of the seed appears dark maroon, similar to its Anasazi parent. USWA-27 should be useful to breeders who want to modify this novel germplasm for wider adaptation and production.

A limited quantity of seed of USWA-27 is available from Phillip N. Miklas, Vegetable and Forage Crop Production Research Unit, USDA-ARS, 24106 N. Bunn Rd., Prosser, WA 99350-9687. It is requested that appropriate recognition be made if this germplasm contributes to the development of a new breeding line or cultivar. Genetic material of this release will be deposited in the National Plant Germplasm System, where it will be available for research purposes, including development and commercialization of new cultivars.

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References and Notes

1. Anasazi as a name for this type of mottled bean is a registered trademark of the Adobe Bean Co., Dove Creek, CO.
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Registration of C1944 and C1945 Soybean Germplasm with High Seed Protein and Moderate Seed Oil Concentration

C1944 (Reg. no. GP-259, PI 599584) and C1945 (Reg. no. GP-260, PI 599585) are soybean [*Glycine max* (L.) Merr.] germplasms that average 486 g kg^{-1} seed protein and 186 g kg^{-1} seed oil on a moisture-free basis, and have moderately good seed yield. The source of high seed protein in both C1944 and C1945 is the cultivar Pando (1). These germplasm lines were developed by the USDA-ARS and Purdue University Agricultural Research Programs, in their cooperative soybean breeding and genetics project. The lines will be useful for increasing seed protein while minimizing reductions in seed oil content.

C1944 is an F_4–derived line from the cross CRS3-998-24-1 × HC85-2206, designated CX1517. The parent CRS3-998-24-1, from a recurrent-selection population for high seed protein concentration, has averaged 514 g kg^{-1} seed protein and 152 g kg^{-1} seed oil (6). The parent HC85-2206 is a determinate selection from the cross 'Elf × 'Williams' (2,3) and was evaluated in Uniform Test IV of the Uniform Soybean Tests—Northern States in 1991 (4).

The cross was made in the field in 1991 at West Lafayette, IN, and the F_1 generation grown in Puerto Rico during the winter of 1991–1992. The F_2 through F_4 generations were advanced by single-seed descent at West Lafayette, in the greenhouse and in the field. The F_5 generation was grown in plant rows in 1994. Individual plant rows, including CX1517-171, that averaged 486 g kg^{-1} protein and 160 g kg^{-1} oil in the seed were selected and evaluated in replicated performance tests at West Lafayette in 1995–1996. In these tests, 2-yr mean data for C1944 were 2999 kg ha^{-1} seed yield, 24 September maturity date, 1.1 lodging score (where 1 = all plants erect and 5 = all plants lodged flat), 86 cm mature plant height, 488 g kg^{-1} seed protein, and 184 g kg^{-1} seed oil. In these same tests, 2-yr mean data for 'IA2022' were 3404 kg ha^{-1} seed yield, 24 September maturity date, 1.0 lodging score, 94 cm mature plant height, 435 g kg^{-1} seed protein, and 204 g kg^{-1} seed oil. C1944 is an indeterminate line that has purple flowers, gray pubescence, and either brown or tan pods at maturity, containing yellow seeds with imperfect black hila and intermediate seed coat luster.

C1945 is an F_4–derived line from a recurrent selection population for high seed protein concentration (6). An S_0 plant that had 506 g kg^{-1} protein and 174 g kg^{-1} oil in the seed was identified in Cycle 4 of the recurrent selection population. Selections from progenies of this plant during three successive generations of inbreeding averaged 479 g kg^{-1} seed protein and 174 g kg^{-1} seed oil. The F_4–derived line that became C1945 was evaluated in replicated performance tests at West Lafayette in 1994–1996. In these tests, 3-yr mean data for C1945 were 3161 kg ha^{-1} seed yield, 27 September maturity date, 1.8 lodging score, 102 cm mature plant height, 485 g kg^{-1} seed protein, and 188 g kg^{-1} seed oil. In these same tests, 3-yr mean data for 'Probst' (5) were 3510 kg ha^{-1} seed yield, 27 September maturity date, 1.4 lodging score, 89 cm mature plant height, 419 g kg^{-1} seed protein, and 206 g kg^{-1} seed oil. C1945 is an indeterminate line that has purple flowers, tawny pubescence, and brown pods at maturity containing dull yellow seeds with black hila.

Packets of 100 seeds of C1944 and C1945 will be available from the author, upon request, for at least 5 yr from the date of this publication. Appropriate recognition of the source should be made if these germplasms are used in research or contribute to the development of new breeding lines or cultivars.

