

sistance to common rust caused by *Puccinia sorghi* Schw. in Illinois and Hawaii. The Rp₁^{Td} gene was derived from *Tripsacum dactyloides* (L.) L. It is a single dominant gene that is located on the short arm of chromosome 10 when backcrossed into maize. Additional information relating to the usefulness of Rp₁^{Td} and experimental data leading to its discovery have been published². Plants containing the gene express an immune, chlorotic-fleck reaction when exposed to field or greenhouse infections of the disease. LP Oh43 Rp₁^{Td} has been backcrossed from *T. dactyloides* to *Z. mays* for 15 generations with the last eight backcrosses utilizing Oh43 as female⁴. This heterozygous line should be a useful source of Rp₁^{Td}, which has the basic phenotype typical of inbred Oh43. Maturity is AES 600.

Breeder seed is currently from the backcross-eight generation to Oh43 and can be obtained in germ plasm amounts from Pfister Hybrid Corn Company, El Paso, IL 61738.

¹ Registered by the Crop Sci. Soc. Am. Pfister Hybrid Corn Company, El Paso, IL 61738. Accepted 9 Nov. 1981.

² Plant pathologist, Pfister Hybrid Corn Company, El Paso, IL 61738.

³ Bergquist, R. R. 1981. Transfer from *Tripsacum dactyloides* to corn of a major gene locus conditioning resistance to *Puccinia sorghi*. *Phytopathology* 71:518-520.

⁴ The *Tripsacum* seed stock from which Rp₁^{Td} was obtained was provided by J. M. de Wet, and J. Harlan, Dep. of Agronomy, Plant Evolution Laboratory, Univ. of Illinois, Urbana, IL 61801.

REGISTRATION OF BS23 MAIZE GERMPLASM¹ (Reg. No. GP 94)

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THIS maize (*Zea mays* L.) synthetic variety was developed in the research program conducted cooperatively by the Iowa Agric. and Home Economics Exp. Stn. and USDA-ARS. It has been evaluated for agronomic traits in a diallel and was released because of its potential 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., Ames, IA 50011.

A maize composite that included teosinte (*Zea mexicana*) and maize germplasm was obtained from a private breeder for use in research for prolific maize. The proportion of teosinte germplasm and the maize stocks are not known. Inbred lines of the two-ear type were developed and evaluated for agronomic performance with a double-double-cross tester. Eight lines were selected and recombined to give a synthetic variety, designated 'Teozoa,' which was further sib-mated with selection of two-ear plants for two generations. An additional generation of random mating with no selection was used to obtain the seed supply for distribution as BS23. Silk emergence is 3 to 4 days earlier than for BSSS CO. In central Iowa, BS23 has good disease resistance and usually shows a strong 'stay-green' characteristic. There is a high frequency of second ears when the plant density is less than 40,000 plants/ha. In a seven-synthetic diallel experiment grown at 3 locations for 2 years (Hallauer and Malithano, 1976)³ BS23 was second highest for average hybrid yield, lower than average for percentage grain moisture, and slightly better than average for resistance to root and stalk lodging. It was second highest in yield for the crosses with BSSS CO. Because of some exotic germplasm from teosinte, breeders may wish to explore this synthetic as a source for inbred lines. The maturity classification is AES700.

¹ Registered by the Crop Sci. Soc. of Am. Joint contribution USDA-ARS, and Journal Paper No. J-10440 of the Iowa Agric. and Home Economics Exp. Stn., Ames, IA 50011. Project No. 2194. Accepted 12 Nov. 1981.

² Professor of plant breeding, Iowa State Univ.

³ Hallauer, A. R., and D. Malithano. 1976. Evaluation of maize varieties for their potential as breeding populations. *Euphytica* 25: 117-127.

REGISTRATION OF EIGHT PEANUT GERMPLASM LINES RESISTANT TO RUST¹ (Reg. No. GP 22 to GP 29)

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EIGHT peanut (*Arachis hypogaea* L.) germplasms were developed by the Crops Research Unit, USDA-ARS, in cooperation with the Coastal Plain Station of the Univ. of Georgia and the Int. Crops Res. Inst. for the Semi-Arid Tropics, India, and released to breeders in July 1981. The lines, designated Tifrust-5 through Tifrust-12, were identified as resistant to the rust fungus caused by *Puccinia arachidis* Speg. in field trials in Georgia, Puerto Rico, and India.

The eight germplasms were developed by phenotypic mass selection in Georgia and Puerto Rico to increase the frequency of resistant plants and to enhance yield in the progeny of material collected in Peru in 1974.⁴ The 8 were among 18 accessions rated as resistant or moderately resistant among a collection of 700 genotypes exposed to a natural rust epiphytotic at Tifton, Ga. in 1976. They were evaluated during natural outbreaks of rust at the USDA winter nursery in Puerto Rico during 1977, 1978, and 1979.⁵ Selection was repeatedly practiced for testa color and other phenotypic traits in heterogeneous material.

