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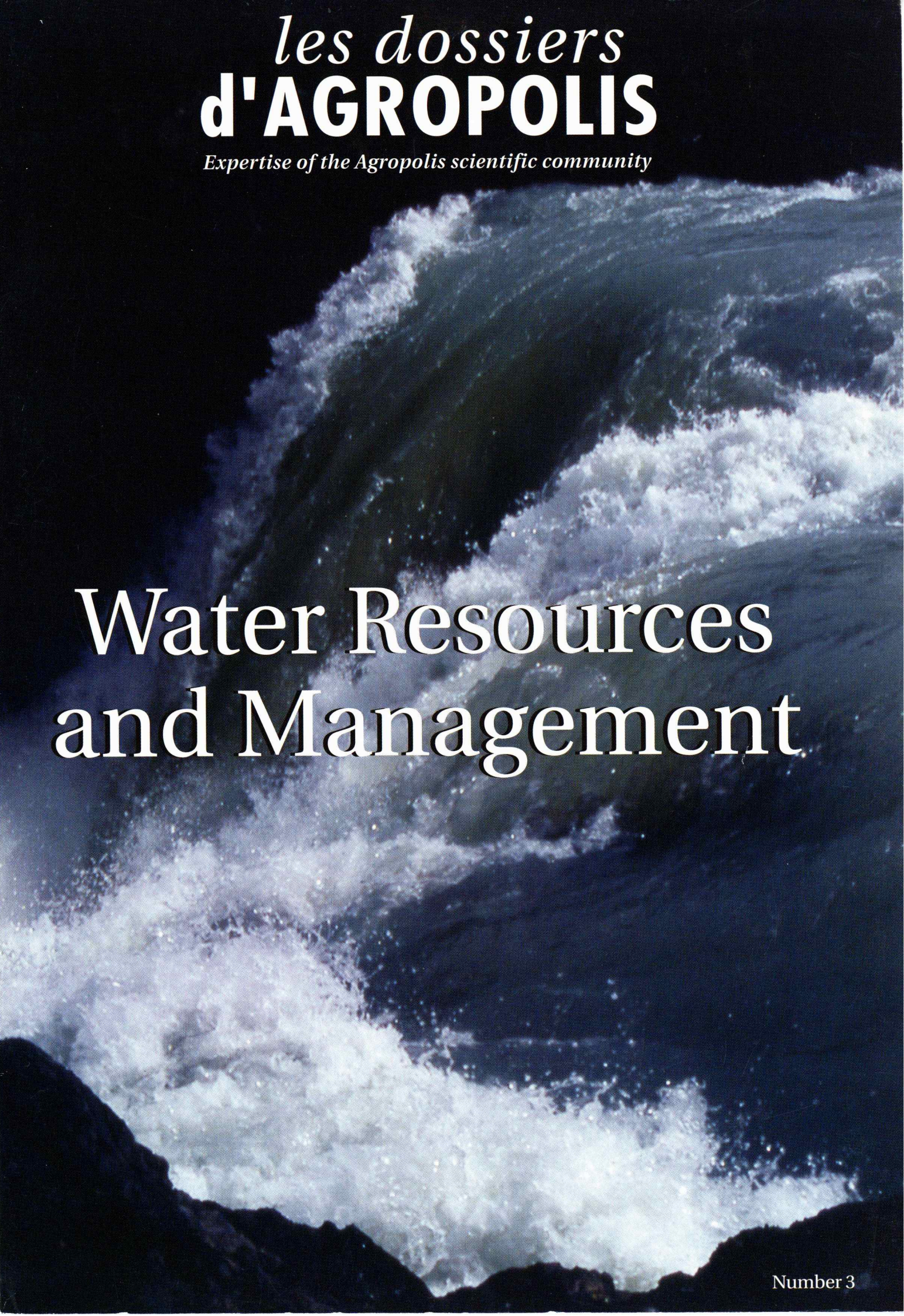

Water Resources and Management

Number 3

Implementation of support tools for decentralised water *management and for* public decision making

Old, lasting water problems have been given new momentum owing to the rapid increase in consumption, the emergence of new leisure and landscaping needs, and the growing demands for sustainable development. Today, there is a major trend for political reforms in water management, the objective of which is to solve both conflicts between users and environmental degradation. The common feature of the reform projects is that they propose a renewal of the role and responsibilities of the public sector, which by tradition is strongly involved in the financing and management of use, namely drinking water supply or irrigated systems. Three types of approaches are often combined: the delegation of certain functions to the private sector; decentralisation of decision-making in water management and supporting water users negotiations to develop an integrated water management programme at the scale of catchment sub-basins; the recovery of the effective costs of water supply. This raises the crucial questions of public decision efficacy when it is based on decentralised and negotiated procedure far removed from the standard framework of the public economy. The LAMETA works on this theme of decentralised water management, by dealing simultaneously with the qualitative (especially diffuse pollution), and quantitative issues. The sustainable management of water resource is studied by the analysis of concrete situations and by the identification of elements that characterise durability at the theoretical level.

Three main themes are being developed:

1) Catchment basin modelling tools (that couple hydrological models and economic decision models) for decision and negotiation support

Several research projects are underway regarding the evaluation of different types of modelling and coupling of models. These are interdisciplinary models that combine ground sciences and hydrology, agronomy and economy.

• The European DITTY programme, coordinated by the University of Montpellier I, concerns several lagoons and catchment basins of Southern Europe that are representative of the diversity of Mediterranean lagoon ecosystems. Its main objective is to integrate the knowledge and concerns of the main stakeholders at different levels, i.e. scientific (research centers, universities), technical (water agencies, professional organisations), and administrative and political (territorial collectivities). All these stakeholders are strongly involved in the study and/or management of these systems, in order to improve their management. This integration enables the development and the implementation of decision support system (DSS: *Decision Support System*) to optimise the current technologies of collection, storage, processing and dissemination of information related to the targets (data bases, Geographic Information Systems, models, networks). Beyond the main scientific disciplines traditionally dedicated to the study of the environments and systems in question (engineering, natural, life sciences), this programme mobilises in each partner country scientists that represent the so-called "human" sciences (economy, sociology, Law). This interdisciplinarity makes it possible to better understand the

An agro-economic approach to assess the water savings feasible in an irrigated perimeter of Réunion Island

Within a context of limited water resource, the irrigated perimeters of the leeward coast of the Réunion Island (*Département français d'Outre-Mer*, Indian Ocean) are today facing a growing competition with the urban users. The priority given to drinking water supply and the emergence of concerns for the protection of aquatic zones question the level of water pumping for agriculture and current irrigation practices.

The «*Gestion de l'eau* (Water Management)» and «*Systèmes canne à sucre* (Sugar Cane Systems)» URs of the Cirad associated with the « Irrigation » UR of the Cemagref are implementing an agronomic and economic integrated approach at the different scales of cultivated plots, of the farm, and of the irrigated perimeter as a whole, to deal with the issue of the achievable water savings. The irrigated perimeters studied are characterised by a wide diversity of production structures and pedo-climatic factors. The method used intends to take this diversity into account through a zoning of the physical environment and of the water needs for the crops, and through a typology of the farms. The analysis and the modelling of the behaviour of the irrigators tries to explain the excess water consumption with respect to the optimal needs and to report on the means necessary to achieve potential water savings. The approach combines a modelling of the irrigation control rules to assess the water demand at individual level and an economic modelling of the agricultural offer (and of the demand in derived water) at the scale of the irrigated perimeter.

Contacts: Jean-Louis Fusillier, jean-louis.fusillier@cirad.fr
Jean-Louis Chopart, jean-louis.chopart@cirad.fr