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Registration of Early-Maturing Peanut Germplasm ICGV 92196, ICGV 92206, ICGV 92234, and ICGV 92243

Improved spanish peanut (*Arachis hypogaea* L. subsp. *fastigiata* var. *vulgaris*) germplasm lines ICGV 92196 (Reg. no. GP-92, PI 599344), ICGV 92206 (Reg. no. GP-93, PI 599345), ICGV 92234 (Reg. no. GP-94, PI 599346), and ICGV 92243 (Reg. no. GP-95, PI 599347) were bred at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) Asia Center (IAC), Patancheru, A.P., India. These four lines were released as early-maturing, high-yielding germplasm by the Plant Materials Identification Committee of ICRISAT in 1996.

ICGV 92196, ICGV 92206, ICGV 92234, and ICGV 92243 originated from the following four crosses, respectively: Chico/ICGV 86052, Chico/ICGV 86533, ICGV 86162/Shuikouyazai, and ICGV 86093/ICG 261. These crosses were made in the 1986 rainy, 1987 rainy, 1989 rainy, and 1985–1986 postrainy seasons, respectively. Chico is an early-maturing, small-seeded spanish germplasm line selected from PI 268661 in the USA (1). ICGV 86052, ICGV

86162, and ICGV 86093 are high-yielding spanish breeding lines developed at the IAC from these three respective crosses: JH 171/Chico, 'Shulamit'/Chico//PI 337409, and 'MH 2'/Shantung Ku No. 203. ICGV 86533 is a jassid (*Empoasca kerri* Pruthi) resistant spanish breeding line developed at IAC from the cross ICGS 36/NC Ac 1705. Shuikouyazai (ICG 11512) is a spanish landrace from China and ICG 261 (also known as NC Ac 44, PI 161297) is a valencia (subsp. *fastigiata* var. *fastigiata*) line from Argentina. ICGV 92206 arose from a single-plant selection made in the F_2 generation of the cross Chico/ICGV 86533. Phenotypically similar early-maturing, high-yielding F_3 plants in the progeny of F_2 plant were selected and bulked at harvest. For ICGV 92196, ICGV 92234, and ICGV 92243, phenotypically similar early-maturing, high-yielding F_2 plants in their respective crosses were selected and bulked together at harvest. In all four crosses, the process of bulking phenotypically similar plants was repeated in following generations until the bulks became phenotypically homogeneous. The pedigrees of the germplasm lines are as follows: ICGV 92196, Chico/ICGV 86052 F_2-B_1-B_1-B_1-B_1-B_2-B_1-B_1-B_1-B_1; ICGV 92206, Chico/ICGV 86533 F_2-P_{11}-B_1-B_1-B_1-B_2-B_1-B_1; ICGV 92234, ICGV 86162/Shuikouyazai F_2-B_1-B_1-B_2-B_1; ICGV 92243, ICGV 86093/ICG 261 F_2-B_1-B_1-B_1-B_1-B_1-B_1-B_1-B_1-B_1-B_1 (where P refers to single-plant selection and B refers to bulk selection).

ICGV 92206 and ICGV 92243 mature in 75 to 80 days after planting (DAP) and ICGV 92196 and ICGV 92234 in 80 to 85 DAP at IAC, similar to Chico. These improved germplasm lines were evaluated in two rainy and two postrainy seasons, in replicated yield trials at IAC which were harvested when the crop accumulated 1240 °Cd (degree days) (equivalent to 75 DAP in the rainy season) and 1470 °Cd (equivalent to 90 DAP in the rainy season). At 1240 °Cd harvest, ICGV 92196, ICGV 92206, ICGV 92234, and ICGV 92243, produced an average pod yield of 1.60, 1.83, 1.56, and 1.65 t ha^{-1}, respectively. These yields represent 58.4, 81.2, 54.5, and 63.4% more than the early-maturing popular Indian cultivar JL 24 and 83.9, 110.3, 79.3, and 89.7% more than Chico (3). At 1470 °Cd harvest, these germplasm lines produced an average of 11.3 to 24.7% more pod yield than JL 24 and 67.0 to 87.0% more than Chico. The increase in pod yield from 1240 °Cd harvest to 1470 °Cd harvest was 8.1% in ICGV 92196, 2.2% in ICGV 92206, 7.1% in ICGV 92234, and 3.6% in ICGV 92243, compared with 48.5% in JL 24 and 14.9% in Chico. The increase in shelling percentage from 1240 °Cd harvest to 1470 °Cd harvest was 15.0% in ICGV 92196, 10.7% in ICGV 92206, 6.8% in ICGV 92234, and 13.3% in ICGV 92243, compared with 32.7% in JL 24 and 9.4% in Chico. In evaluations at other locations in India, Malawi, and Vietnam, ICGV 92206 gave 10 to 46% and ICGV 92234 gave 13 to 27% more pod yield and matured 1 to 2 wk earlier than the local check cultivars.

