MOUNTAIN FARMING SYSTEMS

Discussion Paper Series

**SUSTAINABLE AGRICULTURE IN FRAGILE RESOURCE ZONES:
TECHNOLOGICAL IMPERATIVES**

N. S. Jodha

MFS Series No. 3

1990

International Centre for Integrated Mountain Development

The opinions expressed in this publication are those of the author(s) and do not necessarily reflect the views of the International Centre for Integrated Mountain Development.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever, on the part of the International Centre for Integrated Mountain Development, concerning the legal status of any country, territory, city, or area or of its authorities; or concerning the delimitation of its frontiers and boundaries.

SUSTAINABLE AGRICULTURE IN FRAGILE RESOURCE ZONES :

TECHNOLOGICAL IMPERATIVES

N. S. Jodha

MFS Series No. 3

Dr. N. S. Jodha is the Head of Mountain Farming Systems' Division,
International Centre for Integrated Mountain Development (ICIMOD),
G.P.O. Box 3226, Kathmandu, Nepal

September, 1990

International Centre for Integrated Mountain Development (ICIMOD)

Kathmandu, Nepal

PREFACE

ICIMOD's approach to problem oriented research involves both knowledge reviews and field studies. The focussed reviews and field studies conducted by the Mountain Farming Systems' Division cover various aspects of agricultural development. Since early 1988, a series of 'state of the art' reviews of agricultural policies and programmes were sponsored by ICIMOD in different countries of the HKH Region. The purpose of these studies and the subsequent National Workshops in different countries was to understand some of the constraints and prospects of Mountain area development. These exercises were also aimed at acquiring comparative perspectives of development approaches and strategies in different countries.

This paper using the 'Mountain Perspective-Sustainability Framework', developed by the author, focusses upon prospects of agriculture in fragile resource zones with special emphasis on technological imperatives. The paper was presented at the "International Symposium on Natural Resource Management for Sustainable Agriculture", New Delhi, India.

This paper deals with agriculture in irrigated, rainfed and semi-arid tropical zones. It is not a matter of probability, but of necessity, involved in the management of these zones, (i.e. indicator of an unsustainable situation). The negative impact of the agricultural resources is the important result of the paper.

Their sustainability is not a matter of probability, but of necessity, involved in the management of these zones, (i.e. indicator of an unsustainable situation). The negative impact of the agricultural resources is the important result of the paper.

Introduction and Setting

Page

1

Fragile Regions: The Dominant Scenario

4

Resource Characteristics and Sustainability Implications

7

Search for Sustainability

10

Conclusion

13

ANNEX

14

REFERENCE

23

important ones, as synthesised by Padoa-Schioppa (1991), are summarised below

Conceptually speaking, the focus of "sustainability" is on the issues of inter-generational equity (implies: equal (or greater) availability of options in terms of human well-being or economic prospects, to future generations as compared to the present one). Theoretical abilities of such prospects, achievable through accumulation of capital stocks and technology by future generations, are constrained by the capabilities of the biophysical resource base. They cannot be stretched or manipulated indefinitely, without initiating processes of possible damage. This indicates the primacy of biophysical resources in sustainable development. This is more so in the case of agriculture, whose dependence on biophysical resources is more direct and crucial.