

## COMMUNITY BASED CONSERVATION AND MANAGEMENT OF MEDICINAL PLANTS IN INDIA

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### Introduction

India is one of the twelve centres of mega biodiversity areas of the world with two biodiversity hotspots viz, Western Ghats and Eastern Himalayas. India is one of the major sources of medicinal plant raw material for the global market. Most of the medicinal plants are found in the forests of India. Post-independence reduction in forest area has eroded the availability base of medicinal plants, some having been pushed out of existence and others are on the verge of extinction. A clear picture of the threatened status of medicinal plants indicates that about 10% of all medicinal plant species are endangered, indicating widespread degradation of forests in India (Anon., 1997; 2001a). The urgency of a committed action by different interested groups, particularly community action for the conservation of valuable medicinal resource is now realised.

Gathering and cultivation of medicinal plants provides a critical source of income for many rural communities. It is critical livelihood security for the landless, women, disadvantaged sections of rural particularly tribal society. India is the centre of South Asia's export trade in medicinal plants, and in this country alone it is estimated that the collection and processing of medicinal plants contributes

to at least 35 million workdays of employment a year (Anon, 1997).

Conventional conservation policies and programme in India have ignored the integral relationship between rural communities and natural habitats (Kothari and Bhatt, 1998). The majority of the country's population still depends directly on natural resources for their livelihood. Medicinal plants play a vital role in the life of local community by providing health security and as a source of income. The knowledge and associated practice of prudent resource use and conservation by local communities has been well documented (Kothari and Bhatt, 1998). The relevance of traditional knowledge of medicinal plants needs to be understood in the context of the social and cultural milieu of the community and its relation with the surrounding habitats. The local communities, who are well known for their knowledge of the medicinal properties of various plants, need to be involved in conservation and management of medicinal plants. Policy makers in India have realised the importance of involving indigenous people and local communities in conservation of forest resources and medicinal plants (Anon., 1988; 1998a; 1998b; 2000). Even in protected areas, viz. Sanctuaries and National parks, there can be several ways of involving local communities for conservation of medicinal

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plants (Anon, 1994; Kothari and Bhatt, 1998).

This paper deals with the community based conservation and management of medicinal plants in India.

### **Community based conservation of medicinal plants in India**

India has more than one-fourth (8,000 species) of the world's known medicinal plants (30,000 species) (Anon., 1997). There is an urgent need to initiate conservation in all bio-geographic regions of the country (Anuradha, 2000; Daniels *et al.*, 1993). The Government of India (GoI) has recognized the importance of community based conservation (Anon, 1988). The conservation and sustainable utilization of medicinal plants is one of the thrust areas of GoI-UNDP Environment Programme Support. The Environment Programme Support envisages the need for both *in-situ* and *ex-situ* conservation approaches involving the local communities (Anon, 2001a). *Ex-situ* cultivation through community involvement is looked at as a probable solution to meet raw material market demand and diluting the pressure on medicinal plants in forests. *In-situ* conservation can be achieved by involving local communities in protection of medicinal plants in their natural habitat. As high as 90% of the country's medicinal plants occur in forests or wild habitats. Hence the single most important Government agency, which can contribute to the conservation of medicinal plants, is the State Forest Department. Thus far medicinal plants conservation has not been a priority on the 'forestry agenda'. Recently, the Forest Departments in some of the States and the Non-

Governmental Organisations (NGOs) have started working to promote community-based conservation of medicinal plants in India. Some of the works carried out by various agencies to promote community based conservation of the medicinal plants in the country are discussed below.

### ***Pioneering efforts on community based conservation***

The Foundation for Revitalization of Local Health Traditions (FRLHT), Bangalore, has been implementing one of the pioneering programmes on community based conservation of medicinal plants in collaboration with State Forest Departments and district level NGOs of southern India.

