REGISTRATION OF GP9BR HERBICIDE-
TOLERANT SORGHUM COMPOSITE

The *Sorghum bicolor* (L.) Moench atrazine [2-chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine]-tolerant (pre-emergence applications) composite GP9BR (Reg. no. GP-314, PI 540313) was cooperatively released as germplasm during April 1990 by the University of Georgia Agricultural Experiment Station (G) and the USDA-ARS Tropical Agriculture Research Station (P) in Mayaguez, PR. The initial composite was established in April 1987 by bulking 2-g subsamples from a random selection of 100 *F₂* and *F₃* segregating progeny from the pedigree/backcross breeding program of R.R. Duncan. The segregating composite was chosen on the basis of a high probability for 3-dwarf segregants emerging from the program. Source pedigrees included in the composite were converted lines of IS 12564(SC48), 12568(SC56), 12612(SC112), 12637(SC146), 12666(SC175), 1598(SC214), 2549(SC228), 3574(SC239), 1201(SC258), 7173(SC283), 1309(SC322), 2462(SC325), 7542(SC408), 1335(SC418), 7142(SC564), 8337(SC574), 17459(SC599), 1269(SC630), and 2856(SC650).

The composite was planted in June 1987 on the Bledsoe Research Farm near Griffin, GA, in 16 rows 76 cm wide by 90 m long. Immediately following planting, 9.35 L ha⁻¹ atrazine 4L (4.48 kg ai ha⁻¹) was broadcast over the plots and 30 mm water was immediately applied by sprinkler irrigation. The plots were kept moist for 3 wk following planting, with irrigation applications of 50 to 75 mm at least two to three times per week. A minimum of 200 mm water was applied, to activate and flush the atrazine into the root zone of the emerging sorghum. Soil type at Griffin was a Pacolet coarse sandy loam (Typic Kanhapludult) with 70% sand, 19% silt, and 11% clay and 1.1% organic matter at pH 6.0 (Ap horizon). Funk G-522DR was used as a standard check hybrid for all field tests at Griffin. This hybrid was strip-planted (two rows) on either side of the composite. All plants of this check were killed by the herbicide stress imposed on it and the segregating composite.

During October 1987, 300 panicles were mass-selected (total plant survival rate was ≈ 10%) based on open to semiopen panicles, panicle size, and vigor; 1-g subsamples of each selection were composited for planting near Isabela, PR, in a winter nursery. Soil type in Puerto Rico was a Coto clay (Tropetic Eutrustox) with 25% sand, 10% silt, 65% clay and 2.5% organic matter at pH 5.5. Similar herbicide rate and irrigation regimes were used in Puerto Rico. During March 1988, 250 panicles were selected (plant survival was again approximately 10%) and 5-g subsamples were composited for planting in Georgia during May 1988. In addition to the Griffin location, the composite was also planted at Plains, GA, on a Greenville sandy clay loam soil (Rhodic Kandult) with 61% sand, 16% silt, and 23% clay and 1.3% organic matter at pH 6.5 (Ap horizon). This particular soil had previously produced atrazine injury to sorghum at recommended (1.68 kg ai ha⁻¹) postemergence application rates followed by 50 to 100 mm of rain or irrigation. Total plant survival at both Georgia locations during 1988 was >90% and in Puerto Rico was ≈ 75%.

Similar cycles of herbicide preemergence application, rate, and irrigation activation were repeated at both locations in Georgia during May to October 1988, in Puerto Rico during November 1988 to March 1989, and again at two locations in Georgia during May to October 1989. A total of 300 combine-height (presumably 3- and 4-dwarf) red- and white-seeded, open to semiopen panicles (total plant survival was >95%) were selected and composited for release.

The composite should provide a useful germplasm source of *F₆* to *F₇* generation combine-height maintainer and restorer lines with exceptional tolerance to recommended applications of atrazine on sandy soils. Seed for distribution will be maintained by the senior author at the University of Georgia, Georgia Experiment Station, Department of Agronomy, Griffin, GA 30223-1797 (Fax 404-229-3215).

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REGISTRATION OF RHIZOMANIA-RESISTANT
GERMPLASM OF *BETA VULGARIS*

**C28 is a SUGARBEET (*Beta vulgaris* L.) germplasm (Reg. no. GP-132, PI 538250) developed by the USDA-ARS in cooperation with the Beet Sugar Development Foundation and the California Beet Growers Association, Ltd., and released in 1989. C28 is multigerm and self-sterile. It segregates for the of the emerging sorghum. Soil type at Griffin was a Pacolet coarse sandy loam (Typic Kanhapludult) with 70% sand, 19% silt, and 11% clay and 1.1% organic matter at pH 6.0 (Ap horizon). Funk G-522DR was used as a standard check hybrid for all field tests at Griffin. This hybrid was strip-planted (two rows) on either side of the composite. All plants of this check were killed by the herbicide stress imposed on it and the segregating composite.**

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