EFFICACY AND AGRONOMIC PERFORMANCE OF BOLLGARD II

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Abstract

Bollgard II is a second generation insect control cotton product with two genes for improved lepidoptran control and insect resistance management. Bollgard II was produced by particle bombardment, transforming DP50B and adding the Cry2Ab gene. Replicated field trials were established at 10 locations across the US cotton belt to evaluate the efficacy and agronomic performance of Bollgard II isolines, containing either or both transgenes, in three varietal backgrounds (DP50, DP33B, and SG125) under sprayed and unsprayed conditions. Sprays in all plots were triggered by larvae or damage thresholds in non-transgenic plots. Insect damage was rated on 10 to 20 plants per plot in the unsprayed block throughout the growing season. Lint yields were taken, mature boll characteristics were measured, and a fiber analysis was done on individual plot samples. No differences were seen with respect to square or boll damage between the single and double gene isolines. All lines containing one or both of the Bt genes provided effective bollworm/budworm control, compared to significant damage in the non transgenic lines. The Cry2Ab containing lines provided improved protection from leaf feeding damage compared to the original Bollgard or non-transgenic lines. Equivalent lint yields were seen between the isoline families containing either or both transgenes in the sprayed or unsprayed plots averaged across the locations. Whereas the yields of the non-transgenic lines in the unsprayed plots were significantly reduced. No detrimental effects of the new gene was seen on any of the measured boll characteristics or fiber quality variables. After the third year of field testing the Cry2Ab insert has demonstrated itself to be more efficacious than the original Bollgard on target pests and adds an enhanced spectrum of activity. The activity and agronomics of Bollgard II has also been proven in two additional commercial backgrounds.