HERBAL MEDICINAL PLANTS IN HIMACHAL PRADESH
An Analysis of Income and Employment Potential

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Sponsored by
National Council of Applied Economic Research / Ford Foundation

June, 1999

PREFACE AND ACKNOWLEDGEMENT

The project on "Herbal Medicinal Plants in Himachal Pradesh: An Analysis of Income and Employment Potential" was initiated by Institute of Social Studies Trust (ISST) in late 1997. This is part of a larger Ford Foundation sponsored project seeking to explore the linkages between formal and informal sectors. The project has been co-ordinated by the National Council of Applied Economic Research (NCAER), New Delhi.

This has been a rather interesting project to work on. As the study progressed, it opened up several dimensions of research and enquiry. Much of it could not be explored on account of the limited time we had at our disposal. The report that is being submitted now should be seen as that of an interim phase of the enquiry. We hope we would have the opportunity to explore further some of these questions at some future point of time.

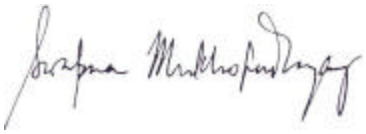
One of the major stumbling blocks in carrying out this study turned out to be the difficulty we had in collecting sensible information, be it at the primary level or at the secondary level. In most of the research projects of ISST having a strong field based component, we have collaborated with local level organizations. This project was no exception. Two local NGOs in Himachal Pradesh, Society for Rural Development and Action (SRDA) and Navrachna, had been our local partners. The survey data on which some of the analysis reported in chapter 4 is based, has utilized the household level information among others collected by these organizations.

ISST is grateful to NCAER and Ford Foundation for sponsoring this study. We are particularly grateful to Ms. Ratna M. Sudarshan of NCAER for her role in co-ordinating the overall project. We thank the participants in the NCAER/SEWA workshop for their valuable suggestions and comments. It is a pleasure to record our appreciation to Mr. Vijay Mahajan for the excellent training workshop he conducted on the nuances of carrying out sub-sector analysis.

We have received very good co-operation and support from various persons and organizations in Himachal Pradesh. Ms. C. P. Sujaya, Additional Chief Secretary, Himachal Pradesh has as usual been a great source of unstinting support and guidance through out the various stages of the project. We are thankful to Mr. S. K. Pandey, Principal Chief Conservator of Forests, Himachal Pradesh for his support and encouragement. Our special thanks go out also to Mr. P. L. Chouhan, DFO Seraj, Mr. S. S. Negi, DFO Rampur, Mr. K. S. Thakur, DFO Kotgarh, Mr. Jhagat Ram R.O., Sainj, Mr. Dhaniram (II) Forest Guard Sainj and Prof. Satish Verma of Guru Nanak Dev University, Amritsar. Last but not the

least, we would like to record our sincere gratitude to the villagers and traders in the districts of Shimla, Chamba, Kullu and Mandi for their co-operation with our research team.

Mr. Rajib Nandi was supported by a team of ISST researchers consisting of Rina Bhattarcharya, D. V. Rukmini and Neena Khanna at different stages of the project. The research team has been ably assisted by the support staff of ISST. We are grateful to all our colleagues in the Delhi office of ISST for the efforts they have put in towards the finalization of this report.



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June, 1999

Contents

Chapter Four Contribution of HMPs in the household Economy of Rural Himachal

4.1 Nature of the HMP Sector
- 4.1.1 Social and Economic Background of the Households dependent on HMPs
- 4.1.2 Competition among Households during Extraction Season
- 4.1.3 Sale vs. Self-consumption of HMPs

4.2 Income and Employment Generation
- 4.2.1 Patterns of Collection
- 4.2.2 Estimation of Employment and Income at the Household Level
- 4.2.3 Patterns of Employment and Contribution to Income
- 4.2.4 Processing of Herbs at Collectors Level before Selling
- 4.2.5 Marketing by the Collectors
- 4.2.6 Problems Faced by Villagers in Collection and Marketing

4.3 Intra-household Dynamics
- 4.3.1 Intra-household Dimension of HMP Collection and Marketing
- 4.3.2 Role of Women and Children in Marketing

Chapter Five Network in the Trade and Marketing of Medicinal Plants: A Sub-sector Analysis

