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tive recurrent parent. F_2 seed of these crosses were produced in Mexico by self-pollination and grown at Auburn, where selection for frego bract was done before initiation of each backcross cycle. Each line is bulked selfed seed of 40 to 60 BC_5 F_2 frego-bract plants. These lines represent a diverse pool of germplasm, particularly regarding combinations of the frego-bract trait with desirable combinations of yield, fiber quality, and adaptation.

Frego bracts are long and twisted and tend to curl outward, leaving flower buds and bolls exposed. A single recessive gene (*fg*) controls this condition. Frego bract has been reported to be associated with boll weevil (*Anthonomous grandis grandis* Boheman) nonpreference, resistance to boll rot, later maturity, lower yield, and more sensitivity to cotton fleahoppers [*Pseudatomoscelis seriatus* (Reuter)] and tarnished plant bugs [*Lygus lineolaris* (Palisot de Beauvois)] than cottons with normal bracts. Disadvantages of frego bract may be overcome by combining it with traits that provide resistance to fleahoppers and plant bugs and/or combining use of frego bract with selective insecticides.

Performance of the eight frego-bract lines was compared with recurrent parent cultivars in seven environments in Alabama. Normal boll weevil control practices were used, but no special efforts were made to control plant bugs. The eight frego-bract lines, compared with their recurrent parent, had 12% lower mean yields, later maturity, and tended to have slightly smaller bolls. Lint percentages and fiber quality of these lines were similar to that of their recurrent parent.

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

REGISTRATION OF EIGHT GERMPLASM LINES OF NECTARILESS COTTON[1]
(Reg. Nos. GP 175 to GP 182)

Raymond L. Shepherd[2]

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

Reg. no.	Identification	Parentages
GP 175	Aub Ne-16	'Deltapine 16' × nectariless
GP 176	Aub Ne-56	'Auburn 56' × nectariless
GP 177	Aub Ne-149	Triple Hybrid 149 × nectariless
GP 178	Aub Ne-165	Pee Dee 2165 × nectariless
GP 179	Aub Ne-201	'Coker 201 × nectariless
GP 180	Aub Ne-213	'Stoneville 213' × nectariless
GP 181	Aub Ne-277	'Delcott 277' × nectariless
GP 182	Aub Ne-310	'Coker 310' × nectariless

The eight lines were developed by backcrossing the nectariless parent to eight recurrent parents as indicated above. These lines represent a diverse pool of germplasm, particularly regarding combination of nectariless trait with desirable combinations of yield, fiber quality, and adaptation.

The nectariless parent of the eight lines was a nectariless BC_5 F_4 Auburn 56 line derived from backcrossing Auburn 56 to nectariless M11. Nectariless M11 was developed by Jim Meyer, Stoneville, Miss. Each backcross cycle was initiated at Auburn, Ala., by crossing 40 to 50 nectariless F_2 plants to each respective recurrent parent. F_2 seed of these crosses were produced in Mexico by self-pollination and grown at Auburn where selection for nectariless was done before initiation of each backcross cycle. With the exception of Aub Ne-56, which is BC_{10} F_4, each of the eight lines is a bulk of selfed seed from 40 to 60 BC_5 F_2 plants homozygous for the nectariless trait. This seed was increased with selection for nectariless and used for agronomic testing and public release.

The nectariless trait is conditioned by the genotype (ne_1 ne_1 ne_2 ne_2) originating from *Gossypium tomentosum*. These genes suppress leaf to extrafloral nectaries. the nectariless trait has been reported to provide beneficial levels of resistance to tarnished plant bugs [*Lygus lineolaris* (Palisot de Beauvois)], cotton fleahoppers [*Pseudatomoscelis seriatus* (Reuter)], and pink bollworm [*Pectinophora gossypiella* (Saunders)]. Boll rot organisms have been reported to enter through extrafloral flower and boll nectaries; therefore, nectariless cottons should reduce boll rotting.

The eight lines were compared in replicated tests with their respective parents in eight environments in Alabama. Lint yield and fiber properties of each line were at least equal to that of its recurrent parent, except Aub Ne-277 and Aub Ne-310, which had slightly shorter fiber.

