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REGISTRATION OF EXTRA-LONG STAPLE COTTON GERMPLASM[1]

(Reg. No. GP 150 to GP 154)

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IN 1946, a collection of upland cotton (*Gossypium hirsutum* L.) breeding stocks with extra fiber strength was assembled in the Pee Dee breeding program at Florence, S.C. AHA 6-1-4 (P), Earlistaple (E), Sealand (S), and Triple Hybrids 108 and 171 (K) were crossed and intercrossed to form a germplasm pool with genes for extra fiber strength.[3] This germplasm pool first existed in a series of selections designated as lines A, F, J, N, and T,[4] which were intercrossed to give the basic germplasm pool of genes for extra fiber strength that exists today.

Although the two extra-long staple PD breeding stocks, Sealand 542 (GP 150) and Earlistaple 7 (GP 151), were grown on limited commercial acreage, they were primarily important as basic germplasm with improved fiber properties. Sealand 542 was selected from a 'Bleak Hall' (*G. barbadense* L. 'Sea Island') × 'Coker Wilds' hybrid backcrossed four times to the Wilds parent. Earlistaple 7 was a selection of Earlistaple 808[5] that was resistant to fusarium wilt caused by *Fusarium oxysporium* f. spp. *vasinfectum* (Atk.) Snyd. & Hans., and root-knot nematode caused by *Meloidogyne incognita* (Kofoid & White) Chitwood. Earlistaple 808 was an F_4 selection from the cross of 'Tidewater Acala' × Coker Wilds. Although Sealand 542 and Earlistaple 7 have important genes for extra fiber strength, obtained primarily through *G. barbadense* introgression, their germplasms are more valuable for the broad genetic base that they have added to the present day Pee Dee germplasm pool.

Hybrid 330 (KPSE), or Line F (GP 152) was the first promising extra-long staple PD breeding stock with genes for extra fiber strength from Beasley's Triple Hybrid, *G. arboreum* L. × *G. thurberi* Tod. × *G. hirsutum* L. Line F is from the increase of the bulk seed of the progeny of a single F_3 plant selection from the complex cross of Triple Hybrid 108 × AHA 6-1-4 ×Sealand 542 × Earlistaple.[3] It yielded about 45% less lint than did 'Coker 100 W', but its fiber and yarn strength were increased over that of Coker 100 W by 50%. Success with this breeding stock indicated that extra-fiber-strength genes could be transferred to high-yielding upland cottons; however, the process would be difficult. Line F is maintained as a 1:1 seed bulk of Hybrid 330-378 and Hybrid 330-379.

Intercrossing of Lines A, F, J, N, and T produced several improved extra-long-staple PD breeding stocks with extra fiber strength. Lines FJA (GP 153) and FTA (GP 154), selected from complex intermatings, yielded about 15% more lint than Line F but were about 20% weaker than Line F in fiber and yarn strength. Studies[4] showed that the genetic association between lint yield and fiber strength had not been changed but that lint yield increases resulted from sacrifices in fiber strength. FJA and FTA are maintained as 1:1 seed bulks of FJA 347 and FJA 348 or FTA 263 and FTA 266, respectively.

Although the demand for extra-long-staple upland cotton with improved fiber strength is limited, these breeding stocks possess other characters, such as earliness and disease resistance, that could be useful in cotton improvement programs. These breeding lines were released by AR-SEA-USDA and the South Carolina Agric. Exp. Stn. in 1979.

Seed (25 g) of each breeding stock may be obtained from AR-SEA-USDA, Pee Dee Experiment Station, Florence, SC 29503.

[1] Registered by the Crop Sci. Soc. Am. Published as Journal Paper 1631 of the South Carolina Agric. Exp. Stn. Accepted 22 Oct. 1979.

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[3] Culp, T. W. and D. C. Harrell. 1974. Breeding quality cotton at the Pee Dee Experiment Station, Florence, S. C. USDA Publ. ARS-S-30.

