

each of Foundation, Registered, and Certified seed classes. Breeder seed of Secretariat is maintained by Grassland West Company. U.S. Plant Variety Protection of Secretariat has been applied for (no. 9700375).

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## REGISTRATIONS OF GERmplASMS

### Registration of Rust and Late Leaf Spot Resistant Peanut Germplasm Lines

Four peanut (*Arachis hypogaea* L.) germplasm lines, ICGV 99001 (Reg. no. GP-118, PI 631072), ICGV 99003 (Reg. no. GP-119, PI 631073), ICGV 99004 (Reg. no. GP-120, PI 631074), and ICGV 99005 (Reg. no. GP-121, PI 631075), were released in 2001 by the Plant Materials Identification Committee of International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, AP, India, for their resistance to foliar fungal diseases. These lines were derived from *A. hypogaea* and wild *Arachis* species crosses. ICGV#99001 and 99004 belong to subsp. *fastigiata* var. *vulgaris* while ICGV#99003 and 99005 belong to subsp. *hypogaea* var. *hypogaea*. ICGV# 99001 and 99004 possess resistance to late leaf spot (LLS) [(caused by *Phaeoisariopsis personata* (Berk. & Curt.) v. Arx = *Cercosporidium personatum* (Berk. & Curt.) Deighton], and ICGV# 99003 and 99005 have resistance to rust (caused by *Puccinia arachidis* Speg.).

The pedigrees of these germplasm are *A. hypogaea* × *A. villosa* for ICGV 99001; *A. hypogaea* × [*A. duranensis* × *A. stenosperma*] for ICGV 99003; *A. hypogaea* × *A. cardenasii* for ICGV 99004; and *A. hypogaea* × [*A. batizocoi* × *A. duranensis*] for ICGV 99005. These wild *Arachis* species are immune or highly resistant to rust and/or LLS (Subrahmanyam et al., 1983; 1985). Cytologically stable tetraploid interspecific progenies were produced following triploid-hexaploid route of crossing in case of *A. villosa* and *A. cardenasii*, and amphidiploid route in case of *A. batizocoi*, *A. duranensis*, and *A. stenosperma* followed by intermitant backcrossing with recurrent *A. hypogaea* parent. These populations were evaluated under field conditions for rust and LLS following infector row screening technique (Subrahmanyam et al., 1995)

ICGV 99001 has decumbent two growth habit, sequential branching pattern, and medium-sized elliptic green leaves (IBPGR and ICRISAT, 1992). Its plant height averages 17 cm with a canopy breadth of 41 cm. It has six primary branches and one secondary branch. It has 1-2-3 seeded pods with no

pod beak or pod ridges, slight pod reticulation, and slight to medium pod constriction. The seeds are round in shape. It has 720 mg g<sup>-1</sup> meat content and a 100-seed weight of 44 g. The seeds contain 521 mg g<sup>-1</sup> oil and 253 mg g<sup>-1</sup> protein of dry seeds.

ICGV 99003 has decumbent three growth habit, alternate branching pattern, and small elliptic dark green leaves. Its plant height averages 18 cm with a canopy breadth of 44 cm. It has six primary branches and 17 secondary branches. It has 2-1-3 seeded pods with slight to moderate pod beak and pod constriction, and moderate pod reticulation and pod ridges. The seeds are elongated to round in shape. It has 740 mg g<sup>-1</sup> meat content, and a 100-seed weight of 55 g. The seeds contain 531 mg g<sup>-1</sup> oil and 181 mg g<sup>-1</sup> protein of dry seeds.

ICGV 99004 has decumbent three growth habit, sequential branching pattern, and medium-sized elliptic green leaves. Its plant height averages 21 cm with a canopy breadth of 36 cm. It has 2-1 seeded pods with slight to moderate pod constriction. The pod beak, pod ridges, and pod reticulation are absent. The seeds are round in shape. It has 730 mg g<sup>-1</sup> meat content and a 100-seed weight of 36 g. The seeds contain 496 mg g<sup>-1</sup> oil and 250 mg g<sup>-1</sup> protein of dry seeds.

ICGV 99005 has decumbent two growth habit, alternate branching pattern, and medium-sized elliptic green leaves. Its plant height averages 11 cm with a canopy breadth of 37 cm. It has six primary branches and eight secondary branches. It has 2-1-3 seeded pods with slight to moderate pod beak, moderate pod constriction and pod ridges, and moderate to slight pod reticulation. The seeds are elongated in shape. It has 690 mg g<sup>-1</sup> meat content, and a 100-seed weight of 66 g. The seeds contain 517 mg g<sup>-1</sup> oil and 252 mg g<sup>-1</sup> protein of dry seeds.

The oil quality, as measured by oleic (O)/linoleic (L) fatty acid ratios, of ICGV 99003 (O/L ratio = 1.53) is relatively better than that of ICGV# 99001, 99004, and 99005 (O/L ratio = 1.16 to 1.21). The seeds of all the lines have dark red testa color. ICGV# 99001 and 99004 mature in 145 d and ICGV# 99003 and 99005 in 156 d during the post-rainy season (October–November to April–May) at ICRISAT, Patancheru, India.

