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Registration of Germplasms

REGISTRATION OF EIGHT GERMPLASM LINES OF SMOOTH-LEAF COTTON[1]
(Reg. No. GP 194 to GP 201)

Raymond L. Shepherd[2]

THE following smooth-leaf cotton (*Gossypium hirsutum* L.) lines were developed and released cooperatively by ARS-USDA and the Alabama Agric. Exp. Stn.

Reg. no.	Identification	Parentages
GP 194	Aub Sm-16	'Coker 201' × N.C. Smooth 1† followed by a cross to F_1 ('Auburn 56' × Coker 201) and six subsequent crosses to 'Deltapine 16'
GP 195	Aub Sm-56	Auburn 56 × A6-238 smooth leaf followed by five subsequent crosses to Auburn 56
GP 196	Aub Sm-149	Triple Hybrid 149 × N.C. Smooth 1 followed by a cross to F_1 (Auburn 56 × Triple Hybrid 149) and six subsequent crosses to Triple Hybrid 149
GP 197	Aub Sm-201	Coker 201 × N.C. Smooth 1 followed by a cross to F_1 (Auburn 56 × Coker 201) and six subsequent crosses to Coker 201
GP 198	Aub Sm-213	Coker 201 × N.C. Smooth 1 followed by a cross to F_1 (Auburn 56 × Coker 201) and six subsequent crosses to 'Stoneville 213'
GP 199	Aub Sm-310	'Atlas 66' × N.C. Smooth 1 followed by a cross to F_1 (Auburn 56 × Atlas 66) and six subsequent crosses to 'Coker 310'
GP 200	Aub Sm-165	Pee Dee 2165‡ by N.C. Smooth 2† followed by a cross to F_1 (Auburn 56 × Pee Dee 2165) and six subsequent backcrosses to Pee Dee 2165
GP 201	Aub Sm-277	MO 63-470§ × N.C. Smooth 2 followed by a cross to F_1 (Auburn 56 × MO 63-470) and six subsequent backcrosses to Delcott 277

† Sources of smooth leaf developed by ARS-USDA in cooperation with the North Carolina Agric. Res. Stn., Raleigh, N.C.
‡ High fiber strength breeding stock developed by ARS-USDA in cooperation with the South Carolina Agric. Exp. Stn., Florence, S.C.
§ Breeding stock developed by the Missouri Agric. Exp. Stn., Portageville, Mo.

The eight lines were developed by backcross transfer of the smooth-leaf trait to eight recurrent parents as indicated above.

The smooth-leaf strain A6-238 used as one source of smooth leaf was from smooth-leaf Auburn 56 breeding stocks developed in 1963 at Auburn, Ala. A6-238 was selected after evaluating many smooth-leaf strains for agronomic performance in Alabama in 1966 and 1967.

The initial crosses to develop the eight smooth-leaf lines were made in 1967. Each backcross generation was initiated by crossing 30 to 40 smooth-leaf F_2 plants with their respective recurrent parent at Auburn, Alabama. The backcross F_2 seed from these crosses were produced in Iguala, Mexico, by self-pollination. F_2 plants of each backcross were grown at Auburn where selection for the smooth-leaf trait was done before initiation of each cycle of backcrossing. Each stock is bulked selfed seed from 40 to 60 backcross F_2 plants that were homozygous for the smooth-leaf trait. Seed of each release was increased and selected for the smooth-leaf trait.

The eight smooth-leaf stocks were compared with their recurrent parent variety or strain at two locations in Alabama during 1976 and 1977. Yields of Aub Sm-16, Aub Sm-56, Aub Sm-149, Aub Sm-277, and Aub Sm-310 were not significantly different from that of their respective recurrent parent. Yields of Aub Sm-165, Aub Sm-201, and Aub Sm-213 were significantly less than that of their respective recurrent parent.

The smooth-leaf trait provides an important level of resistance to bollworms and fleahoppers but causes greater susceptibility to leaf-hoppers and aphids than normal-leaf cotton. This trait may be most useful in combination with other resistance traits and/or chemicals for reducing pest control costs.

Small amounts (10 g) of seed of these lines are available upon written request as long as seed are available. Requests should be addressed to the Crop Science Research Unit, ARS-USDA, Dep. of Agronomy and Soils, Auburn University, AL 36849.