The *in-situ* conservation group has been co-coordinating a unique community based medicinal plant conservation programme, implemented by the State Forest Departments of Tamil Nadu, Kerala and Karnataka since 1993, and Andhra Pradesh and Maharashtra since 1998. This *in-situ* conservation initiative has resulted in the setting up of a network of 54 Medicinal Plants Conservation Areas (MPCAs) across different forest types and altitude zones in these five States of peninsular India (Anon., 2001c; Ved and Ghate, 2002). A significant feature of this medicinal plant conservation programme has been conservation with community participation. Another very important feature of this programme is that it has demonstrated as to how local communities can be meaningfully involved in decision making for sustainable management of the Medicinal Plants Conservation Areas (MPCAs) and in the process, deriving health and economic benefits.

Development and implementation of a participatory model for conservation of medicinal plants by establishing a network of 19 *in-situ* conservation sites in Andhra Pradesh and Maharashtra is a pioneering effort in community based conservation (Anon, 2001c). These sites have been selected in consultation with local communities across the vegetational and altitudinal variations. This network has been supported by medicinal plant nurseries, which are expected to supply plants for the use of local communities and other user groups. The network is expected to conserve 90% of the medicinal plants diversity in the project sites (Anon, 2001c).

At each of the conservation sites, the Forest Department has established a Local Management Committee (LMC) for joint protection and management of the site. The LMCs has been encouraged to suggest and implement community benefit activities related to medicinal plants that can be supported by the project. These activities may range from promotion of home herbal gardens (for primary health care) to growing and processing of selected economically valuable species by women self-help groups in the villages around the conservation sites. The beneficiaries are expected to be rural women, tribal groups, poorer sections of the rural community and various other non-commercial as well as commercial medicinal plants user groups. Accessibility of planting materials to local community and other user groups is one of the major benefits to the local community. Training and capacity building related to *in-situ* conservation, harvesting techniques and sustainable utilization including the use of medicinal plants for primary health care is another important aspect of community based conservation.

The development goal of the programme is to support sustainable livelihood options for local communities through conservation and sustainable cultivation of medicinal plants.

As part of *ex-situ* conservation, Medicinal Plant Conservation Parks (MPCPs) have been established in four States with the support of local communities and NGOs (Anon., 2001c; Ved and Ghate, 2002). These parks serve as community conservation education centres and repositories of the medicinal plant resources and local health knowledge of the region. The parks are spatially dispersed so as to represent distinct agro-climatic zones in Southern India. Each MPCP is a regional resource centre of learning. In these centres authentic and thorough documentation of the natural and cultural heritage of the region relating to medicinal plants are available. It also serves as a training centre for rural households, schools, colleges and government departments on the conservation and sustainable use of medicinal plants, particularly in the context of primary health care.

In most of the places, MPCP or Ethno-Medicinal Forest (EMF) ranges from 5-20 hectares. This is essentially a live collection of the entire medicinal plant diversity known to the local people and used by them for medicinal purposes in the region. These areas mimic as far as possible the real forest type for the area. Attempts have been made to include possible genetic variations within the collection. All the centres have planted an average of 250 species of medicinal plants, including Rare, Endangered and Threatened species in their respective EMFs (Anon., 2002). Above efforts on community based conservation

of medicinal plants can be extended to other States by involving the SFDs and local NGOs. This experience is bound to have a multiplier effect in the field of community based conservation of medicinal plants in other States.

***Community-based conservation of medicinal plants in Western Ghats by WWF***

The forest area of Kodagu in the Western Ghats of India constitutes some 30 per cent of the total area of about 4,000 km<sup>2</sup>. The forests are of the evergreen and semi-evergreen type in regions of high altitude and heavy rainfall (above 2,500 mm per annum) and moist deciduous in regions of slightly lower altitude and medium rainfall (1,500-2,500 mm). Scrub and dry deciduous forest occur in the low rainfall areas to the East of the region. The local traditional peoples are the Kodavas, who are well known for their knowledge of the medicinal properties of various plants. A WWF project was set up in 1993 to record the Kodavas' plant knowledge and to identify and conserve the plants they use before they disappeared with the rapidly dwindling forests of the Western Ghats (Anon., 2002a). The project worked with the local community in recording the information available and a herbarium was built following an extensive field survey of the area.

With the full participation and involvement of the Kodava people, the project, which closed in 1997, successfully gathered and documented much information about the medicinal plants of Kodagu. It also helped to ensure that future generations of the Kodava people would continue to understand the value of age-old traditions.

