REGISTRATIONS OF GERMLASM

Registration of High Fiber Strength Cotton Germlasm Line NM970513

NM970513 (Reg. no. GP-714, PI 613344) upland acala cotton (Gossypium hirsutum L.) germlasm line was developed by the New Mexico Agricultural Experiment Station and released in 2000. NM970513 will provide plant breeders a new source of genes for bundle fiber strength. NM970513 was selected from the cross ‘Acala 1517-95’/NM24052 made in 1994 at the New Mexico Agricultural Experiment Station at Las Cruces, NM. Acala 1517-95 is a high quality acala cultivar with the pedigree Acala 3080/PD2165 (Cantrell and Escabedo, 1997). NM24052 is an experimental line derived from the cross St9/Del Cerro. Del Cerro is a complex population released in 1957 and contains introgression from G. hirsutum L., G. hirsutum var. punctatum (Schumach & Thonn.), G. barbadense L., G. herbaceum L., and G. thurberi Tod. (Smith et al., 1999; Staten, 1971). St9 is a stripper experimental line contributing earliness and compact growth habit to the cross.

In 1995, 122 F2 plants from the cross Acala 1517-95/NM24052 were selfed in Las Cruces, NM, to produce F3.4 progeny. These progeny were evaluated in replicated trials at Las Cruces and Artesia, NM, in 1996. Extensive transgressive segregation was observed in this population for fiber strength (Cantrell et al., 1995). All F3.4 lines were grown also in 10-m rows in the genetics nursery at Las Cruces for selfing. Five random plants within each progeny row were selfed to generate F4.5 progeny. Five F4.5 lines that were selected on the basis of their 1996 fiber bundle strength in the replicated trials were grown in the 1997 Las Cruces genetics nursery. Fifty bolls were bulk harvested from each F4.5 progeny row for fiber quality determination. The best 25% of the F4.5 progeny rows were selected based on fiber strength and tolerance to Verticillium wilt (caused by Verticillium dahliae Kleb.). Five plants within each selected row were selfed to derive F5 progeny. Open-pollinated seed (F5.5) were also bulk harvested from each selected progeny row for 1998 replicated yield trials. NM970513 originated as a bulk of seed from a single F4.5 progeny row grown in 1998. Bulked F4.5 seeds were grown for multiplication and increase in 1999.

The yarn tenacity for 22-count yarn averaged 175.8 kN m kg^-1 for NM970513 and 130.3 kN m kg^-1 for Acala 1517-95. Fiber samples were submitted to the Texas Textile International Textile Center for fineness and maturity testing. The maturity ratio is the ratio of fibers with a 0.50 circularity ratio divided by the amount of fibers with a 0.25 circularity ratio. The mean maturity ratio of NM970513 was 0.93 and 0.86 for Acala 1517-95. The immature fiber percentage of NM970513 was 8.5% compared with 11.1% for Acala 1517-95. The mean fiber fineness was 144.0 mg Mtex^-1 for NM970513 and 130.3 mg Mtex^-1 for Acala 1517-95 and NM970513. This germlasm line has a very similar levels of tolerance to Verticillium wilt as Acala 1517-95.

Small amounts of seed of NM970513 will be placed in the germplasm bank at the Texas Agricultural Experiment Station, College Station, Texas. Requests for additional seed may be made to the corresponding author. Requests for this germplasm if used for research purposes, or for use of a parental line, cultivar, or hybrid, must be accompanied by a written request to the corresponding author. Registration of this germplasm if used for research purposes, or for use of a parental line, cultivar, or hybrid, must be accompanied by a written request to the corresponding author.

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References