Registration of Two Disease-Resistant Germplasm Lines of Rice

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Two disease-resistant rice (*Oryza sativa* L.) mutant germplasm lines designated as LM-1 (Reg. No. GP-106, PI 643397) and LMT-1 (Reg. No. GP-107, PI 643398) were developed at the Louisiana State University Agricultural Center’s Rice Research Station, Crowley, LA, from irradiation of the U.S. cultivar Lemont (PI 475833) (Bollich et al., 1985). Lemont is an early maturing semidwarf long-grain cultivar with excellent agronomic characteristics except for its susceptibility to the diseases sheath blight (caused by *Rhizoctonia solani* Kuhn AG1-1A [teleomorph: *Thanatephorus cucumeris* (A. B. Frank) Donk.]), bacterial panicle blight (caused by *Buchnera glutaeae*), and narrow brown leaf spot (caused by *Cercospora janzania* (Racib.) O. Const.). These three diseases are major rice diseases in the southern USA and cause significant yield and quality damage. Most long-grain cultivars are susceptible to sheath blight, all varieties are susceptible to bacterial panicle blight, and incidence of narrow brown leaf spot is currently increasing (Groth and Lee, 2002; Shahjahan et al., 1998). The present germplasm lines have improved resistance to the above three diseases.

One kilogram seed of Lemont was irradiated with γ radiation (250 Gy) from *60*Co. Seed was planted and harvested. Initial selections were made after inoculation with sheath blight fungus of inoculated rows of bulk seed planted in the field. Fibrations for sheath blight resistance, uniform plant type, and low grain sterility were repeated in 1996 to 2001 and a taller variant selected from rows of LM-1 for advancement. Seed of five panicle rows from the same families were bulked in 2000. In 2001 small plots, five rows by 1.2 m in length, of LM-1, LMT-1, Lemont, and ‘Cocodrie’ (PI 606331) (Lin) were planted in the field and inoculated. Ratings on bacterial panicle blight severity were collected in separate plots for inoculated rows using the same experimental design with five replications. Data on disease severity, flag leaf, plant height, and days to 50% heading were collected. Ratings on bacterial panicle blight severity were collected in separate plots for inoculated rows using the same experimental design with five replications. Data on disease severity, flag leaf, plant height, and days to 50% heading were collected.

References