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

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REGISTRATION OF THREE OKRA-LEAF, FREGO-BRACT DISEASE RESISTANT COTTON GERMPLASMS[1]
(Reg. No. GP 183, GP 184, and GP 185)

A. J. Kappelman, Jr.[2]

THREE noncommercial cotton (*Gossypium hirstutum* L.) germplasm lines with resistance to fusarium wilt incited by *Fusarium oxysporum* Schlect. f. *vasinfectum* (Atk.) Snyd. and Hans and bacterial blight caused by *Xanthomonas malvacearum* (E. F. Sm.) Dows. have been released by the ARS-USDA, and the Alabama Agric. Exp. Stn. Auburn OK fg-1 (GP 183) was derived from a single F_2 plant selection from the cross (Auburn okra-leaf × K_4E) × (W-133 × 79N). Auburn OK fg-2 (GP 184) and Auburn OK fg-3 (GP 185) were selected progeny of the first backcross of the above cross to (W-133 × 79N). Auburn okra-leaf was developed by A. L. Smith prior to 1964 from an okra-leaf line of unknown source crossed with 'Auburn 56'. K_4E is a selection from a cross between Knight's BAR 4/16 × 'Empire' followed by three backcrosses to Empire and contains the B_2 and B_3 genes for resistance to bacterial blight. K_4E and the following two lines were developed by L. S. Bird. W-133 was a selection from a cross between (Lankart 57 with the $B_2B_4B_6$ genes) × ('Deltapine Smoothleaf' × 101-102B). Line 101-102B carried bacterial blight resistance genes B_2 and B_3. W-133 was selected for bacterial blight and Verticillium wilt resistance in Texas followed by 3 years of selection for resistance to the fusarium wilt-root-knot nematode (*Meloidogyne* spp.) complex at Tallassee. In addition to disease resistance, W-133 also carries the frego-bract character-

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istic. 79N is a selection from a series of crosses involving the following: Knight's Bar 4/16, Paymaster, Blightmaster, and three genetic lines. The original selection was made by A. L. Smith for resistance to the fusarium wilt-nematode complex at Tallassee. Following additional crosses, repeated selections for resistance to bacterial blight and escape from seedling disease damage were made. W-133 and 79N carry the $B_2B_3B_4B_6$ and $B_2B_3B_7$ genes for resistance to bacterial blight, respectively.

Auburn OK fg-1, -2, and -3 were developed at Tallassee, AL, on soil heavily infested with both fusarium wilt and root-knot nematodes. During their development all lines were selected for resistance to bacterial blight races 1, 2, 6, 7, 10, and 18. When grown on "wilt-free" soil, lint yields and fiber properties of these lines were equal to those of 'Stoneville 603,' although all of these lines have a lower lint turnout.

Small amounts of seed of these lines are available for distribution to cotton research workers as long as seed is available. Written requests should be addressed to A. J. Kappelman, Jr., ARS-USDA, Dep. of Agronomy & Soils. Auburn University, AL 36849.

REGISTRATION FOR BS9(CB)C4 MAIZE GERMPLASM[1]
(Reg. No. 97)

W. A. Russell and W. D. Guthrie[2]

MAIZE synthetic BS9(CB)C4 (*Zea mays* L.) evolved from a research program conducted cooperatively by the Iowa Agriculture and Home Economics Experiment Station and ARS-USDA. It has good resistance (antibiosis) to the first and second generations of the European corn borer (*Ostrinia nubilalis*, Hübner) and was released because of its value in breeding programs. Breeder seed is maintained by the Iowa Agric. and Home Economics Exp. Stn., and the distribution of seed is by the Committee for Agricultural Development, Dep. of Agronomy, Iowa State Univ.

