

MARKETING STRATEGIES AND TRADE OF MEDICINAL PLANTS IN UTTARANCHAL : PRESENT AND FUTURE PROSPECTS

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Introduction

For thousands of years plants and their caretakers have provided the primary means for the healing and curing of humans afflicted by diseases or injury. However, in twentieth century, these sources and practices started to be dislodged by the introduction of synthetically derived drugs as well as by western medical practices. Although tremendous progress has been made in synthetic chemistry and biotechnology, hundreds of plants species are recognized as having therapeutic value for specific ailments and diseases, and surprisingly about 40% drugs in modern pharmacopoeias are derived either as pure pharmaceutical extracts from plants (mostly herbs) or as their remedies of natural origin and considered being free from side effects. They are also comparatively cheaper, easily and locally available. Now the growing demands of consumers worldwide for herbal and natural products to meet both their healthcare needs and dietary supplements have opened up new opportunities for the medicinal plants-based industries. However, this market-propelled demand has created tremendous pressure on the

natural resources which contribute more than 90% of the current demand for the raw materials of medicinal plants. The local communities mostly belonging to tribal and rural poor are not benefited from the increased commercial activities as only a fraction of the total market return reaches them. There is a lack of approaches and practical experience of the research practioners and commercialization experts in the field of medicinal plant use in the whole South Asian region.

Medicinal plants have attracted considerable global interests in recent years. In the USA alone traditional drugs and preparations worth several hundred million dollars are imported from other countries especially from India and China. Climatically, the Indian Sub-continent is best suited for cultivation of various important medicinal plants. There are many opportunities and vast prospects to develop the medicinal plant sector in the country.

Globalization and economic liberalization open up new opportunities as well as challenges to the hill people in general and for Uttaranchal in particular, for the judicious use of specific natural

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Plate 1



Cissampelos pareira Linn.

Plate 2



Gloriosa superba Linn.

Plate 3



Rauwolfia serpentina Benth.

Plate 4



Plate 5

Viburnum setellulatum, Wall. - Flowers



Viburnum setellulatum, Wall. - Fruit

Plate 6



Thymus serpyllum Linn.

resources. People of this new State need to think about their prospects in such a challenging and changing scenario and to use these resources to their advantage by way of using the resources in a sustainable manner. Surveys of the available literature reveal that about 2,500 species from Indian Sub-continent are in local medicinal use and/or in commerce/trade, especially the pharmaceutical industries. Out of these 1,748 species are from Indian Himalayan region, most of which are found in Uttarakhand region (Bentley and Trimen, 1880; Kirtikar and Basu, 1933; Nadkarni, 1954; Chopra, 1956, 1959).

Uttarakhand State is a part of North-western Himalayas, very rich in vegetation wealth (65% vegetation cover), which comprises of a vast range of important medicinal plants in the natural conditions. There are also vast opportunities and prospects to cultivate these important medicinal plants. In view of these facts, the State Government has taken steps to develop this new State as a 'Herbal State'. Various plans have been formulated in this regard to encourage the growers for the cultivation of medicinal plants in the State, but still there is a lack of proper market structure and market information systems for medicinal plants. Commercial enterprises and local dwellers are regularly exploiting natural heritage of these medicinal plants. There is an urgent need of proper market structure, well developed market information system (MIS) on the subject with flexible policies in market trade for medicinal plants. Uttarakhand Government has formulated the strategies for cultivation of medicinal plants and their marketing. The present paper highlights the marketing strategies and trade of medicinal plants in the State.

Cultivation of medicinal plants in Uttarakhand

The medicinal plant sector in India is not well prioritized and needs special attention. In order to formulate appropriate mechanisms for coordination and implementation of policies relating to medicinal plants both at National and State level, a national level nodal agency National Medicinal Plant Board (NMPB) has been constituted at New Delhi. This agency is providing financial assistance for the cultivation, production of planting material, marketing of the product and for other technical support in medicinal plant sector in every State.

