

## SUSTAINABLE DEVELOPMENT OF MEDICINAL & AROMATIC PLANTS IN INDIA

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### ABSTRACT

*Natural resources play a key role in development of India. The cultivation of medicinal and aromatic plants provide sustainable means of natural source of high value of raw materials for pharmaceuticals, agricultural, food and cosmetic industries. Medicinal and aromatic plants derive medicines, essential oils and products worth of \$72 billion world wide with the share of \$60 billion of medicinal herbal materials. It is estimated that the demand for medicinal plants alone by the year 2050 would be \$5 trillion. The domestic market of ISM & H is of the order of Rs. 4000 crores of which Ayurveda drug market alone is about Rs. 3500 crores. It is estimated that India's annual production of medicinal and aromatic plants raw materials may reach to about Rs. 6000 crores. However, farming area of the medicinal plants is small and scattered with more than 80 per cent of raw materials still being harvested from the wild. The paper purports to review the status of plantation of medicinal and aromatic plants and marketing of herbal products in India.*

Natural Resource Management is expected to play a key role in the development of the nation in the years to come. The government stands committed, as part of its Vision 2020 to bring about a new ethos of people's centred growth oriented governance. Joint Forest Management is one of several areas where the government has try to translate this vision into action, on a sizeable scale, by transferring decision-making to the people. It is now widely accepted that future of food, health and livelihood security depends upon the attention paid to the management of natural resources. There have been several major changes in the forestry sector during the last decade. The change has reflected in involving people in the management of forest resources. This shift led to the emergence of Joint Forest Management Programme. Forest Departments in various states have started building alliances with local communities to project and regenerate adjoining forests. The local community is now given greater formal access and rights over a forest patch in return for increased responsibility for its protection from fire, grazing and uncontrolled harvesting of forest produce. National Forest Policy 1988 gives high priority to environmental functions of forest and on meeting of subsistence requirement of forest communities. The policy

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especially made emphasis on meeting the needs of the tribals and other poor groups living within and near forests, and stress that these should have first charge on forest produce. India is witnessing to a transition from a predominantly rural based agrarian society into a diversified economy. India's planned approach to socio-economic development and poverty alleviation has underlined sustainability. Conservation and resource management is integrated in development plans. A sound environmental policy and law framework is also in place. Recent economic liberalization policies have seen new strides, technology upgradation, cleaner fuels, and efficiencies in production and environmentally sound practices. At the same time, Indian society's traditional respect for the ecology, rivers and nature continues to remain as strongly rooted as ever. India has already recognized that environmental degradation has social reasons, and that combating poverty is a pre-requisite for sustainable development. Against this viewpoint, present paper purports to review the status of plantation of medicinal and aromatic plants and marketing of herbal produce in India.

### **Status of Forests in India**

In 1947, the year of India's independence, government own forests covered an area of about 40 million hectares, but the mid 1970's it had increased to 76.5 million hectares (23.42 per cent of geographical area of the country) due to take over of forests of erstwhile Princely State, Zamindari Forest and areas under Land Ceiling Acts in the states. These newly acquired forest lands were notified as protected forests by the state governments between 1950 and 1960. However, by 1980, nearly 4.5 million hectares of forests had been diverted for agriculture and other use. According to Forest Survey of India, 1999, country now has only 19.39 per cent (63.73 million hectare) of land area under forest cover. Against the Forest Policy, requirement of 33 per cent. Of this, 11.48 per cent (37.74 million hectare) are dense forest, 7.76 per cent (25.5 million hectare) open forest, and 0.15 per cent (0.49 million hectare) mangroves along the coasts.

The recorded forest in India has been reported to be 7.68 lacs sq.km., which constitute 23.38 per cent of the geographical area of the country. The states like Arunachal Pradesh, Chhatisgarh, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura have reported to possess significant proportion of forest cover. However, the states like Rajasthan, Punjab, Jammu & Kashmir, Haryana, Gujarat, Delhi and Bihar have very nominal forest cover against their geographical area.