The 'Susala Gene Bank' is an ongoing community-based project, supported by WWF, aimed at establishing a botanical gene bank of flowering plants found along the Western Ghats in high rainfall tracts (Anon., 2002a). Susala is a manmade island in Mulshi water reservoir, owned by the Tata Electric Company, in the district of Pune. The rugged terrain of Susala incorporates a central saddle known as Raindi Hill, steep and gentle slopes, plateaus and ravines, which have been cut by fast-flowing streams during monsoons. It covers an area of about 400 hectares and is reasonably protected from human and biotic interference. The gene bank project was initiated in 1989 by WWF-India, in conjunction with the local tribal community. In the first phase, up to 2,000 plant specimens incorporating about 500 plant species were recorded on Susala Island. As well as the precise location of each plant species, its habit preference and local uses were recorded. A nursery was set up to propagate seedlings of the medicinal plant species. As an insurance against the possible loss of valuable stock, a second nursery was established in Pune, concentrating on the seedlings of the rarer and more important species. Between 1992 and 1995 some 100,000 saplings and plants of 84 different species were transplanted in pre-selected habitats on Susala Island by involving the local community.

***Community-based conservation of medicinal plants in the Himalayas***

The Himalayas are the major source of medicinal plants in the country. Conservation of medicinal plants in the Himalayas is a challenging task. Community-based conservation of medicinal plants in Himalayas is being initiated by Pragya (Anon., 2001b). The

'Pragya Project on Conserving the Herbal Wealth of the Himalayas' is aimed at the conservation and sustainable utilisation of the medicinal plant wealth of the high altitude valleys and meadows of the Indian Himalayas through multiple community based activities. Pragya project is running in the following three important zones of the Himalayas :

(a) *Cold Deserts in the Western Indian Himalayas* : The project is working with communities in several villages spread over almost all the distinct valleys and agro-climatic zones in Lahaul and Spiti.

(b) *High Altitude Meadows of the Central Indian Himalayas* : The project is working with the indigenous communities in Chamoli District of Uttaranchal for conservation and management of medicinal plants.

(c) *Eastern Indian Himalayas* : The project is being implemented in the far-flung valleys of Lachen and Lachung in the North District of Sikkim, which have very recently been opened for outsiders. Of the four districts in the Sikkim, this is the largest, the most densely forested and least populated. The project is working with the Bhutia community known as Lachenpas and Lachungpas in this region.

Comparative activities of the Pragya project in above three habitats of Himalayas is given in Table 1.

*Impact of community based conservation in Pragya project*: The difference that community participation has made in medicinal plant conservation can be evident from the following activities :

- Preliminary mapping of the herbal

wealth of the target areas has been done and more extensive mapping and documentation is under way involving the local community.

- Some of the community-protected sites have been established and have proved successful in checking degradation. For instance, the local community is successfully managing one such site in the forests near the village of Ghiu in Spiti, which is known in the region for the diversity of medicinal plants, some of which belong to the rare species. The result of protection in the area is encouraging.
- Several 'Mahila Mandals' have taken up the conservation programme with enthusiasm and enlisted all their members in it, near the village of Ghiu in Spiti,. Involvement of women in the project through 'Mahila mandals' has raised the socio-economic status of the local communities.
- The Lahaul Amchii Society (LAS) has been formed and formally registered with the district authorities. The LAS has also been facilitated to set up a one-hectare demonstration plot at Ghosal village, as well as a greenhouse nursery in Keylong, which is working successfully. LAS is pioneering example in community based cooperative movement in conservation of medicinal plants in the area. LAS may provide sustainability to the medicinal plants conservation and management efforts in the area.
- Two high-altitude greenhouses have also been established, one each in the Lahaul and Spiti valleys, for the

