



ICIMOD LIBRARY
Mountain Farming Systems
Discussion Paper No. 28

Strategies for Sustainable Mountain Agriculture in the Middle Hills of Nepal

CASE STUDY

Sugandha Shrestha and Yamun Yadav

International Centre for Integrated Mountain Development

1992

...ment Bank
...ulture in the
... of mountain
...scheduling, and
... was developed. This help
...sustainable agriculture.

...production and resource
...tions, and their responses
...siting systems is selected

The local issue engagement, in reviews of both agricultural policies and programmes and farmers' practices and responses, was the degree of match or mismatch between attributes of public and private (i.e., farmers') interventions in mountain areas, on the one hand, and imperatives of mountain conditions, on the other. This could serve as a first step towards assessing the sustainability implications of present resource use patterns in mountain areas. The major findings based on the above work are available through ICIMOD's published material "Sustainable Mountain Agriculture".

Sugandha Shrestha is a Staff Member of the MFS Division, ICIMOD, and Yamun Yadav is the Project Director, FAO/Women Development Division, Jawalakhel.

Mytila Mountains of Nepal. Conducted from 1988 to 1990, three field studies focused on the current status and emerging directions of mountain farming systems. To cover broadly different agro-ecological scenarios, three types of farming systems were studied. They included (i) an annual crop-dominated farming system, (ii) horticultural crop-dominated farming system, and (iii) livestock-dominated farming system. Despite demographic, cultural, and socioeconomic differences among different countries these types of farming system showed considerable similarities, especially with reference to emerging sustainability scenarios as a result of rising pressure on mountain resources.

It can be added that these studies sponsored by ICIMOD and conducted by national experts from the respective countries are not strictly uniform in terms of descriptive coverage of issues and depth of analyses. They are published as such with necessary language editing.

Preface

The Mountain Farming Systems' Division at ICIMOD, with support from the Asian Development Bank and the Ford Foundation, commenced work on strategies for sustainable mountain agriculture in the countries of the Hindu Kush-Himalayan Region in 1988. Focussing on the imperatives of mountain characteristics such as inaccessibility, fragility, diversity, marginality, human adaptation mechanisms, and 'niche', a conceptual framework called the Mountain Perspective Framework was developed. This help assess the sustainability implications of public policies and programmes for mountain agriculture.

Using the same framework, attempts were made to examine farmers' production and resource management practices, their adaptations to the aforesaid specific mountain conditions, and their responses to development interventions. This was done through field studies of various farming systems in selected areas of China, India, Nepal, and Pakistan.

The focal issue emphasised, in reviews of both agricultural policies and programmes and farmers' practices and responses, was the degree of match or mismatch between attributes of public and private (i.e., farmers') interventions in mountain areas, on the one hand, and imperatives of mountain conditions, on the other. This could serve as a first step towards assessing the sustainability implications of present resource use patterns in mountain areas. The major findings based on the above work are available through an ICIMOD publication entitled 'Sustainable Mountain Agriculture'¹.

Detailed versions of the empirical material synthesised and incorporated by the above publication are disseminated separately. A major part of this material is comprised of studies of farmers' strategies in selected areas: West Sichuan (China), Chitral (NWFP, Pakistan) Himachal Pradesh (India), and the Middle Mountains of Nepal. Conducted from 1988 to 1990, these field studies focussed on the current status and emerging directions of mountain farming systems. To cover broadly different agro-ecological situations, three types of farming systems were studied. They included (i) an annual crop-dominated farming system, (ii) horticultural crop-dominated farming system, and (iii) livestock-dominated farming system. Despite demographic, cultural, and socioeconomic differences among different countries these types of farming system showed considerable similarities, especially with reference to emerging unsustainability scenarios as a result of rising pressure on mountain resources.

It can be added that these studies sponsored by ICIMOD and conducted by national experts from the respective countries are not strictly uniform in terms of descriptive coverage of issues and depth of analyses. They are published as such with necessary language editing.

