

1996

## Cotton Research and Development Corporation

**Project Title:** Maintenance of the VAX computer system at the  
Narrabri Agricultural Research Station

**Project No:** CSP50C

**Research Organisation:** CSIRO Plant Industry

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*A final report prepared for the Cotton Research and Development Corporation*

**FINAL REPORT RECEIVED**

## 1. Introduction

Research work at Narrabri Agricultural Research Station (NARS) is divided into two major components (i) field or laboratory work involving running experiments and gathering data, and (ii) the analysis, documentation, discussion, presentation and extension of the results of that work. The latter point is extensively computer based.

Research computer facilities at NARS have already proved themselves to be invaluable for the development of application packages for decision support such as SIRATAC, hydroLOGIC and entomoLOGIC, statistical analyses, general data processing, simulation modelling, word processing and presentation graphics. Much of the work completed in the last few years would have been difficult or impossible without adequate computer facilities.

Hardware and software maintenance is essential to optimise the use of the DEC computer system, recently upgraded through CSP23C and to ensure a reliable service in a critical multi-user environment. The DEC system is again being upgraded to reduce maintenance costs and facilitate advanced networking with access to the world-wide Internet.

## 2. Objectives

The aim of the project is to maintain the upgraded DEC computing facility at Myall Vale for the term of the project.

## 3. Results and Discussion

### Staffing

Mr Chris Nutt (System Manager to October 1995)	CRDC funded	100%
Mr Lance McKewen B.E. (Hons), Grad. Dip. Bus. Sys.	Senior Research Scientist CSIRO funded	10%

### Progress:

The project commenced on 1 July, 1993. Since then the following has been achieved:

- (1) The computing facilities at ACRI have been operating with a high level of availability.
- (2) The new DEC 2100 SMP Server has been commissioned to replace the VAX 4000. It is currently available as a VMS host and user accounts have been transferred from the VAX.
- (3) The leased line to Canberra (funded by CSIRO) has connected users to world-wide networks using the Internet. Administration staff have direct connection to their mainframe located in Canberra, while research staff have direct connection to SIRONET and AARNET, allowing rapid high-speed communications, with transmission and retrieval of documents and Email to other centres of research.
- (4) All office buildings at ACRI (including the new CRC building) have been wired with coaxial ethernet cable. This gives users with desktop computers connected to the ethernet access to file sharing, Email and to the Internet, via the Cisco Router and leased line. New PC workstations in the proposed capital budget will enable users who currently have dumb terminals to access these services.

- (5) Fibre-optic connections (funded by CSIRO and NSW Ag.) have been installed to the insectaries and to the Plant Breeding Shed to extend services to those sites.

Currently CRDC supports computer operations at ACRI through 2 projects - CSP50C Maintenance of VAX computer system... and CSP49C Computer Systems Manager, Narrabri. Over the last 2 years several changes have been made which have changed the cost structure and also the requirements for technical support.

With capital from CRDC the ageing VAX system was replaced with a DEC Alpha server in June 1994. A backup server was purchased in June 1995 and immediately commissioned to provide file and print services. This program has also seen the replacement of dumb terminals with powerful PC workstations on the users' desks, giving them greater processing power and access to secure file storage. The servers are now used more for file and print services and communication services including Email.

The 3 year hardware warranty on the new Alpha server enabled the maintenance contracts with DEC covering the old VAX, terminals and terminal servers to be cancelled, with a resulting cost saving of around \$40,000 p.a.

The Alpha server has now been configured with Windows NT to become the centralised communication server for the station. It will be used for the World Wide Web server and for accessing the weather station network as well as some in-house file and print serving. We are currently evaluating a Log-in utility for the server to allow users to run specialised programs on the server itself.

The development of the Internet in recent years has provided a means of communication and also dissemination of information. Information and systems developed at ACRI have been made available to the Cotton Industry by setting up a World Wide Web server at ACRI. Users can connect directly by dial-in phone lines or over the Internet using their own service provider. The first data to be published on this server will be daily weather data for the cotton growing regions.

#### **4. Discussion**

The NARS Computing Facility is an essential component in the success of numerous research and development projects for the cotton industry. The facility has been progressively developed over several years and on completion of this project consisted of:

- DEC 2100 AXP SMP Server purchased in 1994 (see CSP50C)
- IBM PC Server 320 running Windows NT
- Sparc 20 Server running Solaris 2.4
- a 10MB Thick/Wire Ethernet,
- telephone modems,
- an HP colour inkjet printer,
- Webster Multigate bridges to MAC network,
- MACs,
- CD-ROM readers,
- PCs,
- laserwriters,
- a network FAX connection,

- an SPC Dataline being currently connected to SIRONET, AARNET and the INTERNET for EMAIL and document transfer facilities for use by all staff,
- connection of all computing devices in the 6 major buildings on site,
- 1 x 5kVA and 2 x 6 KVA Uninterruptable Power Supplies to maintain system availability for up to 15 mins. through power blackouts,
- a Power Conditioner to eliminate power line surges and spikes from affecting the computing facilities on-site.

### **5. Conclusions, Recommendations and Application to Industry**

Upgrades implemented in August 92 have almost totally alleviated reliability problems experienced earlier. System availability is now almost 100 per cent.

In 1994 the previous VAX system was replaced by a new DEC 2100 Server (see CSP50C). This has enabled effective networking with Email, file sharing and connections to the academic world via internet to be fully implemented.

It is proposed that the two separate projects (CSP49C and CSP50C) be replaced with a single new project, providing the Network Support Specialist position and operating funds for the ongoing development and operation of the network. The total cost of the project/s will be reduced through the savings on maintenance contracts and the reduction in level of the funded position.

**7. Appendix**

**A. BUDGET**