FINREP92.

COTTON RESEARCH & DEVELOPMENT CORPORATION

FINAL REPORT

PURCHASE OF IMPLEMENT GUIDANCE SYSTEM

DAN 62C

1991 - 1992

RUSSELL MARTIN

NSW AGRICULTURE

COTTON RESEARCH AND DEVELOPMENT CORPORATION

PURCHASE OF IMPLEMENT GUIDANCE GUIDANCE SYSTEM

FINAL REPORT

Project Number: DAN 62C

Field of Research Crop Management, breeding: 1 and 3

Organisation: NSW Agriculture

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Project Commenced 1/7/91

Project Completed 30/6/92

Project Objectives:

To ensure that row experiments have optimum management starting with even row spacings and accurate inter-row operations.

SUMMARY

An Orthman Mk II tracking unit was purchased in October 1991 prior to cotton sowing. The unit was successful in planting CSIRO's Leitch's block using a Kinze planter.

Modifications to NSW Agriculture listing rig was conducted over summer to accommodate the tracking sensors which are fixed at the front of the listing rig, together with the manufacture of suitable marking arms to accommodate minimum tillage experiments.

The 1992/93 cotton areas have been prepared using the Orthman tracker and has eliminated the 'guess row' errors previously experienced. The tracker will be used through the coming season for inter–row cultivation, now that standard width rows have been constructed.

REPORT

It is generally acknowledged that field research is rendered difficult because it is hard or impossible to control many environmental factors influencing crop growth, development and yield. It is therefore necessary to ensure that all the management practices involved in field experiments are done with precision and accuracy so as to minimise error.

One of the basic variables that needs to be made uniform is row width, since it relates directly to plot area and it is usually a mandatory requirement for the individual plots in an experiment to be of equal area. Unfortunately during the 'hilling up' or 'furrowing out' stage of land preparation the rows falling between each pass of the tractor are often variable and non-standard, ranging from as much as 20 cms wider or narrower than standard. These 'guess' zones can be a major source of experimental error, especially when the 'guess' row is used for measurement of growth and yield. Besides experimental errors there are grave risks that, where 'guess' rows depart substantially from standard, an operator, if he gets in the wrong 'track', will cultivate out sections or even a whole row. Having non-standard 'guess' rows is thus simply not acceptable experimentally.

Devices known as trackers are on the market which are designed to minimise the 'guess' row error. They are attached to existing row crop equipment. They guide by use of electronic sensors which in turn operate hydraulically controlled steering coulters.

Following field inspections of the various commercial units a Orthman Mk II tracking unit was purchased in September 1991 and used successfully on the planting of Leitch's block attached to a Kinze planter. Prior to furrowing, modification have been made to the lister rig to accommodate the protruding sensor balls and the trailing disk coulters. These modification allow some improvements to be incorporated into the rig. All the 1992/93 listered area on the station have be formed using the Orthman tracker with a high degree of success. Difficulties can be experienced if the moisture is to high or if there is a high percentage of surface stubble. In both these cases alterations to the electronic sensors, combined with driver awareness, have overcome the problem.

FINANCIAL SUMMARY

ITEM	1991/92	1992/93	1993/94
Total Staff Costs	-		
Total Travel	-		
Total Operating	-		
Capital	12500		
Total Requested	**12500**		

All funds were expended on the purchase of the guidance system.