

# SELF-INITIATED EFFORTS IN MEDICINAL PLANT CONSERVATION – A CASE STUDY FROM MADHYA PRADESH IN INDIA

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## Background

Demand for wild medicinal plants, both within South Asia and internationally, has been growing very rapidly for over a decade. According to the World Health Organization, over 80% of the world's population, or 4.3 billion people, rely upon such traditional plant-based systems of medicine to provide them with primary health care. Medicinal plants also provide accessible and culturally relevant sources of primary health care to a majority of the population in Asia. Marginalised peoples, who are unable to financially or logistically access formal health systems, are especially dependent on herbal medicines. Medicinal and aromatic plants have also become critically important in supporting livelihoods of millions of rural people who are fully or partially dependent on these plants as a source of income. In India alone, it is estimated that collection and processing of medicinal plants contribute to atleast 35 million workdays of employment annually to the poor and underemployed workforce, a majority of whom are women, tribals and the very poor. Moreover, almost a million practitioners of the Indian Systems of Medicine, in the oral and codified streams use around 8000 species of plants in preventive, promotive & curative applications.

The tribals living in and around the forests in India continue using an enormous range of medicinal plants and are aware of the necessity of the preservation and propagation of many plant species. There are several non-wood forest products available in forests, such as Tendu patta (*Diospyros melanoxylon*), Aonla (*Emblca officinalis*), Belpulp (*Aegle marmelos*), Satawar (*Asparagus racemosus*), Salai gum (*Boswellia serrata*), Baheda (*Terminalia bellerica*), Honey and Safed Musli (*Chlorophytum tuberosum*), Kullu gum (*Sterculia urens*), Dhawra gum (*Anogeissus latifolia*) and Chakota seed (*Cassia tora*) that are of prime economic importance. These medicinal and other non-wood forest products play a crucial role in the economy of the tribal dominated areas. The poor collectors and producers sell the raw materials to different types of markets ranging from weekly stalls in villages to well established industrial markets in the larger cities and abroad. The system however, is quite disorganized and inequitable in that the collectors mostly work as wage labourers for contractors and agents who work for larger industries. As a result, the collectors, who are the farthest from the market and nearest to the resource receives the lowest share of the market price.

Over the years because of the renewed interest in natural extracts for beauty and health care, bio prospecting has resulted in the increased usage of locally available plant extracts for manufacturing herbal remedies. The resulting commercial usage and trade of medicinal and aromatic plants has lead to over-harvesting and extinction of particular species. According to the International Trade Centre, as far back as 1967, the total value of imports of starting materials of plant origin for the pharmaceutical and cosmetics industry was of the order of USD 52.9 million. From this amount, the total values grew to USD 71.2 million in 1971, and then showed a steady annual growth rate of approximately 5-7% through to the mid-1980s. The present global value of medicinal plants trade has been put at over USD 80.0 billion per year and is growing at an approximate rate of 7% per year with an expected growth to USD 5.0 trillion by the year 2050.

Medicinal plant related trade in India is estimated to be around Rs 5.5 billion (USD 1 = Rs 48/- approx.) per year. Of India's total turnover of Rs. 23 billion of Ayurvedic and herbal products, major over-the-counter products contribute around Rs. 12 billion, ethical formulations around Rs. 6.5 billion and classical Ayurvedic formulations the remaining Rs. 4.5 billion. A latest report by the Planning Commission, Government of India, intends to increase this trade in medicinal plant extracts to Rs. 30 billion by year 2005 and Rs. 100 billion by the year 2010 (Planning commission 2001). As a result, many important medicinal plant species are facing enormous threat due to the widespread commercialization of herbal remedies worldwide.

About 95% of the medicinal plant requirements of the Indian herbal drug industry are met from the wild medicinal plants, collected in a pattern that is not concomitant with sustainable harvesting practices. The raw material coming from the wild is almost entirely collected by the tribals and other forest dwelling communities, collection of medicinal plants has remained whose sole means of livelihood, which provides a fair idea about the potential of the medicinal plants in sustaining the tribal and village economies. That almost 70% of the

Indian rural population still depends on the medicinal plant in some way or the other and that all the supply for commercial consumption comes from the natural forests, which is in no way inexhaustible, its future seem rather dim. Due to the over-exploitation of medicinal plants for commercial purposes, many of them are on the verge of extinction. As a precautionary step the Directorate General of Foreign Trade has therefore banned the export of 46 such plants which are on the verge of extinction. In future, the trade of these plants and their products would be permitted only if they have been obtained by cultivation.