This report provides details on the farming systems in the Middle Hills of Nepal.

¹ N.S. Jodha, M. Banskota, and Tej Partap (eds). *Sustainable Mountain Agriculture*, Vol. I - Perspectives and Issues, Vol. II - Farmers' Strategies and Innovative Approaches. Delhi: Oxford & IBH Publishing Company (P) Ltd., 1992.

Table of Content

	Page
INTRODUCTION	1
Background	1
Statement of the Problem	2
Objectives of the Study	3
Purview of the Study	3
Methodological Approach	3
 RESEARCH METHODOLOGY	4
The Conceptual Framework of Mountain Farming Systems	4
Framework of the Research Study	6
Methodology	7
Desk Study	7
Survey Procedure	8
A. Cereal Crop-dominated Farming System	9
Selection of Study Site	9
Selection of Households for Survey	9
Data Acquisition	11
B. Horticultural Crop-dominated Farming System	12
Selection of Study Site	12
Selection of Households for Survey	12
Data Acquisition	12
C. Livestock-dominated Farming System	12
Selection of Study Site	12
Selection of Households for Survey	14
Data Acquisition	14
Analytical Procedure	14
Limitations of the Study	14
 COUNTRY BACKGROUND	16
General	16
National Strategies and Policies for Agricultural Development	17
Development Plan Objectives, Policies, and Resource Allocations	17
Crop Development Strategies and Policies	18
Horticultural Development Strategies and Policies	18
Livestock Development Strategies and Policies	19
Forest Development Policies	20
Mountain Farming Systems	20
General Features of the Hills and Mountains	20
The Farming System	21
Crop Production	21
 STUDY AREAS AND THEIR RESOURCE BASE	25
General Characteristics	25
Physical Location, Topography, and Soil	25
Climate	26
Existing Infrastructure	26
Marketing Centres	27
Resource Base	27
Human Resources	27
Farmland	29
Livestock	32

<i>Livestock Production</i>	34
<i>Animal Feed</i>	35
<i>Animal Disease</i>	37
Forestry	37
<i>Pastureland/Grazing Land</i>	38
<i>Water Resources</i>	38

PRODUCTION FLOW : LINKAGES AMONG COMPONENTS OF MOUNTAIN FARMING SYSTEMS

Backward and Forward Linkages	40
<i>Crops and Livestock</i>	40
<i>Crops and Forestry</i>	44
<i>Livestock and Forestry/Pastureland</i>	44
<i>Linkages with Farm Households</i>	44
Linkages with the Market	45
Implications of the Linkages	46
<i>Nutrition</i>	46
<i>Income</i>	46
<i>Employment</i>	48

FARMERS' STRATEGIES AND THEIR SUSTAINABILITY IMPLICATIONS TO MOUNTAIN AGRICULTURE

Sustainability Issues	50
Farmers' Strategies	50
<i>Extensive Cultivation Practices</i>	51
<i>Intensive Cultivation Practices</i>	51
<i>Extensive Management Practice</i>	54
<i>Intensive Management Practices</i>	55
<i>Backward and Forward Linkages</i>	55
<i>Group Efforts</i>	56
<i>Risk Hedging</i>	57
<i>Biomass Production and Use</i>	57
<i>Diversification</i>	58
The Sustainability Implications of Mountain Agriculture	58
<i>The Crop-dominated Farming System at Dhuskun</i>	62
<i>The Livestock-dominated Farming System at Yelung</i>	63
<i>Horticultural Crop-dominated Farming System</i>	63
Elements Contributing to Unsustainability/Sustainability of Mountain Farming Systems	65
<i>Elements Causing Unsustainability of a Farming System</i>	65
<i>Elements Contributing to the Sustainability of a Farming System</i>	66

CONCLUSIONS AND RECOMMENDATIONS

Conclusions	68
Recommendations	69

REFERENCES

72

ANNEXES

73