Registration of Tx2909 and Tx2910 Sorghum Germplasm (Sudangrass Type)

Two sorghum [Sorghum bicolor (L.) Moench] germplasm lines, Tx2909 (Reg. no. GP-518, PI 598069) and Tx2910 (Reg. no. GP-519, PI 598070), were developed by the Texas Agricultural Experiment Station, Department of Soil and Crop Sciences, Texas A&M University at College Station, TX. These are sudangrass lines that can be used for the production of sorghum-sudangrass hybrids. Because of a unique combination of photoperiod response genes in these lines, Tx2909 and Tx2910 will produce photoperiod insensitive hybrids with most U.S.-developed A-lines.

Both lines were developed using pedigree selection. The pedigree for Tx2909 is (Tx2785*EBA-3)-B2-T3-C2-CBK-CBK, and the pedigree for Tx2910 is (‘Greenleaf’*EBA-3)-C4-T1-C4-T2-CBK. Tx2785 is a sudangrass line with resistance to sorghum downy mildew [caused by Peronosclerospora sorghi (W. Weston & Uppal) C.G. Shaw] Pathotypes 1 and 2 (1). Greenleaf is a disease-resistant sudangrass released by the Kansas Agricultural Experiment Station (2). EBA-3 is a two-dwarf dual-purpose grain and forage sorghum from Argentina that was used as the source of the unique photoperiod response alleles in Tx2909 and Tx2910. For both lines, initial crosses were made in a greenhouse at College Station in 1986. Segregating progenies were selected at College Station and Beeville, TX, as well as Isabela, PR. Final selections were made at College Station in 1990 and they have been maintained as pure lines.

Both Tx2909 and Tx2910 are restorers in the A1 cytoplasmic-genetic male sterility system. Reactions in other systems are not known. Both lines have tan plant color, juicy culms, red pericarp, and thick mesocarp. Tx2909 has a pigmented testa; Tx2910 does not. Plant height of Tx2909 and Tx2910 is 230 and 210 cm, respectively. Both lines flower between 75 to 80 d after planting at College Station. Both lines have a loose panicle, with tan glumes that cover approximately 50% of the seed. Tx2909 and Tx2910 have excellent green leaf retention and resist insecticide toxicity. Tx2909 has resistance to downy mildew Pathotype 1, but is susceptible to Pathotype 3. Tx2910 is susceptible to downy mildew Pathotypes 1 and 3. Both lines have resistance to anthracnose [caused by Colletotrichum graminicola (Ces.) G.W. Wilson] pathotypes found in Texas, and to head smut [caused by Sphacelotheca holci-sorghi (Rivolta) K. Vanky; syn. Sphacelotheca reiliana (Kühn) G.P. Clinton].

When Tx2909 is used as an R-line on an A-line such as ATx631, a photoperiod-sensitive hybrid will be produced, even though both parents are photoperiod insensitive. The same effect is produced using Tx2910 as an R-line. The expression of photoperiod sensitivity seems to be controlled by two genes that interact in a complementary dominant genetic system. The exact genetic loci causing the photoperiod sensitivity response are under investigation. Preliminary screening indicates that Tx2909 and Tx2910 will produce photoperiod-sensitive hybrids with most U.S. germplasm lines. Because of a unique combination of photoperiod response genes in these lines, Tx2909 and Tx2910 will produce photoperiod insensitive hybrids with most U.S.-developed A-lines. Because of a unique combination of photoperiod response genes in these lines, Tx2909 and Tx2910 will produce photoperiod insensitive hybrids with most U.S.-developed A-lines.

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Registration of KY-Leafy Timothy

KY-Leafy timothy (Phleum pratense L.) (Reg. no. GP-1027; PI 597357) was developed cooperatively by the Kansas Agricultural Experiment Station and the USDA-ARS, Manhattan, KS, in 1996. An old stand of ‘Clair’ timothy (1) was subjected to one cycle of phenotypic selection for earlier heading, greater plant vigor, darker green color, and increased leafiness. The selected clones combined in a three clone synthetic that may be of interest to forage breeders, but their genetic base is too narrow for them to be considered forage hybrids. Both lines produce photoperiod sensitive hybrids with most U.S. germplasm lines. Because of a unique combination of photoperiod response genes in these lines, Tx2909 and Tx2910 will produce photoperiod insensitive hybrids with most U.S.-developed A-lines. Because of a unique combination of photoperiod response genes in these lines, Tx2909 and Tx2910 will produce photoperiod insensitive hybrids with most U.S.-developed A-lines. Because of a unique combination of photoperiod response genes in these lines, Tx2909 and Tx2910 will produce photoperiod insensitive hybrids with most U.S.-developed A-lines. Because of a unique combination of photoperiod response genes in these lines, Tx2909 and Tx2910 will produce photoperiod insensitive hybrids with most U.S.-developed A-lines. Because of a unique combination of photoperiod response genes in these lines, Tx2909 and Tx2910 will produce photoperiod insensitive hybrids with most U.S.-developed A-lines.