MAJOR UPDATE OF TWO AVOCADO SOFTWARE PROGRAMS AVOMAN AND AVOINFO

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ABSTRACT

The AVOMAN project began in 1992 with the objective of providing new mechanisms for transfer of technology to the Australian avocado industry. These mechanisms included formation of grower groups and the development of information and decision aid products. The information and decision aid products included two software packages: AVOMAN, a farm management system incorporating record keeping and decision support, and AVOINFO, a reference database for avocado.

Since the commercial release of these software packages to the Australian avocado industry in 1998, ongoing research and development has produced new information relevant to industry. Issues such as quality management, food safety and environmental management have assumed greater importance within the avocado industry due to increasing statutory requirements. As a consequence of these developments, the AVOMAN and AVOINFO programs have been updated to ensure that they continue to meet the needs of commercial avocado producers.

Key Words: Decision aid, phenology, database, software, avocado, orchard management.

INTRODUCTION

The AVOMAN software comprises detailed crop information and a relational database for recording and reporting all major orchard activities. Commercial producers in all major avocado-growing regions in Australia are using the program, which has been designed to run on Windows based personal computers.

AVOMAN analyses block observations and measurements recorded by the grower in conjunction with intrinsic agronomic rules to produce nutrition recommendations that are specific to orchard block level. Users can easily customise built in phenological cycles for each block and

season to provide an appropriate agronomic basis on which to calculate appropriate timing of nutrition applications. The use of phenological rather than calendar events, together with the use of user supplied data, such as leaf and soil analysis results, allows AVOMAN to provide specific nutrition recommendations that are applicable to a wide range of environments and climates (see figure 1).

The AVOMAN project team comprised a multi-disciplinary group of professionals from around Australia. The majority of team members were extension officers whose roles included ensuring that the AVOMAN software accommodated the wide range of growing conditions in Australia. Researchers were responsible for providing and checking the accuracy of information built into the software as well as assisting with the development of decision frameworks. Software technology continues to advance at a rapid pace and the programmers had to write the software to suit changing industry standards. Agribusiness professionals and members of the avocado industry also played an important feedback role in the AVOMAN project with assistance in validating the recommendations produced from the software.

The AVOINFO program is a bibliographic reference database of over 4000 publications, papers, technical articles and conference proceedings. Where copyright permission has been granted, either full articles or substantial content has been reproduced. References include reference material from around the world, with appropriate translations into English where relevant. AVOINFO has been updated to incorporate new literature published since its original release.

RESULTS AND DISCUSSION

Close collaboration with industry was a critical factor for the development and adoption of the original AVOMAN program and this remains an important aspect of this latest phase of the project, during which the program has undergone a major update. The latest version of the program, which has just been released to the Australian industry, incorporates many changes and additions that reflect feedback from clients and industry leaders since its original release in 1998.

All aspects of the program have been updated to take advantage of modern interface controls. The main AVOMAN window has been significantly revised to provide quick and easy access to all program functions, as well as new features such as integrated task lists, job reminders and a monthly crop calendar (see figure 2).

Recent avocado research and development has been incorporated into existing agronomic recommendations in the program to ensure they remain relevant to industry. A new recommendation has also been created for the effective use of the growth regulant Sunny®. The recommendations matrix has been expanded to show a 12-week time frame and the process of actioning recommendations as jobs, including appropriate chemical and rate selection has been further simplified.

The already extensive library of crop information within AVOMAN has been updated and expanded through collaboration with leading avocado research and extension staff. This section, which now includes many full colour pictures and drawings, is accessible from directly within AVOMAN via a new menu tree.

While the original focus of the AVOMAN program was decision support for agronomic management, the scope of the program has widened considerably, to the extent where the recording and reporting facilities within the program have become its centrepiece. The program now comprises over 40 customisable reports that are useful for both management and quality assurance. With increasing statutory demands placed on Australian avocado producers, emphasis has been placed on expanding and simplifying the range of reports that the AVOMAN

system can produce. Collaboration with representatives of the whole demand chain has lead to the development of reporting facilities that suit the needs of growers, agents, pack houses and regulatory authorities.

