

Part 4 – Final Report Executive Summary

Provide a one page Summary of your research that is not commercial in confidence, and that can be published on the World Wide Web. Explain the main outcomes of the research and provide contact details for more information. It is important that the Executive Summary highlights concisely the key outputs from the project and, when they are adopted, what this will mean to the cotton industry.

The resilience of a stacked Bt technology is determined by the efficacy of each individual toxin in controlling insects. Ideally, each toxin will kill >95% of challenged insects, and when combined in a stack will add together to kill all insects except those simultaneously resistant to all toxins. Recent work on Bollgard II demonstrates that this ideal situation is not always met in practise.

The proposed Bollgard 3 technology will contain the same Cry1Ac and Cry2Ab genes that occur in Bollgard II plus Vip3A. We challenged Bt-susceptible insects of *H. armigera* and *H. punctigera* against irrigated field grown cotton containing individual toxins (Cry1Ac, Cry2Ab, Vip3A) and the stacked product (Cry1Ac + Cry2Ab + Vip3A). The proportions of susceptible insects killed throughout the season on single-toxin plants determined the likely selection for resistance to each toxin. This information on efficacy is commercial-in-confidence. It will be a key component for decision making around a Resistance Management Plan for Bollgard 3.

A study at one site in Emerald on the effects of growing cotton over a longer than normal season suggest that this practise does not substantially reduce the efficacy of Bollgard II cotton against Cry2Ab susceptible and resistant insects. In addition, data were collected over one season at one site which suggests that Bollgard II cotton that has regrown after defoliation remains efficacious against *Helicoverpa* species.