

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
WASHINGTON, D.C.

**NOTICE OF RELEASE OF FIVE UPLAND COTTON GERMPLASM LINES, GVS1, GVS2,  
GVS3, GVS4, and GVS5, POSSESSING DIFFERENT GLAND DENSITIES**

The Agricultural Research Service, United States Department of Agriculture announces the release of five upland (*Gossypium hirsutum*) cotton germplasm lines, GVS1, GVS2, GVS3, GVS4, and GVS5. These five lines are a set which includes three semi-glanded lines (GVS1, GVS2, GVS3) with varying gland densities and seed gossypol content, a totally glanded line (GVS4) and a totally glandless line (GVS5) all in the same genetic background, Stoneville 7A. GVS4 and GVS5 are near isogenic lines (NILs); GVS4 has normal glanding and gossypol in the seed while GVS5 has no glands or gossypol in the seed. These lines will be valuable tools for mapping projects and field based studies, such as insect preference and resistance studies. The lines will also provide public and private breeders with genetic resources to develop low seed gossypol lines while maintaining protective glands on the plant. Low seed gossypol lines will improve the feeding value of cottonseed and provide a marketable seed product in addition to the fiber.

All five lines are progeny from a cross between the glandless parent 'STV 7A gl', (a BC5 bulk of glandless progeny from a cross between Stoneville 7A and an unknown glandless line) and the glanded parent 'Stoneville 7A'. The reduced gossypol lines, GVS1, GVS2, GVS3, were developed by crossing and progeny selection for individuals with lower seed gossypol and near-normal glanding in the rest of the plant. The lines were advanced by single plant selection to the F11 generation. GVS4 and GVS5 were generated from the same study used to develop the semi-glanded material; two plants were selected from the same F7 progeny row. The plants were phenotypically the same except one had normal glanding and one was glandless. The two selections were also advanced to the F11 generation by single plant selection with progeny evaluation in each generation as was the case for the semi-glanded lines.

In the F11 (2008), the seed gossypol content of GVS1, GVS2 and GVS3 was 0.90, 0.49, and 0.51% of the total seed weight, respectively. The parental line Stoneville 7A glanded had 1.54% and the Stoneville 7A glandless had 0.00% seed gossypol. The NILs GVS4 and GVS5 had 1.49 and 0.00% seed gossypol. In 2008 GVS1, GVS2 and GVS3 had normal stem glanding, that is, similar to the glanded parent and check cultivars. Calyx glanding was also normal in GVS1 and GVS3 and GVS2 had a reduction of 17%. In 2008 boll glanding scores were 100% (GVS1), 66% (GVS2) and 50% (GVS3) of the Stoneville 7A glanded parent. In these lines, leaf glanding was reduced, especially at the end of the growing season, but the leaves were always glanded on the veins and margins. GVS4 plants had normal glanding throughout and GVS5 plants were completely devoid of glands.

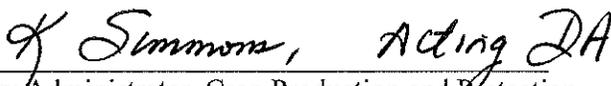
Lint yields in 2007 were 1584 kg/ha for GVS1, 1302 kg/ha for GVS2, 1363 kg/ha for GVS3 and 1632 kg/ha for the yield check SG 747. Lint yields for GVS4 and GVS5 were 1535 and 1347 kg/ha, respectively.

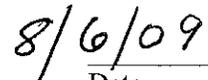
Fiber length (HVI-UHM) was shorter in the germplasm lines than in the quality check FM 832 (32.13 mm) with 30.48 mm for GVS1, 29.08 mm for GVS2, 28.83 mm for GVS3, 30.16 mm for GVS4 and 29.21 mm for GVS5. However, fiber length in the germplasm lines was not significantly different from that of SG 747 in the same year (30.48 mm). Fiber strength of the semi-glanded lines was 298 kN m/kg for GVS1, 326 kN m/kg for GVS2, and 278 kN m/kg for GVS3 while the quality check FM 832 had a fiber strength of 330 kN m/kg. HVI strength for GVS4 was 285 and 278 kN m/kg for GVS5. Micronaire

for FM 832, was 4.8 while micronaire for the semi-glanded lines was 5.5 (GVS1), 5.3 (GVS2), 5.8 (GVS3), and 4.2 (GVS4, GVS5).

The breeding research for these lines was led by Jodi A. Scheffler, and final selections were made by Gabriela B. Romano and Jodi A. Scheffler. Small quantities of seed are available to cotton breeders, geneticists, and other research personnel upon written request to: Jodi A. Scheffler, USDA, ARS, Crop Genetics and Production Research Unit, P.O. Box 345, Stoneville, MS 38776. It is requested that appropriate recognition of the source be given when these germplasm lines contribute to the development of a new breeding line, hybrid, or cultivar or are used in a mapping or evaluation experiment. 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 varieties/cultivars.

**Signature:**

  
Deputy Administrator, Crop Production and Protection  
Agricultural Research Service, U.S. Department of Agriculture

  
Date