1987/UNE1L
11/84-12/87
Thesis
CV

FINAL REPORT ON PROJECT UNE 1L: 'AN EVALUATION OF SEED-BED PREPARATION METHODS FOR GROWING IRRIGATED COTTON ON GREY CLAYS'

Project Number:	UNE 1L		
Project Title:	An evaluation of seed-bed preparation methods for growing irrigated cotton on grey clays.		
Field of Research:	Soil Research	Field Code:	6
Organisation:	University of New England		
Address:	Armidale NSW 2351		
Project Supervisor:	Dr D A MacLeod, B.Sc., M.A., Ph.D.		
Division/Branch:	Department of Agronomy and Soil Science		
Address:	As above		
Administrative Contact:	Mr T Moore Administrative Officer		
Telephone:	(067) 73-2352		
Commencement Date:	November, 1984		
Completion Date:	December, 1987		

OBJECTIVES:

The project utilized a field trial established by Auscott Pty Ltd, on a grey-brown clay at Warren in June, 1984. The trial consists of 3 replicates of the following treatments:

(i) deep ripping to 45 cm, followed by discing and listing;

(ii) chisel ploughing to 25 cm, followed by discing and listing;

(iii) direct listing only, ie. minimum tillage.

After the 1985 cotton crop had been harvested the plots were sown to wheat; the tillage treatment were reimposed prior to sowing to cotton in the 1986/87 season.

The objective of the project was to provide information on cotton growth and soil properties during the cropping sequence to answer the following questions:

(i) What are the effects of the different tillage treatments on soil physical condition? We were principally concerned with soil structure, which determines total porosity and pore size distribution. These control (a) the entry of water into the profile and its subsequent retention and availability for crop growth, (b) drainage of water within the profile and hence aeration, and (c) soil strength and rootability of the profile.

(ii) How do the tillage treatments affect soil conditions? The main topics of interest were the adverse effects of compaction and smearing by machinery, the beneficial effects of loosening the soil, and the ability of the soil to regenerate structure by swelling/shrinkage and root development.

(iii) What are the effects of tillage treatments on cotton production?

The ultimate aim of the project was to generate a body of data to form the basis for developing a scheme for predicting the optimum tillage practices for a given set of soil, climatic and crop sequence conditions.

The project provided a Research Scholarship to enable Patrick J Hulme to study for the Ph. D. degree at the University of New England. This thesis was submitted in December 1987 and the Ph. D. was awarded in 1988.

The detailed results of this project are contained in Dr Hulme's Ph. D. thesis, a copy of which is enclosed for retention by the Corporation. The results and conclusions of the study are summarised in the following summary report.