from the cross ICMP 165/ICP 220. Two male-sterile lines, ICMA 1 (1) and ICMA 2 (2), were used as testers for combining ability. Selected progenies were screened for downy mildew [caused by Sclerospora graminicola (Sacc.) J. Schröt.] resistance. The S selection, (ICP 165/ICP 220)–64, produced a high-yielding, early-maturing hybrid in combination with ICMA 2. This progeny was also resistant to pearl millet downy mildew.

ICP 165 [SC 14(M)]–1 was developed in Uganda. ICP 220, [SD2/EB-2(D1088)]–1, derived from parents from Nigeria and the USA, was developed using ICMA 2 as the male-sterile line. The pollinator was entered into the ICRISAT Pollinator Collection (IPC) and assigned IPC number 0736.

Breeder seed of ICMP 85410 has been published (1). Additional information on the development and performance of ICMP 85410 is available from the corresponding author. M. K. Aycock, Jr.* and C. L. Mulchi (5)

REGISTRATION OF PARENTAL LINES

The S selection, (ICP 165/ICP 220)–64, was advanced up to the S4 generation by the bulk pedigree method with selection for dwarf plants. Hybrid ICMP 85410 was multiplied in isolation using ICMA 2 as the male-sterile line. The pollinator was entered into the ICRISAT Pollinator Collection (IPC) and assigned IPC number 0736.

ICMP 85410 is an inbred restorer line with grain yield ranging from 1114 to 1692 kg ha−1. Mean grain yield is 12% higher than J 104 (restorer of early-maturing commercial hybrid BJ 104), but 16% lower than ICMP 423 (5). It has dwarf plant height (95 to 107 cm) and flowers 56 to 64 d after sowing at IAC. ICMP 85410 tillers moderately (3 to 5 plant−1) and has a cylindrical panicles. It has dominantly inherited, nonhairy foliage and recessively inherited brown spots of varying shapes on upper leaves that serve as markers. Grains are relatively small (1000-grain wt. is 6.3 g), globular in shape, and yellowish gray in color.

ICMP 85410 was tested for resistance to downy mildew in 11 disease nurseries in India and western Africa. Downy mildew incidence ranged from 0 to 21%, compared with 0 to 22% for the resistant inbred control P 7–4 in India. In western Africa, ICMP 85410 had 0 to 85% downy mildew incidence, compared with 2 to 86% for P 7–4. The susceptible inbred control 7042 had high levels of incidence in India (6 to 92%) and western Africa (43 to 100%). ICMP 85410 had a downy mildew resistance reaction similar to ICMP 423 except at Samaru, Nigeria, where it was more susceptible.

A subselection of ICMP 85410 has been used as a parent of the first pearl millet molecular mapping population (4), and the mapped progenies have been screened against downy mildew iso-