Where possible, overlaying of complementary data further increases the value of information for management purposes, such as for water management (see figure 3).

Access to stored farm records has become simpler and more transparent with the addition of data browsers that allow users to easily interrogate their own records using standard controls. Through the use of these complementary controls within each browser, users can rapidly drill down into historical data to produce very specific information. For example, in the orchard jobs browser, it is possible to determine the last time a particular chemical was applied to a particular block with just a few mouse clicks (see figure 4). Having used the browser to find the required data, users can instantly produce that same information in a report that can be either printed or exported to a range of popular file formats, say for further analysis or transfer via e-mail.

Several new facilities have been added to the AVOMAN program to accommodate recent industry requirements. The farm outputs section for example has been updated to incorporate customisable pack styles and a bi-directional fruit tracing system. Using this system, growers can trace a suspect consignment back through the pack shed to the orchard, or alternatively, from the orchard through to consignment. This system affords greater accountability than previously possible (see figure 5).

To further support the wide range of business sizes and management styles evident within the Australian industry, most aspects of the AVOMAN program are now also more customisable. These include employees, customers, machinery, chemicals, water sources, target pests, varieties, locations, fruit grades, pack styles, farm operation properties, report headers & logos and even notes templates. This new level of customisation has significant implications, not only for Australian growers, but also for potential clients outside of the Australian avocado industry. Most aspects of the latest AVOMAN system are now sufficiently generic to suit the needs of growers in other countries and industries.

The AVOINFO bibliographic reference database has also been scheduled for update during 2003 to incorporate avocado material published worldwide since 1998. This material will include scientific papers, technical articles and conference proceedings. Where copyright permission is granted, articles will be substantially reproduced. A powerful integrated search facility allows users to find references based on combinations of key words, as well as locate specific key words or phrases within the body of references. The latest version of AVOINFO will be released on compact disc towards the end of 2003.

CONCLUSIONS

The latest version of AVOMAN represents a significant step forward in terms of functionality and ease of use. Expansion of the recording and reporting aspects of the program, and a greatly increased capacity for customisation, have produced a system that has potential for wider application, both within and beyond the Australian avocado industry. Recent updates will also ensure that information and facilities provided by the program continue to be relevant and useful to commercial avocado producers.

Updates to the AVOINFO system will ensure that it continues to be a valuable source of information to a wide range of users associated with commercial avocado production, including growers, researchers, extension professionals and educational institutions.

ACKNOWLEDGMENTS

REFERENCES

NEWETT SDE. 1999. Nutrition practices in Australia and how the AVOMAN software addresses the issues. Proceedings of Avocado Brainstorming '99, pp 33-36

MULO SF, NEWETT SDE, WHILEY AW. 1998. AVOMAN: A farm management decision support system for avocado. Proceedings of World Avocado Congress III, pp 265-269.

NEWETT SDE, MULO SF, WHILEY AW. 1998. AVOINFO: A computerised avpcado information system. Proceedings of World Avocado Congress III, pp 270-274.

NEWETT SDE, MULO SF, BEZZINA CP, WHILEY AW. 1999. AVOMAN & AVOINFO: Software to improve the management of avocado productivity and quality. Revista Chapingo Serie Horticultura, pp 209-215.
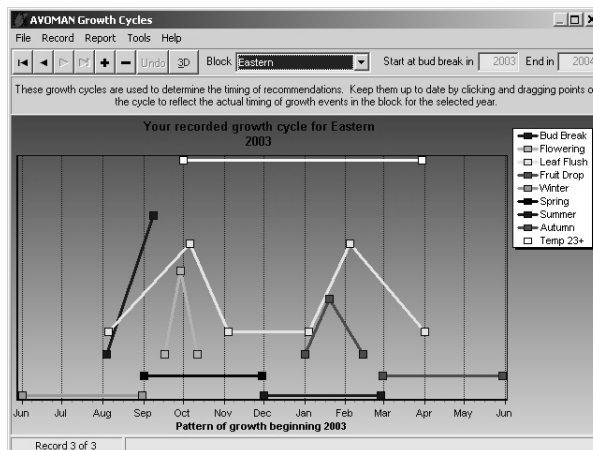
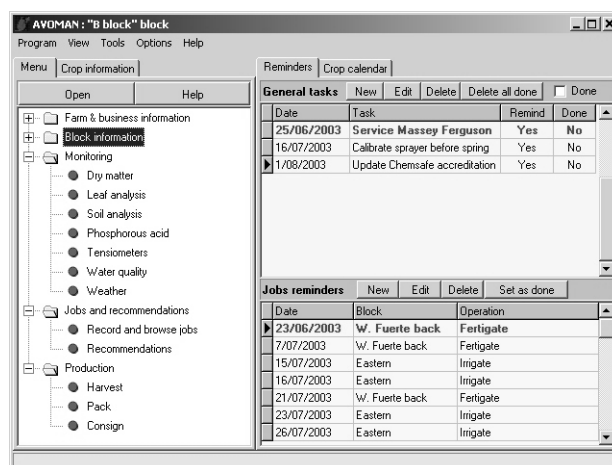

