Medicinal Plants Conservation and Poverty Alleviation in Lalitpur District of Uttar Pradesh

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India is a varietal emporium of medicinal plants. It is one of the richest countries in the world as regards genetic resources of medicinal plants. India ranks sixth under world's twelve mega bio-diversity zones. Out of these, two of them exist in our country. India possesses tremendous ecological bio-diversity. It contains 5 % of the world's bio-diversity on 2 % of the earth's surface. It is estimated that approximately 45000 plants species i.e. 12 % of global wealth of flowering plants exist, out of which nearly 33% are endemic.

The biodiversity in our country is unique in nature and its *in-situ* and *ex-situ* conservation is very well needed. In recent years, the global demand of herbs has led to a quantum jump in volume of medicinal plants traded within and across the countries. The medicinal plants have been identified as one of the most important plant diversities for the rural development.Technically, medicinal plants come under NTFP and there is a great potential for probable cultivation of medicinal plants for biodiversity conservation in India. Their identification, conservation and cultivation for rural development is still in infancy.

The medicinal and aromatic crops are economically important as they provide the basic raw material for pharmaceutical, perfumery, flavor, soaps and cosmetic industries throughout the world. Since, most of the crops are new and uncommon, the farmers often lack knowledge in their scientific cultivation. The information on the cultivation of medicinal and aromatic crops is also scanty, scattered and mostly beyond the reach of even progressive farmers.

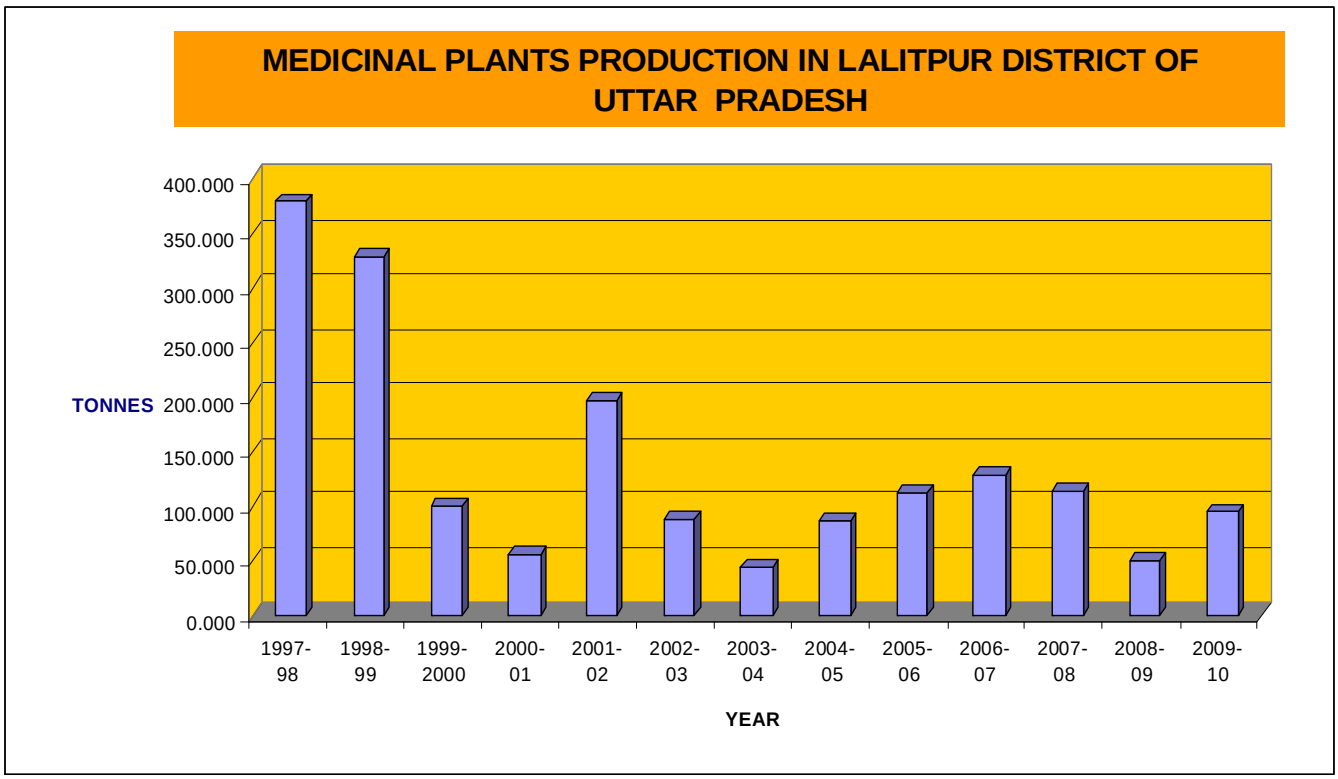
The use of plants as medicine is as old as human civilization itself. India is home to about 15000 to 18000 of flowering plants of which about 8000 plant species are recognized as medicinal plants and are being used by various traditional systems of medicine. The global demand for medicine and aromatic plants is growing at the rate of 7% per annum.In Uttar Pradesh, Vindhyan and Bundelkhand regions, being native of many important medicinal plants, have a great potential for their conservation and cultivation. This paper deals with the conservation of some important medicinal plants, their usages and contribution in development of tribal economy in Lalitpur district of U.P.