### **History of community conservation efforts**

Community conservation efforts in natural resource management have been very common in many parts of the world. Their presence has in certain cases supported existing efforts by the government and on the other created a separate identity for themselves and managed on a self-initiated mode. Self-initiated efforts have been a success where years of government run interventions have failed to make a dent. Needless to say, individual motivation has been a very powerful factor in most cases of self-initiated efforts, which has later led to an entire community to pursue the cause.

In India, community-based natural resource conservation efforts are found in many states, mostly in the tribal parts of the country. They are found in the form of sacred groves in Kerala, Madhya Pradesh, Rajasthan, Arunachal Pradesh, Sikkim and Meghalaya and in some cases in the form of sacred water bodies as in North Bengal in India. There are instances of community conservation efforts as in the case of Sukho Majri in the foothills of the Shiwaliks in the state of Haryana, Ralegaon–Sidhi in Maharashtra and in the case of the Biligiri Rangan hills in Karnataka. There are also instances of self-initiated forest protection from states like Jharkhand, Orissa and in the oft-quoted case of the Van panchayats in Uttaranchal. There are ample evidence of the involvement of tribes like the Bishnois, Irulas, Todas, Korkus, Baigas and Gonds etc being involved in conservation of nature and its resources.

Analysis of community conservation areas has revealed that there are a number of design principles that reveal the similarities with CPR arrangements in many parts of the world. But apart from all the factors, one very important factor very often overlooked is the role of the certain key individual/s in motivating and pursuing the community to adopt conservation strategies for the well being of the community. These individuals have very often been persons from the community who have been regarded for their leadership abilities and possessed certain special qualitative skills.

This case study discusses the self-initiated efforts of an almost uneducated Gond herbal practitioner for the preservation and conservation of the tiny medicinal herbs, shrubs and trees and the management of bio-diversity for maintaining the genetic resources of the locality. This study also takes a look at local attempts at extending voluntary services by treating complicated ailments among his community, create a network of other herbal practitioners in the region and preparing a second generation of tribal herbal practitioners.

### **The locale, agriculture and forests**

The study is the outcome of an International Development Research Centre (IDRC) supported project carried out in almost 15 villages of Ghoradongri Development block of Betul district located at a distance of almost 200 kms from Bhopal, the capital of Madhya Pradesh in central India. Village Kanhawadi, where the prime medicine man from the region Shri Babulal Varkade resides, comes under Ghoradongri block of Shahpur Tehsil of Betul district. It is located at a distance of 4 km from Ghoradongri railway station on the Bhopal-Nagpur line. Kanhawadi village comes under the Pipri beat of Betul range and North Betul forest division. Betul district is situated south of Bhopal between the latitudes 21.22' and 22.34' North and longitude 77.10' and 73.33' East. The other villages that are part of the study are situated around the Ghoradongri block spread around a radius of 20 kilometres.

The project area has a largely tribal population belonging to the tribal communities of mainly Gonds and some Korkus, apart from a sizeable caste population. Ethno-medicinal knowledge among the tribal communities is extremely rich having enriched itself over generations, which has also been instrumental in mitigating the health needs of these communities for hundreds of years. Gonds, the major tribes found in the area have a long history of traditional healing using wild medicinal plants. Local medicine men, also known as Bhagats, are found in such tribal areas in plenty. Presently about 90 percent ailments of local community are treated through herbal medicines in the day to day life. Off late this knowledge of medicinal plants amongst the youth in these communities have been diminishing resulting in a probable gap in their ability to meet their own health needs in the future in the absence of an effective government run health-care systems.

The agriculture in this region is of the dryland agriculture type depending extensively on rain fed irrigation. Therefore, there are a limited number of crops to choose from when it comes to agricultural practices. A number of interventions in the area of agriculture have been carried out in the region but their impacts have been very limited. Cash crop like soybean grown by farmers in the area has also faced

successive years of failure due to a weakening in its gene pool. Furthermore, there has been two successive years of drought in the region which has literally crippled the economy of the region and increased seasonal migrations to the levels existing a decade ago.

Land holding in the region is highly fragmented thus making agriculture an uneconomical proposition. In addition, the soil also has a tendency to form a hard surface pan if not watered frequently. And water has been a persistent problem in the region in the past two years. Many small and marginal farmers have even left their field fallow in the absence of water for irrigation. Only crops like kodo and kutki, which are minor millets, are grown by the farmers in the degrading undulating land in the region mitigating only their subsistence needs and not their economic needs.

