



The Registration of Irrigation Water Use

The registration of agricultural water use in South Africa can be seen as the first major building block in ensuring the correct and equitable application of the National Water Act (1998).



As about two thirds of South Africa's developed water supply is used by agriculture and principally for irrigation, the registration process required that all existing irrigation water uses had to be registered with the Department of Water Affairs and Forestry (DWAF). Thereafter, based on the principle that proper water resource management is for the benefit of all users, users are being billed by DWAF to cover the costs of the management function, on the basis of the registered volume of water used.

ESTIMATING CROP IRRIGATION REQUIREMENTS

The registration process required that farmers complete a series of forms that included the volume of water they used for irrigation, as well as the irrigation system used, the crops grown and the area irrigated. Where data on actual water use was not available, which was the rule rather than the exception, the quantity had to be estimated, usually by regional personnel of DWAF with the support of consultants. Farmers were normally well informed on the areas of crops grown but required guidance on the water use of the crops (the other input needed to arrive at the volume used). SAPWAT, an irrigation planning and management tool developed for the Water Research Commission by MBB consulting engineers, had already been specified in the DWAF Pricing Strategy as the computer program to be used in the determination of water volumes for irrigation. SAPWAT is a relatively simple program but its effective use requires insights into irrigation practices. At the outset of the registration process, training in irrigation principles and the application of SAPWAT was provided for DWAF personnel and consultants in the regions. The agricultural aspects of irrigation are not generally well

understood, and the appreciative interest shown by engineering-oriented personnel was most encouraging.

THE REGISTRATION PROCESS

The registration of water uses is far advanced but it is only the beginning of a process that will ultimately lead to compulsory licensing. It was, therefore, decided to review the effectiveness of SAPWAT in the process and evaluate how it will be applied in the future, through discussions with the Brits-based consultants Schoeman and Partners. The company was contracted to undertake the registration of in-field irrigation water use in the Crocodile/Marico Water Management Area and subsequently was awarded the contract to undertake the next step in the process, namely registration verification for the Upper Vaal catchment. This is the first verification study and is serving as a pilot project to test the methodology to be applied countrywide. Concurrently Schoeman and Partners, in conjunction with Thompson & Thompson and Copad, are developing an official DWAF manual spelling out both the legal and technical details of the verification procedure that will be contracted out to consultants across the country.

Mr Hennie Schoeman, the responsible partner, explained how they had approached registration:

"SAPWAT was employed to develop information on crop irrigation requirements. This is a powerful programme, with many different parameters that can be changed. Although any person can use this programme, expert knowledge of crop characteristics, crop requirements and irrigation practice is necessary to produce a reliable answer. Our initial task was to standardise water volumes to avoid

a scenario in which the same crop under the same conditions has different requirements at different locations within the same homogeneous climate zone. SAPWAT runs were done for the crops in each sub-area, applying the irrigation method and crop production practice most generally adopted. The monthly and seasonal volumes of water required per hectare for each crop were transferred to a spreadsheet.

"The spreadsheets were invaluable. Significant disparities in the initial estimates made by farmers were immediately identified. The spreadsheet values then formed the basis for establishing the causes of the disparities. In a few cases these were legitimate and could be explained by innovative irrigation methods, management practices or circumstances, and this was acceptable. The objective of registration was to establish a reasonable estimate of actual water use, not irrigation efficiency or even legitimacy. That will come later in the process!

"It soon became evident that a significant number of farmers required assistance with their registrations, and we arranged venues where we would be available to assist them. We had coffee and rusks on hand, and two computers installed and manned, the first loaded with GIS and all farm details and the second with the crop irrigation requirement spreadsheet and SAPWAT. At the first monitor the farmers were intrigued by the maps and detail available, and the administrative and legal aspects were soon cleared up. At the second monitor, what could have been an ordeal became a fascinating computer game as the graph of monthly water use developed on the screen. In the rare cases where there was disagreement, SAPWAT was called up and production methods and irrigation management practices reviewed and alternatives