5.1 Basic Characteristics of Market Structure in HMP

5.2 Price Structure and Mark-ups in Each Level of Trade- A Sub-sector Analysis

5.3 Demand from Delhi and Amritsar Market and its Impact on State Market

List of Tables

List of Charts, Maps and Boxes

Chapter One

Introduction

1.1 Background and Scope of the Study

Herbal Medicinal Plants (HMPs) constitute a small part of 'Non-Timber Forest Products'(NTFP). NTFPs are an important source of livelihood for forest-based poor people in India. NTFPs include fodder and grasses; raw materials like bamboo, cane and 'babbar' grass; herbal medicinal plants, leaves, gums, waxes, dyes and resins; and many forms of food including nuts, wild fruits, roots and honey. Gathering these from the forests for subsistence and sale, forms an integral part of the livelihood strategies of the poor. These operations normally fall under informal/unorganised sector.

As in most cases of multiple activities under the informal sector, there is an under-counting of people who are involved in this sector as collectors, processors and small traders etc. This happens due to the unorganised nature of these activities, especially at the gathering and collection stages, and also since these are often done on a seasonal basis, as subsidiary activities, involving women and children. Underestimation of a worker's role is a major problem with estimation of un-organised sector's contribution, since majority of the self-employed or unpaid family workers is part of this sector. Again much of the produce is used for self-consumption and in the absence of market value for these items, the actual value is not accounted for.

The gatherers of the medicinal plant products constitute the starting point of the chain of intermediaries who contribute towards the activities and value added processes in this 'sub-sector'.[1] Use of medicinal plants for making medicines, for example, involves the initial raw material changing hands several times before finally being ready for use as a medicine. During the entire process, informal activities of the sub-sector contribute towards the final product.

As far as medicinal plants are concerned, Himachal Pradesh is one among the major suppliers in the Indian market. More than forty species, enlisted by the state forest department, are exported from the state. But the actual list of products could well be much

[1] The term sub-sector has been defined as the network of firms that supply raw materials, transform them and distribute finished goods to a particular market. A sub-sector is thus a vertical cross-section of activities based on a primary resource, involving procurement, intermediate processing, manufacturing of finished products and their distribution including related and support services (Mahajan, 1997).

longer. The villagers collect most of these species from the forests and alpine pastures of the state. Collection and selling of medicinal plants occupy an important place in the household economy in some parts of rural Himachal Pradesh. It is difficult to estimate the extent of employment generated by this sector for rural people in the state since most of the activities under this sector is considered to be unorganised. It is not even easy to identify the linkages it has with organised sector. In other words the intersection of informal and formal linkages in this sector is another important issue of concern. In economic literature the phrase 'informal sector' refers to the sector of the economy in which the employed persons do not enjoy the advantages of unionisation, social security and/or other associated benefits, or any assurance of regular employment.

The various data collecting agencies such as CSO, NSS and Economic Census fail to capture the size of informal sector employment because of some problems in objectives, concepts and operational definitions of informal sector. Jacob and Visaria (1997) suggested some modifications in questionnaires which are usually used for collection of information on informal sector employment (such as, status in employment, occupations, place of residence, distance between place of work and place of residence, wages received if any) of each employee in a sample enterprise. However, household survey gives better understanding of participation in economic activities by both males and females and income earned as compared to enterprise survey. (Banarjee, 1992).

The vast literature on informal sector activities in this country has failed to pay adequate scholarly attention to forest based activities. Given the several hundred plant species of medicinal value distributed in different parts of the country, many thousands of rural and tribal poor involved in their collection, processing and marketing..., the environmental and economic importance of medicinal plants to the country is enormous. Present study is a modest attempt to fill the gap, which intends to capture the chain of trade in HMP's in the state and size of the sub-sector in terms of its potential in employment and income generation.

It is very difficult to estimate, even approximately, what the herbal medicine industry means economically. Without exaggeration it may probably run well into thousands of quintals each year. It not only includes the volume of trade, legal and illegal, but also the large number of people who are involved in the harvesting, procuring and marketing of herbal plants. However, lack of reliable secondary data on the volume of trade primarily due to the inability of the official machinery to trace entire legal and illegal extraction and trade in medicinal plants, sets limitations in the estimation of the volume of the trade and value added in this sub-sector on the basis of government data.

