

Smallholder Dairy in Mixed Farming Systems of the HKH



Pradeep Man Tulachan
Mohammad A. Jabbar
M.A. Mohamed Saleem



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about the organisations

The International Centre for Integrated Mountain Development (ICIMOD)

The International Centre for Integrated Mountain Development (ICIMOD) is an international organisation devoted to development of the Hindu Kush-Himalayan region covering all or parts of eight sovereign states:  Afghanistan,  Bangladesh,  Bhutan,  China,  India,  Myanmar,  Nepal, and  Pakistan. The Centre is located in Kathmandu, Nepal. The primary objective of the Centre is to promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations. The Mountain Farming Systems' Division at ICIMOD was established to promote improvement of farm productivity on small mountain farms without degrading the resource base.

The International Livestock Research Institute (ILRI)

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Smallholder Dairy

**in Mixed Farming Systems of the Hindu Kush-Himalayas:
Issues and Prospects for Development**

Pradeep Man Tulachan
Mohammad A. Jabbar
M.A. Mohamed Saleem

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Foreword

Mountain resources directly contribute to the livelihoods of several hundred million people living in mountain areas and indirectly support the livelihoods of several billion people living downstream. The state and use of mountain resources constitute an issue that affects us all, and the International Centre for Integrated Mountain Development (ICIMOD) is at the forefront of efforts to help promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations.

The great majority of people in the Hindu Kush-Himalayan (HKH) region depend upon agriculture as their main source of livelihood; most are mountain and hill farmers with marginal or small farms covering less than two hectares of cultivated land. Thus the well-being of mountain people is to a great extent determined by the state of mountain agriculture – and the potential for economic improvement by the ability to produce products for market.

Livestock are an integral, but often under appreciated, component of farming in the mountains and highlands. They provide food, wool, and hides for people and draught power and fertiliser for the cultivation of crops. In the past, and still in remote areas, livestock have been the key to ensuring that farmers can practise a self-sustaining and self-sufficient form of agriculture in reasonable harmony with the natural resources of the mountains. In recent years, however, livestock have begun to play a somewhat different role, as important agents in the transformation from traditional subsistence-based farming to a more market-oriented approach.

Market-oriented dairy farming by smallholders practising a mixed crop-livestock form of farming, can be a key to economic development in many areas of the HKH, particularly in peri-urban areas with good access to markets. ICIMOD, supported by FAO, initiated studies of livestock in mixed farming systems some years ago, and supported by ILRI has now followed on with this detailed study of smallholder dairy farming in high pressure areas of the region.

ICIMOD is delighted to be able to present the results of this study. The publication is intended to raise awareness of the issues involved in and requirements for the development of the dairy sector in the HKH region. It outlines a number of research needs and provides a guide for future efforts. I hope that it will help raise awareness and understanding of issues and help effective promotion of the development of dairy farming in the region. The studies involved the input of a large number of smallholders, suppliers, and consumers, and once again we are grateful for the time and efforts of all involved, and hope that the study will lead to long-term benefits for the hill and mountain smallholders in the region.

Binayak Bhadra
Director of Programmes
ICIMOD

Author's Note

This publication provides a synthesis and summary of the results of four case studies carried out jointly by the International Livestock Research Institute (ILRI), and the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, in collaboration with national partner institutions in Bhutan, India, and Nepal, under a project funded by ILRI.

The first chapter contains an overall synthesis, the remaining four chapters are summaries of the results of the detailed reports. The titles and authors of the original reports and the names of the implementing organisations are given below. Copies of the original reports are available on request from ILRI and ICIMOD.

