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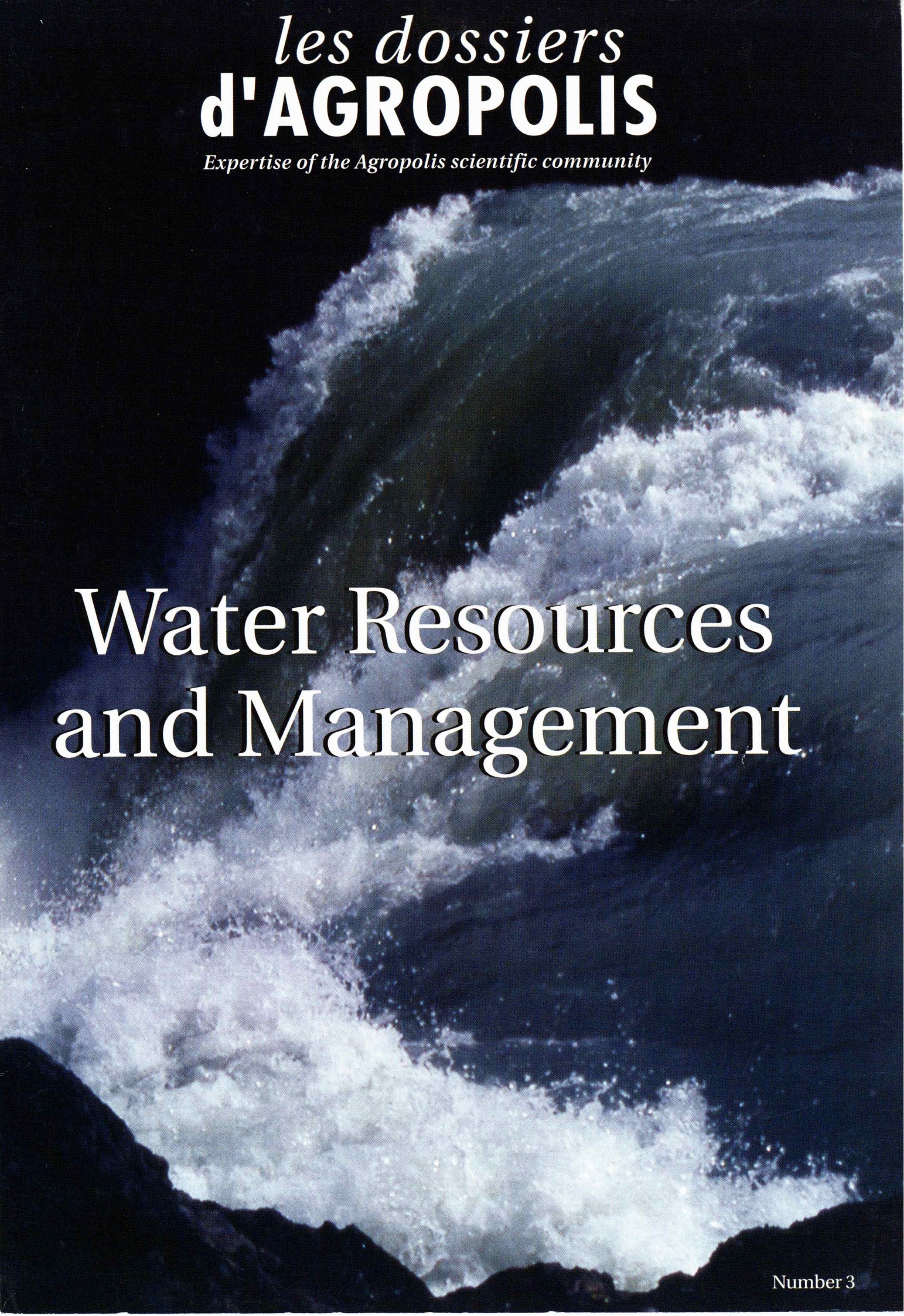

Water Resources and Management

Number 3

Smile Project: economic and institutional viability of small irrigated perimeters in South Africa.

Sylvain Perret © Cirad

Training course in the Venda irrigation area (South Africa): implementation of the SMILE methodology

The small irrigated perimeters in South Africa currently face major problems: lack of local organisation, institutional weaknesses, limited access to most of the markets, etc. Despite numerous unsolved challenges, the central and provincial auhtorities have initiated a water management transfer and rehabilitation process.
Within this context, the SMILE (*Sustainable Management of Irrigated Land and Environment*) project, conducted by the *Gestion de l'eau* (Cirad) UPR, supports this rehabilitation process through research-action at the local level. This project is being carried out in close partnership with the local decision-makers. Its objective is to support decision making and planning, to help groups of users in their role as managers, and to set up a common platform for discussion, training, awareness raising, and capacity building. The approach calls for data collection and analysis at the level of the perimeters, the definition of typology regarding the cultural and agricultural systems, and the use of a software to store data and test different scenarios. For this, a simulation platform (SMILE software) has been developed that enables future work to be carried out analysing of the current situation and subsequent scenario testing that simulates technical, economic, institutional, legal or socio-economic changes, as discussed with stakeholders.

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Towards integrated water management

Water has become a commodity that not only indicates the wealth of nations, but also represents a source of conflict between users and an instrument of power. It is also a rare and expensive resource, the management of which is increasingly complex. Integrated water resource management is a reasoning framework approved by the international community. It is the framework of the US 048 DIVHA *Dynamiques, Impacts et Valorisation des Hydro-Aménagements* (IRD) integrated in the UMR 183 G-EAU, which pursues the following objectives:

1.Development of methods, concepts, and a modelling environment to: (i) represent the global functioning of a complex water system submitted to stresses with all its elements (environment and society) and their interactions, highlighting the impacts and performance of development works; (ii) simulate the sensitivity of the system and of its performance to different forms of forcings i.e. internal (human colonisation of basins; removal/addition of infrastructure; evolution and dynamics of uses; changes in management rules), or external (climatic change, evolution of the socio-economic environment).
2. Transfer of dedicated tools and training of users to facilitate the decision-making process and to develop scenarios suited to rational and sustainable management objectives: the use of existing infrastructure, the impacts of proposed solutions, the long term dynamics of evolution.

Although all forms of uses are assessed, the environmental (aquatic ecosystems) and agricultural (irrigation) demands are dealt with more specifically.
Over the period 2005-2008, the research activities – to be conducted in collaboration with the scientific partners in the South, basin managers and various water users – will focus on the largest African rivers (Limpopo, Niger and Senegal), small Mediterranean basins (Tunisia, Algeria, Morroco), and the Andean basins (Equador, Peru, Bolivia, Chile).

Supporting collective processes in resource *management*

Within the context of globalisation and decentralisation, managing renewable resources in general, and more specifically water, means overcoming the following problems: difficulty in implementing integrated management processes at various organisation levels; conflicting uses; inconsistent information and uneven stakeholder participation; difficulty in understanding complex socio-ecological processes in order to ensure their viability.

Within such a context, the objective of the UPR Green (*Gestion des Ressources renouvelables et de l'Environnement*, Cirad) is to provide knowledge, methods and tools to support collective renewable resource management processes in order to improve the capabilities of the stakeholders who have to manage complex eco-sociosystems. Research is based on the hypotheses that individual and collective environmental and renewable resource management •••