In Uttarakhand in particular, the NMPB has sanctioned about 45 projects under promotional as well as commercial schemes during 2003-04, out of which about 50% projects have been sanctioned directly to individual farmers for the cultivation of medicinal plants and remaining are sanctioned to Government Institutions and NGOs for production of planting material of medicinal plants and research in this sector. Herbal Research and Development Institute (HRDI), which is the nodal agency for medicinal plant sector in the State is working closely with several departments for the development of Medicinal and Aromatic Plants in the State of Uttarakhand. On the basis of existing climatic conditions in the State and market potential of the species, 14 species have been identified by HRDI as focus species in Uttarakhand. The species are : Kuth (*Saussurea lappa*), Kutki (*Picrorrhiza kurroo*), Chirayata (*Swertia chirayata*), Lavender (*Lavender angustifolia*), Sarpagandha (*Rauwolfia serpentina*), Tagar

(*Valeriana wallichii*), Atish (*Aconitum heterophyllum*), Kalihari (*Gloriosa superba*), Jatamansi (*Nardostachys jatamansi*), Bankari (*Podophyllum hexandrum*), Pangar (*Aesulus hippocastanum*), Honey plant (*Ammi majus*), Holy thistle (*Silybum marianum*) and *Herracleum candicans*. Memoranda of Understanding (MOUs) for these species have been signed between Uttaranchal Government and two companies namely Dhawan International, Delhi and Indi Phyto Chemicals, Kashipur for buy back agreement of the medicinal plant produce. Initially HRDI has taken 7 districts namely Uttarkashi, Chamoli, Dehra Dun, Nainital, Udham Singh Nagar, Haridwar and Pithoragarh for cultivation of selected species under Agri Export Zone (AEZ): Availability of planting material is the basic challenge in promotion of cultivation of medicinal plants in the State. To find out the solution, three herbal gardens at Muni Ki Reti, Rishikesh; Aromatic Centre, Selaqui (Distt. Dehra Dun) and Mandal, Gopeshwar have been established by HRDI and establishment of many small nurseries and herbal gardens is being undertaken with the help of the Forest Department and others.

Land, planting materials, labour and other inputs are the prerequisites for the cultivation of medicinal plants. Harvesting/collection largely constitute labour cost and many plants can produce returns only after three years or more. Also the cultivation is a comparatively new activity and exhibits low yield. Therefore, farmers generally feels that the prices they receive do not compensate for the difficulties involved in the cultivation of medicinal plants, and they are reluctant to convert large parts of their land for its cultivation. Farmers generally use either a small part of their

land or fallow land. The reasons for low cost are the collection from the wild, both legally and illegally. The legal collection is functioning through the 'Bhesaj Sangh', which does not undertake collection directly but delegates responsibility to local contractors, who act as middlemen and traders. It is generally assumed that contractors lead both illegal and excessive collection of the medicinal plants from their natural habitat. Large scale collection ultimately led to a significant depletion of important species in some areas.

Another important aspect to consider is the development and supply of technology. Plants grown in high altitude areas are difficult to cultivate. The farmers face difficulties related to cultivation, harvesting, storage, transportation and quality control technologies. Although Research Institutes and Universities existing in Uttaranchal have evolved technology to be transferred, but the linkages between Institutes/Universities and farmers are weak. Production, supply and market barriers are the biggest problems for the farmers of Uttaranchal State. This needs detailed study of market information system. In almost all cases, growers sell their materials to the local contractors and middlemen. There are no open trading facilities like mandis for medicinal plants in the country. This problem tied the farmers to the agents/contractors, as they bound them through debt and other obligations so that their bargaining power would be negligible, meanwhile the producers also suffer from unavailability of prevalent price information. All these facts are preventing farmers going in for large-scale cultivation of medicinal plants.

