SUMMARY

This research shows that a large number of people of Udham Singh Nagar rely on medicinal herbs/plants to meet with their day to day health care needs. They have also realized the need of cultivation and conservation and cultivation of medicinal herbs and plants because of their effectiveness and complete cure of diseases that too without any side effects (noticed in other medicines). As the traditional knowledge system is less adopted by new generations, the knowledge of herbs\medicinal plants and preparation of herbal formulations for curing various types of diseases needs to be updated and motivate younger generations so that they take interest and also adopt the traditional systems of curing their ailments by using medicinal herbs\plants and its products. The local people of Udham Singh Nagar were inadequately aware about the efforts made by the Government for the promotion of the medicinal herbs\plants. Awareness workshops were also organized in collaboration with Indian Institute of Development, (a non-Government organization). People were made aware about the research organizations and agencies working in the field of research and development and management of herbs and medicinal plants.

Owing to the varied agro climatic conditions and a high degree of bio-diversity due to altitudinal changes a wide variety of medicinal and aromatic plants\herbs are reported to be available in Uttarakhand. The Herbal Research and Development Institute HRDI at Gopeshwar, Chamoli is the nodal agency for development of Medicinal and Aromatic Plants in the State. Cultivation of Medicinal and Aromatic Plants is being taken through various agencies like Forest Department, HRDI and NGOs; HRDI has made an effort to register the farmers growing Medicinal and Aromatic Herbs\Plants in the State. So far 6205 farmers have been registered with HRDI. Available information indicates cultivation of medical herbs and plants in around 570 acres and aromatic herbs\plants in more than 955 acres covering a wide range of species. Various research institutions like High Altitude Plant Physiology Research Institute (HAPPRC), Srinagar, Defense Agriculture Research Lab, Pithoragarh, GB Pant Institute of Himalayan Environment and Development, Kosi Katarmal, GB Pant University of Agriculture and Technology, Pantnagar, Central Institute of Medical and Aromatic Plants, Pantnagar and Station
at Purola, Bageshwar, Regional Research Station of Department of AYUSH at Tarikhet, Almora apart from HRDI are involved in research and development of medicinal herbs\ plants in the State. Few private companies like Dabur, India Glycols etc., are also involved in research and developmental activities in their farms leased out by Government of Uttarakhand at Rudraprayag (Ghimtoli) and Tehri Garhwal (Dhanauldi). During 2002-07, National Medicinal Plant Board (NMPB) has extended financial assistance for more than 135 schemes in the State for cultivation of Medical and Aromatic herbs\ Plants and the area envisaged for coverage in Uttarakhand under these schemes is about 1275 acres. Financial Assistance from National Medicinal Plant Board is credit linked and therefore in all the schemes assisted by National Medicinal Plant Board, Bank loan is provided. Twenty One Forest Development Corporation of Uttarakhand has been entrusted the major work of collection and marketing of herbs from the State, in addition to Kumaon Mandal Vikas Nigam Ltd. & Bhesaj Sanghs. An Agri Export Zone for Medicinal and Aromatic Plants has been identified for implementation in Udham Singh Nagar, Nainital, Haridwar, Chamoli, Uttarkashi, Pithoragarh and Dehradun districts where conservation, cultivation and processing of certain identified species is being taken up in a systematic manner. Contract cultivation of medicinal plants is also being taken up in select locations of the State. Three herbal markets have been established at Bibiwala (Rishikesh), Tanakpur and Ramnagar. Important Issues which are to be addressed with immediate effect to tap the enormous potential available for development Herbs and Medicinal Plants in the state following issues are to be addressed.

1. Successful contract farming experiences needs to be publicized.

2. Identification of one nodal agency to promote development of the Medicinal and Aromatic Herbs\ Plants sector on commercial basis with necessary logistic and financial support. This agency can bring about convergence of important programs/interventions by various agencies in the sector.

3. Since many species found in Udham Singh Nagar of Uttarakhand, which are endangered, are common to many of the Himalayan States, there is a need to strengthen the database across these States regarding the species available, planting material supply, demand and supply position etc. This would not only help in assessing the current status
but also to focus the strategies for future sustainable development of herbs\medicinal plants.

4. Training to be organized on methods that can be employed by village level groups and NGOs in co-ordination with the Forest and other allied departments to check illegal extraction and smuggling of endangered herbs species, recognizing that concerned citizens have a role to play in minimizing the plundering of this precious resource.