Comparative situation of forest cover in India is shown in Table 1. The states like Assam, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal reported

**Table 1**  
**Comparative Situation of Forest Cover in India**

Sl. No.	State	2001 Assessment	1999 Assessment	1997 Assessment	Change (1999-2001)
1.	Andhra Pradesh	44637	44229	43290	+ 408
2.	Arunachal Pradesh	68045	68847	68602	- 802
3.	Assam	27714	23688	23824	+ 4026
4.	Bihar	5720	4830	4830	+ 890
5.	Chhatisgarh	56448	56693	56435	- 245
6.	Delhi	111	88	26	+ 23
7.	Goa	2095	1251	1252	+ 844
8.	Gujarat	15152	12965	12578	+ 2187
9.	Haryana	1754	964	604	+ 790
10.	Himachal Pradesh	14260	13082	12521	+ 1278
11.	Jammu & Kashmir	21237	20441	20440	+ 796
12.	Jharkhand	22637	21644	21692	+ 993
13.	Karnataka	36991	32467	32403	+ 4524
14.	Kerala	15560	10323	10334	+ 5237
15.	Madhya Pradesh	77265	75137	74760	+ 2128
16.	Maharashtra	47482	46672	46143	+ 810
17.	Manipur	16926	17384	17418	- 458
18.	Meghalaya	15584	15633	15657	- 49
19.	Mizoram	17494	18338	18775	- 844
20.	Nagaland	13345	14164	14221	- 819
21.	Orissa	48838	47033	46941	+ 1805
22.	Punjab	2432	1412	1387	+ 1020
23.	Rajasthan	Q16367	13871	13353	+ 2496
24.	Sikkim	3193	3118	3129	+ 75
25.	Tamil Nadu	21482	17078	17064	+ 4409
26.	Tripura	7065	5745	5546	+ 1320
27.	Uttar Pradesh	13746	10756	10751	+ 2990
28.	Uttaranchal	23938	23260	23243	+ 678
29.	West Bengal	10693	8362	8349	+ 2331

Source: Annual Report, Ministry of Environment & Forest, 2004.

positive trends as far as coverage of forest area during 1999-2001 is concerned. However, in Arunachal Pradesh, Chhatisgarh, Manipur, Meghalaya, Mizoram and Nagaland, forest cover has declined during the period.

In most of the states, dense forest has declined while open forest has increased during 2001-2003. Overall Tamil Nadu, Tripura, West Bengal, Meghalaya, Mizoram and Uttaranchal have reported significant increase in forest cover.

### **Sustainable Livelihood**

Natural resources that are very vital for food, livelihood and environmental security are under threat today. Land, water and forest can no longer be used as they have been in the past. Recognizing that land degradation, deforestation and pollution are major environmental concerns that are adversely affecting productivity and socio-economic conditions, suitable measures are needed to effectively addressing these problems. The challenges of conservation and sustainable use of natural resources remain enormous. Thus, sustainability is not an option but it is imperative. Sustainable development involves not only the ecological practices that enable meeting the needs of the future generations but also a change in production and consumption patterns so that resources being wasted can be saved and re-channeled to meet a healthy environment and wealth. Sustainability as it is commonly referred to thereby making life on earth possible in future as at present. Sustainable livelihood approach is well recognized as an integrated mechanism for poverty reduction and natural resources management. Government of India has also undertaken Greening India Programme with specific view of sustainable development of livelihood. Around 300 million hectares is the available productive land out of 328.27 million hectare geographical area of the country. Actual forest cover is 63.73 million hectare out of which only 37.73 million hectare are good forest. About 20 million hectare is covered under tree plantations-farm forestry, social forestry and other plantations. In order to achieve 1/3rd geographical area under forest, 43 million hectare area is proposed to be covered under Greening India Programme in 10 year period. The area coverage is proposed to promote Joint Forest Management, agro-forestry and wasteland development. Greening India Programme aims to achieving increased productivity, employment and income generation and food security to poverty-stricken people living in around forest and other fragile eco-systems.

