The development and evaluation of siragcrop software for irrigated crops

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Yields of irrigated crops in southeastern Australia have the potential for substantial increases. New technologies have been around for years to improve the efficiency of irrigation agriculture, but the knowledge to successfully and consistently utilise these new techniques is scarce and often difficult to access. Between 1983 and 1989 the Griffith Laboratory was involved in the development and evaluation of a computer-based decision support system for the management of irrigated crops, called SIRAGCR0P, which aimed to give farmers improved access and quality of advice for important crop management decisions for individual paddocks. SIRAGCR0P started as a co-operative venture between CSIR0 Griffith, N.S.W. Department of Agriculture (Murray and Riverina Region) and CSIR0 Divisions of Plant Industry and Soils. Objectives and progress of the project have been reported in five Newsletters (e.g. 1).

A prototype dial-up service was developed on a MicroVAX at Griffith giving farmers and advisory officers access to electronic mail, weather data from automatic meteorological stations, irrigation scheduling (wheat, maize, soybeans) (2), and decision support for irrigated wheat in nitrogen management (3), variety choice and stripe rust control (4). 0n-farm testing of the system was conducted during the 1984-88 wheat seasons for irrigation scheduling and nitrogen management in collaboration with 25 farmers and 10 farm advisors (2). A booklet and video were produced to assist users in recognizing growth stages and measuring important crop parameters. Irrigation scheduling was tested for soybeans and maize crops during two summers.

Further development of the system was planned but this needed to be preceded by redevelopment of the Fortran software to provide for a more suitable user-interface and easier maintenance. Videotex and database software were used in the re-implementation of the prototype (2), similar to the technology adopted successfully in agricultural electronic information systems overseas (5). However, this development has been terminated as of June 1989 and the dial-up service has ceased because of the slow adoption of computers by farmers, the difficulties of obtaining sufficient funds and a change in research direction.

Instead, two software packages for use on IBM-compatible microcomputers have been developed from the dial-up system software: Irrigation Scheduling and Variety Choice/Nitrogen Planning. Research and advisory staff, consultants and farmers with computers are the target audience. The irrigation package can be adapted for use in any irrigation area but the nitrogen package is specific for rice-based cropping systems in the Murrumbidgee and Murray Valleys of N.S.W. Turbo Pascal and Paradox database are used to make the software flexible, user-friendly and easy to adapt to local conditions. Local weather data required to run Irrigation Scheduling can be accessed directly from an automatic weather station or external database, or, alternatively, daily potential evapotranspiration and average temperature can be entered manually. Before release, the PC-software has been thoroughly evaluated using data from the on-farm tests. User-guides are available with the software.

1. Toohey, D.E. (ed.) (1987). S1RAGCROP Newsletter No. 5. 11 p.

2. Stapper, M., Keegan, G.M., Smith, R.C.G., Shell, G.S.G. and Cook, J.n 182-6. (1988). Proc. Conf. on Agric. Eng. 1988, Hawkesbury Agric. Coll.,

3. Stapper, M. (1987). IREC Farmers' Newsletter (Large Area) 130, 23-7.

4. Murray, G.M. (1989). RUSTMAN software. NSW Dept. of Agric., Wagga Wagga.

5. Stapper, M. (1988). Proc. Standing Committee on Agric. Workshop, Melbourne Aug 1988, Vict. Dept. of Agric. and Rural Affairs, pp. 79-95.