

pletely evaluated in this area.<sup>8</sup> It also may be of value as a bridge in further interspecific hybridization in the *Trifolium* genus.

Two grams of seed of the hybrid will be provided to each plant breeder upon written request to the Department of Agronomy, University of Kentucky, Agricultural Science Center, Lexington, Kentucky 40506.

<sup>8</sup>Taylor, Norman L., W. H. Stroube, G. B. Collins, and W. A. Kendall. 1963. Interspecific hybridization of red clover (*Trifolium pratense* L.). Crop Sci. 3:549-552.

## REGISTRATION OF SIXTEEN GERMPLASM LINES OF UPLAND COTTON<sup>1</sup>

(Reg. No. GP 3 to GP 18)

Vesta G. Meyer<sup>2</sup>

THE stocks of Upland cotton (*Gossypium hirsutum* L.) given in Table 1 originated from a modified backcross program to develop breeding stocks with the Upland cotton genome in cytoplasm from other species of cotton. The parent stocks for these lines were produced by a number of different breeding procedures from interspecific crosses between Upland and seven other species of cotton. In the early generations the backcrosses were made with various Upland cultivars. After the designated number of backcrosses (Table 1), Delcot 277 and Deltapine 16 were chosen as recurrent parents and two or three additional backcrosses were made. All of these lines can be handled by routine methods in an Upland cotton breeding program, except that they and their derivatives must be used as female parents to maintain the cytoplasm. In general they resemble their recurrent parents Delcot 277 and Deltapine 16 in agronomic and fiber properties.

Like the parent stock, which furnished the cytoplasm, both DES-HERB 16 and 277 are male fertile under Mississippi Delta conditions.

Although the stocks which furnished the cytoplasm for DES-ANOM 16 and 277 and DES-ARB 16 and 277 carried a cytoplasmic-genetic male sterility gene, the sterility was not expressed in the heterozygous backcross generations, and incidence of the recessive genes for sterility is expected to be low in these germplasm lines.

DES-HAF 16 and 277 were produced from male-fertile segregates with *G. harknessii* cytoplasm. They carry fertility-restorer

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Table 1. Formation of 16 germplasm lines of Upland cotton.

Reg. No.	Identifying Designation	Species Furnishing Cytoplasm	Total Backcrosses To	
			Upland	Recurrent Parent
GP-				
3	DES-HERB 16	<i>G. herbaceum</i> L.	4	2
4	DES-HERB 277	<i>G. herbaceum</i> L.	4	2
5	DES-ARB 16	<i>G. arboreum</i> L.	9	4
6	DES-ARB 277	<i>G. arboreum</i> L.	8	3
7	DES-ANOM 16	<i>G. anomalum</i> Wawra and Peyr.	8	2
8	DES-ANOM 277	<i>G. anomalum</i> Wawra and Peyr.	8	3
9	DES-HAF 16	<i>G. harknessii</i> Brandagee	7	2
10	DES-HAF 277	<i>G. harknessii</i> Brandagee	7	2
11	DES-HAMS 16	<i>G. harknessii</i> Brandagee*	7	2
12	DES-HAMS 277	<i>G. harknessii</i> Brandagee*	7	2
13	DES-LONG 16	<i>G. longicalyx</i> Hutch. & Lee	6	3
14	DES-LONG 277	<i>G. longicalyx</i> Hutch. & Lee	6	3
15	DES-BARB 16	<i>G. barbadense</i> L.	4	2
16	DES-BARB 277	<i>G. barbadense</i> L.	4	2
17	DES-TOM 16	<i>G. tomentosum</i> Nutt.	7	2
18	DES-TOM 277	<i>G. tomentosum</i> Nutt.	7	2

\* A cytoplasmic male-sterile stock backcrossed to Deltapine 16 and Delcot 277, respectively.

genes from *G. harknessii*; the restorer genes are necessary to produce fertile anthers in any stocks with *G. harknessii* cytoplasm. Crosses of Upland varieties to these stocks produce completely male-sterile plants and progenies whenever the restorer genes are all replaced by their Upland alleles. Consequently, selection for male fertility will be necessary for developing self-fertile transfer lines from these germplasm lines. On the other hand, male-sterile lines derived from them can be maintained without specially bred maintainer or B-lines, since apparently all Upland varieties lack fertility-restorer genes for this cytoplasm.

DES-HAMS 16 and 277 are male-sterile lines with *G. harknessii* cytoplasm. Under Mississippi conditions they produce 100% male-sterile progenies from crosses with Upland varieties. Crossing with pollen from the DES-HAF germplasm lines produces partially or entirely male-fertile progenies.

DES-LONG 16 and 277 originated from a parent stock which carried a highly variable male sterility. Unlike the other germplasm lines included in this release, these stocks have been selected for fertility during the backcrossing program. In crosses involving this cytoplasm, some Upland varieties produce much more vigorous progenies than others. In spite of significant overall reduction of vigor (when *G. longicalyx* cytoplasm progenies are compared with their Upland cytoplasm counterparts), their productivity is adequate for maintaining a transfer program.

DES-BARB 16 and 277 and DES-TOM 16 and 277 are highly productive germplasm lines with cytoplasm from *G. barbadense* and *G. tomentosum*, respectively. All of these stocks are very similar to parent varieties in yield, agronomic characteristics, and fiber properties.

A packet of 25 seeds of any of these lines will be available for breeding or other research purposes after April 1973 from Vesta G. Meyer, Delta Branch Experiment Station, Stoneville, Mississippi 38776.

## REGISTRATION OF FIVE SOYBEAN GERMPLASM POPULATIONS<sup>1</sup>

(Reg. No. GP 13 to GP 17)

W. R. Fehr and R. C. Clark<sup>2</sup>

FIVE soybean (*Glycine max* (L.) Merr.) germplasm populations, AP1, AP2, AP3, AP4, and AP5, were developed cooperatively by the Iowa Agriculture and Home Economics Experiment Station and the Agricultural Research Service, USDA. The populations were developed to increase genetic variability by incorporating plant introductions into breeding populations and by intermating to break up linkage blocks (3, 5, 6). The populations will be used to evaluate the effect that different dosages of exotic germplasm have on breeding populations. They are being released to soybean breeders for additional selection.

The five populations were developed from four plant introductions, two cultivars, and two unreleased experimental lines. PI 81029 and PI 68704 were selected for their good yield potential. PI 91150 and PI 68600 had the best yield response to applied phosphorus among 355 soybean cultivars and plant introductions evaluated in Iowa (2, 4). PI 68704 and PI 91150 have the gene *Dt<sub>1</sub>* that controls stem termination (1). 'Chippewa 64' and 'Calland' were the two commercially grown cultivars used. The experimental lines were C1426, a sister line of Calland, and L15, a derivative of the 'Wayne' cultivar (Wayne<sup>3</sup> × Clark 63). The two cultivars and two experimental lines represented high-yielding genotypes with resistance to race 1 of *Phytophthora megasperma* var. *sojae*.

The derivation of the five populations is illustrated in Fig. 1. AP2 and AP4 had one backcrossing generation to obtain 75%

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