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PLANT
INDUSTRY

CSIRO Division of Plant Industry
Cotton Research Unit
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Narrabri, NSW, 2390

Field Experiments with Cotton at Myall Vale

(Project CSP34C)

Final Report

Report compiled for the Cotton Research and Development Corporation

COTTON RESEARCH AND DEVELOPMENT CORPORATION

FINAL REPORT

PROJECT CODE: CSP34C
ORGANISATION: CSIRO Cotton Research Unit
PROJECT TITLE: Field experiments with cotton at Myall Vale
STAFF INVOLVED: (see below)

Aims:

The aim of the project, to enable cotton to be grown in experiments in the disciplines of breeding, agronomy and entomology by the CSIRO Cotton Research Unit at the Australian Cotton Research Institute, has been met.

Over the three years of CSP34C (1/7/91-30/6/94) a series of agronomic, breeding and pest management studies were completed. An indication of the scale of research is detailed below with that for 1993/94.

| Area of Research | Area of cotton | Staff involved |
|--|-----------------------|---|
| <i>Cotton breeding</i> | 20.3ha | Dr. N.J. Thomson, Plant Breeder Dr. G. Constable, Plant Breeder P.E. Reid, Plant Breeder C. Patrick, Senior Technical Officer L. Heal, Senior Technical Officer T. McCumstie, Technical Assistant L. Carpenter, Technical Assistant |
| <i>Agronomy</i> Varietal responses to irrigation regimes Row spacing, nitrogen, Pix, potassium | 4.3ha | Dr. G. Constable, Plant Breeder S. Milroy, Agronomist J. Kruizinga, Senior Technical Officer |
| Compensatory physiology of cotton | 0.6ha | Dr. V.O. Sadras, Agronomist |
| Nitrogen application efficiency | 3.4ha | Dr. J. Freney, Ian Rochester |
| <i>Entomology</i> | | |
| Host Plant Resistance, BT assessment | 10.0ha | Dr. G.P. Fitt, Entomologist C.L. Mares, Technical Officer |
| Heliothis behaviour and population dynamics (not cotton) | 8.0ha | Dr. G.P. Fitt, Entomologist C. Tann, Technical Officer |
| Mite ecology and management | 6.0ha | L.J. Wilson, Entomologist L. Bauer, Senior Technical Officer |
| Survival of Heliothis eggs on cotton | 3.5ha | G. Dillon, Entomologist |
| Validation of HEAPS subroutines | 2.0ha | M. Dillon, Entomologist |
| Total Area | 51.8ha | |

The experimental crops were grown on a small scale (up to 10ha) using conventional agronomic and irrigation management, combined with specialised data collection appropriate to each experiment. Trials were all machine picked and plant samples handled and prepared on site. The project ensures that the work currently being done by the CSIRO Cotton Research Unit continues and considerable progress has been made on a range of breeding, agronomic and pest management experiments. The cotton industry is benefiting greatly from this work. New varieties are now being released regularly, including improved high yielding and disease tolerant selections of Siokra and Sicala while field work with Bt transgenic cottons has now commenced. New decision support systems (entomoLOGIC, hydroLOGIC) have been developed and will be further extended. Current agronomic and entomological work will improve management of *Helicoverpa*, mites, thrips, water and nitrogen and provide a foundation for more sustainable management systems.