A New Transgenic Trait Protects Cotton from Thrips and Lygus Damage
Jeffrey Ahrens, Monsanto Company, 700 Chesterfield Pkwy W., Chesterfield, MO. 63017. 636-737-5275. jeffrey.e.ahrens@monsanto.com
Waseem Akbar, Monsanto Co.
Robert Brown, Monsanto Co.
Anilkumar Gowda, Monsanto Co.
Jason Stelzer, Monsanto Co.
Scott Bollman, Monsanto Co.
Thomas Clark, Monsanto Co.
John Greenplate, Monsanto Co.

Introduction of transgenic traits such as Bollgard and Bollgard II has brought about revolutionary changes in cotton (Gossypium hirsutum) farming with regard to lepidopteran pest control. However, no such option is currently available for controlling two other important pests of cotton; thrips (Thysanoptera: Thripidae) and Lygus (Hemiptera: Miridae). Thrips typically cause injury to cotton early in the season, whereas Lygus infests cotton from early squaring stages to post bloom. Chemical insecticides are currently the only available option for managing these insects, and resistance to several classes of insecticides has already been reported. We have identified a protein derived from Bacillus thuringiensis that exhibits efficacy against these pests, and through protein engineering we have increased its activity. Transgenic cotton plants expressing this improved protein have demonstrated excellent protection against both thrips and Lygus in multi-year field studies. This represents the first ever transgenic control for hemipteran and thysanopteran pests of cotton and its commercial adoption should help to further reduce chemical insecticide use in the cotton agroecosystem.

Key words: Lygus, thrips, cotton, Bacillus thuringiensis