

**Project title:** Physiology of cotton responses to pest damage

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**Project period - actual:** March 1993- June 1995

**Organisation:** CSIRO Division of Plant Industry

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#### **SUMMARY**

The cotton plant has two main sets of traits that contribute to its resistance to pests: (1) chemical (e.g. gossypol) and morphological defences (e.g. okra-leaf) and (2) compensatory mechanisms for regrowth (e.g. bud dormancy). Defences are aimed at damage avoidance, while compensation refers to the ability of the plant to recover after damage. This project investigated compensatory growth in cotton on the grounds that a better understanding of the underlying mechanisms could assist in better pest management practices. In two years of experiments we have advanced considerably in our understanding of cotton responses to three main types of damage: i) fruit damage, as caused by *Helicoverpa* and mirids; (ii) leaf damage, as caused by mites; and (iii) tip damage, as caused by early-season pests. Important physiological and morphological responses of the cotton plant have been identified that will be used to improve the capacity of the CERCOT cotton model to predict crop responses to pest damage. We envisage that such an enhanced version of CERCOT will be the core of the next generation of packages for pest management in the Australian cotton industry.