The forests in the region being of the dry deciduous nature is home to a wide variety of medicinal plants like *Chlorophyton borivillianum* (safed musli), *Gloriosa superba* (kalihari), *Costus speciosus* (Keokand), *Asparagus racemosus* (shatawari) etc all of which hold immense market value. This has resulted in the overharvesting of medicinal plants found in the area, probably to the extent of being endangered in the region. Overharvesting on one hand has degraded the medicinal plant habitat and on the other affected its regeneration potential. These medicinal plants are collected from the wild by the poor collectors whereby through a channel of middlemen reach their final destination, be it the export market or the herbal drug industries. The collectors who collect medicinal plants for commercial sale also do so on behalf of the tribal medicine men in the region, although it is not the same vice-a-versa. A number of medicinal plants like *Kakai*, *Budwarkand*, *Buddikand*, *Bhasmkand* etc. are now almost extinct in this region, because of its overuse among the tribal medicine men.

According to Champion and Seth's classification of forests, the forests of the Betul district fall into 4-A Southern Tropical Deciduous type with presence of two classes viz. C-1 Dry Teak forest and C-2 Dry mixed deciduous forest. From ecological point of view, the forest maybe divided into the following types: -

1. Moist deciduous teak (with mixed bamboo)
2. Dry deciduous teak (with or without bamboo)
3. Mixed Type: *Terminalia tomentosa*, *Embllica officinalis*, *Terminalia arjuna*, *Aegle marmelos*, *Pongamia pinnata*, *Annogessius latifolia*, *Madhuca indica*, *Ailanthus excelsa* etc.
4. Salai (*Boswellia serrata*)
5. Bamboo dominated

Mixed species commonly found in the forest are *Terminalia tomentosa*, *Embllica officinalis*, *Terminalia arjuna*, *Aegle marmelos*, *Pongamia Pinnata*, *Annogeisus sp.*, *Madhrea califolia*, *Ailanthus exelsa*, *Boswellia serrate*.

### Herbal Practitioners in the region

There is a presence of a large number of herbal practitioners in the region. These medicine men cater to the health needs of the poverty stricken and interior rural population who are unable to mitigate their health hazards with support from the government-run health care systems and have been doing so as a service/occupation since a very long time. Most of the plant requirements for the herbal practitioners come from the forests adjoining the region. As a result the total volume of medicinal plants collected in the region is tremendous. This enormous pressure on medicinal plants has literally left the region bereft of natural regeneration. Some of the practices run by medicine men have even assumed commercial scale further threatening the natural habitat for medicinal plants.

Most of the herbal practitioners in the region belong the Gond community. The prime herbal practitioner in the region Shri Babulal Varkade, also known as Bhagat Baba, too belongs to the Gond community. Bhagats are a refined group of Gonds who have adopted the Hindu belief of teetotalism and vegetarianism. Shri Babulal Varkade is actively involved in collection of herbal products from the nearby natural forests and treating ailments of all sections of the people as a voluntary service to mankind. For the service that he provides, Bhagatji does not charge money as he believes that accepting money would render his medicines less effective.

As is very prevalent among the traditional herbal practitioners, Bhagatji learnt the plant based traditional knowledge system from his father, who was also a herbal practitioner of repute. But he graduated into a full-fledged medicine man under the tutelage of Bhuta Bhagat with whom he trained for 3 years and 13 days. But the process of learning for Bhagatji was a continuous process. While he was young, he would accompany his father to the forest for collection of medicinal plants as well as while administering them to the patients. He had a keen sense of observation and an uncanny knack for experimenting with medicinal plants.

Earlier Bhagatji would attend to patients every day, but lately he has reduced it to two days in a week large due to the shortage in the availability of key medicinal plants. He mentions that medicinal plants are getting rarer and that he has to travel more than what he had to some 30 years ago. But even on just two days a week, he has to attend to some 500 patients at the least. Patients have been coming to Bhagatji's from places as far off as Madras, Calcutta, Jaipur etc which goes to suggest that he quite well known in the region. He has

also treated patients who have been rejected by high profile city doctors and has cured their illness.

Babulal is well acquainted with the nature of plant behavior and knows which species grows in which habitat. He marks the rocks, stones and trees with different colours. He also uses codes extensively to identify and collect the same species, during the next season and marking on rocks, soil, trees etc can be seen by anyone. He even marks trees, which give better products like seeds, barks, and tubers of good quality. Babulal is aware of the phenology of most of the important plants, around 200 in number. He always takes the opportunity to collect seeds and tuber well in time for sowing in the nearby forest area or in his medicinal garden.