The Lalitpur district falls in Vindhyan hilly tract and is surrounded by Betwa, Dhasan, Jamini and Narayani rivers. Rohini, Sahjad, Sajnam, Jamini are the tributaries of Betwa which flows through the district. The soil of the forests of the district is mostly red morramy soil. Most of the area is stony with sand stone beds around 7 - 10 ft. down. The Northern part of the district, mainly Talbehat Tahsil is of quartz and red granite stone. The climate of district Lalitpur is of typical Central Indian climate with mild winters and hot summers. The temperature during summer goes upto 46^{o}C. Average rain fall is 600 - 700 mm but concentrated only during July - August. Most of the rain fall is run-off due to rocky nature of the soil.

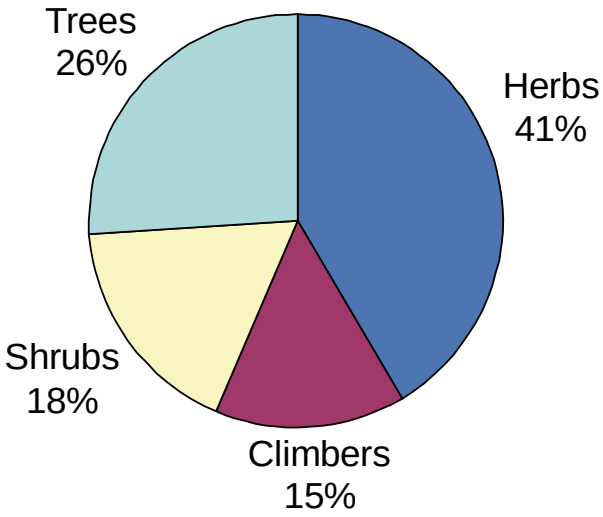
Lalitpur district is rich in dry deciduous mixed forests. The area of the district is 5,30,900 hectare out of which 74,416 hectare is recorded forest, which is 14.7%. of the total geographical area.The forests of the district is abundant with trees, shrubs, herbs and other species of medicinal value. More than 350 species of medicinal value are identified and out of which 83 species are abundant in the forests, and collected by the local villagers and sahariya tribes. The forests are in clusters spread over in the whole of the district.