Marketing/trade of Medicinal Plants in Uttarakhand : A new approach

The trade of medicinal plants in the State as well as in the country is largely unorganized and uncertain both in demand and price structure. Therefore, the market information systems are poorly developed, resulting in considerable inefficiency within the markets. In Uttarakhand till last year only 'Bhesaj Sangh' (a branch of Co-operative Department involved in marketing of medicinal plants) have the rights of collection and marketing of the medicinal plants from the forests. Cultivation of medicinal plants through farmers in the State was also the mandate of the 'Bhesaj Sanghs' but due their monopoly, in this sector the 'Bhesaj Sanghs' emphasized collection more and the cultivation aspect was neglected. It was also due to poor infrastructure, lack of manpower and funds with 'Bhesaj Sanghs'. But from year 2003 onwards, the Uttarakhand Government has given the rights of collection and marketing to the Uttarakhand Forest Development Corporation (UAFDC), 'Bhesaj Sangh' and Kumaon Mandal Vikas Nigam (KMVN) to avoid negligence in over-exploitation of medicinal plants from forests. A committee comprising of representatives of UAFDC, 'Bhesaj Sangh' and KMVN is now deciding the geographical areas from which collection of material is to be permitted and by which agency. Much emphasis has now been given to the cultivation aspect of medicinal plants in the State. Herbal Research and Development Institute (HRDI) is the Nodal Agency for the research and development of medicinal and aromatic plants in the State.

Mandies for open trading

Previously, the marketing aspect of medicinal plants in the State was very poor and disorganized. Only the private traders were active in the marketing sector (Table 1) and cultivators were being exploited by the traders. Now the State Government has taken the step to break the disorganized system of trade in medicinal plant sector through establishing government mandis of medicinal plants. The State Government has sanctioned the proposal for the establishment of government mandis in the State, to facilitate open trading of medicinal plants. Initially three mandis i.e., Rishikesh, Ram Nagar and Tanakpur will be working. The infrastructure will be provided by nodal agency HRDI, and final execution of mandi has been given to UAFDC in coordination with Bhesaj Sanghs and KVMN. One representative of each agency will be present at each mandi for the execution of departmental trade. All collected medicinal plant produce through these three agencies will be sold at the mandis. The present price list of more than 120 species is available with these agencies.

Collection agencies (UAFDC, Bhesaj Sangh and KMVN) will purchase/collect the medicinal plant produce from their allotted regions either from forest or farmers and bring it to existing mandis. Trade/marketing of medicinal plant will only be allowed at mandi. No agency can sell the produce outside the mandi and mode of marketing may be either auction or direct sale in future but at present auction system is being followed. This approach will definitely help the farmers for maximum cultivation of medicinal plants. To facilitate the farmers, each

mandis are connected by several collection ranges as nearer as mandis (Table 2) and the farmers are allowed to sell the plant produce in these respective ranges.

Table 1

Major drug manufacturers/pharmaceuticals and herbs traders in Uttaranchal

Manufacturers

1. Amrit Dhara Pharmacy, Rajpur Road, Dehra Dun.
2. Arogya Ayurvedic Sansthan Ltd., Dhalwala, Rishikesh (Tehri Garhwal).
3. Gurukul Kangri Pharmacy, Kankhal, Haridwar.
4. Himalaya Drug Company, Saharanpur Road, Dehra Dun.
5. Himalayan Products Corporation Inds. (P) Ltd., Kathgodam (Sarada Building) Nainital.
6. Hinland Industries, Ranikhet, Almora.
7. Indian Herbs and Extractions, Tanda, Kashipur Road, Ramnagar, Nainital.
8. Indo Phyto Chemicals Private Ltd., Pirumadra, Kashipur, Nainital.