**Table 1**  
*Activities of Pragya projects in three habitats of Himalayas*

Cold Deserts in the Western Indian Himalayas	High Altitude Meadows of the Central Indian Himalayas	Eastern Indian Himalayas
1	2	3
<p><i>Herbal Wealth Mapping</i> : The process involves traditional healers and community elders in each distinct agro-climatic zone.</p> <p><i>Cultivation Techniques</i> : Development of cultivation packages for medicinal plants and training the local community is one of the major activities of the project. Several small farmers and traditional healers have been assisted in setting up micro plantations of medicinal plants.</p> <p><i>Herb Orphanages and Greenhouses</i> : Herb orphanages have been set up as a part of several micro plantations in which the target species are studied and propagated.</p> <p><i>Awareness Programmes</i> : Community meetings have been held for generating awareness on the issue of conservation of medicinal plants and on the potential of these species as cash crops.</p> <p><i>Women's Home Gardens</i> : This novel concept recognises women as the key repositories of knowledge on medicinal plant species, and encourages and supports them in taking</p>	<p><i>Mapping medicinal plants</i> : Mapping of the medicinal plants are being conducted in collaboration with Local community and traditional healers of the region</p> <p><i>Community Plantations</i> : The 'Van Panchayats' of the villages of Bhyundar and Badhgaon are being trained and assisted in setting up community medicinal plantations.</p>	<p><i>Mapping medicinal plants</i> : Medicinal plant mapping in the different zones are carried out with the help of the local community.</p> <p><i>Community Plantations</i> : A few pilot plantations have been set up with four to five farmers with contiguous plots collaborating in plantation establishment and management.</p> <p><i>Community Nurseries</i> : A polyhouse in Lachen village has been set up for raising seedlings, which is being managed by the community. A similar facility for Lachung is under way.</p> <p><i>Training and Mobilisation</i> : Pragya members have been working closely with the Dzumsa, the democratically elected village governing body, for planning and implementation of the project by training and mobilization.</p>

*Contd...*

1	2	3
up the cultivation in the backyard of their houses.		
<i>Common Land Protection</i> : The traditional healers and community groups are being encouraged to adopt common lands with a concentration of medicinal plants and protecting them from illegal collectors.	<i>Vaidya Association</i> : The community of 'vaidyas' in the region are also being organised into an association for the preservation of traditional medicinal knowledge.	
<i>Institution Building</i> : Pragya has facilitated the local communities in the different villages of the valleys of Lahaul and Spiti in the conservation of medicinal plant species.		

purpose of setting up nurseries. Local communities are managing and protecting the nurseries successfully.

- Some pilot plantations have been established in the Laxmanganga valley with the involvement of community. Plantations are being protected and managed by the local community successfully.

#### ***Medicinal and Aromatic Plants Program in Asia (MAPPA)***

Recently, the International Development Research Centre (IDRC) in collaboration with the Ford Foundation, launched the Medicinal and Aromatic Plants Program in Asia (MAPPA) in 1998 (Anon., 2002b). MAPPA's main goal is to institute a system of long-term sustainable and equitable use of medicinal plants. The objective is to improve resource conservation and livelihood security in

rural and marginalised communities. The mechanism is the design, support and coordination of a holistic research program to strengthen linkages between medicinal plants production and utilization center. This is being achieved through strategic research, partnership building and the promotion of regional and international networking. Through regional, national and local partners, including government organizations, NGOs, community based organisations (CBOs), national research institutions and universities, MAPPA has developed a regional network of expertise in community based conservation, participatory research, and documentation. MAPPA works with the following objectives :

- Sustainable use and conservation of medicinal plants, by promoting sustainable management and genetic conservation schemes at the community level.

- Establish local, State and national policies for community based conservation and sustainable management, as well as appropriate and workable implementation mechanisms.
- Develop and realise "bio-partnerships" between local communities and industry, fostering a more balanced division of benefits between these groups to ensure long-term sustainable conservation strategies.
- Improved human health by promoting medicinal plants as a means of safe and effective health care that can fulfill the primary health care needs of the rural poor, and by increasing access to, and use of, medicinal plants.
- Emphasize the documentation and use of local knowledge and practices in order to improve their overall acceptance, value and use.
- Networking to facilitate communication and collaboration.

#### **Future prospects of community-based conservation measures**

An important factor contributing to the endangered status of many species is anthropogenic activity. Dependence of local population on forests also contributes to species endangerment by over-exploiting forest produce in the absence of livelihood alternatives. There is need for involving local communities and their knowledge-base for conservation and management of medicinal plants. In areas where communities are to be involved, incentives for their participation must be identified.