BS9 was developed specifically to use in a recurrent selection program for improvement in the combined resistance to first and second generations of the European corn borer. This pest usually has two generations in Iowa; a first generation in which the larvae cause feeding damage in the leaf whorl before tassel emergence and a second generation in which the larvae cause feeding damage to leaf collars and sheaths after tassel dehiscence, and the mature larvae tunnel in the stalks and ear shanks. BS9 was developed by recombining 10 inbred lines: B49, B50, B52, B54, B55, B57, B68, CI31A, Mo17, and SD10. BS9 was predicted to be moderately resistant to the first-generation corn borer but moderately susceptible to the second generation (unpublished data and Pesho et al., 1965[3]). Inbred SD10 is an early line that is susceptible to both generations of the corn borer, but contributes a desirable type of root system for tolerance to corn rootworms (*Diabrotica* sp.).

Recurrent selection was used for four cycles to improve the resistance in BS9 to both the first and second generations of the European corn borer. We evaluated S_1 lines in three replications and used high levels of artificial infestation. In all cycles, the evaluations for resistance to the generations were in separate experiments to avoid confounding effects of the damage caused by the two generations. The numbers of S_1 lines evaluated were 300, 300, 273, and 250 in the successive cycles, and 10% of the lines were selected in each generation for recombination. The bases of selection were resistance to feeding in the leaf whorls for the first generation and low stalk cavity count and resistance to leaf-sheath and collar feeding for the second generation. Also, we selected the S_1 lines so that the average date for pollen shed was not later than the average for all lines evaluated in the same cycle. Thirty S_1 lines were selected in the first cycle for recombination to give BS9(CB)C1; nine of these lines rated equal to CI31A for first-generation resistance, but only one line was as resistant as B52 for second-generation cavity count, and 16 were significantly higher. Twenty-six S_1 lines were selected from BS9(CB)C3 for recombination to give BS9(CB)C4; 24 lines rated 2.3 or better for first-generation resistance, and the average rating was 2.1 (1 = highly resistant and 9 = highly susceptible). For the second generation, 15 S_1 lines had fewer cavities per stalk than did B52, and none was significantly higher; the average cavity count was 5.6. First-brood ratings were 2.7 for BS9 and 2.1 for BS9(CB)C3, and the counts for cavities per stalk were 15.4 for BS9 and 7.6 for BS9(CB)C3. Further improvement should be expected in the C4 for second-generation resistance. The C3 population was 0.5 days later than the BS9. The maturity classification for BS9(CB)C4 is early AES800.

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[3]Pesho, G. R., F. F. Dicke, and W. A. Russell. 1965. Resistance of inbred lines of corn (*Zea mays* L.) to the second brood of the European corn borer (*Ostrinia nubilalis* (Hübner). Iowa State J. Sci. 40:85–98.

REGISTRATION OF EIGHT MAIZE GERMPLASM POPULATIONS[1]
(Reg. No. GP 98 to GP 105)

L. M. Josephson, H. C. Kincer, and D. R. West[2]

EIGHT maize (*Zea mays* L.) breeding populations were developed in the corn breeding project conducted cooperatively by the Tennessee Agric. Exp. Stn. and the USDA. The breeding populations, either developed to provide elite germplasm stocks for research programs or as a result of basic selection studies, were released because of their potential value in maize breeding programs. The various breeding populations have been made available to the public periodically since 1965. Breeder seed of the populations are maintained and are available from the Dep. of Plant and Soil Science of the Univ. of Tennessee.

TSGP (Southern Germplasm Pool) (Reg. No. GP98) resulted from an attempt to preserve some of the more important germplasm from the southern states. Twenty-nine varieties or synthetics from six states are represented in the population: two southwestern corn borer (*Diatraea grandiosella* Dyar) synthetics from Arkansas; two white and three yellow varieties from Louisiana; one white and four yellow varieties from Missouri; one European corn borer (*Ostrinia nubilalis* Hbn.) synthetic from South Carolina; two northern leaf blight (*Helminthosporium turcicum* Pass.) synthetics, one prolific synthetic, two white varieties and one yellow variety from Tennessee; and the Corn Belt-Southern synthetic, two white varieties, and seven yellow varieties from Virginia.

Initially, 200 seeds of each variety or synthetic were composited and grown in isolation, Subsequently 25 seeds from each of

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