Selected lines were sent to ICRISAT for evaluation and were compared to rust-susceptible cultivars in the post-entry quarantine area in 1979. The trial was repeated in the 1979-1980 post-rainy season, using a triple lattice design and inoculated infector rows.

Disease was assessed in each of six environments: the eight released germplasms had resistance to rust greater than that of any standard United States, Asian, African, or South American cultivar in these tests.

Accession data and testa color for the eight germplasm lines are documented in Table 1.

Seven of the eight germplasms (Tifrust-5 through Tifrust-11) are valencia type peanuts (*A. hypogaea-fastigiata-fastigata*). Common features include the erect (bunch) habit of growth, a sequential branching pattern, inflorescences in some main stem leaf axils, and fruits (pods) with moderate to prominent reticulation. They differ primarily in plant size and vigor, maturity, color of foliage and standard petals, or testa color.

Tifrust-5 (GP 22) plants are large, sparsely branched, average 63 cm in height and mature in 145-155 days. Foliage is medium green and standards orange. Seed average 475 mg. Plants are moderately resistant to both early leafspot caused by *Cercospora arachidicola* Hori and late leafspot caused by *Cercosporidium personatum* (Berk. & Curt.) Deighton.

Tifrust-6 (GP 23) plants have few lateral branches, average 64 cm tall and 140 days to maturity. Foliage is light green and standards orange. Seed are small (377 mg), with some dormancy at harvest. Plants are low-yielding and moderately susceptible to both leafspots.

Tifrust-7 (GP 24) plants are large with large leaves, average 60 cm in height and have the extreme fastigiate branching characteristic of some valencias. Foliage is medium green, stems are green, and standards orange. Maturity averages 145 days and seed average 495 mg. Plants have relatively good yields and are susceptible to both leafspots.

¹ Registered by the Crop Sci. Soc. of Am. Accepted 9 Nov. 1981. Cooperative investigations of USDA-ARS, the Univ. of Georgia Coastal Plain Station, and the Int. Crops Res. Inst. for the Semi-Arid Tropics (ICRISAT).

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⁴ We wish to acknowledge the contribution of Dr. L. D. Tripp, presently of Texas A&M Univ., College Sta., Tex., who made the original collections in Peru, and the initial seed increase in Oklahoma.

⁵ Hammons, Ray O. 1981. Breeding peanuts for disease resistance: rust and leafspot. p. 52-58. In J. C. Wynne and T. A. Coffelt (ed.) Proc. Peanut Breeding Symp., APRES, Richmond, Va., 1980. NC ARS Res. Rep. No. 80.

Table 1. Plant introductions used in developing Tifrust-5 through Tifrust-12, their ICRISAT accession (ICG) number, and testa color of the released line.

Germplasm no.	ICG no.	Sel. from PI no.	Testa color†
Tifrust-5 (GP 22)	7894	393641	lt. tan with purple stripes (174C/79A)
Tifrust-6 (GP 23)	7895	393643	light tan (173D)
Tifrust-7 (GP 24)	7896	393646	purple (59B)
Tifrust-8 (GP 25)	7888	393516	white with red blotches (155D/42A)
Tifrust-9 (GP 26)	7889	393517	off white (158A)
Tifrust-10 (GP 27)	7890	393526	purple (79A)
Tifrust-11 (GP 28)	7893	393531	tan with purple stripes (174B/79C)
Tifrust-12 (GP 29)	7891	393527	red (53A)

† R. H. S. Colour Chart, The Royal Horticultural Society, London, 1966.

Tifrust-8 (GP 25) plants are large and tall (ca. 90 cm), with sparse branching, green stems, dark green foliage, orange flowers, late maturity (150 to 160 days), and small seed (412 mg). The germplasm has good resistance to both leafspots.

Tifrust-9 (GP 26) has small plants with short (49 cm) mainstems, medium branching, and medium-late maturity (145 to 150 days). Stems are green, foliage light green, flowers orange, and seed are small (415 mg). Plants are susceptible to both leafspots.

Tifrust-10 (GP 27) plants average 85 cm tall, are vigorous, have purple-green stems and dark green foliage, and mature late (> 150 days). Inflorescences have 1 to 3 flowers, whose standards are deeply pigmented. Seed average 455 mg. Resistance to both leafspotting fungi is moderate.

Tifrust-11 (GP 28) has large (76 cm) plants that mature in 145 to 155 days. The stems are green, the foliage is medium green, and the standards orange. Plants are productive and seeds average 487 mg. The genotype has moderate resistance to early leafspot but is susceptible to late leafspot.

