NEW TRANSGENIC FIBERMAX VARIETIES J.K. Dever Aventis Crop Science Collierville, TN

Abstract

Aventis Crop Science has released new transgenic FiberMax cotton varieties in 2001, including FM 832 B, tested as EXP0043, FM 991 R, tested as EXP0991, FM 989 R, tested as EXP1003, and FM 989 BR, tested as EXP0055. These varieties were initially developed in the CSIRO breeding program, and were tested as elite strains by Aventis. These lines will be the first Aventis transgenic variety introductions and are targeted to mid- and full season production in the Southeast, Midsouth, South Texas and Far West. These varieties provide a yield and fiber quality package similar to their recurrent parent with insect protection of the Bollgard gene and resistance to over-the-top applications of Roundup Ultramax.

Introduction

Through an agreement finalized with Monsanto in March 2001, Aventis was enabled to provide Monsanto technology in the FiberMax germplasm. The first offerings include FM 832 B, which is adapted to Southern Texas, Louisiana and South Mississippi. FM 832 B, like its recurrent parent, produces some of the longest staple fiber among Midsouth and Southwest varieties. FM 989 R and FM 991 R are longer season Roundup Ready varieties for the Southeast and West. FM 989 BR shows somewhat earlier maturity than its recurrent parent and has tested extremely well in the Mid-Atlantic area.

Discussion

Variety Tolerance and Equivalence

All four commercially available FiberMax transgenic varieties show substantial equivalence to the recurrent parent in yield, fruiting pattern and fiber quality. The Roundup Ready lines show substantial equivalence in yield, fruiting pattern and fiber quality unsprayed and sprayed twice over the top and twice side-dress.

Yield and Quality

Over more than 18 locations in OVT trials in 2001, FM 989 BR averaged 105% of the test yield means. Fiber length, strength and micronaire were statistically equivalent to FM 989. FM 832B had average yield of 1130 lbs. per acre in Louisiana OVT strains compared to a test mean of 1080. Fiber length of FM 832 B in Winnsboro was 1.20 inches, and strength was 48.8 g/tex. In the Georgia OVT strains (3 locations), FM 989BR yielded 1517 lbs./acre; FM 991 R, 1455 lbs./acre; and FM 989 R 1429 lbs./acre compared to FM 989 at 1384 lbs./acre in the OVT variety tests.

In the first year of testing, FM 989BR had the highest yield across locations in Virginia and North Carolina.

Adaptation

FM 832 B is well adapted to full season areas in Texas, Louisiana and South Mississippi. It is particularly competitive in dryland situations on heavier soil. FM 832 B is characterized by the same vigorous growth habit as FM 832 and can benefit from early plant growth regulator applications under good moisture and fertility conditions.

FM 991 R is the Roundup Ready conversion of FM 991, a variety not commercially available in the USA as a conventional line. It has been tested in the USA since 1996 as IF 1000. FM 991 R is a full season, erect plant that produces excellent fiber quality. It has performed well in South Carolina and Georgia. IF 1000 has performed well under earlier conditions in the San Joaquin Valley. FM 991 R would benefit from plant growth regulators at first blooms if conditions warrant.

FM 989 R is a full season line with similar areas of adaptation to FM 989. FM 989 BR initiates fruiting 1-2 nodes earlier and performs well in the Mid-Atlantic as well as some areas of the Midsouth. Performance in the higher heat unit areas of West Texas was excellent in 2001.