In an attempt to understand the trading of selective items of phytochemical and employment generated in the sector, the whole process of trading from raw material to final products has been studied. It was estimated that in India 1.4 lakh rural workers are employed at various stages of trade of phytochemicals and herbal products, as per census of India, 1981. (Mahajan, 1997) However, the NSS 1987-88 employment figure that includes both primary and subsidiary status workers was much higher at 1.7 million. Of these, 1.2 million were engaged in collection of roots, tubers, vegetables, flowers and other plant products, as a subsidiary occupation. (NSS, 1987-88)

1.2 Objectives

On the basis of above discussions, the main objectives of the present study on Himachal Pradesh have been formulated as following:

i. To study the detailed activities in collecting and processing for various medicinal plants by the rural people in Himachal Pradesh.
ii. To study the extent of dependence of the rural households on medicinal plants across the regions in this state.
iii. To analyse the importance of HMP regarding its potential in generating employment for the villagers, with special reference to women.
iv. To study the contribution of women in household income through HMPs.
v. To study the price structure and mark-ups at each stage of trading.
vi. In addition, an attempt has been made to study the growth potential of the herbal medicinal sector in Himachal Pradesh.

1.3 Some Basic Issues in the Study of NTFPs

The literature available on forest issues in India, primarily deals with social forestry and community involvement in forest management. A number of studies have also been undertaken with the objectives to study small scale forest based enterprises and the importance of non-timber forest produces in household economy and gender dimensions of such activities.

The approach of the present study is different from those. First of all, this study deals with various aspects of forest and forestry, but neither purely on forest management nor small-scale enterprises, are discussed in isolation. While discussing socio-economic aspects relating to herbal medicinal plants, various issues pertaining to minor forest produce, such as forest management, marketing of forest produce and most importantly matters related to

bio-diversity are touched upon. The present section reflects this multiple facets, since not many studies exist on medicinal plants per se but many studies are there on each of the above mentioned issues.

A number of studies have been undertaken in recent years on Joint Forest Management (JFM) and community involvement in the management of their own forests. This system of management, where both the government and the local people participate in the protection, conservation and maximum utilisation of forest for the local community is a radical departure from the tradition of centralised forest management in India which was mostly prevalent in colonial and post-colonial India. JFM is commonly perceived to have the potential of restoring both the health of our forests and the dignity of impoverished forest dependent women and men through assuring them access to forest resources for secured livelihoods.

With tribal and other rural women comprising possibly the single largest category of people directly dependent on forests, this section of community locates their status and condition within the growing national commitment to promoting gender equality. This introduces the analytical concept of gender within overviews of changing gender relations in adivasi and non-adivasi cultures and the changing patterns of gender roles in forest use. The national objectives of gender equality in access to resources should be explicitly integrated in the policy and practice of JFM. (Sarin et al, 1998)

There exists a prominent extent of mismatch between the incentive of a share of revenue from timber being offered to villagers for participating in JFM and the policy mandate of treating their forest needs as the first charge on forest produce. The negative impact of the continuing focus on managing forests for timber even under JFM on the forest dwellers, as evident from several research studies, is examined to make a plea for a dispassionate recasting of the basic JFM deal. Moreover the rules, norms and practices of local institutions, both formal and self-initiated, often systematically exclude women forest users and marginalise sub-communities from local institution decision making and entitlement to benefits. Here lies the importance of the joint strategies adapted by NGOs and the forest departments to increase visibility and voice of the poorest forest users, particularly the women, to bring them at the centre stage in JFM. (Sarin et al, 1998)

Sarin's study also deals with the challenges facing the forest department in making a transition from policing agency of the state to partners of poor forest users in evolving a more democratic, participatory and equitable system of sustainable forest management.

In developing countries, local communities are very much dependent on various forest produces. The development of Non Wood Forest Produce (NWFP) is regarded as an important option for the socio-economic development of rural areas (FAO, 1993). Supporting these assertions are the statistics, in terms of millions of person days of employment generated and equally impressive figures of income that accrues to the rural poor (Shiva, 1994).

