Introducing CottonLOGIC for Palm OS® handhelds

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For many years, cotton pest managers have been asking for a computerised tool that can be taken into the field to assist with pest management decisions. The aim was to develop software that could be used on reliable electronic device that could be used to streamline the data entry process, run models of pest development, generate in-field reports, access historical data for insects and crop details and most of all, save time. To meet these needs much of the pest management components of CottonLOGIC are now able to be used on handheld devices that run the Palm operating system (Palm OS®). These handheld devices are reliable and robust enough to meet the rigours of field data collection. Significant input by growers and consultants into the development of the software, extensive evaluation and feedback has shown the system to be extremely useful for effective pest management.

Introduction

Room (1979) had recognised that a hand-held computer-compatible device for recording data in the field would increase the value of SIRATAC. The idea was revisited twice during the SIRATAC era. Final development of a product was delayed to lack of resources, and because the devices were cumbersome, expensive, task-specific and individually soon obsolete, while the software was device-specific and difficult to program (Hearn and Bange, 2002).

Advancements in computer technology over the past few years, with strong support from industry have enabled the original vision to become reality with the release of the first version of CottonLOGIC for Palm OS® Handhelds¹. It has been developed by the CSIRO/Cotton CRC cotton management support systems team at Narrabri, with the help of an in-field evaluation team, comprising of cotton pest managers from various regions.

This paper presents details of the operation of CottonLOGIC for Palm OS handheld systems, and discusses issues resulting from field and independent evaluation.

CottonLOGIC for Palm OS® Handhelds

Why develop for the Palm OS® handhelds?
Significant research was devoted to choosing the most suitable platform on which to develop the software as well an appropriate handheld device to it. The Palm operating system (Palm OS®) proved to incorporate the necessary features required for the development and adoption of this type of technology. Palm OS handhelds are extremely popular organisers that are compact; inexpensive; user friendly; designed to be viewed in direct sunlight; have infra-red capabilities; recognises hand writing; relatively easy to develop software for; and they host a range other useful tools for different applications.

From the perspective of a team developing software for cotton managers it will rim on any handheld that runs the Palm OS system, as well the software being easily to upgraded when devices change. In a recent survey on a significant website associated with development of software for handheld development (PDA Developer.com) 84.6 % of those whom frequently visit the site develop specifically for the Palm OS handhelds, as opposed to 2.4% who are developing for Windows Pocket PC® handhelds alone.

**What does CottonLOGIC for the Palm OS® do?**

The current functionalities of CottonLOGIC for Palm OS handhelds (Version 1.0) include:

- Insect data entry for pests and beneficials, based on individual crop entries.
- Insect density reports for conventional and INGARD crops, including results from the Helicoverpa development and prediction model.
- In field reporting of pest and beneficial status for on the spot printing.
- Insect data from the last 16 days prior to the current check, for use in the two-spotted spider mite model that indicates the level of infestation and a predicted yield loss.
- The ability to edit insect data or crop information eg. plant populations.
- The capacity to enter temperature forecasts to enhance the *Helicoverpa* spp. population model.
The ability to download crop profiles from multiple datasets via the PalmOS® Manager, which is a program responsible for managing data between your PC CottonLOGIC system and your PalmOS® handheld.

- The ability to use and synchronise multiple handhelds with the one desktop system.
- The opportunity to use your time more efficiently while the handheld is synchronising.

Product Evaluation

An important process needed in any development of software is to conduct evaluation to determine the usefulness of a product, as well as providing feedback on user needs to improve it. Over the course of the development of CottonLOGIC for the Palm OS handhelds we have endeavoured to have a number of mechanisms in place to assist with this process.

In-field evaluation

To create a useful tool for pest managers, it was fundamental to involve them in the process of development. Two phases of rigorous in-field evaluation activities were conducted. The first was conducted by Cotton CRC research colleagues in Northern Australia over the winter of 2001. This allowed the development team to fix any major problems before releasing it to a much larger group (20 pest managers) across the industry in the 2001/2002 summer. Despite pressures to release it to much larger group, we resisted in order to focus on getting the software functioning well, rather than potentially having to spend time on supporting a product that might not be working well. The group varied in makeup in terms of the size of the enterprises and they way they went about using the software. The main outcome from these activities was to develop a list of features that would be needed to ensure that CottonLOGIC for the Palm OS was successful. The majority of the features gained from this evaluation were implemented.

Solutions were also explored to address any concerns raised by the group in terms efficiency and durability of using the handheld devices in the field. An example of this was that we were able to find a plastic water-resistant pouch that protected the device, and made it easy to carry and use.

Independent evaluation
In addition to this in-field evaluation, the cotton management support systems team employed the services of an independent consultant Peter Van Beek to initially assess the evaluation group’s expectations of the technology. At the end of the season he attempted to capture from the group whether product had genuine value. The general expectation captured prior to the use of CottonLOGIC for the Palm OS, mentioned by all interviewees was that it would save time with data entry. Other expectations were that it would provide better quality data with fewer mistakes, provide a set format for data collection and add value to the service that a consultant provides. Following the season where the majority of the group had persisted in using the software, the evaluation showed that most had believed that it had met their expectations, and believed with improvements in some areas the product would be successful. Some of the comments made by people who had used CottonLOGIC for the Palm OS for a season were:

The Palm-top is only new and of course there are hick-ups and extra things we want. But it improves our lifestyle as much as it improves our business.

A second interviewee said that using the Palm-top ‘had not affected decisions much this year but it will make them quicker next year, less guesstimating and sorting manually through files. It is quicker especially on the CottonLOGIC side ... (for) forecasting insect populations, and that will give better decisions. It will definitely be an improvement. And it gives more confidence’.

‘You get the info in your pocket, the history, and you become able to make decisions in the field, and get the application quickly, rather than have to go home and go look for the info. It speeds up the process and that is important especially in sensitive areas.’

The concepts and ideas expressed from these evaluations have set the foundation for the current application and future developments of CottonLOGIC for handhelds.
The Future

From the vast array of expectations and feedback from both the independent and in-field evaluation of CottonLOGIC for handhelds, future efforts will be made to incorporate these features, providing that are not beyond the current Palm™ technology and fits within our current objectives of the cotton management supports systems team.

The development team also recognizes that during the uptake of this new technology, support and training will be crucial, along with maintaining close links with users to retain a clear view of their needs. For information and free copies of CottonLOGIC contact David Larsen, the coordinator the Australian Cotton CRC’s Technology Resource Centre on (02) 679915534.

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References