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REGISTRATION OF EIGHT GERMPLASM LINES OF GLANDLESS COTTON[1]
(Reg. No. GP 202 to GP 209)

Raymond L. Shepherd[2]

THE following glandless cotton (*Gossypium hirsutum* L.) lines were developed and released cooperatively by ARS-USDA and the Alabama Agric. Exp. Stn.

Reg. no.	Identification	Parentages
GP 202	Aub G1-16	Glandless Auburn 56 × 'Deltapine 16' followed by six subsequent crosses to Deltapine 16
GP 203	Aub G1-56	Glandless Auburn 56 × Deltapine 16 followed by six subsequent crosses to 'Auburn 56'
GP 204	Aub G1-149	Glandless Auburn 56 × 'Coker 201' followed by one cross to Coker 201 and five subsequent crosses to Triple Hybrid 149
GP 205	Aub G1-165	Glandless Auburn 56 × Pee Dee 2165† followed by six subsequent crosses to Pee Dee 2165
GP 206	Aub G1-201	Glandless Auburn 56 × Coker 201 followed by six subsequent crosses to Coker 201
GP 207	Aub G1-277	Glandless Auburn 56 × Missouri 61-470F‡ followed by six subsequent crosses to 'Delcott 277'
GP 208	Aub G1-213	Glandless Auburn 56 × 'Stoneville 213' followed by six subsequent crosses to Stoneville 213
GP 209	Aub G1-310	Glandless Auburn 56 × 'Coker 413' followed by six subsequent crosses to 'Coker 310'

† Strain developed by ARS-USDA in cooperation with the South Carolina Agric. Exp. Stn., Florence, S.C.
‡ Strain developed by the Missouri Agric. Exp. Stn., Portageville, Missouri.

The eight lines originated from a backcross program to incorporate the glandless trait into eight recurrent parents as indicated above. Glandless cotton plants are free of pigment glands and their seeds are nearly free of gossypol. The advantages of this genotype are that it removes gossypol pigments that discolor

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cottonseed oil and eliminates gossypol from cottonseed meal. Glandless cottonseed has potential as an important source of high-quality protein for humans, swine, poultry, and other nonruminants. Glandless plants have been reported to be more susceptible to certain insects such as tarnished plant bug, *Lygus lineolaris*.

The glandless trait is conditioned by two recessive genes, gl_2gl_2 and gl_3gl_3. The source of glandless used in developing the above stocks was a glandless upland Acala cotton stock obtained from ARS-USDA, Shafter, California, which was crossed to Auburn 56 at Auburn, Alabama, in 1958. Six subsequent backcrosses were made to Auburn 56. For 3 years, beginning in 1965, field tests were conducted of the BC_6F_4 glandless strains of Auburn 56 developed at Auburn. Based on data from these tests, a BC_6F_4 glandless strain of Auburn 56 with the best combination of the glandless trait and desirable agronomic traits was selected and designated Glandless Auburn 56. In 1968, Glandless Auburn 56 was crossed with various cottons to initiate the backcrossing program. Each backcross generation was initiated by crossing 30 to 50 glandless F_2 plants with their recurrent parent at Auburn. Backcross seed produced by these crosses were grown at Iguala, Mexico, to produce F_2 self-pollinated seed. The F_2 seed were then grown at Auburn and used to initiate another cycle of backcrossing. Each of the eight stocks is the bulk of selfed seed of 35 to 60 F_2 plants homozygous for glandless following the last backcross to each recurrent parent.

The eight glandless stocks were compared with their recurrent parents in tests at two locations in Alabama during 1976 and 1977. Open-pollinated seed were used for testing, but roguing of glanded seedlings was done to ensure that less than 5% glanded plants remained in final stands. Normally recommended insect control procedures were used but no special attempt was made to control the tarnished plant bug. Average yields of glandless cotton tended to be slightly less than that of the glanded cotton, and the glandless cotton was slightly later maturing. Complete control of insects may have eliminated much of the tendency toward lower yields and later maturity of the glandless stocks. Lint percentage, boll size and fiber properties of the eight glandless stocks were similar to those of recurrent parents.