Traders

1. Asian Power Cyclopes, Rochipura, Majra, Dehra Dun.
 2. Agarwal Trading Co., Tanakpur, Champawat.
 3. Aurori Agro Herbo Medical (I) Pvt. Ltd, Nainital.
 4. A.S. Sarada Enterprises, Tanakpur, Champawat.
 5. Arua Vastu Bhandar, Dispensary Road, Dehra Dun.
 6. Bharat Drug Co., Moti Bazar, Dehra Dun.
 7. Kanhaya Lal Harishankar, Paith Parar, Ramnagar, Nainital.
 8. Bharat Vastu Bhandar, 47 Dhamawala Bazar, Dehra Dun.
 9. Chandra Sen Kailash Chandra, Koshi Road, Ramnagar, Nainital.
 10. Corbet Herbs, Penth Road, Ramnagar, Nainital.
 11. Devidas Kishanlal, Babuganj, Darshani Gate, Dehra Dun.
 12. Daily Kirana Store, Court Road, Uttarkashi.
 13. Doon Trading Company, Panditwari, Premnagar, Dehra Dun.
 14. Doon Trading Corporation, Panditwari, Premnagar, Dehra Dun.
 15. Durga Singh Martolia, Bala Village, Madlakya, Pithoragarh.
 16. Himalayan Taji-Buti Centre, Station Road, Tanakpur, Champawat.
 17. Himalayan Drug Co., Sarnimal Bazar, Dehra Dun.
 18. Himalaya Drug Company, Saharanpur Road, Clement Town, Dehra Dun.
 19. Indian Drug Co., Moti Bazar, Dehra Dun.
 20. Joginder Singh, Kirana Store, Hanuman Chowk, Uttarkashi.
 21. Jagdish Narayan Hari Mohan, Ward No.2, Tanakpur, Champawat.
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Contd...

22. Kiran Store, Bhairav Chowk, Uttarkashi
23. Krishna Pharmacy, Haridwar Road, Kankhal, Haridwar.
24. Madho Ram Narottam Saran, Karera Line, Ramnagar, Nainital.
25. Mahesh Chandra and Sons, Tanakpur Champawat.
26. Magan Lal Company, Paltan Bazar, Dehra Dun.
27. Mukti Prasad Rameshwar Dayal, Ramnagar, Nainital.
28. New Chand Kiran Store, Hanuman Chowk, Uttarkashi.
29. National Trading Company, Darshani Gate, Dehra Dun.
30. Parvatiya Sahkari Bhesaj, Vikas Evam Karya Vikray Sangh, Pithoragarh.
31. Panna Lal Brijlal, Tehri House, Haridwar.
32. Pharmaceutical Crude Drug Enterprises, Kosi Road, Ramnagar, Nainital.
33. Prabhat Herbs, Latowali, Kankhal, Haridwar.
34. Ram Sons Apere, Near Police Station, Ramnagar, Nainital.
35. Ratan Lal & Sons, G.B. Pant Marg (Udham Singh Nagar) Tanakpur.
36. S.K. Dutta & Company, 215 Old Dalanwala, Dehra Dun.
37. Sahkari Vikas Sangh Ltd., Gopeshwar, Chamoli Garhwal.
38. Tek Chandra Vinod Kumar, Thanga Line, Ramnagar, Nainital.
39. Vinay Aggarwal Ratan Lal & Sons, G.B. Pant, Marg, Tanakpur.

Table 2*Proposed mandis of medicinal plants and their collection ranges*

Mandi	Collection Ranges
Rishikesh at Bibiwala	Entire Yamuna Circle, Siwalik Circle, Bhagirathi Circle, parts of the Garhwal Circle including Pauri Division -- Paithani range, Pauri range/Karnprayag Division, Nanda Devi Biosphere Reserve upto Kedarnath Forest Division.
Ramnagar at Amdanda	South Kumaon, Parts of Northern Kumaon i.e. Almora Division, Bageshwar Division, Civil Soyam Almora Division and Ranikhet Division. Parts of Western Circle -- Tarai Forest Division, Ramnagar Forest Division, Tarai Central Forest Division. Parts of Garhwal Circle -- Garhwal Division except Paithani & Pauri ranges
Tanakpur	Parts of North Kumaon i.e. Pithoragarh Division and Champawat Division. Parts of Western Circle i.e. Haldwani Forest Division and Tarai East Forest Division.