Except for number of secondary branches, canopy width and height, and pod and seed characteristics, all four lines are similar in plant and flower characteristics. They have erect growth habit with sequential branching, and elliptical light green leaves (2). Each has four to five primary branches, and the flowers are orange in color, with garnet crescent marks.

The number of secondary branches is 1 to 2 in ICGV 92196, ICGV 92234, and ICGV 92206 and 4 to 5 in ICGV 92243. The height of the main-stem axis of these lines is approximately 48 cm in ICGV 92196, 37 cm in ICGV 92206, 43 cm in ICGV 92234, and 45 cm in ICGV 92243 at 80 DAP during the rainy season at IAC. Canopy width is about 42 cm for ICGV 92196 and ICGV 92243, 54 cm for ICGV 92206, and 39 cm for ICGV 92234.

All four germplasm lines have small (24 to 29 mm length and 11 to 13 mm breadth), two-seeded pods, with an occasional three-seeded pod in ICGV 92243. Pods of ICGV 92196, ICGV 92206, and ICGV 92243 have slight beak, slight constriction, and slight reticulation. Pods of ICGV 92234 have slight to moderate beak, moderate constriction, and moderate reticulation. The average meat content is 69% in ICGV 92196, 72% in ICGV 92206, 63% in ICGV 92234, and 68% in ICGV 92243. The average sound mature seeds percentage (calculated as percentage of sound mature seeds to total seeds obtained by shelling random samples of 1 kg of pods) is 70 in ICGV 92196, 76 in ICGV 92206, 73 in ICGV 92234, and 79 in ICGV 92243. ICGV 92196, ICGV 92206, and ICGV 92234 have seeds with tan colored testae, and ICGV 92243 has red colored testae. The seeds of ICGV 92196, ICGV 92206, and ICGV 92234 weigh 35 to 36 g 100 $seed^{-1}$ and seeds of ICGV 92243 weigh 38 g 100 $seed^{-1}$, compared with 30 g 100 $seed^{-1}$ for Chico. Average oil and protein concentrations in these lines range from 46.8 to 48.8% and from 23.3 to 24.3%, respectively.

ICGV 92196, ICGV 92206, ICGV 92234, and ICGV 92243 can be used as improved sources of earliness in a germplasm enhancement program. They can also be cultivated in areas where the growing season is short if planting is delayed, where end-of-season droughts are frequent, or in multiple cropping systems.

Breeder seed of these germplasm lines will be maintained by the Genetic Resources Division, ICRISAT Asia Center, Patancheru P.O., Andhra Pradesh 502 324, India. Limited quantities of seed of these lines are available upon request. Seeds of these four lines are also deposited with the U.S. National Seed Storage Laboratory, 1111 S. Mason St., Fort Collins, CO 80521-4500.

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Registration of REL-1 and REL-2 Sugarbeet Germplasms for Tissue Culture Genetic Manipulations

Two clones of sugarbeet (*Beta vulgaris* L.), REL-1 (Reg. no. GP-187, PI 598071) and REL-2 (Reg. no. GP-188, PI 598072), have been developed and released for use in tissue-culture-mediated genetic manipulations such as transformation and somatic cell selection. High intensities of shoot regeneration from callus, as well as low frequency of shoot vitreousness, make these germplasms unique.

REL-1 was jointly released by the USDA-ARS and the Michigan Agricultural Experiment Station on 15 Oct. 1987. It is a cloned individual having approximately 50% of its germplasm from clone 6926-0-3 (a selection from SP6926-0 based on good in vitro shoot regeneration from leaf callus) (1), 25% from Owen's annual 03 cytoplasmic male-sterile O-type tester, and 25% from 58-81, which is a monogerm East Lansing breeding clone with a selection background for resistance to black root seedling disease (caused by *Aphanomyces cochlioides* Drechs.), chosen for good shoot regeneration ability from callus. REL-1 produces shoots from 100% of the callused leaf disks individually plated on a modified Murashige–Skoog medium (2) with 1.0 mg L^{-1} 6-benzyladenine (3). REL-1 leaf disk callus produces well-dispersed suspension cultures. Although REL-1 has not been evaluated for tolerances to