Small amounts (10 g) of seed of these lines are available upon written request as long as seed are available. Requests should be addressed to the Crop Science Research Unit, ARS-USDA, Dep. of Agronomy and Soils, Auburn University, AL 36849.

REGISTRATION OF EIGHT GERMPLASM LINES OF OKRA-LEAF COTTON[1]
(Reg. No. GP 186 to GP 193)

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THE following okra-leaf cotton (*Gossypium hirsutum* L.) lines were developed and released cooperatively by ARS-USDA and the Alabama Agric. Exp. Stn.

The eight lines originated from a backcross program to incorporate the okra-leaf trait into eight recurrent parents as indicated above. Pee Dee 2165 is a high fiber strength breeding line developed by ARS-USDA in cooperation with the South Carolina Experiment Station, Florence, S. C. The eight lines represent a diverse pool of germplasm, particularly regarding combinations of the okra-leaf trait with desirable combinations of yield, fiber quality, and adaptation.

Reg. no.	Identification	Parentages
GP 186	Aub Okra-16	'Deltapine 16' × okra leaf
GP 187	Aub Okra-56	'Auburn 56' × okra leaf
GP 188	Aub Okra-149	Triple Hybrid 149 × okra leaf
GP 189	Aub Okra-165	Pee Dee 2165 × okra leaf
GP 190	Aub Okra-201	'Coker 201' × okra leaf
GP 191	Aub Okra-213	'Stoneville 213' × okra leaf
GP 192	Aub Okra-277	'Delcott 277' × okra leaf
GP 193	Aub Okra-310	'Coker 310' × okra leaf

Okra leaf is conditioned by the incomplete dominant gene L^0_2. Cottons with this trait have a more open plant canopy and are earlier maturing. Losses to boll rots and white flies are reduced in okra-leaf cotton, but the open canopy may increase weed control problems. This trait would be adapted best for areas where boll rot and rank cotton growth are problems.

The okra-leaf parents of the eight lines were developed by the Louisiana Agric. Exp. Stn., Baton Rouge. The okra-leaf parent of Aub Okra-16, Aub Okra-149, Aub Okra-201, and Aub Okra-310 was a line pedigree: BC_5 F_4 of L^0_2 to 'Deltapine Smoothleaf.' The pedigree of the okra-leaf parent of Aub Okra-56 and Aub Okra-213 was line pedigree: BC_6 F_3 of L^0_2 to 'Stoneville 7A.' The pedigree of the okra-leaf parent of Aub Okra-165 and Aub Okra-277 was: BC_5 of L^0_2 to Stoneville 7A plus BC_3 to Stoneville 213.

Each backcross cycle was initiated at Auburn by crossing 30 to 40 F_2 okra-leaf plants with each respective recurrent parent. F_2 seed of these crosses were produced in Mexico by self-pollination for the next cycle of selection and backcrossing. Each line is bulked selfed seed from 40 to 60 BC_5 F_2 plants homozygous for okra leaf.

Performance of each okra-leaf line was compared with its recurrent parent in seven environments in Alabama. While yields of Aub Okra-16 and Aub Okra-213 tended to be slightly lower than that of their recurrent parents, all of the other okra lines had yields comparable with that of their recurrent parents. Lint percentages and fiber properties of these lines were similar to those of recurrent parents. The okra-leaf stocks were earlier than their normal-leaf counterparts.

Small amounts (10 g) of seed of these lines are available upon written request as long as seed are available. Requests should be addressed to the Crop Science Research Unit, ARS-USDA, Dept. of Agronomy and Soils, Auburn University, AL 36849.

REGISTRATION OF 11 SUGARBEET GERMPLASM LINES WITH RESISTANCE TO VIRUS YELLOWS[1]
(Reg. Nos. GP 73 to GP 83)

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ELEVEN sugarbeet (*Beta vulgaris* L.) breeding lines were developed by ARS-USDA in cooperation with the Beet Sugar Development Foundation. These lines were released between 1978 and March 1981 because of their potential value in breeding programs as sources of multiple disease resistance. Sugarbeet breeders may obtain small quantities of seed upon written request to Sugarbeet Research, U.S. Agricultural Research Station, P. O. Box 5098, Salinas, CA 93915.

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