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The Role of Medicinal Plants in Livelihood Improvement in Uttarakhand

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ABSTRACT

In the face of threats caused by both anthropogenic and natural reasons, the question of the sustainability of medicinal plants has emerged very strongly in recent times. These plant resources, therefore, have become important domains of intervention and are increasingly attracting the attentions of public and private sector policy researchers, policy makers and development program implementers. In recognition of such importance this paper is undertaken to focus on important aspects of medicinal plants in Uttarakhand associated with livelihood. Markets for medicinal plants in Uttarakhand are not in optimally ideal conditions due to an awkwardly longer value chain entangled with many constraints and weaknesses. Therefore, the research examined production and management through an industry-community partnership approach that can improve the existing medicinal plant value chain. The study assessed the local perceptions of the use and cultivation of medicinal plants and the need for conservation of these plants, as well as the features of already ongoing cultivation practices and options for increased cultivation.

Keywords: Medicinal plants, Conservation, Tradtional knowledge, traditional uses, livelihood, Ecosystem-based approach, Sustainable use

1. Introduction

Uttarakhand is a part of the North-Western Himalayas and is located between 28º 43' – 31º 27' N latitudes and 77º 34' – 81º 02' E longitudes. The river Tons separates the state from Himachal Pradesh in the north-west, whereas the river Kali separates it from Nepal in the east. The greater Himalaya is the northern boundary of the state and is also the international border with China (Tibet). Foot-hills in the south are bound by Uttar Pradesh. The total geographical area of the state is 53,483 sq. Km.; it is split into 13 districts within two revenue divisions, of which approximately 89% is mountainous. Of the total geographical area, about 19% is under permanent snow cover, glaciers and steep slopes. The total population of the state is 1.01 Crores (Census 2011). Water, agriculture, forestry and energy, among other issues, are central to the State's inclusive strategy for future growth. Most of the people of this state are dependent on their natural environment, with over three-fourths of the total population dependent on agriculture for their livelihood. Uttarakhand State is well endowed with forest and valuable water resources with over fifteen important rivers.

The promotion and development of processing of medicinal and aromatic plants have gained momentum recently in many developing countries. Green consumerism and resurgence of interest for plant based products, liberalized and free market economy, increasing awareness about biodiversity conservation and sustainable use of natural resources coupled with poor socio-economic conditions of native populations are ground realities for planning and harnessing the low-cost and purpose oriented process technologies [1-4].

This paper shows the assumptions and results of a study to assess the role of medicinal plants for improving livelihoods and an expansion of medicinal plant vegetation in the forest and the role of students and youth in conservation.

2. Methodology

It consisted of participatory assessments and field surveys in four villages of Munakote Block of District Pithoragarh namely Doubans, Bhateri, Amkot, Dhaulkanda involving around 350 persons and participatory trials with 25 rural women selling medicinal plants on urban markets since August 2009. Regular visits were made to collect the data. A semi-structure questionnaire survey was conducted among knowledgeable traditional Vaidyas randomly with a view to document the knowledge on the use of medicinal plants. The survey also gathered information about the local names of medicinal plants, plant parts used in treatment, and number of ailments being treated by medicinal plant formulations. It was based on the assumption of poverty alleviation not only referring to an increase in income and labor, but also an increase in social capital and human dignity.

3. Result and Discussion

3.1 Medicinal Plant Research

In recent times, focus on plant research has increased all over the world and a large body of evidence has collected to show immense potential of medicinal plants used in various traditional systems [5, 6]. Uttarakhand state is the hub of medicinal plants species due to its rich biodiversity. Uttarakhand has just 14% of the total land under cultivation and about 65% of population depends on agriculture for their livelihood. The state has tremendous potential for medicinal plants cultivation and it can become one of the important options for sustainable livelihood for the hilly area. New approaches of biotechnology and conservation strategy can help preserve and utilize the indigenous knowledge of medicinal plants for humankind [7, 8]. Thus their knowledge must be considered as an essential component of all efforts to conserve and develop in rural areas. The cultivation of medicinal plants is considered to be of great importance for the safeguarding of biodiversity and contribution to rural livelihoods in Uttarakhand. It is hoped that cultivated medicinal plant material will provide an alternative source of supply to the market, and thereby reduce the need for collection of these plants from the wild. Cultivation will also provide an additional source of income for the state's rural poor. The growing demand has not only resulted in increased hazard for overexploitation of wild plant populations, but also increased interest in cultivation. Due to poor land quality and the small size of landholdings lead to low rural incomes in the state.