[4] ———, and ———. 1975. Influence of lint percentage, boll size, and seed size on lint yield of upland cotton with high fiber strength. Crop Sci. 15:741-746.

[5] ———, and ———. 1973. Breeding methods for improving yield and fiber quality of upland cotton (*Gossypium hirsutum* L.). Crop Sci. 13:686-689.

REGISTRATION OF 10 HARD RED WINTER WHEAT GERMPLASM LINES[1]

(Reg. No. GP 122 to GP 131)

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THESE 10 lines of wheat (*Triticum aestivum* L. em. Thell.) were among 12 released by the Texas Agric. Exp. Stn. in 1978 as superior primary breeding stocks. They were developed cooperatively by the Texas Agric. Exp. Stn. and AR-SEA-USDA. The lines were released for the expressed purpose of crossing in a breeding program and reselection or release as a cultivar by recipients is prohibited. Since the release of the 12 lines, two have been approved by the Texas Agric. Exp. Stn. for release as cultivars 'TAM 105,' CI 17826, and 'TAM 106,' CI 17827.

The 10 lines registered herein are all awned semidwarf hard red winter wheats originating from crosses and selections made at the USDA Southwestern Great Plains Research Center, Bushland, Texas. 'Centurk' was a parent of nine of the lines, and the 'Sturdy' sib, TX391-56-D8, used as a parent in four crosses. All lines have been evaluated extensively at several locations in Texas during the period of 1973 to 1978. Each also has been evaluated in the Southern Regional Performance Nursery 1 or 2 years from 1976 to 1978. These lines have demonstrated wide adaptation as well as high yield potential and some have other desirable characteristics that make them valuable as parents. They all have sufficient lodging resistance but none appear to have straw as strong as Sturdy. They have acceptable quality characteristics. Reactions to leaf rust (caused by *Puccinia recondita* Rob. ex. Desm.) and to powdery mildew (caused by *Erysiphe graminis* DC. ex. Merat f. sp. *tritici*) varied among lines, locations and years in Texas trials. None of the lines has been grown where stem rust (caused by *Puccinia graminis* Pers. f. sp. *tritici* Eriks, and Henn.) was severe, and only limited data on their reaction to the disease are available. It is believed that most are neither highly resistant nor highly susceptible to stem rust. Three lines were moderately resistant or resistant to soil-borne mosaic virus in Kansas and Illinois field trials.[3] The release of these breeding lines does not preclude the possibility of one or more of the lines being released later as cultivars by the Texas Agric. Exp. Stn. The selection number, pedigree, and a brief description of each follows.

TX71A30, 'TAM W-101'/Centurk (GP No. 122) is a white chaff line and is the earliest of the 10. It is susceptible to powdery mildew and leaf rust. It has the highest percent protein of the 10 lines and has good test weight.

TX71A58-3, TAM W-101/Centurk (GP No. 123) is a white chaff wheat which is rather late in maturity and susceptible to both powdery mildew and leaf rust.

TX71A106-5, TAM W-101/Centurk (GP No. 124) has a good yield record in irrigated trials but only mediocre yields in regional trials. It has good test weight but is susceptible to leaf rust and to powdery mildew.

TX71A407-6, 'Palo Duro'/Centurk (GP No. 125) is a brown chaff selection that has a good record in irrigated trials. It was rated moderately resistant to resistant to soil-borne mosaic virus in field trials at Manhattan and Newton, Kansas and at Urbana, Illinois, 1977.[3] It had the lowest average test weight of 40 entries in the 1977 Southern Regional Performance Nursery and only two other entries had lower average test weights than

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[3] Conducted by E. G. Heyne and C. L. Niblett, Kansas Agric. Exp. Stn., and C. M. Brown and H. Jedlinski, Illinois Agric. Exp. Stn., and USDA, SEA-AR.

[4] Superior Hard Red Winter Wheat Breeding Lines Released 1978. Texas Agric. Exp. Stn. MP-1421, 1979.