Aggregation of employment and income, disregarding as to who is actually employed and during which season and the actual contribution of income to the household livelihood, conceals some of the key aspects relating to the potential (or lack of potential) of NWFP. A substantially large number of products belong to the subsistence category, fulfilling the basic needs of the local economics. These products are collected in the traditional sector but invariably they have strong linkages with the modern sector, where they are processed and traded. The technology of collection remains simple but the processing technology ties up with profit-making modern sector, which excludes the poor and the women. (Nair, 1994).

Forest based small-scale industries are most useful for women precisely because they can be undertaken as an extension of household activities. These activities can potentially empower women by giving them flexibility and control over their livelihood with the household as the economic base (Campbell, 1991).

Study of women's roles in extended household activities has always been a centre of interest in the study on small-scale forest based enterprises. Small-scale forest enterprises include all such efforts which depend on forests for supply of both consumption goods and intermediate goods and are traded in formal and non-formal markets. Such efforts are dependent on utilisation of local skills and local village level technology. Units of production are small so that they can be pursued as a self-employment or household activity or non-household cottage industry (Khare, 1987). Women's labour and economic contributions are undervalued in practically all societies. Women frequently occupy a low wage niche and are often constrained by culturally enforced divisions of labour, prescribing domestic and production functions around the home (Campbell, 1991).

Forestry enterprises in India present a bewildering range. In such circumstances, identification of Small Scale Forest based Enterprises (SSFE) where women play an important role cannot lead to the exact listing of such enterprises. Women's participation rate for each type of enterprises can be calculated. Participation rate of women is higher for those forest enterprises, which are dependent on usage of local skills and village level technology for collection, extraction and processing of forest products. The unit of

production in these enterprises is such that it can be pursued as a self-employment venture or a household enterprise or non-household cottage industry. Participation rate of women shows a significant decline when the type of technology used for extraction and processing of forest products becomes more mechanised. It is estimated that forest based enterprises provide a minimum of 1622.677 million days of employment. Of this, women contribute 571.851 days of labour. More than 90% of women's contribution to forest based enterprises are in small-scale sectors only. The study says that, uncertainty of market (in terms of demand and prises) and women's production at the lower end of technological spectrum is intrinsically linked (Khare, 1987).

A study on two different forest based small scale enterprises, collection and processing of uppage fruits and the craft of lacquerware in Karnataka, reveals how in both instances external changes have helped these FBSSEs (Forest Based Small Scale Enterprises) expand, opening up increased employment and income generating opportunities (Campbell, 1991). Changes in these FBSSEs have not distributed income and opportunities equally to women and men. In one case, women benefited because they were able to sell as much uppage rind as they could collect; but they were not able to rise above the lowest economic rung in the new profit ladder. In the lac-turnery industry, women were actually displaced or marginalised. In the uppage industry, most significantly, women remain at the lowest link of the value added chain, the lowest common denominator in terms of income earned. Men have filled the profitable openings.

Lacquerware business stems from three external sources. Women are kept out of the growth process though traditionally played an important role in processing. Commercialisation stimulates competition, attracts men and sidelined women. Increasingly organised collection restricts access to raw materials. The social systems in which uppage collections and the lacquerware workers operate, are male dominated. Through out the region there is a conspicuous difference in the wage rates of men and women, even for the same job.

As in traditional feudal systems, the local landlord or trader is inevitably the local collection agent for processed uppage, acting as a controlling link between collectors and the market. Increasing commercialisation, which occurs as markets develop and expand, stimulates competition from non-industrial groups and often attracts men. Although increased commercial demand for uppage rind has increased the number of people involved and the geographical range of collection activities, it has not significantly increased income levels or altered wage differences.

It is difficult for the women to take advantage of new economic opportunities for a number of reasons. The administrative procedures governing collection of NTFPs and the sale of raw materials automatically ensure the existence of middlemen and contractors, confusing women and marginal workers to a permanent role as collectors and sometimes, primary processors. Another institutional issue revolves around the role that organisations such as co-operatives can play in increasing the competition of FBSSEs to women's income. In the case of uppage collection, in Karnataka, the Bakkal society, a regional diary and agricultural produce marketing co-operative tried to enter the uppage trade. Given the factors upon which co-operative's success is contingent, there is no assurance that co-operative involvement with FBSSEs would benefit disadvantaged groups. (Campbell, 1991)

There is no doubt that Forest Based Small Scale Enterprises (FBSSEs) can play a substantial role in improving the livelihood of women and their families. FBSSEs can be especially effective in providing essential supplementary income, often during seasonal periods of critical shortage, creating a bridge between description and hope. Successfully FBSSEs can go much further, providing women with opportunity to take positive control over their economic situation.

