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REGISTRATION OF THREE ROOT-KNOT RESISTANT COTTON GERMPLASM LINES

THREE cotton (*Gossypium hirsutum* L.) germplasm lines with resistance to root-knot nematodes were released by the USDA-ARS and the Alabama Agricultural Experiment Station in 1986. Aub. 82 RNR Ne (Reg. no. GP-300) was derived from crossing root-knot resistant Aub 634 RNR (3) with Aub Ne 213, a nectariless release (4), and selecting for root-knot resistance and nectariless. Aub 244 RNR (Reg. no. GP-301) and Aub 299 RNR (Reg. no. GP-302) were developed by crossing Aub 634 RNR with 'Stoneville 213', and selecting for root-knot resistance. To develop the three germplasm lines, individual F_2 plants were selected for root-knot nematode resistance in greenhouse tests. Since none of the selected F_2 were homozygous for resistance in the F_3 generation, individual plant selection for resistance was repeated within F_3 progenies. Selected F_3 plants were extensively progeny tested in F_4 for root-knot resistance and selected in the field for desirable agronomic traits (and for nectariless in the case of Aub 82 RNR Ne).

Resistance to root-knot nematodes results in reduced galling and giant cell production [caused by *Meloidogyne incognita* (Kofoid & White) Chitwood] in cotton roots. Root-knot nematode damage reduces nutrient and water uptake efficiency of roots, causes general plant debilitation and greatly increases susceptibility to seeding diseases (1) and fusarium wilt [caused by *Fusarium oxysporum* Schlect. f. *vasinfectum* (Atk.) Snyd. & Hans.] (5). These three germplasm lines had 45 to 50 times less root-knot nematode egg production and root galling than on Auburn 56, which has one of the highest levels of root-knot resistance available in a commercial cultivar, and 80 to 85 times less than on Stoneville 213. These germplasm lines are the first to be released that carry a high level of root-knot resistance in Stoneville 213 background. Also, Aub 82 RNR Ne is the first germplasm line to be released that combines root-knot nematode resistance with the nectariless trait. Nectariless reduces populations of several economically important insects (2). These germplasm lines should be useful in cotton improvement programs to develop cotton cultivars with resistance to root-knot nematodes, fusarium wilt, and several insects.

These germplasm lines, along with the Stoneville 213 check cultivar, were tested in 1984 in a field relatively free of root-knot nematodes. Lint yield, lint percentage [(lint/seed cotton) × 100], boll weight, fiber length, strength, and micronaire in the three germplasm lines were generally comparable with that of the check. These results indicate that resistant cultivars developed by using these germplasm lines as the source of resistance should not only outperform susceptible cultivars on root-knot infested soils, but they also should compete successfully with them on noninfested soils.

Small amounts of seeds of these three lines are available for distribution to cotton breeders, geneticists, and other research workers. Written requests should be addressed to R.L. Shepherd, USDA-ARS, Crop Science Research Laboratory, P.O. Box 5367, Mississippi State, MS 39762-5367.

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REGISTRATION OF FP-8400 PENCILFLOWER GERMPLASM

FP-8400 PENCILFLOWER [*Stylosanthes guianensis* (Aubl.) Sw.] (Reg. no. GP-63), a tropical legume, is the result of natural selection involving 22 *S. guianensis* accessions from various areas of South America. These accessions were planted in 1971 in a 2-ha field together with other *Stylosanthes* species at Agricultural Research and Education Center-Ft. Pierce, FL. The field is typical of grass pastures in the area that are generally established on flatwood soils. Pangolagrass (*Digitaria decumbens* Stent.), a common pasture grass in southern Florida, was interplanted at establishment to provide competition. Each accession consisted of 24 plants that were randomized in eight blocks. After 2 yr of evaluation for yield, quality, and flowering, plants were allowed to regenerate by seeding over the next 12 yr. Normal environmental stresses such as flood, drought, low temperatures, grass competition, and cultural practices (burning, mowing, discing) occurred over this 12-yr period.

A persistent and homogeneous population of early maturing *S. guianensis* resulted from natural selection. A small number of plants in this population survived each winter, when winters were not too severe. Although the original introductions came from frost-free areas, some were able to avoid light frost because of a low-placed or buried crown. The bulk of this population, however, regenerated each year from seed. Seeds were harvested by a combine in 1981 and a new field established by seeding into an existing stand of pangolagrass. Regeneration of *S. guianensis* was excellent following seed harvest in the new field. FP-8400 is readily grazed by beef cattle (*Bos taurus*), and can also be used as hay. Average crude protein content and in vitro organic matter digestibility were 21 and 70%, respectively. FP-8400 has good tolerance to anthracnose [caused by *Colletotrichum gloeosporioides* (Penz.) Sacc.], an important pathogen of several Stylosanthes cultivars in the tropics.

Seed and planting stock will be maintained and distributed by the Agricultural Research and Education Center, Institute of Food and Agricultural Sciences (IFAS), University of Florida, P.O. Box 248, Fort Pierce, FL 33454.

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References and Notes

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