Proposed System for Collection and Cultivation of different Medicinal Plant species

A new policy for the collection and marketing of medicinal plants in Uttaranchal has been prepared by the Chief Wildlife Warden of Uttaranchal vide letter no. 514/22-1(Jari-Buti) dated 26th August 2004, which has been forwarded to the Government for approval. Following initiatives will be followed in near future for the collection and cultivation of medicinal plants in Uttaranchal, as mentioned in the aforesaid letter.

(a) *Collection of Banned Species* : In this category are included species which have been listed by CITES in Appendices 1 & 2 and also the species which are lesser abundant or show scanty distribution in Uttaranchal. Collection/harvesting of some species as presented in Table 3 are totally banned while the species listed in Table 4 can be collected, however, collection would not be permitted prior to the completion of

Table 3

Strictly banned species for collection

Sl. No.	Local Name	Botanical Name
1.	Balcharh	<i>Arenebia benthamii</i>
2.	Salam Panja	<i>Dactylorhiza hatagirea</i>
3.	Salam Mitri	<i>Eulophia dabia</i>
4.	Kakoli	<i>Frittilaria royleii</i>
5.	Kuru/Kakoli	<i>Gentiana kurroo</i>
6.	Vridhhi	<i>Habenaria edgeworthii</i>
7.	Rihi	<i>Habenaria intermedia</i>
8.	Ksheer Kakoli	<i>Lilium polyphyllum</i>
9.	Jeevak	<i>Microstylis muscifera</i>
10.	Jatamansi	<i>Nardostachys jatamansi</i>
11.	Satuva	<i>Paris polyphylla</i>

Rapid Mapping Exercise (RME) by the Forest Department on the basis of their abundance in the forests.

Table 4

Banned species at present but some of them may be opened for cultivation after Rapid Mapping Exercise (RME) by Forest Department

Sl. No.	Local name	Botanical name
1.	Meetha	<i>Aconitum balfourii</i>
2.	Aatish	<i>Aconitum heterophyllum</i>
3.	Vacch	<i>Acorus calamus</i>
4.	Kingod/ Kirmoda	<i>Berberis</i> species
5.	Brahmi	<i>Centella asiatica</i>
6.	Shankpushpi	<i>Convopvulus</i> species
7.	Salparni	<i>Demodium gangeticum</i>
8.	Pathar laung/ Pather phody	<i>Didymocarpus aromaticus</i>
9.	Gethi	<i>Dioscorea deltoidea</i>
10.	Kalihari	<i>Gloriosa superba</i>
11.	Dhoop	<i>Jurinea dolomiaea</i>
12.	Kutki	<i>Picrorrhiza kurroo</i>
13.	Chitrak	<i>Plumbago zeylanica</i>
14.	Sarpgandha	<i>Rauwolfia serpentina</i>
15.	Chirayata	<i>Swertia</i> species
16.	Giloya	<i>Tinospora cordifolia</i>
17.	Indrayaj	<i>Tricoganthos</i> species
18.	Privathaparni	<i>Uraria picta</i>
19.	Temru/Timru	<i>Xanthozylum alatum</i>

(b) *Collection of species on the basis of five-year time interval* : The species mentioned in this category are : Lichens, Mosses, *Taxus baccata*, *Skimmia laureola*, *Coleus barbatus*, *Polygonatum verticillatum* and *Rheum emodi*. Collection of these species in a particular Division should be done only after every five years interval basis so that sustainable utilization of natural resources can be made. To achieve this

target the whole of Uttaranchal has been divided into following six regions :

Region	Year of Collection
Bhagirathi Division	2004-05
Kumaon Region	2005-06
Yamuna Division	2006-07
Garhwal Division	2007-08
Nanda Devi Biosphere (outside reserve area)	2008-09
Bhagirathi Division	2009-10

(c) *Collection on the basis of quantity decided by district level collection society* : The species presented in Table 5 are mentioned in this category in which collection quantity will be decided by district level collection societies.