Continuing growth of FBSSEs involves increased utilisation of forest products. Given the tremendous existing levels of extraction and degradation of forest resources world wide, it is particularly important to ensure that FBSSEs are linked to sustained management of the forest products they utilise.

Several studies have been conducted on the issues of commercial exploitation of NTFPs and other bio-diversity issues. Exploitation is heavy but no regard is paid toward ensuring regeneration of the concerned NTFPs. A study on Yamuna basin has shown that, NTFPs have been identified in two groups - those with high commercial value and those important for domestic purposes (Shiva and Mathur, 1996).

The rich and diverse heritage of traditional medicinal system in the subcontinent is increasingly threatened by the interplay of a number of factors. Rapid deforestation and habitat destruction; indiscriminate collection, the exploitative trade network; and the entry of cheap and spurious substitute in the market are a few among them. The paucity of research and lack of resources, directed at the systematic cultivation of some of these species are also responsible for this declining heritage. (Bajaj and Williams, 1995).

In order to stop reckless exploitation of the species and to remove middleman, who reaped maximum benefits but paid low rates to the villagers, in the northern districts of Uttar Pradesh which come under Yamuna basin, government decided to transfer the collection of NTFPs to the State Co-operative Federations. Later co-operatives called 'Bheshaj Sangh' were formed in each district. Bheshaj Sangh acts as the main trade channel out of the hills to the wholesale traders. (Shiva and Mathur, 1996)

In Himachal Pradesh, the majority of producers of 'anardana' generally prefer private traders to dispose off their produce because of lack of credit marketing linkage facility at government level. About 33 percent of total produce were marketed through the following channel, producer - village trader - primary and secondary wholesaler - retailer - consumer. 25 percent of the produce directly to the primary wholesaler from the producers. 27 percent of the product go directly to the secondary wholesaler from the producers. The share of producer in the final price was found higher, when the number of middlemen in the marketing system was less. (Sharma and Tewari, 1996)

In Kerala, inspite of all efforts by the State Federation of SC/ST Development co-operative and the Forest Department, the present marketing system of NTFPs (specially bamboo, canes other items) is still unorganised and often controlled by the private traders. But Kani tribes of Kerala could get sustained yields of NTFPs and because of centralised auction market, they obtained better remuneration for their products. (Shankar and Muraleedharan, 1996)

A recent study (Bajaj, 1997) attempts to capture the contribution of medicinal plants and non-timber forest products to the economy and lives of people in the areas from which they are gathered. Based on field survey of villages in the Mandi and Kullu forest circles of Himachal Pradesh, the study analyses the economic value of diverse NTFP based systems and estimates their relative contribution to the region's economy. It identifies collection and estimates the earnings of collectors and traders from the sale of herbs, and the value of the non-cash benefits from NTFPs to families. It also looks at the overall magnitude of the herbal trade in the two districts.

At the policy level, the above study identified three issues for closer scrutiny. First and most critically, the state of the natural resource base was examined in an effort to determine whether these levels of income as consumption was found between the species traded and those on the list of endangered and threatened flora suggesting that the trade is having a deleterious impact on non-timber forest resources.

Some of the issues that emerged from the studies reviewed in the context of forest based activities are as follows:

- ? Community involvement or participation is one of the important mechanisms to ensure better management of the local forest areas.

- ? Use of Non Timber Forest Produce is an important option for socio-economic development in rural areas. Collection of these forest produce usually falls under the 'informal' sector but strong linkages exist with modern sector for processing and trade.

- ? NTFP and MFP have major importance for women's employment, but only in collection and traditional home based activities. Moreover they occupy a low wage niche. Unfortunately women's participation declines as technology improves. Commercialisation stimulates competition and attracts men and women get sidelined.