India today has become a major importer of wood from other countries. By 2001, India's export of forest based products stood at Rs. 4459 crore. However, imports were over Rs. 12000 crore. It is estimated that forests provide benefits worth over Rs. 1,00,000 crore. Minor forest produce has enormous potential for revenue and employment generation since nearly 500 million people living in and around forests in India are depend on minor forest produce for sustenance and as a supplement to their income. Around 80 per cent of forests dwellers in Orissa, Madhya Pradesh, Himachal Pradesh and Bihar are depend entirely on minor forest produce for their sustenance. Over 50 per cent of the revenues earned by the forest departments comes from minor forest produce and its share in total export earnings ranges from

56.5 per cent to 75 per cent of the total exports of the forest produce including timber. However, the marketing of minor forest produce is unmanageable and non-regulated by the government agencies. Thus, minor forest produce is one of the most secretive part of India's export sector. Madhya Pradesh and Chhatisgarh are the major producer of Tendu leaves and the state governments have made serious attempts to regulate the pricing of Tendu leaves. However, there are wide price variations in the minor forest produce in the local markets and state as well as national markets. This calls for market regulation and management of minor forest produce. In order to promote sustainable livelihoods for forest dependent people, cultivation of medicinal and aromatic plants and marketing of herbal produce are showing enormous potential since herbs are the main source of raw materials for unani, ayurveda and homeopathy medicines.

### **Medicinal & Aromatic Plantation**

Cultivation of medicinal and aromatic plants provide sustainable means of natural source of high value industrial raw materials for pharmaceuticals, agri-chemical, food and cosmetic industries and opens up new possibilities for higher level of gains for farmers. India now covering an area of nearly about 0.4 million hectares are finding a much higher place in international agri-business with an estimated annual growth rate of 10-15 per cent. Medicinal and aromatic plants derive medicines, essential oils and products worth of \$ 72 billion world-wide with the share of \$60 billion of medicinal herbal materials. It is estimated that the demand for medicinal plants alone by the year 2050 would be \$5 trillion. The domestic market of Indian System of Medicine and Homeopathy is of the order of Rs. 4000 crore of which Ayurveda drug market alone is about Rs. 3500 crore. India's total export earning from the crude drugs, herbal extracts and finished products stands at meagre Rs. 800 crore. It is estimated that India's annual production of medicinal and aromatic plants raw materials may equal about Rs. 6000 crore. The farming area of the medicinal plants is small and scattered with more than 80 per cent of the raw material still being harvested from the wild. Thus, proper survey, documentation and harvesting of medicinal and aromatic plants in forest areas may provide enormous opportunities for income and employment generation as well as promoting Indian system of medicines. The degraded forest land can be converted into plantation of medicinal and aromatic plants with community participation and revitalizing soils.

Medicines grown in the rural backyards helps save money, apart from staving off diseases. A programme of herbal medicinal plantation is being supported by UNDP and Danish International Development Agency for revitalizing local health traditions in southern states of Kerala, Karnataka

and Tamil Nadu. The forest departments in collaboration with community-based organizations has promoted the concept of Garden of healing in Karnataka, Kerala and Tamil Nadu. Now, UNDP and Global Environmental Facility have commissioned the Foundation of Revitalization of Local Health Traditions, Bangalore to assist in drawing up medicinal plants conservation programme in Arunachal Pradesh, Sikkim, Meghalaya, Uttaranchal, Jammu & Kashmir, Himachal Pradesh and Chhatisgarh. India's 4635 ethnic communities including 1 million folk healers use around 8000 species of medicinal plants. The growing demand for herbal products in the domestic and global market also makes the use of eco-system. Over 90 per cent of medicinal plants commercially used are harvested from wild in an unsustainable manner. This is one of the reasons of loss of biodiversity. About 1000 species are under various degrees of threat across the different biogeographical regions in the country. India's herbal market size is estimated to be about Rs. 5000 crore and there are enormous potential to increase the size of herbal market in India. There are about 8000+ manufacturers of whom, 7000 have sales of less than Rs. 1 crore a year. There is a vast potential for production, distribution and marketing of herbal products in India. The following medicinal and aromatic plants are useful for healing the chronic diseases:

