

**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.**

**Evaluation of disease tolerance of transgenic cotton lines containing genes for putative antifungal proteins**

We have obtained transgenic cotton that makes increased amounts of an enzyme, chitinase, believed to have antifungal properties. These transgenic plants produce about 10 times as much chitinase as their untransformed parents. We tested the tolerance of these transgenic plants to infection by the fungal pathogens that are commonly significant in Australian cotton production, namely *Verticillium* and *Fusarium* wilts. In glasshouse assays we found that the chitinase expressing line was less stunted after *Verticillium* infection than an untransformed control line. Field tests in conditions of high *Verticillium* or *Fusarium* pressure showed no differences between the transgenic and control lines.

Glasshouse testing of an osmotin-expressing line has also shown reduced stunting after *Verticillium* infection. The chitinase and osmotin-expressing lines were crossed and a line homozygous for the expression of these two genes was selected. This line is currently being tested in the glasshouse. Work with other potentially antifungal genes is continuing.

Feeding trials using transgenic chitinase cotton and *Helicoverpa* (bollworm) larvae to test the effects of chitinase on the susceptibility of insects to Bt toxin were conducted. No useful toxicity of chitinase or synergy between chitinase and Bt was found.