- ? There is evidence of exploitation of women and marginal workers by middlemen and contractors. Co-operativisation of forest based small-scale enterprises would benefit these disadvantaged groups.

- ? However, this needs to be done with caution. In a number of cases, co-operatives have failed to provide adequate service and marketing is still controlled by private traders.

- ? The lack of infrastructural facilities for marketing compel the collectors to sell the produce at low price to middlemen.

- ? Rapid deforestation, habitat destruction, exploitative trade networks have made an adverse impact on rich variety of forest resources.

- ? Continuing growth of forest based small-scale enterprises involves increased utilisation of forest products. Therefore involvement of people is important for management of the forest in a sustainable manner both in terms of ecology and livelihood.

1.4 Methodology

The present study uses household surveys and sub-sector analysis to investigate some of these issues. Sub-sector analysis draws out linkages between types of enterprises, especially vertical linkages between formal and informal enterprises and measures value added and contribution of various agents at each stage. This method is very useful in capturing the whole process of trading from raw material to final product in a particular sector (Mahajan, 1997). Household survey help in understanding the nature of extent of the participation in forest based activities by different members of the household. Through the household survey method, valuation of labour input by the members of the household can be done to estimate member-wise contribution to the household income from this sector, as also their contribution to self-consumption by the household. This is necessary since large fractions of

the collected product not marketed and consequently, not accounted for in the National Accounts Statistics (NAS).

Very few studies have actually undertaken household survey. Household survey helps to estimate the actual income accumulated from the forestry sector. The present study has analysed the potential of a particular sub-sector (Herbal Medicinal Plants), in terms of employment generation and value addition in the context of market structure at every stage with special reference to women, adopting household survey.

1.4.1 Village and Household survey

The study was started with the identification of eight market nodes covering all the agro-climatic zones (for details on agro-climatic zones see section 3.1) of Himachal. From the study of road maps and physical maps, market nodes were identified, under the assumption of the presence of a market node where maximum number of roads meet. Eight village clusters have been selected through the backward linkages from these market nodes. (See Map 3) The locations of these village clusters are identified from the traders on the basis of their knowledge about the source and suppliers of the HMPs. This part of the study also helps to understand the market and structure of the trade also the way it functions. In the next phase, as a follow up of the first part, 14 catchment areas, which are the suppliers of HMP, are identified from the market nodes from its backward linkages and with the help of secondary information. The village clusters, where the people are collecting the medicinal plants for commercial purpose are selected from respective catchment areas to study the household structure and contribution of income from HMPs to the total household income. Importance has been given to estimate the gender-wise contribution of HMP sector in household income, employment and so on.

At the collectors' level, information has been gathered through questionnaire surveys at the household level as well as focus group discussions. Repeated visits have been made to the selected clusters. As a part of the methodology, a few key informants also have been interviewed to get further cues for gathering more information.

1.4.2 Market study with sub-sector analysis

The term sub-sector has been defined as the network of firms that supply raw materials, transform them and distribute finished goods to a particular consumer market. A sub-sector is thus a vertical cross-section of activities based on a primary resource, involving procurement, intermediate processing, manufacturing of finished products and their

distribution, including related and support services. There is thus more to a sub-sector than just the core manufacturing unit. It encompasses the whole gamut of units and individuals and engaged in related and support services, their employment potential and value addition. Also, in order to promote a sub-sector, it is important to understand not just the chain of value addition from the primary raw material to the ultimate consumer market, but also to understand the different constraints at each stage.

The sub-sector analysis framework identifies determinants of competitive advantage such as factor conditions, demand conditions of related and supporting industries, firm strategy, market structure and competition. Each of these determinants has many sub-determinants. The sub sector profile tries to assess the extent to which each of these sub-determinants is favourable or unfavourable to the growth of the sub-sector. Those sub-determinants which are the least favourable act as the binding constraints for the sub-sector. Policy and institutional efforts should first target these. The sub-sector profile also reviews regulatory, promotional credit and representational policies and institutions. This is done to indicate the focus of action required for promoting growth of the selected sub-sector, leading to increase in output and employment.

