

CSP74C Plain English Summary

Research in this project was conducted over 3 years to investigate a range of issues related to improving the management of pests in cotton, especially through the early season.

Experiments investigated

- . the efficacy and non-target effects of new insecticides
- . the response of cotton to early pest damage from thrips and other pests
- . resistance in spider linte to insecticides
- . the effects of spider Tintss on yield of dryland cotton
- . plant resistance in cotton to spider linte
- . rotation crops and Tinte overwintering.
- . effects of aphids on cotton yield

The aims of the project were largely met and outcomes have been extended to industry.

This project has highlighted the importance of early season pest management in 'setting the stage' for integrated pest management (IPM) in cotton. Further, to facilitate the development of IPM the efficacy and effect on predators of a wide range of insecticides was tested. This allowed development of tables that growers/ consultants can use to assess the likely impact of insecticides on beneficial insect populations.

A comprehensive risk analysis study for thrips was undertaken and the capacity of plants to recover from thrips damage explained to industry. Further study identified the capacity of cotton to recover from different types of pre-squaring damage and these results reported to industry. These outcomes have contributed significantly to changing attitudes toward thrips control and early damage and have produced a dramatic reduction in the early season use of organophosphate sprays to control thrips.

Resistance in spider linte to acaricides was studied. Resistance was found to older organophosphate compounds, but alarmingly also to the newer pyrethroid, bifenthrin. Early in the project an acaricide resistance management strategy was developed and has been endorsed and accepted by industry. The efficacy of new acaricides was also compared and results reported to industry. Spider Tintss are a key pest in irrigated cotton but their significance in dryland cotton was unknown. Our experiments showed that dryland cotton is more tolerant of linte damage than irrigated cotton, with yields much less affected. We also compared the resistance of a range of cotton lines to linte and identified a number which show promising resistance.

Notably, the commercial okra leaf varieties consistently conferred a moderate degree of resistance to linte and were high-yielding. We also considered the possible impact of changing rotation crop choices on pests such as mites. Legume crops grown through winter harboured significant mite infestations. These mites could migrate into cotton in the following spring and legume rotations are therefore a potentially important source of infestation of spider mites between crops

Experiments to determine the effects of aphids on cotton growth and yield were hampered by insecticide drift from neighbours. Nevertheless, glasshouse experiments showed that the green peach aphid is far more damaging to cotton than the cotton aphid. This was reflected in changes to thresholds for these pests.