Figure 1. A stored phenological cycle
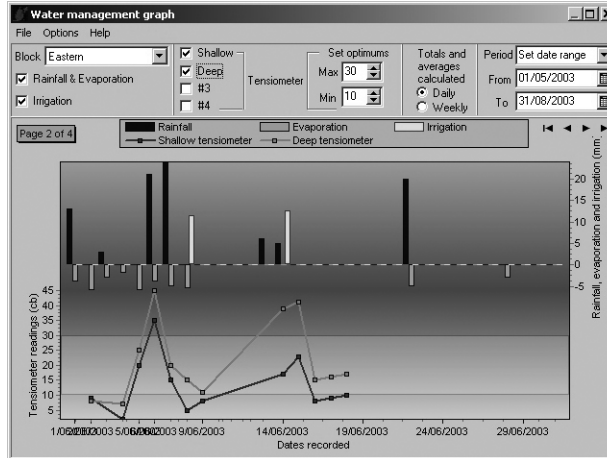

Figure 2. The main AVOMAN window

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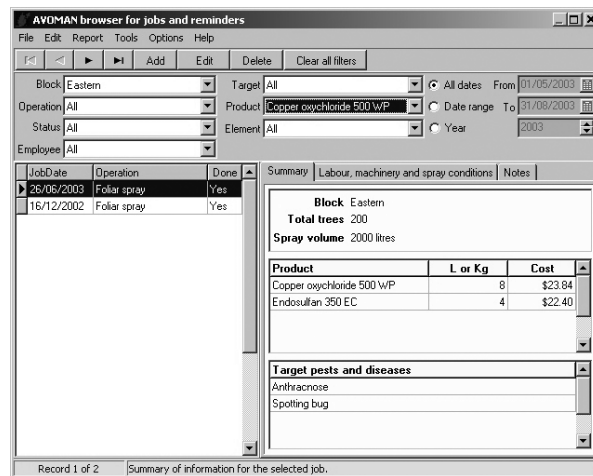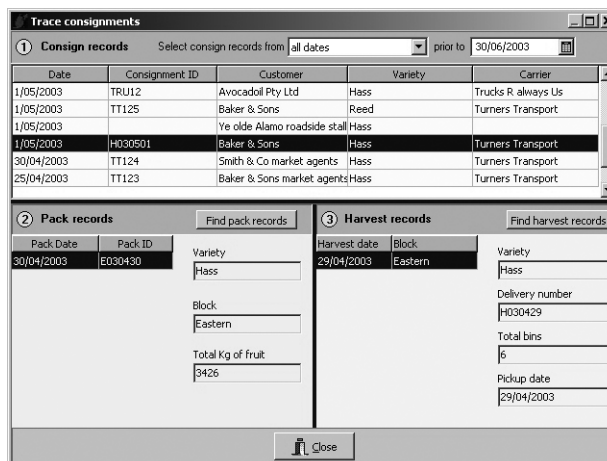**Figure 3.** A water management chart

Figure 4. The jobs browser

Figure 5. Consignment tracing facility