**Some Potential Medicinal and Aromatic Plants with Their Uses**

<i>Common Name</i>	<i>Scientific Name</i>	<i>Uses</i>
Amla	Emblic myrobalan	Diarrhea, weakness of brain and eyesight, stomach and uterus.
Gajar	Carrot	General weakness and palpitation, kidney and bladder stone
Alsi	Linseeds	Cough, asthma and sour throat
Belgiri	Bengal quince	Diarrhea, stomach, lever, heart, chronic fever.
Anjeer	Fig	Kidney and bladder stone, burning
Jamun	Black berry	Diabetes
Arand	Castor	Inflammation, injury, arthritis
Izkhar	Lemon grass	Paralysis, arthritis and inflammations
Aspaghul	Ispaghul	Dysentery, cold cough and sour throat
Kasni	Cichory	Inflammation of stomach, lever and joints, facial paralysis, hemiplagia, arthritis
Asgand	Withania	General weakness
Kalonji	Small fennel	Anti-flatulent
Mako	Black nightshade	Fever and inflammation of stomach and lever
Tezpat	Cinnamon	Anti-flatulent
Tulsi	Holy basil	Fever and cold
Neem	Margo	Skin diseases and chronic fever
Saunf	Fennel	Paralysis, arthritis
Satavar	Asparagus	Vigour & vitality, weakness

<i>Common Name</i>	<i>Scientific Name</i>	<i>Uses</i>
Safed Musali	Chlorophytum borivillianum	Heart disorder Vigour & vitality weakness
Greater Yam	Dioscorea deltoidea	Diosgenin steroidal hormones
Keo Kand	Costus speciosus	Sex hormones and steroidal drugs Diosgenin which are widely used for their anti-fertility
Kalmegh	Andrographis paniculata	Chronic fever liver disorder, high blood pressure, anaemia
Ashwagandha	Withania somnifera	General and sexual debility Urinary disorders, asthma, wounds etc.
Tikhur	Curcuma angustifolia	Swelling in Lungs, Piles, tumour, leucorrhoea etc.
Patchouli	Pogostemon patchouli	Patchouli oil is extensively used as a flavouring ingredients in major food products, including alcoholic and non-alcoholic beverages
Black Tulsi	Ocimum sanctum	Culinary purposes, drugs, flavour insecticide, perfumery
Sarpagandha	Rauvolfia sepeutyine	Nervous disorders, mania, epilepsy, hypertension and as a sedative or tranquillizing agen
Kalihari	Gloriosa superba	Promote Uterine contraction in childbirth, uterus disorder, used for abortion and menstrual disorders etc.

## **Conclusion**

India has 16 agro-climatic zones, 45000 different plants species and 15000 medicinal plants. There is growing domestic and international demand for natural products including pharmaceuticals and other products with medicinal value, food supplements and cosmetics. However, India's share in global export market for medicinal plants is just 0.5 per cent. Aromatic oils are another potentially important forest products, with expanding global markets and limited supply. The market structures for medicinal plants and aromatic oils in most of the states in India are weak and focusing on local trading only. With growing market demand and high potential revenues, many states are considering developing more state control market systems for these products. Madhya Pradesh has made the progress in developing market system for medicinal plants. Chhatisgarh and Jharkhand are also promoting cultivation of medicinal plants in order to empower tribal communities. Madhya Pradesh State Minor Forest Produce Cooperative Federation assists primary collection societies in selling non-nationalized non-timber products by offering fixed purchasing rates for a small selection of plants with market potential. Assam has success with Patchouli, a perennial herbaceous plant of the Lamiaceae family. The dry leaves of the species can be distilled to yield aromatic oil used in perfumes, medicine and processed food. The North Eastern Development Finance Corporation is also

financing start up capital for small farmers to cultivate Patchouli and facilitating market linkages. The Amjal Group has also established local processing facilities.

A World Bank study indicates that forests offer vast potential for poverty reduction and rural economic growth in India while also supporting critical national conservation goals. The JFM approach for management of forest resources and exploiting the opportunities for forest dependent people is best suited for promoting medicinal and aromatic plantation in India, however, reforms are needed for promoting community-based forestry and improving the marketing mechanism for marketing of products of medicinal and aromatic plants.

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