I. INTRODUCTION

The hills and mountains lying in the northern part of Nepal cover about 77 per cent of the total physical area and contain about 56 per cent of the total population. The limited transport and communication infrastructure, unavailability of reliable markets and production inputs, high variations in micro-climates, accompanied by large family size on small fragmented farms on hill terraces and steep slopes have led the farmers in the mountain regions to adopt the subsistence-oriented mixed farming system which is characterized by substantial diversity and also a high degree of self-reliance. The system comprises of a great variety of crops including perennial fruit and fodder trees and different species of livestock on the farm. The system produces food year-round, and provides continuous employment for unskilled labour to tend crops and livestock. The system is highly labour intensive and depends to a large extent on the available forests and rangelands. Forest is an integral part of the farming system, just as much as arable land and livestock. Forests supply fuelwood, fodder, compost, timber, poles, and food to the system. Thus, crop production, animal husbandry, and forestry constitute the three main closely and inseparably integrated components of the mountain farming system. Although the farmers in the region have always understood these linkages and closely integrated agricultural, animal husbandry, and forestry practices, the interrelationships have only recently begun to be understood and appreciated at the professional level (Mahat 1985). However, despite the recognition of this fact, there has hardly been any quantified evidence on it.

The objectives of this study are: i) to examine the importance of components such as crop, livestock, and forestry and identify their linkages with respect to mountain farming systems and ii) to quantify those linkages in terms of contribution of each component of the farming system to other(s) and vice-versa. The scope of the study is to quantify the contribution of: i) forests and pastures to livestock and crops in terms of fodder, bedding, and compost materials, and to farming households in terms of fuelwood, timber, and other forest products; ii) livestock to crops in terms of draught power and manure, to households in terms of food and cash income, and to forests and pastures in terms of manure; iii) crops and farm trees to livestock in terms of feed and bedding materials and to households in terms of food, fuelwood, other materials, and cash income; iv) farming households to crops, livestock, forests, and pastures in terms of labour and management; and v) market to all the above components and vice-versa.

In order to generate information required for the accomplishment of the study objectives, data were collected from both primary as well as secondary sources. After reviewing the available literature on mountain farming systems, a reconnaissance survey was carried out in different places in Dhadhing, Makwanpur, Kavrepalanchok, Sindhupalchok, and Dolakha districts in order to select study sites that represent hills and mountains in terms of accessibility, altitude, aspect, climate, and agricultural and socioeconomic characteristics. based on the findings of the reconnaissance survey, three sites namely, Naubise in Dhadhing District as a horticultural crop-dominated farming system; Dhuskun in Sindhupalchok District as a cereal crop-dominated farming system; and Yelung in Dolakha District as a livestock-dominated farming system were selected for conducting site specific case studies. Thirty households were randomly selected and interviewed from each site. In addition, a number of local leaders and other key informants were also interviewed from each site in order to generate community level information.

The data generated through primary as well as secondary sources have been analysed and interpreted to form the basis of this paper. The paper, in the following sections, provides a brief account of the physical, socioeconomic,and agricultural characteristics of the study sites; elaborates the linkages among the various components of mountain farming systems; and finally puts forward some important policy implications based on the findings of the study.