BHUTAN

Sustainable Development of Smallholder Dairy Farming in Bhutan

Phanchung, Phub Dorji, Thubten Sonam, and Kinley Pelden

Natural Resources Training Institute, Lobesa, Wangdue Phodrang, Bhutan

INDIA

Smallholder Dairy in Highland Areas of the Hindu Kush-Himalayas: a Rapid Appraisal in Himachal Pradesh, India

Ranveer Singh and C. Shekhar Vaidya

Agro-Economic Research Centre, Himachal Pradesh University, Summer Hill, Shimla, India

Smallholder Dairy in Mixed Crop-Livestock Farming Systems in the Uttar Pradesh Himalayas, India [Uttaranchal]

Vir Singh

G.B. Pant University of Agriculture and Technology, Pantnagar, India

NEPAL

Smallholder Dairy Farming in Mixed Crop-Livestock Farming Systems of Nepal

Bikash Sharma and Kamal Banskota

Centre for Resources and Environmental Studies (CREST), Kathmandu, Nepal

This report combines the results of three case studies carried out for CREST in different regions of Nepal: in the Western Hills [Western Region] by Bhoj Raj Joshi of the Lumle Agricultural Research Centre; in the Ilam Milkshed Area [Eastern Region] by Kamal R. Gautam of the Department of Agriculture; and in the Kathmandu Milkshed Area [Central Region] by Hari Ram Shrestha of the National Agricultural Research Council

Executive summary

Over the past 10 to 15 years, considerable changes have taken place in the structure and management systems of smallholder dairy farming within the mixed crop-livestock farming systems of the Hindu Kush-Himalayan (HKH) region. In particular, there have been notable changes in the species and breeds of the dairy population, infrastructure, and market developments. Increasing urban markets and improved marketing systems have led to a slow but steady move towards dairy farming as a means of supplementary income generation and even as a commercial venture rather than as part of a subsistence system.

A rapid appraisal study was carried out by the International Centre for Integrated Mountain Development and the International Livestock Research Institute in collaboration with national partner institutions in four hill/mountain regions (Bhutan, the Nepal Hills, the Central Indian Himalayas (Uttaranchal), and the Western Indian Himalayas (Himachal Pradesh)) to gather information about the way in which these changes have affected smallholder dairy production systems in the HKH region, the constraints on and opportunities for smallholder dairy development, and priority areas for further research. The results of the survey are presented in this publication, with an overall summary followed by more detailed summaries of the findings in the four different areas.

The smallholder dairy sector plays a critical role in generating cash income in the hills of India and Nepal. Smallholder dairy farming is not as advanced in Bhutan as it is in Nepal and India, but there is considerable scope for its promotion. In India and Nepal, although government programmes have promoted crossbred cows for use as dairy animals, the use of buffalo is becoming popular among small farmers because of their adaptability to local feed resources, high milk fat content, and salvage value in the hills. In Nepal and Uttaranchal, crossbred cows form a very small portion of the total number of dairy animals. In Himachal Pradesh, however, there is an increasing trend towards using crossbred cows. In Bhutan, because of a government programme, there has been a significant increase in crossbred cows in certain pocket areas where smallholder dairy farming is popular.

Smallholder dairy farming is promoted through the marketing arrangements of parastatal government organisations such as the Dairy Development Corporation (Nepal) and the Milk Federations (Himachal Pradesh, Uttaranchal, and Bhutan). These organisations have milk chilling and processing facilities and have organised farmers' groups or cooperatives to collect milk and deliver it to the chilling and processing centres. Overall, however, these systems are collecting barely a quarter of marketed milk. The greater part is channelled through the informal sector (direct sale to consumers by the farmer or through traders) and private dairies. Particularly in Nepal, private dairies with their own chilling and processing plants are rapidly becoming established. The operating costs of the parastatal organisations are high and this can lead to a variety of problems: in Himachal Pradesh, for example, many cooperatives are defunct and others are not functioning as efficiently as they could. There are some fundamental problems with these organisations, for example the existence of 'milk

holidays', with refusal of milk deliveries once or twice a week, for almost four to five months during the peak milk production season in the hills of Nepal. Such problems are very serious for smallholders because they depend on the cash income from milk sales. In view of the present state of dairy farming, it is essential that governments formulate favourable policies to promote the private sector in the dairy industry. The role of the state should be limited to facilitating the growth and monitoring the quality of the private dairy industry.