5. Setting up of nurseries and demonstration herbal plots for supply of quality planting material and promotion of medicinal herbs.

6. HRDI has identified about twenty six priority species in the context of Uttarakhand and Standardization of agro-techniques for these species to be taken up on priority basis.

7. HRDI has been registering farmers in Udham Singh Nagar along with the other parts of the state growing medicinal herbs\plants. These farmers need to be organized in clusters to promote the production of suitable herbs for their specific area through active NGOs or HRDI so that appropriate processing and marketing infrastructure can be created.

8. Farmers need the further awareness on the procedure for getting transit permit, due to the inadequate knowledge at times they hesitate to sell their products in proper markets because of the procedural and official fears

9. State Medicinal Plant Board consolidates and indicates the agency and quantum of bank loan involved in the projects where financial assistance is extended by them to SLBC/NABARD for effective monitoring of the scheme.

10. Wide variation has been observed in cost norms fixed by various agencies. Economics of all the major species need to be worked out right from the district to state level and this should form the basis for fixing scales of finance at district level.
11. Monitoring of financing of *National Medicinal Plant Board* assisted schemes may be taken up *District Coordination Committee and District Level Research Committee*.

12. Delay in disbursing the matching grant from the State Government in respect of units assisted by *National Medicinal Plant Board* may be avoided for the better results.

**It was examined the local level status of medicinal herbs, their production and supports to livelihoods and primary healthcare.**

The research determined the existing causes as to why medicinal herbs species are gradually depleting from nature. It also focused on various practices and measures, ranging from primary production to consumption in the study area of Udham Singh Nagar, that the impact on biodiversity and local livelihoods. Management initiatives at various levels to redress these problems are also examined in the light of this objective.

ii. **It analyzed the national level medicinal plant market system and industry value chain and options for improving the supply chain through partnerships between industry and the producers’ community.**

The research attempted a comprehensive overview of the existing medicinal herbs/plants and the farmer based herbal market system in Udham Singh Nagar, it was tried to identify the role of medicinal herbs in the market system, the structure, and various dimensions of that herb based industrial market. The industry value chain and *Strengths, Weaknesses, Opportunities, Threats* are analyzed to find out improved management and marketing approaches toward suitable management of herbs and medicinal plants.
iii. Identification of existing formal and informal organizations, and examine cross-scale linkages between them in order to enhance and strengthen public policy options and management strategies.

The study identified the key institutions involved in the management of medicinal plants and then determined the extent of involvement of the organization located at the community level in the project sites that were studied. It also attempted to indicate the linkages and institutional interplays at various spatial levels. Then it pointed to possible institutional arrangements for addressing the sectoral strategic management problems.

Conceptual Considerations

Participatory Methods and their Relevance

The field investigations of this research were done using a ‘qualitative research’ approach. Within the purview of qualitative\quantitative research methods, where Rapid Rural Appraisal (RRA) and Participatory Rural Appraisals (PRA) are widely practiced by the researchers, analyzed the pros and cons of using both RRA and PRA as tools and ways to collect field data. Upon analysis, I determined the RRA methods to follow based on the fact that the research was initiated by the ideas and guidance supervisor, in recognition that the goal of an individual researcher (I) to fulfill nested academic obligations very much dominated the research mindset rather than a prior assessment of the community needs and urgencies. The focus of RRA is not community driven and the research outcome is less likely to benefit the communities directly or immediately. However, a brief comparative review of RRA and PRA was done to examine the justification of using such methods in my research and to dispel confusions and debates concerning these methods.

RRA helps “outsiders” learn about rural conditions by looking at them from many points of view. This means having people participate with a variety of different technical and scientific skills and a balance of different institutional outlooks. This requires an integrated development approach which cuts across institutional and disciplinary boundaries.
Awareness of bias

Researchers and development workers who are trying to understand rural conditions can be biased by their urban attitudes, their own professional and personal priorities, the type of transport they use, and the language they speak. The people researchers talk to can be biased as well by their limited experience, their customs and beliefs and their own interests as well as those of their families. RRA seeks to avoid biases by being aware of them and by being systematic in taking into account different points of view and different sets of interests.

Accelerating the planning process

RRA tries to shorten the time it takes to get from knowing nothing about an area or a situation to deciding what development interventions might be best for that area by using key informants and careful observation and by exploiting the knowledge and experience of local people. The information produced is analyzed “on the spot” and presented in a form which is more easily used by planners and which can be discussed and understood by local people themselves.

