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Conservation of alpine pasture in Himachal Pradesh, India

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Abstract

Himalayan Alpine pasture occurs at high altitude mountains in between the tree line and perpetual snow line. These constitute one of the important land cover. These pastures contain very good grasses and medicinal plants thus traditionally tribal people depend on these pastures for grazing their animals during summer. 75% of the total alpine pastures in Himalayan region are situated in Himachal Pradesh.The alpine pasture of Himachal Pradesh provides a matchless wealth of highly priced medicinal, aromatic plants and known as a natural reservoir of these herbs. In alpine pasture and meadows due to continuous loss of forest land, uncontrolled grazing and irregular exploitation of medicinal herbs by commercial enterprises have resulted in depletion of valuable medicinal plants used since ancient times. There are many medicinal plants which have become rare in several tracts while a few others have fallen in the list of endangered species. Therefore it has been felt that there is an urgent need for ex-situ and in-situ conservation of these valuable and threatened species.

Keywords: *Medicinal plant, grazing, ecosystem, trible people*

Introduction

75% of the total alpine pastures in Himalayan region are situated in Himachal Pradesh. 16-19%of the total geographical area of the state constitute the alpine pasture. The alpine pasture occupies 827.31 sq.km.area which account for 12.84% of the chamba district. In the chamba district the alpine pasture girdles around three prominent ranges .starting from south they are:-

1. Dhaulandar range (303.03 sq.km.)
2. Pir Panjal or Pangi range (445.58 Sq.km.)
3. Zanskar range (78.70 sq.km.) (a\c to data provided by Remote sensing office, Shimla)

The use of medicinal plants for curing diseases in human society is almost as old as man himself. The earliest mentioned use of medicinal plants is found in Rigveda.After the Vedas there is no information on the development of this science in India for a period of about 1000 years. The study of Indian indigenous drugs first started in the early part of the first century and it was then confined to the collection of available information with regard to various medicinal plants growing in different parts of the country .Extensive studies has been carried out in exploring the medicinal plants specially of alpine pasture from different region:

Chawdhery and Wadhwa (1984) studied the Alpine flora of Himachal Pradesh, Chopra, and Chopra (1955) reviewed work on medicinal plants, Dey. (1996) studied indigenous drugs of India, Gammie (1898) studied botanical tour to Chamba and Kangra. Jain and Sartry (1979) studied threatened plants of India; Joshi (1962) worked on preliminary study of the Alpine Flora of Rudranath Bugyal of Distt. Chamoli (North Garhwal). Samant and Palni (2001) reported diversity, distribution and indigenous uses of essential oil yielding plants of Indian Himalayan region. Sharma and Singh (1990) reported phytogeographical observations on the flora of Chamba district, Himachal Pradesh.

The demand of these high qualities of medicinal herbs from alpine region of Himachal Pradesh is increasing day by day within and outside the

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country .Time has come when serious and effective measures are required to meet the challenge. Therefore this is a time to think and formulate strategy for the conservation for supply of raw materials to industries, users and above all to maintain ecological balance of these areas.

Materials and Method

The medicinal plants were collected from time to time during flowering and fruiting season. The plants collected from study area were consisted of almost all parts so that they can be easily recognized and able to provide maximum information. Herbarium of plants was also prepared.

Beside this information related to collected plants was also gathered by discussing with people inhabiting the area. Study material from various reference books was also referred.

Results and Discussion

The following alpine medicinal plants of Himachal Pradesh have been collected likely to be endangered (rare) groups therefore there is an urgent need for ex-situ and in-situ conservation.

1. *Aconitum benthamii*
2. *Artemisia brevifolia*
3. *Atropa acuminata*
4. *Angelica glauca*
5. *Colchicum luteum*
6. *Corydalis govaniana.*
7. *Dactylorhiza hatagirea*
8. *Delphinium denudatum*
9. *Delphinium brunonianum*
10. *Ephedra gerardiana*
11. *Fritillaria roylei*
12. *Gentiana kurroo*
13. *Hedychium spicatum*
14. *Hyoscyamus niger*
15. *Hyoscyamus niger*
16. *Jurinea dolomiaca*
17. *Meconopsis aculeate*
18. *Nardostachys grandiflora*
19. *Picrorhiza kurroa*
20. *Picrasma quassioides*
21. *Podophyllum hexandrum*
22. *Rheum australe*
23. *Saussurea costus*
24 *Saussurea hypoleuca*

The species mentioned above are mostly from alpine and sub-alpine regions of Himachal Pradesh, which have limited scope for their sustenance in wild imperative need to conserve these species of rhizomes and roots, which remain dormant more than two to six months under heavy snow. So there is an urgent need to save these plants for their multiplication by growing them on mass scale in temperate regions of Himachal Pradesh , for internal consumption of pharmaceutical enterprises, such as Ayurvedic, Unani, Homeopathic, Sidha and also in Allopathic system of medicines

Socio-economic and ecological importance of Alpine Pasture-

Grass lands are both a component and product of ecosystem. As a product of ecosystem they provide extractable products which have been utilized for food, essential oil, paper making, ornamental and medicinal purposes etc.

As a component of ecosystem they play an important role in protection of water shed

And soil conservation, nutrient cycling and biological diversity.

In Himachal Pradesh particularly in Chamba and Kinaur district grazing pressure is tremendous. The region supports 2,47,117 cattle,34,718 buffaloes , 2,69,923 sheep and 1, 73,169 goats. (a\c Data provided by censes department).

From available information from the forest department of chamba district, some of live stock from adjoining states of Haryana and Punjab are brought for grazing during summer in this alpine pasture. Due to this pressure of grazing, these alpine pastures are being degraded continuously.

Environmental impact of Grazing -

The environmental impact of grazing has to be evaluated in terms of grazing practices.Most of the damage to grass land is done along the migratory routes.Grazing by sheep and goat harm younger shoot tips, effecting shoot growth and causing soil compaction and thus reducing soil fertility. The other impact of over grazing is loss of vegetation cover which accelerates, soil erosion, land slides and subsequently results in salutation of rivers and dams. Beside this, overgrazing causes species destruction by trampling of reproductive plant points. Continuous grazing at the same place over a period causes loss of palatable species and increase

in the number of unpalatable species and ultimately effects ecological succession.

Consideration Points

The following facts need consideration while formulating action plan.

Alpine pasture constitute unique ecosystem having economical, social and ecological importance.

The tribal population is closely linked with this ecosystem and subsides on it for their livelihood.

Apart from good grasses this zone is a repository of very valuable herbs having medicinal value.

Proximity of Chamba district to Punjab plains and as plains depends on the hill for various kinds of raw material.

Considering the above facts it goes without saying alpine pastues need systemic study and scientific management.

Management Needs -

The following measures may be taken up for sustained productivity of the pasture lands.

Constituting an alpine pasture development society with the involvement of users especially 'Gaddies and Gujjars' (Tribal Communities) .It could be termed under the gaddies development board and gujjars development boards.

Alpine pasture should be divided into different sectors based on the migratory routes and each sector should be opened for grazing on rotational basis.

A mission should be launched with the help of beneficiaries to eradicate the undesirable growth of weeds and undesirable grass species.

Aerial broadcasting of suitable seeds should be taken up before the snowfall season preferably in the month of Oct. and early Nov.

The tribal people should be trained in the scientific collection of herbs and medicinal plants.

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