(d) *Collection of species found outside the forest area in abundance* : The species growing in agriculture land and wasteland can be collected without any prohibition. However, as per rules, transit pass should be taken for material transportation. The species listed in this category are presented in Table 6.

(e) *Collection of exotic species or the species found outside the Uttaranchal* : Species like Kuth, Lavender, Mentha, Chandan, Stevia etc can not be harvested and transported. However, for the cultivation of Kuth permission must be taken from the Chief Wildlife Warden of the State as per the provisions of Section 17 of the Wildlife Protection Act (1972).

(f) *Collection/Harvesting of weeds* : Forest weeds viz., *Lantana*, *Eupetorium* and *Parthenium* can be collected without any permission. These species are free from any type of prohibition.

Table 5

Certain quantity of collection decided by district level collection society

Sl. No.	Local name	Botanical name
1.	Apamarg	<i>Achyranthes aspera</i>
2.	Vasindha	<i>Adhatoda vasica</i>
3.	Bel	<i>Aegle marmelos</i>
4.	Satavar	<i>Asparagus racemosus</i>
5.	Pashan bhed	<i>Bergenia ciliata</i> (syn. <i>Saxifrage ligulata</i>)
6.	Amaltas	<i>Cassia fistula</i>
7.	Priyagu pushp <i>macrophylla</i>	<i>Callicarpa</i>
8.	Malkangni	<i>Celastrus paniculata</i>
9.	Patha	<i>Cissampelos pareira</i>
10.	Tejpatta	<i>Cinnamomum tamala</i>
11.	Aonla	<i>Embllica officinalis</i>
12.	Kapoor kachri	<i>Hedychium spicatum</i>
13.	Marorphali	<i>Helectrus isera</i>
14.	Kadipatta	<i>Murraya koenighii</i>
15.	Gandh pasarni	<i>Paederia foetida</i>
16.	Vidarkandra/ Saral	<i>Peurania tuberosa</i>
17.	Mainphal	<i>Randia dumetorum</i>
18.	Majith	<i>Rubia cordifolia</i>
19.	Bhutkesi	<i>Selenium tenuifolium</i>
20.	Ginjadu	<i>Stephania glabra</i>
21.	Harada	<i>Terminalia chebula</i>
22.	Baheda	<i>Terminalia bellirica</i>
23.	Nirgundi	<i>Vitex negundo</i>
24.	Kantkari	<i>Taraxcum officinale</i>
25.	-	<i>Viburnum</i> <i>continifolium</i>
26.	-	<i>Viburnum setlulatum</i>

(g) *Collection/Harvesting period* : The collection of any species should be done between 1st October to 30th April because the commencement of reproductive phase

Table 6

*Species which can be collected
without any prohibition*

Sl. No.	Local name	Botanical name
1.	Neem patti	<i>Azadirachta indica</i>
2.	Purnarva	<i>Boerhaavia diffusa</i>
3.	Aak	<i>Calatropis purpurea</i>
4.	Agyadhas	<i>Cymbopogon martini</i>
5.	Mrigraj	<i>Eclipta alba</i>
6.	Shahtara	<i>Fumaria vullantii</i>
7.	Gudhal phool	<i>Hibiscus rosa-sinensis</i>
8.	Pudina	<i>Mentha viridis</i>
9.	Lajvanti	<i>Mimosa pudica</i>
10.	Kamal phool/ Phal	<i>Nymphus</i> sp.
11.	Tulsi	<i>Ocimum sanctum</i>
12.	Moongparni	<i>Phaseolus trilobus</i>
13.	Bhuin aonla	<i>Phyllanthus niruri</i>
14.	Arand	<i>Ricinus communis</i>
15.	Gulab phool	<i>Rosa</i> sp.
16.	Bala	<i>Sida cordifolia</i>
17.	Ativala	<i>Abutilon indicum</i>
18.	Makoy	<i>Solanum nigrum</i>
19.	Masparni	<i>Teramnus labialis</i>
20.	Sarpunkha	<i>Tephrosia purpurea</i>
21.	Chota gokhru	<i>Tribulus terrestris</i>

(flowering and fruiting) of most of the species is 1st May to 30th September which ultimately leads the regeneration of species.

