Registration of TAM 98D-102 and TAM 98D-99ne Upland Cotton Germplasm Lines with High Fiber Strength

TAM 98D-102 and TAM 98D-99ne upland cotton (Gossypium hirsutum L) germplasm (Reg. no. GP-793, PI 636490; Reg. no. GP-794, PI 636491) lines were developed by the Cotton Improvement Laboratory, Department of Soil and Crop Sciences, Texas Agricultural Experiment Station and released in 2004 as part of an ongoing effort to create germplasm and cultivars with improved yield potential and fiber quality. TAM 98D-102 and TAM 98D-99ne are pubescent leaf and stem lines that combine high yield potential with excellent fiber qualities, especially fiber strength, and are adapted to south and central Texas. TAM 98D-102 and TAM 98D-99ne are midseason maturity, picker-type upland cotton lines with growth habits similar to Tamcot 22 (Thaxton and Smith, 2005) when grown with supplemental irrigation at College Station, TX.

TAM 98D-102 and TAM 98D-99ne are sister lines resulting from the cross of an unreleased, nectaried, breeding line and ‘MD-51ne’ (Meredith, 1993). TAM 98D-99ne does not exhibit leaf or bract nectaries. MD51ne combines high fiber strength and the nectariless trait. The nectariless trait reduces damage from insect pests such as fleahopper [Pseudatomoscelis seriatus (Reuter)], plant bug (Lygus spp), bollworm [Helicoverpa zea (Boddie)], tobacco budworm [Heliothis virescens (F.)], and pink bollworm [Pectinophora gossypiella (Saunders)] (Meredith, 1976). TAM 98D-102 and TAM 98D-99ne each were derived from F2:3 plants selected on the basis of their apparent yield potential, fiber properties, and overall plant conformation. The resulting F3:4 progeny rows were considered pure lines for further evaluation and tested under the names TAM 98D-102 and TAM 98D-99ne.

TAM 98D-102 and TAM 98D-99ne were advanced through performance tests from 1999 to 2001 at two to eight locations across south and central Texas. Advanced generation trials were conducted at additional Texas locations in 2002 and 2003. Results from 13 performance trials conducted across seven locations in 2002 and six locations in 2003 indicated that TAM 98D-102 and TAM 98D-99ne yielded equal to (P = 0.05) ‘Suregrow 747’ and ‘FiberMax 832’. Upper half mean (UHM) fiber length of TAM 98D-102 was longer (P = 0.05) than that of Suregrow 747 and TAM 98D-99ne but not as long as FiberMax 832. Averaged over all performance trials, high volume instrument fiber bundle strength of TAM 98D-102 was 28% higher than that of Suregrow 747 than that of FiberMax 832 (P = 0.05). TAM 98D-99ne was similar (P = 0.05) to FiberMax 832 for fiber bundle strength. Average micronaire reading of TAM 98D-102 was 28% higher than that of Suregrow 747 and 8% higher than that of FiberMax 832 (P = 0.05). The average micronaire reading of TAM 98D-99ne was 4.8, similar (P = 0.05) to that of Suregrow 747.

TAM 98D-102 will be valuable to plant breeders in developing cultivars of upland cotton with potential, fiber strength, and length. TAM 98D-99ne will be valuable to plant breeders in developing improved cultivars with good yield potential and quality along with the nectariless trait. The nectariless trait reduces damage from insect pests such as fleahopper, plant bug, bollworm, tobacco budworm, and pink bollworm.

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References


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