

Alternative Strategies for Small Livestock Keepers in Forest Margins

Options to integrate and optimise sustainable production of small-stock in the moist forest/agriculture interface farming systems of lowland Bolivia and similar environments were explored, and the role of livestock in small-scale slash-and-burn farming systems was investigated.

Background

Small livestock (small-stock) are found on almost all small farms in forest-margin areas of Bolivia, particularly when farming systems are in the early stages of evolutionary development. In the Provinces of Sara and Ichilo, about 50% of farmers are 'immigrants' from the highlands and 50% are lowlanders. Chickens, ducks, tropical 'hair' sheep, pigs and guinea pigs play distinct roles in food security, cash flow and capital generation. Almost all farmers keep chickens: sheep and guinea pigs are kept only by the highlanders, while only the lowlanders keep ducks.

Although a number of NGOs have been promoting the use of small-stock for maintaining the livelihoods of poorer farmers, there was little reliable information on the productivity of these animals or on the nature of their integration with other components of the farming system. This information is fundamental to a sustainable system

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Ducks waiting for scraps from the kitchen. In the forest margins of Bolivia, the farms' small-stock may generate as much income as a farm labourer.

to ensure their contribution in the face of threats to livelihoods, resulting from destruction of moist tropical forest for expansion of agricultural production, degradation of natural resources (principally soil, water and biodiversity), and lack of locally verified, income-generating technologies for sustainable agriculture.

Research highlights

In established small farms in the forest margins of Bolivia, the productivity of small-stock is either unknown or very low due to poor animal husbandry

practices – especially nutrition and disease control. Typical farms in the Department of Santa Cruz were selected for monitoring. Information obtained on the major factors limiting the productivity of these livestock was used as a basis for designing simple interventions, the effects of which will be measured in follow-up studies. On the farms in the study areas, chickens and guinea pigs are used largely for home consumption while sales of ducks and pigs generate income – sheep can either be used for home consumption or sold. The role of these



Tropical hair sheep pass the farmer's house on their way out to graze.

small animal species is highly significant. On many farms the cash and in-kind benefits generated by small-stock may amount to as much as the income earned by a farm labourer.

The project also showed that high levels of mortality are suffered by most species although these could easily be reduced by the application of existing recommendations for vaccination, treatment and good husbandry practices, such as better housing, feeding etc. The major losses of poultry are through diseases; guinea pigs are lost through theft, while parasites and poor selection of breeding stock limit the productivity of pigs and sheep. Greater animal health problems tended to occur in livestock owned by immigrant farmers than in those owned by more experienced lowlanders. This may have been due to their unfamiliarity with the agro-ecology and resource base of the areas into which they had migrated. Thus, farmer-to-farmer extension may have a role to play in improving the livelihoods of immigrant farmers.

Uptake

Although widespread uptake and impact have yet to be reviewed, initial indications are very encouraging. The project has identified new foci for activities in livestock development. In the early years of farm evolution when there is great need for capital generation, small-stock are particularly suitable because of their rapid reproduction rates. Small animals are cheap to buy and are, therefore, also suitable for the more

disadvantaged farmers, such as the immigrant highlanders. Furthermore, they offer excellent opportunities for improving rural livelihoods through their contributions to household nutrition and rapid income generation. The final stages of the project concentrated on ensuring that the outcomes of this research were translated into developmental action.

Linkages

The project's approach is based on on-farm research. This has been achieved through collaborative links with local research institutions and NGOs, and through the participation of slash-and-burn farmers. A number of these institutional links may be of value in supporting future work. This includes a formal memorandum of understanding between CIAT in Santa Cruz and the Universidad Autónoma de Yucatán in Mexico where similar livestock production systems might benefit from the project's findings. The Bolivian Ministry of Sustainable Development has shown considerable interest in the outputs of this project and a programme is being developed to promote the use and improved management of small animal species with funding from the Inter-American Development Bank. The results of this project are relevant to other projects funded by the Livestock Production Programme, such as R6675: Modelling the sustainability of frontier farming at the forest fringe in Amazonia and R6982 on optimising the integration of livestock into small-scale low external input crop systems in Mexico.

Relevance to sustainable livelihoods

Small livestock are often cited as a potential "route out of poverty" for the most vulnerable and disadvantaged farmers. This project has identified a number of reasons for this in a sustainable livelihoods context in Bolivia – notably, their role in reducing vulnerability and increasing food and income security. In addition, the project has identified a number of strategies that could be implemented in order to allow immigrant and other disadvantaged farmers to use small-stock as a basis for a more secure existence.

Selected project publications

- CIAT (1997) *Estrategías para Integrar y Optimizar la Producción Pecuaria en Sistemas de Producción de Interfaces Bosque Húmedo/ Agricultura*. Memorias de un taller informativo, Yapacaní, septiembre 1996. Centro de Investigación de Agronomía Tropical, Santa Cruz, Bolivia. 77 pp.
- Ugarteche, J., Paterson, R. and Joaquín, N. (1998) *Especies Menores: en Sistemas de Producción de Pequeños Productores*. Centro de Investigación Agrícola Tropical, Santa Cruz, Bolivia. 52 pp.
- Paterson, R.T., Joaquín, N., Chamón, K. and Palomino, E. (2001) The productivity of small animal species in small-scale mixed farming systems in subtropical Bolivia. *Tropical Animal Health and Production*. **33**: 1–14.

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