

Section 4

Sustainable Environments

Planning ahead with FIESTA

A new highly detailed computer model of climate, land and water interactions is now available that covers the whole of the tropics. The model, known as

FIESTA, can help us to better understand the effects of land use changes and climate change on hydrological systems and poor users downstream. FIESTA can be used to help decision makers apply watershed protection in appropriate areas, build water-related infrastructure and target efforts to get water to people who need it.

The model is unique because it looks at areas as small as one square kilometre. This helps planners account for the very different hydrological effects that land use or climate change can have from area to area at a very local level—boosting our ability to develop sustainable land and water strategies.

■ To find out more, please type **FRP30** into the search box on the search page of the CD attached to this book.

Project title: FIESTA (Fog Interception for the Enhancement of Stream flow in Tropical Areas) ...

Firm foundations for future development

Various linked projects have been working to provide firm foundations for livelihood-improving efforts to manage forests and land in upper water catchments. Known as the FRP-FLOWS studies, the projects are providing in-country government departments in Grenada, South Africa, Tanzania, Costa Rica and India with much-needed facts and policy-guiding information. They've also been demonstrating that hydrological models like HYLUC, SWAT and ACRU really do work.

Outputs from the projects include workshops for ministers and policy briefs that give decision makers key insights into payment for environmental services schemes. The projects have also developed a new dissemination tool known as EXCLAIM, as well as the so called 'Rapid Quadrant' approach—which is helping in the design of new interventions in 100 watersheds in support of two \$200-million World Bank-funded watershed development projects.

■ To find out more, please type **FRP31** into the search box on the search page of the CD attached to this book.

Project title: FRP-FLOWS research cluster on the management of upper water catchments

Improving soil quality and fighting erosion in the Andes

Work has been ongoing in the Andean valleys of Bolivia to find ways of combating soil erosion and falling soil fertility levels—problems which affect similar semi-arid areas throughout South America. These problems hit poor subsistence farmers particularly hard and are forcing people to migrate from the country into cities.

One of the main reasons that soil fertility is degrading is the fact that fields are not being left to lie fallow for sufficiently long. Options identified to combat this include the use of grasses and leguminous cover crops like woolly pod vetch. These act as barriers, protecting bare uncropped land from erosion, and also boost the fertility of the land they are grown on.

■ To find out more, please type **LPP15** into the search box on the search page of the CD attached to this book.

Project title: Improved soil and water conservation practices in hillside production systems ...



Multiple production systems boost pro-poor benefits from the floodplains

An integrated management system that presents a new take on systems that provide multiple products, especially fish and crops, is improving the livelihoods of both farmers and fishers. Floodplains are under threat from overexploitation and degradation, and in the past management has often put more stress on rice production at the expense of fisheries and other natural resources on which the poor depend. The new model aims to maximize the joint benefits of crops and fish for all stakeholders.

These options are used at two sites in Bangladesh, Narail and Tangail, where the community has independently adopted the ideas. The practices have spread to adjacent areas, and have since been introduced at three more sites in the country.

■ Find out more by typing **NRSP03** into the search box on the search page of the CD attached to this book.

Project title: Better options for integrated floodplain management

Don't let the rain run off

New approaches to rainwater harvesting (RWH) are improving life in Tanzania's semi-arid areas.

Previously, lack of awareness by planners and farmers meant RWH was not used much. A holistic system integrates interventions ranging from *in situ* RWH (soil and water conservation), to supplementary irrigation using water harvested from macro-catchments. The basic principle is to start by preventing runoff and promoting infiltration of the rain falling directly on the field. Another approach combines RWH with road and railway drainage infrastructure to contain flash floods while at the same time increasing water availability for agriculture and livestock.

In Tanzania, use is widespread in the districts originally targeted by the project and spreading. In Rwanda, projects have been launched in several areas.

■ Find out more by typing **NRSP12** into the search box on the search page of the CD attached to this book.

Project title: Rainwater harvesting for up-grading and stabilizing rainfed agriculture ...

Rainfall modelling can predict future yields

PARCHED THIRST (PT) is a decision-support tool that addresses the challenges of low and unreliable crop and livestock production in semi-arid areas.

Unlike most other models, PT includes the effect of the weather, water management and soil variability on cereal crop yields. Planners can therefore use it to estimate food deficits or surplus, and so anticipate their import or export strategies.

The model is currently used by the Early Warning Department of the Ministry of Agriculture and by agricultural extension offices and training institutes in several areas of Tanzania. It is also used for research and teaching in Uganda, Ethiopia, South Africa, Nigeria, India, Pakistan, Greece, the UK and the USA. It is available for download from websites in Tanzania, UK and Belgium.

