



SANREM CRSP

ABOUT SANREM CRSP

SANREM's mission is to assist in the analysis, creation and successful application of decision support methods, institutional innovations and local capacity approaches to support participatory sustainable agriculture and natural resource planning, management and policy analysis at local, municipal, provincial and national levels.

ABOUT THE AUTHOR

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SANREM CRSP RESEARCH BRIEF

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RECONCILING LIVELIHOODS AND LANDSCAPES: TRADE POLICIES, LABOR MARKETS, AND LAND USE IN THE PHILIPPINES

What is the contribution of national economic development policies to natural resource management? Is it possible to achieve higher incomes for rural households while sustaining the productivity of the resource base?



Scientists Ian Coxhead, Agnes Rola et al. from the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP) addressed these questions in a five year research project in the Philippine island of Mindanao.

Their research demonstrates that crop prices and non-farm employment opportunities influence upland farmers' land use and cropping decisions. This finding has sustainability implications because incentives and constraints in commodity and labor markets may favor

crops that call for environmentally damaging management practices over those that ensure greater soil protection and require less chemical inputs. Therefore policies affecting the profitability of various crops or the availability and attractiveness of non-farm employment can help curtail rates of deforestation, soil erosion, and water pollution.

BACKGROUND

The Philippines is representative of upland agricultural systems of the humid tropics. It has experienced rapid economic development and structural transformation, as have many Southeast Asian countries, and a concurrent expansion of roads, markets, urban centers, financial systems, and educational opportunities.

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The Manupali river watershed in the Bukidnon province of northern Mindanao island hosts one of the richest biodiversity reserves in the country, encompassing the forested slopes of Mt Kitanglad (about 2,500 masl). Rice is cultivated in the river flats and coffee and corn on the hills. Temperate climate vegetables are grown at higher elevations.

Postwar government programs encouraged the conversion of forest to farmland as a way to relieve population pressure and economic stagnation in the rice growing areas of the country. Poorly defined tenure rights in upland areas have encouraged agricultural encroachment, deterred investments in soil conservation, and favored annual over perennial crops.

Road improvements in the 1970s facilitated in-migration and have enabled locally grown crops to reach distant markets. Economic growth in the early part of the 1990s (before the 1997 Southeast Asian crisis) resulted in rising incomes and fueled urban demand for vegetables and corn for cattle feed.

National agricultural and trade policies have also encouraged annual crops such as corn and vegetables (whose management practices are highly erosive and demanding of chemical inputs), over soil-protecting perennials, such as coffee. Because corn prices are stabilized through policy interventions, farmers plant corn as a risk aversion strategy. Import tariffs protect domestically produced corn and vegetables, while export taxes reduce the profitability of coffee. Allocation of research funds also favors annual crops.



During the 1990s, rural labor has been diverted toward jobs in the manufacturing sector and in the growing urban centers. In the last 30 years, the share of agriculture in GDP, exports, and employment has steadily declined. But real wages have remained static. Therefore upland farming continues to attract immigrants, especially those with less skills or education.

RESEARCH FINDINGS

The research is based on several surveys conducted between 1994 and 1999. These surveys periodically gathered information on age, ethnicity, household composition, land use, technology, inputs, and crop sales on representative samples of households. Other field surveys collected data on farm and non-farm employment, residence, land tenure, land allocation, soil conservation practices, and other variables. Prices for yellow and white corn, potato, cabbage and coffee at the farm gate and in wholesale provincial markets were monitored weekly.

Contrary to the common assumption that upland smallholders in developing countries are 'subsistence oriented', the data shows that more than half of corn and almost all vegetables produced in the watershed are marketed. An econometric analysis of land use decisions shows that total land farmed and its allocation to various crops is influenced by variance in expected revenues as well as household resource availability and other constraints. Despite the remoteness of the area, price causation analysis shows markets to be highly integrated.

Corn prices in the watershed are driven by national markets. Local supply fluctuations affect potato and cabbage prices in the short term but in the long run their prices are determined at the regional level.

Using exchange rate variability as a proxy during the endpoints of the post-1997 economic crisis, Coxhead, Rola et al. examine the impact of global economic trends on the relationship between farm-gate and wholesale prices. The price dynamics indicate that during a crisis the effects of macroeconomic instability find their way into price fluctuations that guide farming decisions even in areas far from the main regions and sectors of economic activity.

National markets transmit both price information and the effects of macroeconomic instability to producers. This means that policy interventions that influence national prices are effective tools for redirecting local agricultural resource allocation.

