

## CSE66C Executive Summary

A one page plain English summary of the project outcomes must be submitted, and this may be used in CRDC publications and on our proposed web site.

Transgenic cotton expressing insecticidal proteins offers a great opportunity to Australian growers through a significant reduction in the use of synthetic chemical insecticides and the problems of environmental damage that they pose. However, as with any new technology, we have to learn its limitations and the way in which we can derive the greatest sustainable benefit. A significant limitation detected early in the deployment of Bt cotton has been the variations in plant resistance to insect pests.

This project has developed methods that allow us to measure the amount of the insecticidal protein from cotton tissues of all ages and types. This involves extraction of all the proteins in these tissue and capturing the insecticidal component by using an antibody that binds only to the insecticidal protein. The amount of insecticidal protein bound to the antibody can then be detected by using methods that are now commonplace in medical practice and industry. By collaborating with other researchers we have obtained data on the level of Cry1Ac in INGARD™ cotton throughout the season and under various growing regimes. Other collaborators have conducted bioassays with tissues from the same plants. By combining these data we are improving our understanding of the relationships that exist between plant performance and insecticidal protein levels. We can then start to identify the environmental factors that trigger changes in plant performance and what these changes mean for short- and longer-term management strategies, including resistance management.