(h) *Registration for cultivation* : There is no clear cut policy for the cultivation of banned medicinal plant species till date and initially it was proposed that registration should be done only for those species listed in the Appendices 1, 2 and 3 of CITES. But till the formulation of

clear-cut policy regarding these banned species, it is proposed that registration should be done for all the species mentioned earlier under Table 1 and 2.

(i) *Registration process* : Prior to this notification the registration of farmers for the cultivation of medicinal plants was done by HRDI with the help of 'Bhesaj Sanghs' and it is proposed that now this should be done by the Divisional Forest Officer (DFO) of the concerned area.

Market for Medicinal Plants

The international trade in medicinal plants is estimated as US\$ 70 billion and is growing at a rate of 7% annually. In India, domestic demand of medicinal plants in 1999-2000 was estimated as Rs. 1,099 crores which was expected to rise to Rs. 2,000 crores by the year 2004-2005 as per CERPA estimates (Anon., 2001). Lack of proper market information and suitable opportunities to search the trade market has led to exploitation of local communities engaged in collection of medicinal plants. The Tribal Corporation Marketing Development Federation of India Ltd. (TRIFED) operates a market information system which mainly serves the agricultural sector but also covers some NWFPs as well. Middleman/contractors exert strong control over the marketing of medicinal plants, often by exploiting the collectors' ignorance of market factors and claim a disproportionate share of producers' value for themselves. Assessment of market information is therefore, crucial and will result in increased awareness of market practices in general. This could be done through market research. Studies are needed to analyze the flow of raw materials from collectors to the primary processing

industries and further to study the market opportunities and means of assessing the markets for products from the primary processing industries. At the local level, some market studies could be carried out with the assistance of market surveyors, which needs training and appropriate guidelines to carry out such studies.

The demand for medicinal plants is expected to increase by about 15 to 16 times between 2002 and 2005 (Anon., 2000). The Himalayan region of Uttarakhand State is the home for one of the largest reserves of medicinal plant biodiversity. The annual turnover of three of the major Indian Systems of Medicines (ISMs) i.e. Ayurveda, Unani and Siddha is estimated to be more than half a billion dollars. The current gap between demand and supply is estimated to be 40,000 tonnes which is expected to rise to 152,000 tonnes by 2005 (Anon., 2000). Increasing demand by major herbal drug industries for medicinal plants as essential raw material for their drugs as also their collection, production, processing, packaging and transportation requires high labour input which can create employment in Uttarakhand State.

Future Prospects

Uttarakhand has immense potential as the sustainable commercialization of Medicinal and Aromatic Plants (MAPs) can benefit the local collectors by providing higher price for traditional traded products and by opening up national and global market for new products from the Himalayas. The private sector stands to benefit by ensuring sustainable supply of quality raw materials to benefit their industry and trade if they can be facilitated to build partnerships with collectors and

growers. There are enormous areas of land including the fallows on which MAP mixed plantations can be raised. Many of the species are shade tolerant and others are climbers, trees, shrubs and herbs that can be grown in different configurations of crop geometry.

Government should draft ten-years perspective/strategy plans for the development, cultivation and conservation of medicinal plants in the State, defined as : establishing comprehensive scientific research facilities, expanding R & D for new and improved technologies; improving industrial quality through technological progression; raising the industry standard to Western levels; and increasing exports to Western markets.

