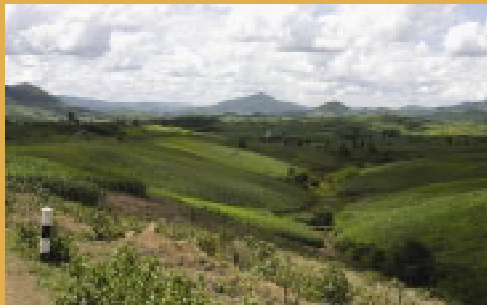


Impact of technologies and market access on natural resources and farming systems

Southern Xayabury, Lao PDR

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Context

Farming systems have changed drastically over the last fifteen years in southern Xayabury. Traditional farms have been transformed through development based on production of rainfed cash crops such as maize, rice-bean (*Vigna umbellata*), peanuts, Job's tears (*Coix lacryma*), black cowpea (*Vigna unguiculata*) and sesame. This development depends on local market accessibility, transfer of technologies from Thailand and the capacity of local traders to finance the import of inputs, heavy mechanisation and technical skills from Thailand.

Degradation of natural resources and destruction of roads and paddy fields

This development, associated with land allocation and increasing population density, has led to reduced fallow periods. As a result, agricultural systems are no longer conserving soils and nutrients. Even arable land with very good soils and high potential for agricultural development can be rapidly degraded.

Different strategies to suit each area

In areas with high soil fertility maize provides the main cash income for most households. Despite high yields (mean 5.0 t/ha), labour productivity is relatively low (mean US\$ 2.25/ha) because of high production costs (\$175/ha) incurred by ploughing, seed purchase, and chemical weeding.

In the most degraded areas a combination of multicropping, animal husbandry and off-farm activities gives a balanced distribution of farming activities over time and space. These strategies reduce climatic and economic risks in a fragile ecosystem.

Smallholders in this region cite three main development goals: (i) increasing cash income and the area cultivated; (ii) optimising labour; and (iii) decreasing the drudgery of work.

Converting this 'resource-mining' production

The region has experienced significant rural growth supplying the Thai market, but is now scarred by a rapidly degrading landscape. Such damage to natural resources and cultivated area has immediate negative social and economic impacts.

Awareness-raising exercises are urgently required and should focus on the economic costs of irreversible natural resource losses. The socio-economic factor is the starting point for generating and extending soil conservation technologies.

An iterative approach with farmer groups looks at the adaptation and validation of direct-seeding systems based on residue management and the positive features of local crops. Planned future systems will integrate soil and crop management to diversify production, for example through grain crops, and grazing/cut and carry forages. This will reduce agronomic, economic and climatic risks while optimising the main functions of DMC systems through adequate use of main and relay crops.



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