Popular Article

Popular Kheti
Volume -5, Issue-2 (April-June), 2017
Available online at www.popularkheti.com

eISSN: 2321-0001

Traditional Agroforestry Systems in Cold desert Region of Himachal Pradesh, India

Navjot Singh Kaler, B. Gupta and Vipasha Negi
Department of Silviculture and Agroforestry,
Dr. YS Parmar University of Horticulture and Forestry Nauni, Solan (HP), India
***Email of corresponding author: kalernavjot8888@gmail.com**

Traditional agroforestry systems *viz.*, agrisilviculture, agrihorticulture are prevalent in the region that combines agriculture crops like *Hordeum vulgare* (Barley), *Triticum aestivum* (Wheat), *Fagopyrum tataricum* (Buck wheat), *Panicum miliaceum* (Millets), *Avena sativa* (Oat), *Brassica spp.* (Mustard) *etc*. with boundary plantations of multipurpose trees like Morus *alba* (Mulberry), *Salix spp.* (Willow) and *Populus spp.* (Popular) which are the main source of fodder and fuelwood. Among wild plants, *Hippophae rhamnoides* (Seabuckthorn) is a multipurpose thorny shrub, which is used by people for food, fuel, fodder, medicine and for fencing their fields.

Introduction

Cold desert region of India falls under Himachal Pradesh (Lahaul & Spiti and Kinnaur district), Jammu & Kashmir (Leh & Kargil district), Uttarakhand, Sikkim and Arunachal Pradesh. The cold desert region of Himachal Pradesh covers 35% of its geographical area and 5 % of total cultivated area which is elevated at 2700m to 4551m asl with dry and extremely cold conditions. The region receives precipitation mainly in the form of snow and having less than 500 mm rainfall annually. The region have barren topography and the soil moisture remain frozen during winters and low relative humidity during summers with very short growing season as the land remain landlocked for more than 6-7 months every year during extreme winters. The local people have small land holdings where they grow limited agricultural crops and largely depend upon natural resources for meeting their diverse needs. However, main source of income are rearing of goats and sheep that provide milk, meat and wool. Natural wealth of the area is under various biotic stresses (grazing, over harvesting, invasion of exotic species etc.), abiotic deformation (natural calamities), habitat fragmentation, increase in population, climate change, impetus to tourism etc. that severely disturb the fragile ecosystems of the region.

Traditional Agroforestry Systems

The extreme climate and weak ecosystem equilibrium demands in the region demands use of integrated farming systems to avoid complete losses in the times of adverse conditions. In this regard, Agroforestry is an apt solution as it provides multiple outputs and reduces the pressure on natural resources. Agroforestry, as a science and practice, have potential to improve the livelihood status of rural people of the region due to its various forms to offer multiple alternatives and opportunities to the farmers to enhance farm production and income. Traditional agroforestry systems *viz.*, agrisilviculture, agrihorticulture are prevalent in the region that combines agriculture crops like *Hordeum vulgare* (Barley), *Triticum aestivum* (Wheat), *Fagopyrum tataricum* (Buck wheat), *Panicum miliaceum* (Millets), *Avena sativa* (Oat), *Brassica spp.* (Mustard) *etc*. with boundary plantations of multipurpose trees like *Morus alba* (Mulberry), *Salix spp.* (Willow) and *Populus spp.* (Popular) which are the main source of fodder and fuelwood. Among wild plants, *Hippophae rhamnoides* (Seabuckthorn) is a multipurpose thorny shrub, which is used by people for food, fuel, fodder, medicine and for fencing their fields. In lower slopes, there is sparse integration of agricultural crops with fruit trees like *Malus domestica* (Apple), *Prunus armenica* (Apricot), *Prunus persica* (Peach) etc. In recent years, local farmers have diversified their agricultural crops by including vegetable crops like *Pisum sativum* (Pea), *Solanum tuberosum* (Potato), *Brassica rappa* (Cabbage), *Brassica oleracea* (Cauliflower) *etc*. Diversification in present cropping system seems to be the need of the day to cope up with the ever-increasing demand for variety of products and assured income. The region has great medicinal plant diversity like *Aconitum heterophyllum*, *Artemisia maritima*, *Picrorhiza kurrooa*, *Saussurea costus etc*. so the cultivation of medicinal plants with existing agroforestry system is a viable option. The integration of livestock with existed agroforestry system will also be helpful in increasing the income of the farmer in the region.

Conclusion

There is great need of crop diversification in traditional agroforestry system to provide sustainable livelihood to the local peoples and environment security in cold desert region of Himachal Pradesh. Keeping suitable agroforestry combinations in mind, the existing agroforestry systems should constantly monitored, improved for future requirements. Combination of agriculture, horticulture, silviculture and pasture will help to increase productivity of available land resources without disturbing ecology. We anticipate that the effective implementation of modified integrated agroforestry systems throughout the region will help in social, economical and environmental development.