In order to understand the market structure of HMPs market in H.P. the following issues have been given importance.

i. Trading Routes: To study how the collected species are marketed and travel from one level of traders to others.
ii. Market Network: To study types and forms of Contracts between two traders from different levels. Entire system of marketing network. And competition and co-operation between the two levels of traders and collectors.
iii. Processing of HMPs: To understand the Processing (species wise) of HMPs in different trading levels and its importance in marketing.
iv. Price Structure and Mark ups: To study price of a particular species in different levels of trading. Profit maximisation and its relationship with information about demand and price of a species in higher level of markets.
v. Quantity of the HMPs marketed in H.P.: To study quantity of HMPs supplied by the village traders (species wise).
vi. Conservation: To understand the perception and awareness to conserve the forest resources in both household and trader level, with regard to long term benefits accumulated from HMPs.

Along with these main issues, some more issues have been looked into -

? Market linkages in both village cluster level and market level. Price structure and quantities supplied from different clusters.
? Information about HMPs found in H.P. and its demand outside the state in both community level and traders level.
? Market structure from the conservationists' point of view.

1.5 Sources of Data

Both primary and secondary data have been used for the study. The major part of the study, basically the household level and village level analysis, has been covered by primary data. The main source of primary data is extensive household survey in the selected village clusters. Along with, local traders and commission agents in villages and nearby towns, the nodal level traders and exporters also been interviewed by the investigators. The study has been substantiated by secondary data collected from both published and unpublished forest department documents and other government documents. Published books and reports were referred for data and information.

Map 1: Himachal Pradesh

Chapter Two

People and Forest in Himachal Pradesh

2.1 Settlement History of the State

Himachal Pradesh came into being as a part 'C' state of Indian Union on the 15th of April 1948, by integrating 31 big and small hill states. To start with, there were four districts, viz. Chamba, Masu, Mandi and Sirmour with an area of 27,169 square kilometres. In 1954, the neighbouring state of Bilaspur was integrated with Himachal Pradesh, thereby adding one more district with an area of 1167 square kilometres. In 1956, with the abolition of categorisation of states as part A, B, C etc. Himachal Pradesh was endowed with Union Territory status which continued till the conferment of statehood on 25th January, 1971. In 1960 and 1966, five new districts were formed by carving out a separate district and merging some hilly areas from Punjab by trifurcating of Kangra district.

The state is mountainous with altitudes ranging from 350 to 6975 meters. Himachal Pradesh is spread over an area of 55,673 square kilometres inhabited by its population of 5,111,079 persons who live in some 16,997 villages, and 58 small and large towns (Census, 1991). In the wake of numerous migrations to this hilly state, the numerous cultural strains have enriched the cultural heritage/tradition of the state in their style of living and faith. The traditions of Kulinds, Nagags and democratic Khasas, the customs of chivalrous Rajputs and nomadic characteristics of the Huns, Gaddis and Gujjars are mingled in the way of life of Himachalis.

The main tribes in Himachal Pradesh as per official list are Gaddis, Gujjars, Kinnaurs, Jads, Lambas, Khampas, Bhots, Lahaulas, Pangwals and Swanglas. The tribes of Himachal Pradesh like that of India are unique in respect of their culture and traditions. These tribes are mostly found in the districts of Chamba, Kangra, Mandi, Bilaspur, Shimla, Sirmour, Kinnaur, Lahaul and Spiti.

The people of Himachal Pradesh largely depend on agriculture, as about 91 percent of them are directly or indirectly dependent on it. Having diversified from agriculture, the horticulture is assuming the prime role in raising the potential income of the people from fruits like apple, almond and kinnow. The sheep and goat rearing prevails in the higher cold zones.

The strong family affinities exist and people are mostly attached to joint family system. Their environments have in fact, greatly influenced the social status of women. The brave, sturdy

and self-reliant women of the state enjoy a greater degree of freedom comparatively elsewhere in the country (Chauhan, 1998). Most of the women are still agrarian based.