Interaction with and learning from local people

Whatever the purpose of the RRA it must involve the people who are the intended “beneficiaries” of any eventual development activities. RRA should give them the opportunity to describe their lives and conditions. The people carrying out an RRA must be prepared to listen to local people and learn from them. Participation by local people can take many forms but any RRA will involve intense interaction between researchers, planners, traditional and formal authorities and local people.

Combination of different tools

The RRA approach uses a combination of communication and learning tools. These tools help outsiders to observe conditions in a concise but systematic way. They also allow local
people to present their knowledge, concerns and priorities to outsiders. The combination of different tools and techniques builds up a more complete picture where different viewpoints can be compared and contrasted. The systematic cross-checking of information collected in different ways by different people and from different sources can increase accuracy and comprehensiveness.

**Interactive learning**

During an RRA, what has been learnt is constantly reviewed and analyzed in the field. This is usually done in workshops carried out at regular intervals. This means the focus of the RRA, the tools used and the people talked to can be adjusted constantly. Guided by the above principles under the qualitative research paradigm, in order to attain the objectives of the research, I developed a set of questions (as my *key research questions*). However, an interactive adaptive approach (Nelson, 1991) allowed me to often modify my methods and questions to maximize efficiency and ensure the validity of the results. With the light shed by the interactive approach I also made modifications to the planned scope of the study in order to come up with significant conclusions that enunciated a better market and livelihood provisions or policies both for medicinal plant producers and processors. Thus, as the vital instrument to delve out facts and figures, I eventually used the following key research questions.

**Specific Research Questions**

**Objective-i: Threats and Measures**

1. What are the factors responsible for the depletion of medicinal herbs from Udham Singh Nagar?

2. What are the conservation initiatives undertaken by the existing medicinal herbs and plants projects in Udham Singh Nagar.

3. *In-situ* Conservation and *Ex-situ* Conservation Initiatives.
4. Is there any attempt to retain the traditional knowledge on medicinal herbs and plants?

5. What are the primary healthcare implications of the studied project activities?

6. What are the medicinal plant production-related activities in the project areas?

7. What are the impacts on livelihood of medicinal herb\plant production?

8. What type of initiatives contributed to the promotion of medicinal plants in the studied areas?

9. What and how are the harvesting, primary and secondary processing related practices?

**Objective-ii: Market system and Value Chain**

1. What are the uses of medicinal herbs as healthcare products?

2. How is the nature and dimension of the medicinal herbs\plant-based herbal market system in terms of Market context, Market size, Market demand, and Market supply?

3. How diverse is the medicinal plant-based industry value chain.

4. Who are the main linked persons\agencies?

5. What are their activities?

6. How does the productive network function within the value chain?

7. What is the marketing system of the existing herbal manufacturing companies?
8. How can the industry value chain be improved given its inherent constraints and weaknesses?

**Objective-iii: Institutions and Management**

1. What institutions are involved in managing and promoting medicinal plants?
2. What is the management scenario at the local scale in the studied areas?
3. Are NGOs, Development Organizations and Sectoral bodies involved in medicinal plant management and promotion?
4. What are the government institutions that deal with medicinal plant resources?
5. What are the cross-scale institutional linkages prevailing in the studied medicinal plant projects?

Therefore, with the above specific research questions in the aforesaid three objectives, the approach of the research was two-tier, i.e. case study and market study. The concepts and the rationale of adopting such an approach are described below. It is suggested that there is need to pay attention for conservation of commercially important species, which can be successfully grown in Udham Singh Nagar. Few of them have been named as *Acorus calamus* (Vacha), *Aloe vera* (Ghrit Kumari), *Anacyclus pyrethrum* (Akarkara) *Cymbopogan citrates* (Lemon grass) *Rauvolfia serpentine* (Sarpgandha), *Withania sominifera* (Ashwagandha), *Tinospora cordifolia* (Giloï), *Asparagus adscenden* (Shatavar) *Emblica officinalis* (Aanwala) etc. We need to focus on Agro-technology, yield perspectives per year, high potential areas most suitable for their cultivation in Udham Singh Nagar, keeping in mind the conservation approach, suitable medicinal plants trading patterns and sustainability.

It is hoped that the problem will be solved to a considerable extent if the Government decides to lease out the forest land for the cultivation of herbs and medicinal plants to the landless and farmers of the region. Proper assessment of diversity, abundance and quantum of
extraction of the medicinal plants from wild habitats are required. Further, agro-technology packages of these plants need to be developed for large scale cultivation and sustainable utilization.