Medicinal plants required by him are also collected by his collectors groups. All the collectors have been instructed to collect medicinal plants in a sustainable manner, which goes a long way to state his concern for sustainable harvesting of products available in nature. He also keeps a check on their collection mechanisms. He has also instructed the collectors of medicinal plants in the region, especially those who collect them for commercial purposes, to limit their collections. He has also instructed them to ensure that natural regeneration takes place, before the collection season.

### **Harvesting nature of herbal practitioners**

Observing that medicinal plants in the forest were getting rarer, Bhagatji has started nurturing rare medicinal plants in his backyard to ensure its medicinal plants in his backyard to ensure its availability in times of emergency. He has also planted medicinal plants species that are no more available in the local forest after procuring them from their available sites. He has also encouraged another herbal practitioner colleague of his to establish a kitchen garden of important medicinal plants, and the two exchange whatever they require.

Babulal Varkade has been a herbal practitioner for more than 30 years now. Most of the plant parts that he uses belong to seeds, leaves, tubers, barks and fruits and every other possible plant parts as possible. Even in this era of globalisation he has not taken to this service as a commercial profession, mentions very highly of him. Bhagatji has over the years of experience developed a keen understanding of nature conservation and sustainable management of natural resources. His ethno-cultural upbringing has strengthened his belief in the need for nature conservation. He does not believe in harvesting of medicinal plants throughout the year. Only after the Pola (A Gond festival celebrated in tribal belts of central India) festival, he collects medicinal plants, which incidentally co-incides with the natural flowering and fruiting season. This allows for the natural regeneration to take place in nature after which he collects his requirement of medicinal plants.

The herbal practitioners as other people of their community, believe in tribal religion. Tribals believe that the world is imbued with the spiritual beings of varied categories, some of, which are benevolent while others, are malevolent. They worship stone, soil, animals and trees and believe in all inanimate things on earth. They express malevolent deities as evil spirits, which are controlled by the magical power of the "shaman". The tribals believe that the cause of disease is the existence of evil spirits that cause the disease. Sometimes it is believed that the anger of the 'Gods' cause the disease. Therefore the methodology of the treatment is to propitiate the deities. When a patient comes to them, he try to identify the displeasure of the deity. But nowadays that are also applying the technique of feeling the pulse and studying the cause with a more scientific approach.

The herbal practitioners start collecting their herbal products on a particular sacred day - which comes in the end of August after the Pola festival. First, they collect all available products in small quantities and perform 'Siddhi' (personal worship, chanting carried out just once every year) on every species. They then keep some 'Siddhi' material in all containers in which medicinal herbs are stored. The idea here is to collect plant material through out the year but add to the container where the first 'Siddhi' material is kept. These medicinal plants are then administered as per the needs of the patients.

### **Initiatives in the region – management options**

Bhagatji has been an extremely powerful force in the management of medicinal plants in the region. He has networked with the other medicine men in the region and has tried to convince them about the need for developing a second generation of medicine men the region. As a result of his efforts the other herbal practitioners in the region have now started training young people from the region as herbal practitioners of the future. He has also been instrumental in the formation of Rural Herbal Medicinal Practitioners Network comprising of medicine men from the region. This network has been an unique experience in bringing together herbal medicinal practitioners from twenty different villages in Ghoradongri block of Betul district in the state of Madhya Pradesh in India. This network was created as part of an ongoing activity of an IIFM-IDRC project titled '**Community based Sustainable Management of Medicinal Plants in Madhya Pradesh.**'

Over a series of meetings conducted by the project on '**Sustainable Harvesting Practices of Medicinal Plants**', the medicine men and the collectors in the project area had emphasised the need for networking among them. Such a demand emanated out of the following felt needs –

- medicine men and the collectors in the area knew little about one another.
- they were unaware about the existing knowledge related to the multiple uses of medicinal plants.
- they were unable to share knowledge about the availability of medicinal plants over a vast area.
- they knew little about the conservation status of medicinal plants in the area.
- they knew nothing about the cultivation of medicinal plants for commercial purposes.

Even during the collection of medicinal plants, all herbal practitioners observed a few rules of collection. They believe that there are specific times for collection of plant parts and that they are to be collected during those periods. For example tubers are to be collected only after the months of September/ October as the active constituents are at their peak during this time of the year. While collecting medicinal plants, the shadow of the person collecting must not fall on the medicinal plants as it renders the medicinal properties ineffective. Women are not allowed to collect medicinal plants. Such collection norms for medicinal plants have their cultural significance among the tribal communities, but in effect allow for their natural regeneration and in-situ conservation in nature.