Since agricultural income cannot sustain the families for more than four months in a year. Under these conditions, the major challenges before the state are to achieve economic prosperity without losing out on its biodiversity. In this context the state need to start a choice of pursuing the path of cultivation of medicinal and aromatic plants, which not only provide a livelihood option for the farmer with minimum external inputs but is also environmentally benign. Because of a variety of agro-climatic niches the state has tremendous potential to emerge as a regular supplier of medicinal and aromatic plants to other states in the country and even outside of the country [9]. Taking advantage of relatively higher literacy rates, Uttarakhand has a potential to become an herbal state. Given the terrain of the state and favorable climatic conditions, medicinal and aromatic plants continues to be the major source of income for more than three-fourths of the state's population. Many medicinal plants can be cultivated on poor quality land under low rainfall and moisture conditions where other crops do not grow [10]. This would enable farmers to increase their income without unduly affecting their existing crops. The study reveals that local people still depend on a number of plants for their daily needs especially for medicines.

3.2 Herbal and Medicinal plant products

Plants have been used since ancient times to heal and cure diseases and to improve health and wellbeing. Medicinal plants are chiefly used for curing stomach pain, fever, cold and cough, bleeding and wounds, fungal infection, burns, rheumatic pain, insect bite, influenza, diarrhoea, jaundice and cirrhosis [11-13]. Medicinal plant provides herbal medicines to the peoples. Herbal medicines are also referred to as herbal remedies, herbal products, herbal medicinal products, phytomedicines, phytotherapeutic agents and phytopharmaceuticals.

Despite ancient nature of the tradition, medicinal plants still form the basis of traditional or indigenous health systems and are reported by the World Health Organization (WHO) to still be used by the majority of the populations in most developing countries. The search for healing power in plant products is an age-old idea and throughout the history man has relied on nature for their food, clothing, shelter, transportation and medicines. WHO has estimates that about 80% population of the world depends on plant as a primary source of medicine in their traditional system. It is thus a matter of utmost concern to public health and indeed to human life that urgent action is taken to prevent further diminution of actual and potential availability of medicinal and biological agents.

Medicinal plants are used as raw materials for extraction of active constituents in pure form (eg. alkaloids like quinine and quinidine from cinchona bark, emetine from ipecacuanha root, glycosides from digitalis leaves, sennosides from senna leaves), as precursors for synthetic vitamins or steroids, and as preparations for herbal and indigenous medicines. Medicinal plants provide the natural raw material for most oral and non-oral traditional medications [14]. There is huge commercial value in the oils and essences extracted from aromatic and medicinal plants. Aromatic plants like lemon grass, citronella, palmarosa, chamomilla, tulsi, geranium, naramotha, Japanese mint, khuas, and marigold are used extensively in the cosmetics industry. There is scope for medicinal plants and medicinal trees like tejpatta, amla, harad, and bahera are being planted. There is high demand for ritha but the forest department has not taken any initiatives. There is a great deal of potential for the development of these crops in the hill regions without much heavy investment. Medicinal principles are present in different parts of the plant like root, stem, bark, heartwood, leaf, flower, fruit or plant exudates.

3.3 Income Generating Activities

The State of Uttarakhand has high degree of agro-climatic diversity and economic backwardness**.** Medicinal plant products can become a parallel market which, if captured in a strategic manner, can lead to the rapid development of the hill districts of Uttarakhand. Continuous extraction of several medicinal plant species from the wild and substantial loss of their habitats during last two decades have resulted into decline of many highly valuable medicinal plant species in the region. Cultivation and sustainable harvesting of medicinal plants with scientific knowledge and proper marketing system might be a big source of additional income for

improvement of livelihood of rural people [15]. The economic deprivation in region is not only because of small land holdings but also because of unproductive land use due to rain fed and operational constraints faced due to harsh physical conditions. Demand of the high quality medicinal plants is increasing day-by-day in the national and global market resulting in the loss of biodiversity and environmental degradation. In the global market, the trade of herbal medicines is about Rs. 27 billion per year whereas in India it is about Rs. 3.5 billion per year and it is increasing at the rate of 7% per year [16]. Uttarakhand can take advantages of increasing demand and low availability of medicinal and aromatic plant resources in the other parts of country and start to grow highly valuable medicinal plants in high altitudes areas. Medicinal and aromatic plants (MAPs) can play an important role in the subsistence economy of rural people, especially women through an environmentally sustainable manner while maintaining the biodiversity of these natural products. Traditionally, the rural poor, especially women, collect and dry the wild medicinal plants and transport these raw materials to the market. As a result, systematic production and processing of MAPs offers promising new income and employment opportunities to improve the livelihoods of the rural poor in an environmentally sustainable manner. These medicinal plant applications have the potential to create a large increase in the number of rural jobs.