Various organizations like Central Institute of Medicinal and Aromatic Plants, Regional Centre, Nagla, Pantnagar State Medicinal Plant Board, G.B. Pant Institute of Himalayan Environment and Development, Kumaon Centre for minor forest products for rural development and environmental conservation, NGO’s, The Herbal Research and Development Institute (HRDI) have made efforts to register farmers growing MAPs in the State. The Chief Ministers Herbs and Medicinal Plants Scheme (2010-2015) is on going in the 7 Developmental Blocks in Udham Singh Nagar, 630 hectare area is scattered amongst 21 Clusters which have around 2970 beneficiaries. An Agri Export Zone for Medicinal and Aromatic Plants has been identified for implementation in Udham Singh Nagar and 1 Ideal Nursery has been established under National Herbs and Medicinal Plant Mission in Tanda, field station of CIMAP, Udham Singh Nagar.

Since last five years, the National Medicinal Plants Board has stepped up its investments into both conservation and cultivation programs on medicinal plants. However, cultivation strategies involving small farmers and collector cooperatives are currently weak. R&D investments required to focus on products and processes for high science and technology innovations and creation of new knowledge. While such research is important and can make original contribution to the world of medicine, it is necessary to balance this kind of research with critical and substantial R&D investments which can also help to enhance the health and livelihood security of the rural poor.

Awareness among local peoples or stake holders will be the best method of conservation of medicinal plants. The current investment pattern for rural and community development of both national government and international agencies needs to provide critical investments for up-scaling health security and livelihood security through green strategies. In respect of medicinal plants, since 1993 India has done pioneering work in the field of in-situ conservation. As, of 2012, a total of 112 Medicinal Plant Conservation Areas across 13 states of the country have been created. Cultivation programs need to design a special strategy to benefit small farmer and collector cooperatives. They also need to take into account the prescribed ‘Good
Agricultural Practices’ and create suitable infrastructure for post harvest, moisture free storage, low dose gamma radiation facilities, fair pricing for collectors and farmers and streamlining of other elements of the supply chain.

National Organizations like the National Medicinal Plants Board (NMPB), International agencies like the United Nations Development Program-Global Environment Fund (UNDP-GEF) and others need to design special schemes to support capacity building of small farmers and collector co-operatives for cultivation wild harvest of medicinal plants.

The research examined the institutional arrangements in the medicinal plant sector, where it identified the existing ones and their linkages and pointed out the options for the further strengthening the institutional strengths from strategic and holistic resource management perspectives.

1. We need to focus our efforts to establish a strategy for the better and improved production, conservation and management of the herbs and the medicinal herbs\plants. Establish the herbs and medicinal plants dependency of local populations in protected corridors, buffers and other areas of conservation value. An assessment of the extent to which communities living inside and along the peripheries of a protected areas use forests (irrespective of whether there is usufruct right allowing usage or law banning the same) is very crucial for protected forest areas management. It not only helps in understanding the association between the local communities and the forests, and the nature and extent of these pressures, but also helps design the objectives of and strategy for a conservation plan.

- It is also suggested to identify and prioritize areas of high medicinal herb\plant dependency in protected areas and other critical biologically diverse habitats and initiate studies.

- To identify the herbs and medicinal plants collected and used by the local people living inside as well as on the peripheries of protected areas and quantify the collection patterns.
To understand the nature and extent of pressures faced by the protected areas due to use of medicinal herbs and plants.

To locate various areas for the protection that is both presently subjected as well as vulnerable in the future to pressures exerted by the human use of herbs and the medicinal plants.

2. Combined efforts should be carried out to determine the distribution, demand, markets and supply by detailed survey. The first step in promotion of herbs and medicinal plants ecoenterprises is not only to inventories the existing status of medicinal plants in the state but to determine the demand, markets and supply so as to build up a picture of the distribution and markets of medicinal herbs\plants and accordingly to map the areas with high medicinal diversity, use and marketing infrastructure. Herbs and medicinal plants conservation areas can be set up on the lines of medicinal plant conservation areas.

3. The present requirement for the sustainable management of the medicinal herbs\plants is to establish harvesting methods and levels. Sustainable harvesting is broadly divided into six steps (Shiva, 1995) including (1) Species selection (2) Forest Inventory (3) Yield studies (4) Regeneration surveys (5) Harvest assessments and (6) Harvest adjustments. The following steps delineated by Shiva, 1995 are to be utilized to ensure sustainable harvest methods and yields.