In Protected Areas, local communities can be involved in conservation of medicinal plants or at least mitigating some of their hardships. (Anon., 1994; Kothari and Bhatt, 1998). Community biodiversity registers may be helpful in organizing relevant information about medicinal plants at the micro-level on patterns of utilization, conservation, status and management that would form the basis of identifying sustainable livelihood patterns (Gadgil *et al.*, 1996). The Government of India needs to issue clear guidelines for managing bio-prospecting of medicinal plants involving local community (Anuradha, 2000).

Community based conservation and management strategies can help in solving the problems related to overexploitation and degradation of medicinal plant resources in India. Following short and long-term measures can be adopted for community based conservation of medicinal plants :

- Banning export of plant species for medicinal use is only a short-term measure for crisis management, as it does not address the broader issue of large domestic and international demand and the absence of national strategy to ensure a continued and sustainable supply of medicinal plants.
- It is important to develop scientific harvesting technologies so that plants are harvested in the proper season, at the proper stage of their physiological growth, from the proper habitats and in a non-destructive and sustainable manner.
- Agro-technologies urgently need to



be developed for such prioritized species that are in high demand but short supply and which cannot be collected from the forest on sustained basis.

- Agro-technology developed in experimental fields needs to be transferred from the lab to the land and ultimately to the market place.
- Market links also need to be developed between the local community and the end users and marketing co-operatives of local community can also be established.
- State Forest Departments and local communities can jointly contribute for *in-situ* conservation of medicinal plants.
- Industry, research institutes, NGOs and local communities (especially women groups) can play a very effective role in ensuring the long term conservation and the sustainable supply of medicinal plants.
- Successful implementation of activities related to medicinal plants conservation provides scope for income, employment and empowerment of primary users of medicinal plants.
- Conservation and management of medicinal plant needs suitably designed area specific participatory models.

#### **A Word of caution**

Community based conservation is subject to the physical and economic

limits. It must be recognised that natural ecosystems are slow producers and all the members of the community cannot depend on the enhanced end-product, though it could help the most needy by making substantial contribution to improve livelihood sources. For others it has to be in the nature of beneficial interaction. Community participation alone is an insufficient guarantee of habitat conservation if the size of the community is larger than the carrying capacity of the habitat. However, community participation can supplement the existing efforts of medicinal plants conservation. And in turn conservation efforts can help the local community in supplementing their income and by providing health care to some extent. Sustainable management and conservation of medicinal plants is possible if it takes in to account the above-mentioned facts. The conservation and management of medicinal plant is feasible only if suitably designed, area-specific participatory models are formulated and implemented.

#### **Conclusion**

A community-based medicinal plants conservation and sustainable utilisation programme, if designed appropriately, can ensure increased access to health resources to the rural poor and create jobs and sustainable livelihoods limited to the carrying capacity of the programme. It has a special scope to advance the education and economic status of women and thus promote gender equity. It has scope to implement some of the important objectives of National Forest Policy (1988) with regard to benefit sharing with local communities. A medicinal plants conservation programme

will be successful only if specially focused towards protection, regeneration and sustainable resource use involving the local community. Experience of FRLHT in five States of India, WWF work at Susala Gene Bank, Pragya project in three habitats of Himalayas and MAPPA are different experiences that constitute the pivotal role of community participation. It is important to

design programmes to revitalise household knowledge of health traditions that use medicinal plant resources for primary health care needs. In view of the above facts it is important to note that plans for the conservation and sustainable use of medicinal plants can be successful only if they are community-based, promote equity and social justice.

