

## SUMMARY

### 1. INTRODUCTION

Whiteflies represent a major potential threat to Australian cotton. Whiteflies damage cotton directly feeding throughout the season and by gumming up the lint with honey dew in the late season. In Australia two species are reported to occur on cotton, the green house whitefly *Trialeurodes vaporariorum* and *Bemisia tabaci* (the cotton whitefly). The cotton whitefly has a major pest status in cotton overseas (Africa, Middle east, Asia and America) which is exacerbated by insecticide resistance to pyrethroids and organophosphates. While whiteflies do not cause any problems on cotton in Australia at present, they are becoming more common on the crop. However, whitefly species, or insecticide resistance status on Australian cotton are not known

### 2. OBJECTIVES

The objectives of Dr Byrne's visit to Australia were:

1. For Dr Byrne to present a paper to the special whitefly workshop at the World Cotton Research Conference in Brisbane, February 1994 on "Resistance biochemistry of the cotton whitefly *Bemisia tabaci*".
2. To assist Dr Gunning to initiate some baseline toxicological and biochemical studies to assess the resistance potential of *B. tabaci* on Australian cotton crops.
3. To discuss collaborative research on *Helicoverpa* resistance biochemistry between Dr Gunning and the Rothamsted Insecticide Resistance Group.

### 3. RESULTS AND DISCUSSION

Whiteflies, collected from cotton in NSW and Queensland were all identified as the green house whitefly *Trialeurodes vaporariorum*. Biochemical resistance studies showed no organophosphate resistance. However, whiteflies from sprayed cotton location had elevated esterase levels, compared to an unsprayed sites. This increased enzyme activity confers tolerance to pyrethroids.

### 4. CONCLUSION AND RECOMMENDATIONS

The greenhouse whiteflies found on cotton this year, have the biochemical capacity to develop pyrethroid resistance. While we presently do not appear to have *B. tabaci* on cotton in Australia, the cotton industry is constantly at risk of its accidental introduction. *B. tabaci* already occurs in northern Australia and these whiteflies may be of the very troublesome insecticide resistant B-Types. Clearly, further research into both whitefly species is required.

We intend to continue the survey of insecticide resistance in the green house whitefly *Trialeurodes vaporariorum* on cotton and to examine the biochemical