The SANREM CRSP scientists also explore the effect of labor markets on land allocation and management. About 27% of labor in surveyed households is involved in non-farm work. Most of these are women, because they generally achieve higher educational levels. Farm employment is highest in more management-intensive crops, such as vegetables, and lowest in low-input perennial crops, such as coffee. A decrease in available on-farm labor, as when labor is absorbed by non-farm employment, should shift crop choice to low input perennials.

But it will also discourage labor-intensive soil conservation measures.

Generally, farmers have been shifting from more labor-intensive conservation measures, such as contour plowing and hedgerows, to less labor-intensive ones, such as tree planting and fallowing. The

analysis shows that most households with non-farm income practice tree planting and fallowing. Households that do contour plowing and hedgerows have fewer members in non-farm employment than those that have adopted tree planting and fallowing. The research found that older farmers, who have less access to non-farm jobs, are more likely to practice contours and hedgerows (but this might also be due to their greater farming knowledge and bequest motivation). Tree planting and fallowing is also more common among farmers with tenure security.

KEY INSIGHTS

Policy biases can undermine sustainable natural resource management.

Agribusiness and agricultural intensification, hailed by many donors and governments as the key to rural development, do not always lead to better natural resource management. Expansion of commodity markets along with policy bias has contributed to deforestation and adoption and spread of crops that require land degrading management practices and water polluting inputs.

Farmers' land allocation decisions respond to global economic influences

Farmers in remote, marginal areas of developing countries do not operate in isolation from market forces and global pressures. Through price fluctuations, national markets transmit impulses from the global economy to frontier farming areas. Price policies, trade agreements, and infrastructural developments that affect the profitability of agricultural commodities strongly influence farmers' decisions of what to grow.

Rural labor markets influence crop choice and land management

Labor availability is an important factor in crop selection and land management decisions. When household labor

is absorbed into non-farm employment farmers adjust crop choice or technology to reduce farm labor inputs. Farmers may reduce area planted, mechanize certain tasks, or shift to less labor-intensive crops and land management practices. Yet, with tenure security and given the right incentives, they may continue

practicing labor-saving soil conservation measures, such as tree planting and fallowing.

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POLICY RECOMMENDATIONS

A consistent, cross-sectoral policy approach is needed

Conservation efforts need to balance local action with policy advocacy at the national level. Policy advocacy should broaden its scope beyond environmental regulations and into all aspects of policy that affect land use decisions. An integrated approach to policy reform must ensure consistency among crop-specific and sector-specific policies so that they do not send conflicting messages to farmers.

Trade and price policies can encourage sustainable land use

Policy biases and price supports favoring crops that require environmentally damaging production practices should be removed. For instance, removal of tariffs and import restrictions can reduce farm-gate prices of corn and vegetables. This may prompt farmers to replace them with perennial and tree crops that provide greater erosion protection and require fewer chemical inputs.



Trade liberalization will increase the relative profitability of coffee.

Non-farm employment can induce environmentally sound crop choice

Incentive packages should be developed to support private sector investments in rural micro-enterprises. Promoting rural employment will induce wage increases in both farm and non-farm sectors, raising the opportunity cost of household labor and reducing incentives to expand agriculture. With less household labor available for farm work, farmers will shift to less demanding, soil conserving, tree crops.

Incentives are needed for labor-short farm household to invest in soil conservation

Policies to expand non-farm employment need to be complemented by incentives and interventions that induce farmers to invest in sustainable soil management. For instance, tax breaks and interest discounts for loans may be used to encourage upland farmers to plant perennials, adopt agro-forestry, fallow land, and practice contour plowing and hedgerows.

Land tenure regulation must uphold clear and secure rights and mediate among multiple stakeholders

A thorough investigation and definition of land tenure claims over private and public upland areas and buffer zones is needed. But clarification does not necessarily mean a rigid regulatory code. Reconciling conservation goals, ancestral domain claims, domestic water and energy requirements, revenue and employment needs, and the exigencies of economic development will require flexible mechanisms for consultation and compromise among multiple stakeholders.

This brief draws from articles by Ian Coxhead et al. in: *Seeking Sustainability: challenges of agricultural development and environmental management in a Philippine watershed*. Edited by I. Coxhead and G. Buenavista. PCARRD, Los Banos, Laguna, 2001. PDF versions of individual articles can be downloaded from:
<http://www.aae.wisc.edu/sanrem-sea>

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