- Species selection based on social and economic criteria that both depend in some measure on the potential of the resource to be managed sustainably.

- Forest inventory including collection of data on the number of harvestable herbs \plants per hectare and the existing size class distribution of these species.

- Yield studies to estimate the total quantity of resources produced by herbs of varying size and the productive capacities of the species being exploited. Local people can be trained to obtain this data by weighing, counting or measuring the quantity of resources produced by different sample trees during harvesting. These studies are to be repeated
every few years using the same sample group of sample plants to monitor variation in yield over time for standardizing harvesting.

- Periodic regeneration surveys to quantify the initial density of seedlings and samplings in the populations being exploited and monitoring of density fluctuations in response to differing harvest levels. This data can be analyzed by creating height class histograms to obtain a picture of the population structure from seedlings to large trees. These can be repeated every five years, which is probably sufficient for most species.

- Harvest assessments are visual assessments of the condition herbs and medicinal plants that are conducted concurrently with harvest activities. These quick, visual assessments help in early detection of reproductive or growth problem exacerbates and reduces seedling recruitment and establishment.

- Harvest adjustments. According to Shiva, if such regular monitoring is carried out, levels of harvest can be sustained as long as densities recorded in the original regeneration surveys remain above these values and no major problems are observed in the harvest assessment. Intensity of harvest must be reduced if seedling or sampling densities drop below this value. Harvesting adjustments can be made by regulating the number or size of plants being exploited or alternatively by limiting the total area from which the resources is harvested.

4. Action plan for sustainable harvest and management practices for medicinal plants and their linkage to household revenues could be incorporated in JFM / eco-development micro plans and working plans. Strategy is to be adopted to encourage cultivation of medicinal plants. In several cases, supplies from the wild may be unsustainable or undesirable. Protection of the germplasm is as important as wide spread multiplication. Therefore, cultivation of commercially important species for which high demand exists must become widespread. Cultivation material despite the low regard in which it is held by many traditional medical practitioners is in many ways more appropriate for use in drug production due to the ability to standardize and ensure quality control and requirement amounts of the active ingredients. Systematic cultivation however requires
specific cultural practices and agronomical requirement. Multiplication and cultivation of important medicinal herbs/plants has been expanded on a wide scale in China. This must be done in India as well. Initially, this can be tried on a pilot scale by establishing demonstration centers and then expanding the project and area under cultivation depending on success factors. A 1995 study (Nautiyal, 1995) suggests that cultivation of certain high altitude Himalayan herbs could yield products between Rupees. 7.150 per hectare and 55,000 per hectare. Rao & Saxena (1994) reported an average annual per hectare income of Rupees 120,000 through mixed cropping of high altitude medicinal herbs.

- Establish research cum demonstration centers in different agro-climatic zones and carry out research and development on good quality agricultural practices including appropriate selection and identification of species.

- Best sites and locality factors for different species of herbs.

- Evolving best techniques for the propagation and protocols under which maximum success in the plantation is obtained.

- Cultivation techniques, harvesting, control of raw material, post harvest treatments, storage/holding (mainly to fetch better prices) etc. All these have to be built into protocols for cultivation of medicinal herbs/plants.

- Based on the success of such initiatives popularize cultivation of medicinal herbs/plants.

- Encourage cultivation of important herbs and medicinal plants through JFM, Van Panchayat and eco-development committees.

5. Establish close professional linkages between the forest department and the relevant research institutions. Greater sharing of knowledge, technology transfer, capacity building, expertise, germplasm, genetic resources and plant propagation material and methods is required between the forest department and institutions such as
FRI, CIMAP, NBPGR, NBRI for medicinal plants. This could include the development of collaborative ventures such as medicinal plant nurseries, like one established in Tanda of Udham Singh Nagar and Pirumadara.

6. Developing marketing mechanisms and local enterprises. Local communities frequently end up deriving less revenue in relation to their labour investments. Further, there are no efforts to link these communities with more remunerative and alternative uses of the resources and the markets for such goods. Middlemen, contractors and entrepreneurs acquire the bulk of the profits. The reason for the scarce returns and hence unremunerative livelihoods are mainly three:

- Inadequate marketing information and availability and crediting infrastructures. This makes the medicinal plant collectors, a disadvantage lot; the middlemen consume the profits gained or subsidies provided. Day to day existence of the herbs and medicinal plants producers forces them to sell their produce for ready cash. The middlemen cum moneylenders meet immediate need soft the money.