Following the observation in shortfall in the availability of medicinal plants by the herbal practitioners in the region, they also devised the following collection norms that are to be observed during the collection of medicinal plants and are ensuring their implementation even among the commercial collectors of medicinal plants -

1. Bark – use only half the bark. The rest of the bark would then regrow after a period
2. Tuber yielding plants-
  - a. With plants having multiple tubers- half of them could be removed leaving the rest.
  - b. With plants with single tubers - they could be removed as carefully as possible without destroying the plants
3. Collect seeds only after maturation. Ensure to leave enough seeds for natural regeneration.
4. Use leaves only when they have matured and developed. Leaves should not be collected in the lean and dry season.
5. For collection of fruits, branches should not be lopped which reduces following year yield.

The network meetings are held every month in different villages in the region. The benefits from the network have been observed as follows - regular interaction among herbal practitioners, sharing of knowledge, recognition of Herbal Practitioners, dissemination of medicinal plant information, facilitating combined decision making process, conservation of medicinal plants, training of village youth in medicinal plants and finally making them more organised and united.

All the medicine men that are members of the network have been provided with identification badges. This has on one hand helped locate medicine men in the area as also appreciate his/her area of expertise. The medicine men meet at monthly intervals at previously decided villages and discuss matters of their general welfare apart from the issues on treatment and medicinal plants. The network of herbal practitioners in the area was formed with the following office bearers – Adhyaksh (Chairman), Upadhyaksh (Vice- chairman) and a Jugma-Sachib (Joint Secretary). The rest of the medicine men and collectors are part of the General Body Members.

The Chairman, Shri Babulal Varkade, presides over the meetings of the herbal practitioner's and the collectors. In his absence, Bhujal, who is an expert on medicines for snakebites, looks after its proceedings.

### **Learning points**

There is an inextricable mixed with cultural practices and livelihood, it is all the more evident in tribal, aboriginal cultures. Globalization has been very successful in breaking such linkages. Globalization has been responsible for the loss of biodiversity of nature in many parts of the world. But the globe has ample such examples where individual efforts have held high and succeeded despite the growing odds in the battle against global forces. Bhagatiji has in this case been largely responsible for carrying forward the age-old tradition on his own efforts. He has made people aware of the benefits of the herbal medicine. He has also succeeded to a fair extent in the maintaining the genetic resources in the forest and in the vicinity of the village. He has also established the credibility of medicinal plants and limited their over harvesting in nature, restricting the damage to biodiversity. Such efforts like that of the medicine men at Betul go a long way in ensuring that sustainable development is not just another rhetoric and really possible.

The medicine men in the region have also started training young men in the region as second generation of herbal practitioners. The network approach has helped in building a platform for the exchange of information and sharing on the plant based systems of medicine

men prevalent among the tribal heritage. As the network is still new, several ideas are still emerging from this group as to its operations. Through the network the herbal practitioners now have a forum to discuss about the conservation of medicinal plants in the region. It has also empowered them, through a collective decision making process, to ensure that medicinal plants in the region do not get extinct. Through the network they could further adopt the cultivation of commercial medicinal plants as also develop their kitchen gardens as an easily accessible source of medicinal plants.

Large-scale commercial harvesting of medicinal plants from the forests has resulted in the denudation of many species in the region. Many could even have become extinct locally. The network has successfully worked towards convincing the commercial collectors of medicinal plants in the region from overharvesting the medicinal plants available in nature. Organised efforts from such groups are required to prevent such processes and ensure the continuity of medicinal plants for years to come. Such groups could also ensure that the indigenous knowledge on medicinal plants, as available with them, is not lost and continues to serve mankind for generations to come.

These tribal herbal practitioners have supplemented the efforts of the public health services at the grassroots level and could continue to do so even in the future. This would also reduce their dependence on the quack doctors who roam the rural countryside in abundance. Bhagatji has played a commendable role in bringing together the herbal practitioners living in different villages in the region. As a result of his efforts the local community has started conserving medicinal plants available in the region. Commercial collectors of medicinal plants have also streamlined their collection norms allowing scope for natural regeneration.

Efforts are on to provide support to the network in whatever way possible to ensure that all the efforts of the medicine men do not go waste. There are rare instances of such efforts found that are capable of showing to the world that even in this era of globalisation, sustainability is not a lost word. It is possible, given the concerns emanating from within the societies are paid attention to and steps taken in the right direction.

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