Tifrust-12 (GP 29) is a virginia-type (ssp. *hypogaea* var. *hypogaea*) peanut: the branching pattern is alternate and inflorescences do not occur in leaf axils of the mainstem. Plants average 59 cm in height, branching is profuse and coarse, stems are green and foliage medium green, and standards orange. Fruit set is good, pods are large with medium constriction, and seeds average 810 mg. The testa is often split. Maturity is medium late (145 to 150 days), and plants are susceptible to both leafspots.

Limited quantities of seed (up to 25) will be made available upon written request and agreement to appropriately recognize the source as a matter of open record when these germplasms contribute to the development of a new cultivar or genetic information.

Seed stocks will be maintained and distributed by the Dep. of Agronomy, Univ. of Georgia, Coastal Plain Stn., Tifton, GA 31793, and by the International Crops Research Institute for the Semi-Arid Tropics, Patancheru P.O., Andhra Pradesh 502 324, India.

REGISTRATION OF PEANUT GERmplASMS TIFRUST-1 TO TIFRUST-4¹ (Reg. No. GP18 to GP21)

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Four lines of peanut (*Arachis hypogaea* L.) were released by USDA-ARS, the Univ. of Georgia Agric. Exp. Stn., Coastal Plain Station, and the Int. Crops Res. Inst. for the Semi-Arid Tropics (ICRISAT) in August 1981. These lines provide resistance to peanut rust caused by *Puccinia arachidis* Speg. The disease is now established in most peanut-producing areas of the world and causes major economic loss in crop yield and quality.

In field trials with a collection of 700 peanut accessions exposed to a natural epiphytotic at Tifton, Ga., in 1976, we identified several good sources of resistance to the rust fungus. Resistance was confirmed in the winter nurseries at Isabella, Puerto Rico in 1977, 1978 and 1979. Selection to minimize phenotypic variation within lines was practiced at both Tifton and Isabella. Progeny of the selected lines were among 6,000 peanut accessions evaluated for rust reactions in field tests where intermittent spreader rows of susceptible cultivars, or supplemental inoculation with collected uredospores, were used to insure uniformity of disease pressure.

Levels of resistance for the four selected genotypes were greater than those in any standard commercial cultivar evaluated in these collections. They classify botanically as *A. hypogaea* ssp. *fastigiata* var. *fastigiata*, and share these traits: an erect (bunch) growth habit, a sparse and sequential branching pattern, the occurrence of inflorescences in some mainstem leaf axils, and little fresh-seed dormancy. They differ in maturity or seed size and/or in flower or testa color (Table 1). As a group the rust resistant selections mature later and are less productive than currently grown cultivars.

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Table 1. Plant introductions used to develop Tifrust-1 to Tifrust-4, their ICRISAT accession (ICG) number, country of origin, and seed color of the released germplasm.

Germplasm No.	ICG No.	Sel. from P.I. No.	Country of origin	Seed color†
Tifrust-1 (GP18)	7881	215696	Peru	purple (59A)
Tifrust-2 (GP19)	7886	390593	Peru	light tan (173D)
Tifrust-3 (GP20)	7887	390595	Peru	purple (79A)
Tifrust-4 (GP21)	7898	407454	Ecuador	tan (174D)

† Royal Horticultural Society Colour Chart (RHS), London, U.K.

Each of the lines was derived from germplasm collected in South America as documented in Table 1. Their maturity rating when grown at Tifton, Georgia (31°27' N, 83°35' W) and other characteristics are briefly described.

Tifrust-1 (GP18) plants mature late at 145 to 155 days, have medium green leaves, and have inflorescences that frequently elongate to several cm. The standard petals are deeply pigmented, and the seeds average 0.5 g. This germplasm has exhibited appreciable resistance at Tifton, Ga., to the leafspot caused by *Cercospora arachidicola* Hori and at ICRISAT to the leafspot caused by *Cercosporidium personatum* (Berk. & Curt.) Deighton.

Tifrust-2 (GP19) plants mature at about 140 days, have light green foliage, orange standard petals, small seeds (ca. 0.4 g), and moderate resistance to *C. personatum*.

Tifrust-3 (GP20) plants average 140 days to mature, have light green foliage and deeply pigmented standard petals. Seeds are comparatively large (0.6 g). Resistance to *C. personatum* was observed at ICRISAT.

Tifrust-4 (GP21) plants are tall and coarse, very sparsely branched, and mature in 140 days. They have light green foliage, orange standard petals, and medium small (0.45 g) seeds. The genotype is susceptible to *C. personatum*.

Limited quantities of seed (up to 25) will be made available upon written request and agreement to appropriately recognize its source as a matter of open record when these germplasms contribute to the development of a new cultivar or genetic information.

Seed stocks will be maintained and distributed by the Dep. of Agronomy, Univ. of Georgia, Coastal Plain Stn., Tifton, GA 31793, and by the International Crops Research Institute for the Semi-Arid Tropics, Patancheru P.O., Andhra Pradesh 502 324, India.