■ Find out more by typing **NRSP13** into the search box on the search page of the CD attached to this book.

Project title: Rainwater harvesting and management

Fair shares for all from the common pool

Common pool resources (CPR) management systems must prioritise the needs of the poor.

A knowledge base in Tanzania seeks to do just that by identifying aspects of institutional, regulatory and tenure systems for equitable access to runoff and related CPR in rainwater harvesting systems. It includes information on agreed arrangements for tenure and management of CPR in target areas and guidelines for use by District Councils, wards, villages and communities in making CPR management plans. These plans therefore protect the interests of the poor while ensuring optimum and sustainable benefits to the communities using rainwater harvesting systems.

The knowledge base is in use by village communities, water users, District Councils and NGOs in the target areas of Tanzania.

■ Find out more by typing **NRSP14** into the search box on the search page of the CD attached to this book.

Project title: Rainwater harvesting and management of common pool resources

Why are research results not reaching farmers' fields?

A compilation of the constraints limiting uptake and scaling-up of natural resources research results in Eastern Africa is helping policy makers get a better idea of these barriers.

Awareness-raising products are explaining to researchers their role in the process. Training materials, including a learning manual, are helping build the capacity of researchers to influence institutional strategies and also design and implement plans for communication, sharing, promoting uptake, and scaling-up of their own research outputs.

These materials are now used extensively throughout Eastern and Southern Africa, including in Angola, Botswana, Burundi, Comoros, D.R. Congo, Eritrea, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, South Africa, the Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

■ Find out more by typing **NRSP15** into the search box on the search page of the CD attached to this book.

Project title: Community of champions for uptake, scaling-up and capacity building ...

Boosting rice production

In India, work has been done to bridge the 'production gap' between current and potential levels of production in high-potential, irrigated rice systems.

This is often the result of farmers not taking up new technologies as a result of poor communication. They need to know, for example, that using both groundwater and surface water means that they can plant and harvest early and still have time to grow a wheat crop.

In India, this and other techniques were tested and then promoted using a low-cost communication strategy, including field-based demonstrations and the production of communication products in Hindi. These made clear to producers the benefits of establishing rice nurseries early. They also showcased the benefits of using the water available in rice systems for more than one thing—such as aquaculture.

■ To find out more, please type **NRSP23** into the search box on the search page of the CD attached to this book.

Project title: Strategies for participatory irrigation management and multiple water use ...

Field guides for better livelihoods

To help poor forest users make better use of the resources around them, researchers have worked with local people to produce field guides and create methods for identifying useful local plants. Outputs include policy briefings, a book to teach in-country

partners how to produce usable easy-to-understand local field guides and a whole range of field guides suitable for use by local people. These are targeted at different countries, such as Bolivia, Brazil, Peru, Cameroon, Grenada, the West Indies and Ghana.

This work has created a popular approach that local people can readily benefit from. Demand for the handbook on field guide preparation is high, and copies have been distributed to at least 15 countries.

■ To find out more, please type **FRP37** into the search box on the search page of the CD attached to this book.

Project title: Development of a global methodology and manual for biodiversity guides ...

Practical hints for user-friendly field guides

Foresters, botanists, herbalists, park managers and many others often have to prepare simple handouts, leaflets, guides, posters and public information materials about plants and trees.

Now, a new manual gives them practical hints on how to tailor information materials to particular audiences. Plus, there's a website where they can find information to help identify flora and download copyright-free pictures.

Semi-literate villagers in southwest Ghana could name 80% of the trees in the forest after just a short session with a farmer-friendly photo guide prepared with the help of the manual. Before, they could name less than 5%. In Sierra Leone and Tanzania, other guides are also already in use.

■ Find out more by typing **FRP45** into the search box on the search page of the CD attached to this book.

Project title: User-friendly field botany: activating new ways for the flora to reduce poverty ...



Teaching smallholders to combat soil erosion

A systems framework forms the basis of a training tool for field professionals working with smallholder households on the impact of farming activities on soil erosion and conservation.

Methods for the field assessment of both biophysical and economic aspects of erosion and conservation by developing country professionals and field staff are included. The methodology has been published and presented at meetings and training workshops.

The publication was originally put on the Internet and is now available in print in English and Spanish, with an Arabic version in preparation. The technique has been widely adopted around the world. It is used in 26 countries with eight more about to take it up. This includes 12 countries of sub-Saharan Africa.

■ Find out more by typing **NRSP06** into the search box on the search page of the CD attached to this book.

Project title: Field methods to assess the extent and impact of land degradation ...