Registration of TxAG-8 Peanut Germplasm Line

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TxAG-8 peanut (Arachis hypogaea L. subsp. hypogaea var. hypogaea) (Reg. No. GP-127, PI 646155) germplasm line was developed and released by the Texas Agricultural Experiment Station in May 2006. TxAG-8, previously designated Tx046127, was developed for and released based on the color of its leaves, which turn yellow approximately 60 to 70 d after planting (DAP), and based on a plant width similar to varieties with a spreading growth habit. The line is proposed to be used as a field marker to separate experiments, for confirmation of correct planting order, or to fill plots for which seed was insufficient. Given the obvious yellow leaf color during the latter half of the growing season and brown color toward the end of the season, the line is easy to distinguish from all other experimental lines. The currently available field marker, Aureus, is a Spanish-type peanut and is best avoided in experiments involving runner or Virginia plants due to the differences in growth habit and interplot competition.

TxAG-8 was developed from a cross between Aureus (Stone, 1968), a yellow-leaf Spanish-type peanut, and ‘Tamrun 96’ (Smith et al., 1998), a runner-type cultivar. The genetic basis of chlorophyll-deficient mutants has been described previously (Tai et al., 1977; Dwivedi et al., 1990). The cross was performed in the greenhouse at Texas A&M University, College Station, TX, in 2000. The F₁ seeds were planted in the greenhouse in 2001. The F₂ generation was sown as spaced plants at the Western Peanut Growers’ Research Farm (WPGFR) Denver City, TX, in 2002. No F₂ plants combined yellow leaves and the spreading growth habit; however, selections were made for yellow leaves and long, semi-erect lateral branches. Several F₃ and F₄ populations were evaluated as replicated plots at the WPGFR in 2003 and 2004. Several entries were selected and planted for increase in Brownfield, TX, in 2005. Entry Tx046127 was selected as the TxAG-8 germplasm line to be released, based on leaf color, plant growth habit, and uniformity of appearance.

TxAG-8 has semi-erect lateral branches, with a main stem that is not prominent, and lacks flowers on the main stem. The line yielded 61% and 59% less than ‘Florunner’ (Norden et al., 1969) and Tamrun 96, respectively in 2003, and 57% and 55% less in 2004. Despite the reduced yield, plant rows filled well and the plants had a large canopy. Main-stem height average was 13.2 and 17.0 cm at Denver City in 2004 and Brownfield in 2005, respectively, and plant width averaged 30 and 40 cm. During the first 60 d of the growing season, the color of the leaves was light green (143A according to the Royal Horticultural Society-Flower Council of Holland scale); by contrast, the leaves of Florunner and Tamrun 96 were green (132A and 137B, respectively). At 60 to 70 DAP, the leaves of TxAG-8 begin changing color, to light yellow (13A) and eventually darker yellow (14B). However, a few of the leaves on the plants remain light green (143A); usually, the plants at the ends of the plot keep greener leaves. Toward the end of the season, the leaves turn brown. Stem color changed from light green (137A) to pale yellow (13A) during the season.

Branching pattern is alternate, with hypogaea-type pods variable for size and shape. Two-seeded pods range from 2.6 to 3.8 cm in length and from 1.2 to 1.8 cm in width. There is a high frequency of single-seeded pods, averaging 36% (range 24–50%). Pod constrictions range from very deep, for which pods break frequently during shelling, to moderate. TxAG-8 has a tan testa and has a 100-seed weight of 44.7 g. Maturity is variable, ranging from 6 to 66% of pods with black and brown mesocarp.

Small samples (25 seeds) are available from the corresponding author for five years. Seed requests should be addressed to the Texas Agricultural Experiment Station, 1102 East FM 1294, Lubbock, TX 79403.

References