### SUMMARY

India one of the twelve centres of mega biodiversity areas of the world with two biodiversity hotspots viz, Western Ghat and Eastern Himalayas. As one amongst the top repositories of medicinal plants, India is one of the major sources of raw material for the global market. Unsustainable exploitation of medicinal plants has led to the extinction of many plants and many plants are on the verge of extinction. The local communities who are well known for their knowledge of the medicinal properties of various plants needs to be involved in conservation and management of medicinal plants. Policy makers have realised the importance of community based conservation of the medicinal plants. Successful implementation of activities related to medicinal plants conservation and their sustainable utilization needs the involvement of local communities, especially women groups and provides scope for income, employment and empowerment of primary users of medicinal plants. Some of the works by Government and non-government organization related to community based conservation is discussed in the paper. Experience of FRLHT, in five states of India, WWF work at Susala Gene Bank, Pragya project in three habitats of Himalayas and Medicinal and Aromatic Plants Program in Asia (MAPPA) are different experiences that constitute the pivotal role of community participation. The conservation and management of medicinal plant is possible through a suitably designed area specific participatory models. A community based medicinal plants conservation and sustainable utilisation programme, if designed appropriately, can ensure increased access to health resources to the rural poor, and create jobs and sustainable livelihoods.

### भारत में समुदाय-आधारित संरक्षण और औषध-पादों का प्रबन्ध

मोहन झा

सारांश

भारतवर्ष विश्व के महा-जैवविविधता वाले बारह केन्द्रों में आता है जिसमें दो अत्याधिक सक्रिय जैवविविधता स्थल अर्थात् पश्चिमी घाट प्रदेश और पूर्वी हिमालय प्रदेश भी हैं। औषध पादों के शीर्ष आश्रम स्थलों में से एक होने के कारण, भारतवर्ष विश्व बाजार को कच्चा माल उपलब्ध कराने के प्रधान स्रोतों में से है। दीर्घ समय तक चल सकने वाला समुपयोजन न किया जाने से औषध पादों में से बहुत सारे पेड़ पौधे विलुप्त हो गए हैं और बहुत सारे अन्य विलुप्त होने की कगार पर हैं। स्थानीय समुदायों को, जिन्हें बहुत सारे पेड़पौधों के चिकित्सीय गुणों की जानकारी रहने की ख्याति प्राप्त है, औषध पादों के संरक्षण और प्रबन्ध करने में साथ मिलाने की आवश्यकता है। निति निर्माताओं ने भी औषध पादों के समुदाय आधारित संरक्षण का महत्व भलीभांति समझ लिया है। औषध पादों के संरक्षण और उनका लम्बे समय तक उपयोग करते रहने से सम्बन्धित कार्यकलाप के सफल क्रियान्वयन के लिए स्थानीय समुदायों, विशेषकर स्त्री समुहों को साथ लगाने की आवश्यकता है और इससे औषध पादों के प्राथमिक उपयोगकर्ताओं को आमदनी, रोजगार और शक्तिसंपन्न बनाने की संभावनाएं

भी मिलती है। समुदाय आधारित संरक्षण के सरकारी और गैर सरकारी संगठनों से सम्बन्धित कुछ कार्यों का इस अभिपत्र में विवेचन किया गया है। स्थानीय स्वास्थ्य परम्परा पुनरुज्जीवन प्रतिष्ठान (एफ.आर.एल.एच.टी.) द्वारा भारत के पांच राज्यों में, सूसला जीन बैंक में लिया। विश्वव्यापीनिधि (डब्लू.डब्लू.एफ.) कार्य, हिमालयी क्षेत्र के तीन प्राकृतावासों में प्राज्ञ परियोजना और एशिया में औषध और सौरभिक पादप कार्यक्रम (एमएपीपीए) से मिले विविध अनुभव ही समुदाय भागीदारी की केन्द्रीय भूमिका हैं। औषध पादपों का संरक्षण और प्रबन्ध क्षेत्रविशिष्ट भागीदारी मॉडल उपयुक्त तरीके से अकल्पित करके कर पाना संभव है। यदि समुदाय के आधार पर औषध पादपों के संरक्षण और दीर्घकालिक उपयोग का कार्यक्रम, सही-सही ढंग से तैयार किया जाए तो उससे ग्रामीण गरीब लोगों की स्वास्थ्य संसाधनों की अधिकाधिक पहुँच सुनिश्चित बनाई जा सकेगी, उनके लिए रोज़गार निकलेंगे तथा दीर्घकाल तक मिलती रह सकने वाली आजीविका उपलब्ध हो जाएगी।

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