- Lack of processing is a disadvantage in medicinal plant sector. The products are either sold in raw form from or with limited processing by the producers. The products are sold unprocessed in absence of technical skills, market information and managerial skills.

- Lack of enterprises is also a serious concern to be taken care of. The producers often function in isolation. Singular and dispersed existence makes them financially weak, restricts access to information and credit. The community is unable to set terms against the powerful nexus of middlemen and traders. Therefore, devising alternative marketing mechanisms and channels are required for effective promotion of medicinal herbs cultivation and collection. Societies, co-operatives and federations fetch better remuneration for the poor dependent on NWFP collection (Shiva, 1995). Market information on demand and supply must be available to local collectors.

Development of eco-enterprises that add value to forest products traditionally collected by local forest communities can pave the way to sustainable forest resource use. Eco-
enterprises therefore aim at introducing forest based products in these areas and linking them to the appropriate markets. However, even where enterprises exist, poor returns are often the order of the day due to:

1. Lack of product diversification - Local communities often lacks the technical expertise to produce a wider product mix that would fetch a higher price in the market.

2. Lack of proper marketing channel, in absence of marketing infrastructure that can collect and store the products and market them in peak season, the middlemen and local traders fulfill this function and hence gain the profit.

3. Non-availability of Government credit facilities due to which the local entrepreneurs are debt ridden and forced to sell off their product at low rates in the absence of credit facilities.

Therefore a number of sincere actions are required to develop the herbs and medicinal plants marketing and profit making enterprises.

7. Provide market information to the local farmers and tribal collectors. Promotion of marketing channels and market information for medicinal plants can be done in conjunction with the farm forestry extension system delineated earlier.

- To develop eco-development committees for the collection and marketing of medicinal plants. The process of collection and marketing must be integrated into community forest management systems. Medicinal plants should be directly purchased from these committees.

- Extend credit facilities to farmers growing herbs and medicinal plants through agricultural and co-operative banks such as NABARD.
- Link up with the NGOs to help the local communities in capacity building, market information flow and development of eco-enterprises. There is a need to enhance the entrepreneurial capacities of the product households and the village communities.

- Encourage eco-enterprises and cottage industries. The role of institutions playing active role in the management of herbs and medicinal plants, eco-development committees must become prominent in all aspects for the management, processing, marketing and value addition. The diversification of product mix and value addition through better technology, skill and improved processing are needed.

8. Setting up of Medicinal Plant Conservation Areas (MPCA) in forest and protected areas will serve a field gene banks leading to the long term preservation of the genetic variability (inter-specific) of species. These medicinal plant conservation areas serve as repositories of genetic material with the demarcation of no of harvest zones and should be about 500 hectare in area. To capture the maximum possible genetic diversity of the target species, first information needs to be collected on morphological, chemical or genetic variants or chemical screening (GOI, 2000), Under a UNDP Country Co-operative Programme, a project on Medicinal Plant Conservation and sustainable utilization is ongoing with the Foundation for the Revitalization of Local Health Traditions (FRLHT) as the coordinating agency for the establishing Medicinal Plant Conservation Areas with State Forest Departments as the key players in these activities.

- Inventories such areas and carry out detailed documentation with herbarium records, estimation of plant populations, regeneration, distribution patterns, species assemblages and association and co variation, micro habitat data and cultural information.

- Set up such areas with the help of technical agencies including CIMAP, NBPGR,

9. To involve the corporate sector in a big way in the medicinal plant sector and for the development programs on medicinal plants whether it is cultivation, maintenance of wild gene banks or conservation and research programmes, the herbal and pharmaceutical industries such as Dabur, Zandu, Baidyanath, Himalaya Drug Company etching the
interest of corporate responsibility such companies should develop widespread cultivation, Research and Development and Conservation Programmes.

For the successful establishment of medicinal plants sector we need to establish linkages with stakeholders, involving the agricultural support agencies in the sector for viable cultivation of medicinal plants. Initiative should be taken by the Centre to develop the networks of medicinal herbs\ plants conservation areas across the country on a priority basis and encourage the traditional herbal healers and practioners of Ayurveda. Forest department should lay focus on the documentation of the traditional uses of low profile and less known medicinal herbs also in order to disseminate their therapeutic efficacy by preparing well acceptable medicines and also to reduce the pressure on over exploited species. Renewal of the available herbal formulations by standardization their efficacy by discouraging any attempt of adulteration of herbal medicine through certification of raw materials for quality control by using the modern tools.