List of medicinal plants found in Lalitpur forests

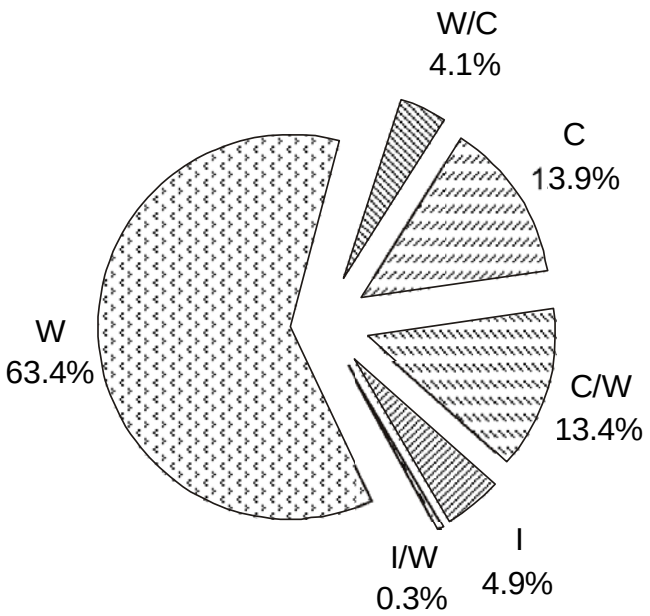
Sl.No.	Scientific Name	Comoun Name
1.	*Aegle marmelos*	Bel
2.	*Andrographis paniculata*	Kalmegh
3.	*Asparagus racemosus*	Shatavri
4.	*Bacopa monnieri*	Brahmi
5.	*Cassia angustifolia*	Senna
6.	*Chlorophytum borivillianum*	Safed Moosli
7.	Coleus barbatus; syn. Coleus vettiveroides	Patharchur
8.	*Commiphora wightii*	Guggal
9.	*Diospyros melonaxylon*	Tendu
10.	*Embelia ribes*	Ve viding
11.	*Emblica officinalis*	Aonla
12.	*Gloriosa superba*	Kalihari
13.	*Glycyrrhiza glabra*	Mulethi
14.	*Gymnema sylvestre*	Gudmar
15.	*Madhuca indica*	Mahua
16.	*Ocimum sanctum*	Tulsi
17.	*Phyllanthus amarus*	Bhumi Aonlaki
18.	*Piper longum*	Pippali
19.	*Plantago ovasta*	Ishabgol
20.	*Rauvolfia serpentine*	Sarpgandha
21.	*Santalum album*	Chandan
22.	*Saraca asoca*	Asoka
23.	*Solanum nigrum*	Makoya
24.	*Swertia chirata*	Chirayata
25.	*Tinospora cordifolia*	Giley
26.	*Withania somnifera*	Ashwagandha



Life-forms of Traded Medicinal Plants



Sources of traded botanicals



W = Wild; C = Cultivated; I = Imported

Wild harvest vs. Cultivation of Medicinal Plants

For species and ecosystems it is better to ...	
wild-harvest because ... ◆ It puts wild plant populations in the continuing interest of local people ◆ It provides an incentive to protect and maintain wild populations and their habitats and the genetic diversity of MAP populations but ... ◆ uncontrolled harvest may lead to the extinction of ecotypes and even species ◆ common access to the resource makes it difficult to adhere to quotas and the pre-cautionary principle ◆ in most cases knowledge about the biology of the resource is poor and the annual sustained yields are not known ◆ in most cases resource inventories and accompanying management plans do not exist	**cultivate because ...** ◆ it relieves harvesting pressure on very rare and slow-growing species that are most susceptible to threat **but ...** ◆ it devaluates wild plant resources and their habitats economically and reduces incentive to conserve ecosystems ◆ it narrows the genetic diversity of the gene pool of the resource because wild relatives of cultivated species become neglected ◆ it may lead to conversion of habitats for cultivation ◆ cultivated species may become invasive and have negative impacts on ecosystems ◆ reintroducing plants can lead to genetic pollution of wild populations
The Market demands	
wild-harvested plants because ... ◆ it is cheaper since it does not require infra-structure and investment ◆ many species are only required in small quantities that do not make cultivation economically viable ◆ for some plant parts extra-large cultivation areas are required (e.g., Arnica production for flowers) ◆ successful cultivation techniques do not exist, e.g., for slow-growing, habitat-specific tax ◆ no pesticides are used ◆ it is often believed that wild plants are more potent **but** ◆ there is a risk of adulterations ◆ there is a risk of contaminations through non-hygienic harvest or post-harvest conditions	**cultivated material because ...** ◆ it guarantees continuing supply of raw material ◆ it makes reliable botanical identification possible ◆ genotypes can be standardized or improved ◆ quality standards are easy to maintain ◆ controlled post-harvest handling is possible ◆ production volume and price can be agreed for longer periods ◆ resource price is relatively stable over time ◆ certification as organic production is possible **but ...** ◆ it is more expensive than wild harvest, it needs substantial investment before and during production
From a perspective of the people it is better to ...	
wild-harvest because ... ◆ it provides access to cash income without prior investment ◆ it provides herbal medicines for health-care needs	**cultivate because ...** ◆ it secures steady supply of herbal medicines it provides in-country value adding **but ...** ◆ capital investment for small farmers is high

◆ it maintains the resources for rural populations on a long-term basis (if done sustainably) **but ...** ◆ unclear land rights create ownership problems ◆ this income and health-care resource is becoming scarce through over harvesting	◆ competition from large-scale production puts pressure on small farmers and on wild harvesters ◆ benefits are made elsewhere and traditional resource users have no benefit return (IPR)