By means of infector row technique, these four germplasm were screened for resistance to rust and LLS under field conditions for 2 rainy seasons (June–July to October–November) at ICRISAT. They were evaluated on a 1-to-9 scale, where 1 = no disease and 9 = 81 to 100% foliage damaged, 1 wk before harvest. The average resistant disease score ranged from 3.0 to 4.0 for rust and 3.0 to 5.5 for LLS as compared with 9.0 on the susceptible control TMV 2. ICGV# 99001 and 99004 for LLS and ICGV# 99003 and 99005 for rust recorded the lowest score in both seasons. These lines were also evaluated for components of resistance to LLS and rust under greenhouse conditions. Resistance to LLS in ICGV# 99001 and 99004 is due to longer incubation (9.5–10.0 d as compared with 8 d in TMV 2) and longer latent (16–26 d as compared with 13 d in TMV 2) periods, reduced number of lesions per leaflet (83–116 as compared with 244 in TMV 2 at 20 d after inoculation (DAI)), smaller lesion diameter (2.5–2.8 mm as compared with 6.6 mm in TMV 2 at 35 DAI), reduced sporulation score (1.8–2.7 as compared with 8.0 in TMV 2 at 35 DAI), and lower leaf area damage (6.4–7.4% as compared with 39.0% in TMV 2 at 20 DAI). Resistance to rust in ICGV# 99003 and 99005 is due to longer incubation (10.7–13.0 d as compared with 7.0 d in TMV 2) and longer latent (14–25 d as compared with 9 d in TMV 2 when first pustule sporulated) periods, reduced number of pustules per leaflet (52–110 pustules as compared with 310 in TMV 2 at 50 DAI), smaller pustule diameter (0.6 mm as compared to 1.0 mm in TMV 2 at 50 DAI), reduced sporulation score (1.7–1.9 as compared with 9.0 in TMV 2 at 50 DAI), and lower leaf area damage (1.4–3.0% as compared with 59.5% in TMV 2 at 50 DAI).

The Genetic Resources and Enhancement Program, ICRISAT Center, Patancheru AP 502324, India, will maintain seeds of these elite germplasm. Limited quantities of seed without limitations on research uses will be made available upon request. The seeds of these germplasm are also deposited with U.S. National Seed Storage Laboratory, 1111 S. Manson, St. Fort Collins, CO 80521-4500.

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### Registration of RN582 Sorghum Germplasm Line

RN582 sorghum [*Sorghum bicolor* (L.) Moench] germplasm line (Reg. no. GP-591, PI 628277) was developed jointly by the USDA-ARS and the Agricultural Research Division, Institute of Agriculture and Natural Resources, University of Nebraska, and was released in September 2001.

RN582 is an  $S_6$  selection from the cross (RTx430  $ms_3ms_3 \times E 35-1$ )  $\times E 35-1$ . RTx430 was developed and released by the Texas Agricultural Experiment Station (Miller, 1984) and was provided to this project containing the nuclear male sterility gene  $ms_3$  by A.B. Maunder in 1988. E 35-1 is an Ethiopian land race with white seed, tan necrotic plant color, 2-dwarf in height, late maturing, and was obtained from A. Sotomayor-Rios in 1979. RN582 has tan necrotic plant color ( $pp$ —), white pericarp (— $yy$ ), thin mesocarp ( $ZZ$ ), normal ( $WxWx$ ) white endosperm, no testa ( $b_1b_1$ —), and juicy culms ( $dd$ ). RN582 has demonstrated high heterotic potential for grain yield with 10% higher yields when crossed to AWheatland than the check hybrid AWheatland  $\times$  RTx430 over the 3-yr period 1998 to 2000, and 20% higher yields when crossed to ATx631 than the white seed tan plant check hybrid ATx631  $\times$  RTx437 in 2001 (Table 1). RN582 is adapted to the northern portion of the U.S. grain sorghum producing region and will reach anthesis 5 d earlier than RTx430 in that environment. RN582 is a strong restorer of fertility in A1 cytoplasm. Fertility reaction in other cytoplasmic sterility systems is not known. Nuclear male sterility has not been observed in RN582. Performance data for RN582 and its hybrids collected in 1998, 1999, 2000, and 2001 at Ithaca, NE, are presented in Table 1.

RN582 is a source of tan necrotic plant color and white

**Table 1. Descriptive data for RN582, AWheatland  $\times$  RN582 and ATx631  $\times$  RN582 hybrids.**

	Days to anthesis†	Height	Seed set‡	Test weight	Yield
<b>Inbreds§</b>		<b>cm</b>	<b>%</b>	<b>kg hL<sup>-1</sup></b>	<b>kg ha<sup>-1</sup></b>
RN582	82	96	100	63	6020
RTx430	87	133	90	50	4076
BWheatland (BTx399)	71	104	80	59	5581
LSD 0.05	3	13	21	21	1693
<b>Hybrids 1998–2000¶</b>					
AWheatland $\times$ RN582	76	165	99	77	10 849
AWheatland $\times$ RTx430	74	139	84	76	9845
LSD 0.05	1	4	11	4	627
<b>Hybrids 2001# (tan plant white seed)</b>					
ATx631 $\times$ RN582	77	150	100	56	6707
ATx631 $\times$ RTx437	76	131	100	54	5576
LSD 0.05	1	8	—	6	714

† Days from planting to 50% anthesis.

‡ Percent self seed set under pollinating bag.

§ Data for inbreds are from a randomized complete block design experiment with  $n = 22$  and four replications at Ithaca, NE.

¶ Data for hybrids are means pooled over 3 yr from randomized complete block design experiments with four replications at Ithaca, NE, in 1998 ( $n = 44$ ), 1999 ( $n = 44$ ), and 2000 ( $n = 39$ ).

# Data for tan plant white seed hybrids are from a randomized complete block design experiment with four replications at Ithaca, NE, in 2001 ( $n = 30$ ).