

Book Review

Werner Doppler and Siegfried Bauer (2010) **Farming & Rural Systems Economics** (Ed) Margraf Publishers GmbH, Weikersheim, Germany, pp. 194 + ix including Figures, Tables, Equations, Abbreviations Glossary, References, and Appendices. Price not quoted.

Since soil is a fundamental input of agriculture, its degradation is a serious threat to sustainability of agriculture. Deforestation, grasslands' degradation, encroachment of steep slopes, and intensive agriculture are leading to soil degradation. Unbalanced use of chemical fertilizers also causes soil degradation through change in soil structure and acidification. Development works, particularly the construction of mountain roads without adequate conservation measures also contribute to landslides and soil erosion. About one-fifth of the agricultural land in Asia has been degraded over the last few decades. In South Asia alone, the annual economic loss due to nutrient loss by erosion and soil fertility depletion is quite lumpy.

It is observed that the issues of soil degradation in Nepal are more related to nature rather than to human interface. Studies have shown that 60-80 percent of the total annual soil loss from cultivated terraces occurs during the pre-monsoon. But the incidence of degradation largely aggravated by unsustainable land use practices cannot be overlooked. Increased anthropogenic activities in an inherently fragile ecosystem with unstable geology, steep slopes and intense monsoon rains have accelerated various processes of soil degradation and caused loss of soil and its fertility. The one-way flow of nutrients from forest to farmland has resulted in rapid depletion of nutrients in forest soils.

Mid hill region of Nepal is inherently vulnerable to landslides and soil erosion. Population growth, fragility, rainfall intensity, expansion of agriculture on to steep slopes, encroachment on forests, livestock pressure on grazing land, construction of roads over hill slopes lead to high rate of erosion throughout the hills, particularly on bare and cultivated land. Rapid erosion occurs during pre-monsoon season. The declining soil fertility has resulted in stagnancy in the production of major food crops.

The book under review is an outcome of research on analyzing soil conservation in mid hill region of Nepal with bio-economic modeling approach. The study was carried out by Dr. Romy Das under the PhD programme of DAAD in Agriculture Economics and Related Sciences at the Justus Liebig University of Giessen, Germany.

The book is divided into nine contents including summary at the end of each content. Contents include: Introduction; Overview of Nepalese Agriculture Sector; Overview of Soil Resource, Soil Degradation and past Conservation Efforts in Nepal; Theoretical Review and Analytical Approach of soil Conservation; Study area and Socio-economic Characteristics of households; Soil Nutrient Balance and Its Determinants; Biophysical Modeling of Soil Conservation Technologies; Economic Analysis of Conservation Technologies; and Summary, Conclusions and Policy Implications.

The book comprehensively assesses the state of art of soil resource use in mid hill region of Nepal by estimating nutrient balance as an indicator of sustainability and also analyses socio-economic factors determining nutrient balance. It evaluates the biophysical as well as economic performances of various soil management options integrating outcome of biophysical model to the economic analysis. Coherently integrating biophysical model, soil change under agro-forestry model and economic analysis under the framework of bio-economic modeling was calibrated for study area based on location-specific input parameters and impact of various conservation technologies was simulated over the long run. This core part of the analysis makes an assessment of the status quo of soil resource use by examining soil nutrient balances as an indicator of sustainability and evaluating long term performance of various soil conservation and fertility management technologies to achieve sustainable agriculture production.

The model results reveal that conservation technologies under consideration are efficient in improving range of biophysical parameters of soil with varying impact over time. However, these technologies are not economically viable in short run at the farmers' level implying that necessary support should be provided to the farmers to achieve sustainable use of soil resources.

Hoping to the encouragement of further empirical work on bio-economic modeling of soil resource conservation that ultimately will help shape policies to reduce the stark gaps in outcomes seen in mid hill region of Nepal. It will lead to more comprehensive extensive evaluation of the impacts on sustainable development of agriculture, and more effective policies and programs to reduce of soil degradation in the agriculture sectors. Soil degradation is an area of major interest to agro-researchers and policy makers, particularly those with a concern for developing economies. The book provides a practical hands-on guide for the measurement and interpretation of farming system which will act as a bridge between the academic literature and the needs of practitioners. This book deserves a standard text in the field of soil resource conservation analysis and will attract researchers, academics, students along with a wide range of audience.

Central Department of Economics
Tribhuvan University, Kirtipur, Nepal.

Sohan K. Karna
Professor of Economics