Source: A COMPARISON OF CULTIVATION AND WILD COLLECTION OF MEDICINAL AND AROMATIC PLANTS UNDER SUSTAINABILITY ASPECTS - Uwe Schippmann, Danna Leaman and A.B. Cunningham

Livelihood implications of medicinal plant collection

The authority of indigenous peoples to manage, conserve and develop their resources according to their own institutions and laws must be adhered to. Self-determination, under certain conditions, collective ownership of lands and territories, exercise of customary law according to social and cultural practices, legal and political representation through their own institutions and control over their own indigenous knowledge are rights claimed by Sahariya tribess that are not claimed normally by other sections. These explicitly calls for securing legal recognition and lived experiences of the rights of governance of communities -

i. over their biological resources;
ii. to collectively decide over development project/ programmes by recognising the free, prior and informed consent of the Sahariya tribes through the use of indigenous customary;
iii. to collectively benefit from the use of their biological resources;
iv. to their innovations, practices, knowledge and technologies acquired through generations;
v. to collectively benefit from the utilisation of their innovations, practices, knowledge and technologies;
vi. to use their innovations, practices, knowledge and technologies in the conservation and sustainable use of biological diversity; and
vii. to the exercise of collective rights as legitimate custodians and users of their biological resources.

We should be able to synthesize lessons being learnt from field experiences, document positive examples of community based and collaborative conservation, and in other ways advocate and encourage the shift towards new models of achieving medicinal plant conservation and livelihood security through.

Need of the Hour

- Authorized Agencies with Transparent system
- Demand with standards
- Survey/Inventory - Species wise from Nature
- Registered local Collectors/Cultivators
- Good Collection Practices
- Cultivation Promotion
- Proper collection centers
- Proper grading and storage practices
- Marketing centers
- Reducing middlemenship Policy & Strategy
- Sustainable Limits of Collection from Nature:-

  Government agencies will have to overcome a great deal of distrust that exists among the people in order to be seen in a supportive role, and people will need to understand the constraints within which conservation officials work. Changes in this situation require that policy and legal measures be taken with at least three basic objectives:

  ❏ facilitating the empowerment of local, resource-dependent communities to manage and protect

adjoining ecosystems and species, and the participation of all other stakeholders in various capacities;

- ensuring the biomass and other subsistence and livelihood rights of these people, including appropriate tenurial arrangements;
- regulating human activities to ensure their compatibility with conservation and sustainable livelihood values; in particular, prohibiting destructive commercial-industrial activities in areas of conservation or cultural value.

Most important, policies and laws will have to be flexible enough to allow for site-specific modifications.

A change in attitude at all levels within and outside government is essential..Government officials, NGOs, and community members, must dialogue with one another, must be able to sit on an equal plane and chalk out joint management strategies for conservation of medicinal plants and livelihood security. Also they must be able to join hands to fight the 'developmental' juggernaut which, otherwise, threatens to consume every medicinal plant habitat as raw material and every local community as cheap labour.

Conclusion

A very large number of medicinal plants in trade are obtained from the wild with implications on their conservation and sustainable utilization.This concern has a higher priority for species that are endemic or narrowly distributed and assessed as threatened.

1. There is a need to develop management practices for ensuring conservation of these resources as well as meeting the livelihood needs of the large number of collectors involved in harvesting.
2. There is a need to document the indigenous knowledge related to Indian herbs and plants and their medicinal and other uses and convert it into easily navigable computerise data base for easy access and to secure patenting rights; to discourage other countries for patenting Indian heritage; to transfer knowledge to all sectors who are interested to know about our Indian Systems of Medicine; most of our knowledge is in Sanskrit, Arabic, Persian and other classical languages, which needs to be translated to other modern languages.
3. The right to permanent sovereignty of indigenous peoples over natural resources is implicit in international law particularly in the right of ownership of the lands they historically or traditionally use and occupy, the rights to self-determination and autonomy, the right to development, and the right to be free from discrimination amongst others. This right is a collective right that requires the States to respect, protect, and promote the governmental and property interests of indigenous peoples (as collectivities) in their natural resources. The legal expropriation of the resources that once belonged to indigenous peoples, by the State, is discriminatory and contrary to international law and constitutes vestiges of colonialism. This ought to be discarded to ensure that Sahariya tribess enjoy ownership of and benefits from the natural resources on or under or otherwise pertaining to the lands they historically occupy and use.

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