Animal feed and breeds, and policies for dairy marketing and processing are critical issues across the HKH region for the promotion of smallholder dairy farming in mixed mountain farming systems. Shortage of feed during the dry period and the winter is a serious problem affecting the milk productivity of dairy animals. Local breeds are still the most common animals and their milk productivity is low compared to that of crossbred animals. Lack of product diversification seems to be another important reason for low income from milk production.

This publication makes recommendations for the role of governments in addressing the above key issues. Community participation in natural resource management needs to be encouraged to increase animal feed resources from common property resources. Efficient use of private land to grow fodder trees and forage crops without competing with other cereal cash crops needs to be investigated. Suitable dairy animal breeds need to be identified for the different agroecological zones. All of these will assist farmers in making good investments.

The studies show that the demand for dairy products is likely to increase considerably in the future in response to increases in urban populations and incomes. With the existing technology and marketing systems, the hill and mountain regions are likely to face serious deficits in dairy products. Bhutan, for example, imports milk and milk products from neighbouring states. The fundamental issue to address is how to bring about the participation of more smallholder dairy producers in the market. Achieving this will promote mountain economies in terms of farm employment and income.

It should be possible to upscale the successes of livestock sector initiatives in certain pocket areas in other degraded uplands in the mountains of the HKH. Smallholder dairy farming integrated with agroforestry-grassland systems can ensure equitable distribution of income through greater participation of poor and vulnerable farmers; can provide upland mountain communities with alternative opportunities for income generation; and can impact positively on the environment through judicious land management for growing fodder trees and grasses, thus reducing soil erosion and landslides. Initial facilitation is required for the delivery of appropriate technological options such as agroforestry-grassland systems and for linking up with market opportunities. Such an approach can be promoted through government and donor programmes, using local non-government organisations.

Acronyms and Abbreviations

AI	artificial insemination
APROSC	Agricultural Project Service Centre
BDL	Bhutan Dairy Limited
BEH	bovine enzootic haematuria
BQ	black quarter
CBS	Central Bureau of Statistics
CDB	community development block
CDR	Central Development Region
CGR	compound growth rate
CPR	common property resource
CS	cooperative society
CU	cow unit
DAD	Department of Agricultural Development
DAP	draught animal power
DDC	Dairy Development Corporation
DLS	Department of Livestock Services
DMU	Dairy Milk Union
EDR	Eastern Development Region
FAO	Food and Agriculture Organization
FMD	foot and mouth disease
FWDR	Far Western Development Region
FWM	fresh whole milk
GDP	gross domestic product
GIS	geographic information system
HIG	high-income group
HGM/N	His Majesty's Government of Nepal
HKH	Hindu Kush-Himalayas
HS	haemorrhagic septicaemia
ICIMOD	International Centre for Integrated Mountain Development
ICMR	Indian Council of Medical Research
ILRI	International Livestock Research Institute
IRs	Indian rupees
LIG	low-income group
LSC	livestock service centre
LSU	livestock unit

MCC	milk chilling centre
MilkFed	Milk Federation
MoA	Ministry of Agriculture
MPA	Milk Producers' Association
MPC	milk producers' cooperative
MPU	milk processing unit
MSS	milk supply scheme
MWDR	Mid Western Development Region
NABARD	National Bank for Agriculture and Rural Development
NLSS	Nepal Living Standard Survey
PPR	peste des petits ruminants
RGOB	Royal Government of Bhutan
RNR-RC	Renewable Natural Resources Research Centre
NRs	Nepalese rupees
SLU	standard livestock unit
SMP	solid milk powder
SNF	solid-not-fat
VDC	village dairy cooperative
WDR	Western Development Region

NOTE:

Currencies are given in local denominations. The conversion rates at the time the surveys were carried out were:

NRs 68 = US \$1

Nu 42.5 = US \$1

IRs 42.5 = US \$1

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