The Himalayan mountains are extremely rich in medicinal and aromatic plant wealth. However, due to unwise use, the availability of medicinal plant materials in desired quality, quantity, time and place have raised serious doubts about the region's potential to be a preferred market destination for the Phyto-medicine industry regionally. The sustainable production, conservation and use of medicinal plants is influenced by a number of factors, largely of agriculture, socio-economic, technical, institutional and policy nature. One of the important steps in realizing this prospect is to ensure better economic returns to collectors and cultivators. Availability and access of market information is the key to improving returns to producers of medicinal plants. Information is needed on demand, supply and end uses, distribution channels, product promotion, prices, marketing environment and institutions related to marketing. Better method of collection, storage, grading and local level value

addition can substantially improve returns to local communities. Poor production unsustainable and destructive harvesting of the materials from the wild by untrained and poorly motivated collectors and farmers mostly using primitive methods and lack of awareness about the real potential of the resources are other important factors leading to resources depletion. Medicinal plant resources need to be augmented and properly managed

following national and international guidelines for standard and quality to ensure their marketing and commensurate benefits to the local people. Knowledge of prevailing market conditions will push for the conversion of these natural resources into quality products that can generate gainful employment and greater income to collectors and farmers. Application of value or market chain analysis and method is the central to this approach.

SUMMARY

Medicinal plants have attracted considerable interest in recent years. Commercial enterprises and local dwellers are regularly exploiting natural heritage of these medicinal plants. There is an urgent need of conservation of these valuable medicinal plants through cultivation. Poor marketing structure in the country is the primary challenge towards its promotion and cultivation. In Uttaranchal, attention has been given to conservation/cultivation and its open trading system by the government. The present paper highlights the cultivation and open trading aspects of medicinal plants in the State.

उत्तरांचल में औषध पादपों का बाजारगत समरनीतियां और व्यापार - वर्तमान और भावी संभावनाएं

धनसिंह, राजीव के० श्रीवास्तव व वी०पी० खण्डूरी

सारांश

औषध पादपों ने विगत वर्षों में काफी ध्यान आकर्षित किया है। व्यापारिक उद्योग और स्थानीय लोगबाग नियमपूर्वक इन औषध-पादपों की प्राकृतिक पितृसंपदा का समुपयोजन करते जा रहे हैं। खेती करके इन बहुमूल्य औषध पादपों को संरक्षित करने की तत्काल आवश्यकता है। इसके अतिरिक्त देश में इनका विपणन करने की घटिया संरचना सबसे मुख्य चुनौती है जिसे इनको प्रोत्साहन देने और खेती कराने के लिए, सुलझाना जरूरी है। उत्तरांचल में, सरकार द्वारा इनके संरक्षण। कृषि करने तथा इनका मुक्त व्यापार करने पर ध्यान दिया गया है। प्रस्तुत - अभिपत्र में राज्य में इनकी खेती करने और मुक्त व्यापार सम्बन्धी पक्षों पर प्रकाश डाला गया है।

References

- Anon. (2001). *Demand Study For Selected Medicinal Plants* Vol.-I. Center for Research Planning and Action (CRPA), New Delhi.
- Anon (2000). *Demand Study For Selected Medicinal Plants* Vol I & II. Centre for Research Planning and Action (CRPA) for Ministry of ISM & H and WHO, New Delhi.
- Bentley, R. and H. Trimen (1880). *Medicinal Plants* Vols.I-IV (repr. edn). International Book Distributors, Dehra Dun.
- Chopra, R.N., I.C. Chopra and B.S. Verma (1969). *Supplement to Glossary of Indian Medicinal Plants*. Pub. & Info. Dte., CSIR, New Delhi.
- Chopra, R.N., S.L. Nayar and I.C. Chopra (1956). *Glossary of Indian Medicinal Plants*. Pub. & Info. Dte., CSIR, New Delhi.
- Kirtikar, K.R. and B.D. Basu (1933). *Indian Medicinal Plants* Vols. 1-4. Allahabad, India.
- Nadkarni, A.K. (1954). *Indian Materea Medica* Vol. 1 (3rd edn). Popular Book Depot, Bombay.