3.4 Cultivation and Conservation of Medicinal Plants

It is necessary to initiate systematic cultivation of medicinal plants in order to conserve biodiversity and protect endangered species. In the pharmaceutical industry, where the active medicinal principle cannot be synthesized economically, the product must be obtained from the cultivation of plants. Systematic conservation and large scale cultivation of the concerned medicinal plants are thus of great importance. Cultivation of this type of plants could only be promoted if there is a continuous demand for the raw materials [17]. In order to initiate systematic cultivation of medicinal and aromatic plants high yielding varieties have to be selected. There is an outstanding need to devise and demonstrate effective, appropriate ways of conserving the biological diversity of the state. Conservation is essentially a social issue requiring democratic involvement of the people and local communities whose lives and livelihoods are most affected. Conservation efforts are more likely to be successful and sustained if they are driven by participatory processes and communal decision-making, in which local communities have the central role. Conservation provides the essential foundation for sustainable rural life and livelihoods.

3.5 Medicinal plant education:

The state is bestowed with abundant natural resources in the form of forests, water bodies and plants of rare kind. What it requires is focused application of skills and knowledge to make best use of it in a sustainable manner. There is a growing need for quality medicinal plants education in the state, which can create new employment in the areas such as plant science, food science, processing, agribusinesses, etc. It would be desired that special provisions be made to teach agriculture of medicinal plants to children in schools. The children's awareness and understanding of our ecosystem is essential, they must be exposed to the necessity of sustainable medicinal plant practices to ensure that the future of our biodiversity is secure. This can become the foundation of vibrant medicinal plants businesses in the newly formed state.

4. Conclusions

The study shows that the cultivation of medicinal plants can play an important role in the livelihood strategies of the villagers in high altitude of Kumaun region of Uttarakhand. As all family in the region have own land, the cultivation of medicinal plants can benefit most households. At the same time, it is clear that the success of cultivation will largely depend on the returns from medicinal plants, compared to other crops. Our field survey confirms that cultivation of medicinal plants is a viable option to improve the livelihoods of poor farmers. The study revealed that the growing demand for medicinal plants is related to the great cultural significance attached to medicinal plants and following factors are needed to success on this sector:

1. To promote the cultivation of those medicinal plants with a large market potential.
2. Select a suitable area with favorable agro-ecological conditions and relatively low levels of economic development.
3. Research and development needs to be carried out to understand and find out favorable conditions for the cultivation of important medicinal plants. This can help to improve productivity and production of herbal and medicinal plants through increasing cooperation between researchers and farmers.
4. Identifying a buyer in the market who can guarantee to purchase the whole production at a good price with higher return than other crops and increase their trade in the state.
5. To increase the area of cultivation of aromatic and medicinal plants on hilly barren land.
6. Strengthening the extension activities of Herbal Research and Development Institute (HRDI), Gopeshwer, Chamoli and Centre for Aromatic Plants (CAP), Dehradun and give more emphasis on - how to grow medicinal plants and conserve them.
7. To increase the knowledge about the need of pharmaceutical and food industry.
8. To increase awareness about herbal supplements and herbal remedies among the villagers.
9. Find out the role of cultural factors in medicinal plant use and cultivation for maintain biodiversity.
10. To fix support prices by the government are required for long-term plantation.
11. To increase production and productivity it is important to establish the cluster approach and low-cost processing.
12. To set up good road network at village level due to the difficult physical geography of the hill villages in the state.
13. Need to revise state forest policies that support conservation and sustainable use of medicinal plants in Uttarakhand.
14. Uttarakhand needs to build up technological and scientific capabilities to develop and improve the production of medicinal principles and to conduct R&D to develop green products.

The finding of this paper seen as an initial effort to increase awareness of both the potential and problems associated with cultivation, conservation of biodiversity and trade in medicinal plants.

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