Indian Journal of Forestry 38(4) 295-301, 2015

Land Use Ecology of Major Ecosystems in Cold Deserts of Himachal Pradesh

Poonam, R. Bawa, H.P. Sankhyan, D. Nayak and S.S. Sharma

ABSTRACT : The present study was conducted in Goshal, one of the largest villages of Lahaul valley of Himachal Pradesh during 2010 to 2013 to study the land use pattern of village Goshal by classifying the study area into three major ecosystems viz; Forest Ecosystem, Alpine Pasture Ecosystem and Agro-ecosystem and to assess the soil physical properties of these ecosystems. Land use pattern in agro ecosystem revealed that of the total area of village Goshal, maximum area was occupied under second grade irrigated area and maximum area under non cultivable lands was reported under grasslands. Pea occupied maximum per cent area which showed the shifting of the farming community from traditional cropping pattern to cash crops. It was further observed that the villagers opted plantations of Poplars and Willows. The soil physical properties of all the three ecosystems were found medium in available nutrient status.

KEYWORDS: Land use, Ecosystems, Cold Deserts, Traditional Cropping, Ecology.

INTRODUCTION

Lahaul and Spiti district of Himachal Pradesh falls under the cold desert region. The region is characterized by low precipitation, a short growing season, low primary productivity and high stocking density (Mishra, 2000). The growing season in is restricted to less than six months in a year. The dry type of vegetation found in cold desert is due to scanty rainfall, low capacity of substratum to retain moisture, excessive lopping and grazing. Dry land cultivation is not possible and the entire cultivated area depends on assured irrigation through long, winding streams from the upper mountain reaches (Oinam *et al.*, 2005). Snow and glaciers are the only sources of water. Also, there are considerable differences in stream flows during the farming season, which creates immense difficulties. On the other hand, as the growing period is short, all farmers need irrigation almost at the same time. At first glance, one would think that human survival is impossible in this harsh climate. Yet, the local people have learnt to make judicious and optimal use of their limited resources and have built a glorious civilization in the process. The local inhabitants' livelihood is mostly agropastoral.

Thus the present study was undertaken to study the land use pattern of village Goshal by classifying the study area into three major ecosystems viz; Forest Ecosystem, Alpine Pasture Ecosystem and Agro-ecosystem to assess the soil physical properties of these ecosystems which will be of great help for researchers working in such harsh areas in other parts of the world, planners and policy makers for drawing interlinked sustainable developmental plans for the area for better socioeconomic status and restricting further desertification in cold desert of Himachal Pradesh.

MATERIALS AND METHODS

Location, Extent and Physiography of the study area

Village Goshal in the Lahaul Valley is situated on the left bank of the river Chandra just before it merges with river Bhaga. Goshal village is located on a fan shaped alluvial deposits and occupies 28.91 ha of land. Above the agricultural fields, the area supports grazing lands. On the higher reaches, the area supports conifer forest and above that the glacial level exists, from where, the melt flow down through gorges and feeds the entire village. The village is well known for its productive fields and farmers prefer to grow Peas, Potatos, Vegetables (Cabbage), Apple, Barley and commercially important Medicinal Plants.

Abiotic Variables

The abiotic variables or the atmospheric variables for mean minimum and maximum atmospheric temperature and total precipitation on daily basis were procured from Indian Meteorological Department, Shimla. The daily data was averaged on monthly basis for three years (2010- 2013), which was further averaged. However, the minimum and maximum relative humidity on daily basis was recorded through digital thermo hygrometer stationed at village Goshal itself.

Poonam[✉], Bawa, R., Sankhyan, H.P., Sharma, S.S.
College of Forestry, Dr YS Parmar University of Horticulture and Forestry
Nauni, Solan – 173 230 (Himachal Pradesh)
e-mail: poonamwarpa008fty@gmail.com

Nayak, D.
ASPEE College of Horticulture and Forestry, Navsari Agricultural University,
Navsari – 396450, (Gujarat)