



Guiding the sustainable management of rice landscapes in the uplands

In the upper catchments of the Mekong and Red River basins, improving the productivity of rice could help to break the cycle of poverty, food insecurity and environmental degradation that characterizes the area.

■ Research Highlight #6



■ Breaking the cycle

For the 20 million people whose livelihoods directly depend on land and water resources in the upper catchments of the Mekong and Red River basins, improving the productivity of rice could help to break the cycle of poverty, food insecurity and environmental degradation that characterizes the area. Farmers living in these catchments are extremely poor, their main agricultural activity consists of producing rice and other food items for household consumption. Increasing population pressure has forced many farmers onto marginal agricultural land, particularly

steep sloping land, where land use practices are contributing to soil erosion and water losses.

The high incidence of poverty in this area often directly correlates with the degree of rice self-sufficiency. Helping farmers produce rice more productively is a key entry point for converting the vicious cycle of low productivity-poverty-environmental degradation into a virtuous cycle that raises productivity, increases incomes and protects the environment.



■ Technology for rice-based production systems

Using landscape management and rice productivity as the entry point, the Challenge Program on Water and Food (CPWF) project 'Rice management for raising water productivity, conserving resources and improving livelihoods in upper catchments of the Mekong and Red river basins' targets directly the poorest rice farming households in the upper catchments and help raise food productivity. It takes an approach that aims to raise productivity in both wetland paddies and in sloping uplands to encourage land use diversification while assuring household food security.

Among the knowledge gaps the project bridges is the relationship between water use, resource productivity and the trade-offs involved in water use across the landscape. The project also intends to deliver improved technologies for rice-based production systems in the uplands that have been tested and validated by the farmers.

In northern Laos, rice farming is mostly done under shifting cultivation systems of short rotation. Improved technologies that will be developed and validated for such rice-based systems will consist of stress

tolerant varieties and improved crop management practices. In addition, the project identifies institutional arrangements that complement these technologies to improve overall resource management at the landscape level. The project activities, hence, span the development of technologies, field testing and validation of such technologies and the identification of interventions to improve community-level resource management.

✓ *Rice landscapes with upland rice in sloping areas and rice terraces in northern mountains of Vietnam*



Photo: Sushil Pandey

■ Landscape management to improve food security and reduce poverty

Land degradation is the weakened ability of ecosystems or landscapes to support the functions or services required for sustaining livelihoods. Typically, land degradation occurs because of poor land use, primarily caused by agricultural practices. Intensification of agriculture in fragile, steeply sloping areas adversely affects the balance of various components in natural ecosystems. Under such circumstances, land degradation becomes synonymous with livelihoods degradation.

Focusing the management of agriculture and water at the landscape level using an integrated perspective ensures that agriculture is productive while the essential resources on which it relies are conserved. Landscape approaches to management consider the ecosystem as well as livelihood processes that characterize landscapes.

Focusing on research sites in Thailand, Laos and Vietnam, the project is designing a range of improved land

use and agricultural practices that take into account resource allocations and flows of water, nutrients, labour, and capital, and their interactions across the landscape. In doing so, the project will develop an integrated strategy to improve food security by intensifying rice production in paddies in the upper catchments and provide options for the sustainable use of soil and water resources in the catchment slopes.

The project takes a holistic approach to managing rice production using an inter-disciplinary research team of soil scientists, hydrologists, plant breeders, crop management specialists and social scientists. The main methodological backbone of the research is based on participatory approaches involving stakeholders at all stages to make sure that the technology fits the needs and conditions of its beneficiaries. In this manner, all technologies and institutional innovations developed as part of the project will be validated through farmer and community participation.



Intensive rice production in the valley bottom helps conserve forests in sloping mountains (Yunnan, China)

The results of this project will contribute to the development of management approaches for rice production systems in most of the upper catchments in the Mekong and Red River basins which cover an area of some 250,000 km².



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Project information

CPWF Project
Rice Management for raising water productivity, conserving resources and improving livelihoods in upper catchments of the Mekong and Red River Basins

Partner organizations

- International Rice Research Institute (IRRI)
- Vietnam Academy of Agricultural Sciences (VAAS), Vietnam
- Thai Nguyen University of Economics and Business (TUEBA), Vietnam
- Centre de Cooperation Internationale en Recherche Agronomique pour le Developpement (CIRAD), France
- National Agriculture and Forestry Research Institute (NAFRI), Lao PDR
- International Center for Research in Agroforestry (ICRAF) (World Agroforestry Center), Kenya
- University of California, Davis (UC Davis), U.S.A
- Chiang Mai University, Thailand