2.2 Demographic Profile

The total population of Himachal Pradesh, according to 1991 census was 51,70,877 and it gave a density of population at 93 persons per square kilometre. There are wide variations in area and population figures of the districts and the district-wise density varies from 2 persons per square kilometre in Lahaul and Spiti to 330 persons in Hamirpur district. The number of females per 1000 males is 976. The sex ratio of females per thousand males has been constantly rising in Himachal Pradesh since 1961 census. (Census, 1991)

The population of the state registered a growth of 20.79 per cent as against 23.56 per cent at all India level during the decade 1981-91, thus recording a decline of 2.92 per cent as compared to the preceding decade 1971-81.

During 1991 census the literacy percentage in Himachal Pradesh increased to 63.86 from 51.17 in 1981 census. Males 75.36% and females 52.13%.

2.3 Urbanisation and Industrialisation

Himachal Pradesh is primarily a rural state. By 1991 census, 47,29,681 persons or 91.31% of the populations lived in rural areas. However, the percentage of the population living in certain areas has been steadily going up from 7% in 1971 to 7.6% in 1981 to 8.69% in 1991. 66.91% of population in Himachal Pradesh depend on agriculture.

Industrial development in Himachal Pradesh made a beginning after the formation of statehood. In 1977, there were seven medium scale units mostly in Public sector and about 4000 small scale and tiny units spread all over the state. The government encouraged the industrialisation in the state by granting lucrative incentives to the entrepreneurs. As a result, industrialisation process spread rapidly and today the state has 155 large and medium industrial units and about 2500 small scale and tiny units which together accounts for about 1982 crore investment creating employment opportunities to about 1.25 lakh persons. (Annual Plan of H.P. 1997-98)

The state government announced a new industrial policy in 1996. The new policy focuses on dispersal of industrialisation in backward regions and providing of incentives to entrepreneurs. The new policy has also considerable emphasis for the encouragement of small units.

Much of industrial activity in Himachal is related to agro-processing and located in rural areas. The contribution of the secondary sector to state domestic product increased from 16.73% in 1970-71 to 25.03% in 1990-91 (Ninth Five Year Plan, H.P., p.12). Thus compared to the national average, both urbanisation and industrialisation indices are lower in Himachal, although in terms of per capita incomes, the state very close to the national average.

2.4 Land Resources/Land Use

The biological status of lands held in private has changed significantly in the past hundred years. The economy of the state, which was significantly dependent on pastoralism, has made a move towards a transformation of the private lands, even in the remotest villages, into thriving commercial ventures. The change has come abruptly, over a few decades, barring from technological advances of the green revolution in Punjab, and otherwise along with the rapid changes being brought in the social and natural landscape through the march of development in the state. The most significant change has come in the way that the role of private lands in the economic life is perceived. Besides, a significant proposition of private holdings was devoted to the production of grass and leaf fodder. Cultivation was restricted to the subsistence crops that were coarse and did not have significant market value. Soon another dimension was added to the problem with the switch over to cash crops. (Navrachna, 1997)

Commercialisation of land use has been made at the cost of cultivable land under food and fodder crops. This has a profound impact at two levels. At first, it has made the cultivation extremely dependent on the market in two ways; (i) the farmers became dependent on a more commercialised market; (ii) the import of food grains from outside the state was increased. Even fodder started coming from the Punjab in large scale.

2.5 Extent and Types of Forest in the State

Almost the whole of Himachal Pradesh is mountainous except for small valley areas. Due to it the state is bestowed with a diversified and rich flora and forests constitute one of the most important renewable resources in the state.

Forest land in Himachal cover an area of 35,578 square kilometres and form about 67.5 per cent of the total geographical area of the state. The green forests cover an area of 21324.13 square kilometres under different types of forest species thick or scattered, as per legal definition, and constitute about 38 per cent of the total geographical area.

Table 2.1: Forest Classification by Legal Status

Status	Area (in sq. km.)	Percentage to total
Reserved Forests	1896	5.30
Demarcated Protected Forests	11385	32.10
Un demarcated Protected Forests	20156	56.70
Unclassed Forests	684	1.90
Other managed by Forest Dept.	812	2.30
Not managed by Forest Dept.	585	1.70
Total	35578	100.00

Source: Himachal Forests 1998, Forest Dept. H.P.

However, the effective forest cover is much lower than this area primarily on account of the fact that a very large area is either alpine meadows or is above the tree line. In reality, hardly 17 percent of the area that are under tree cover can really be termed as forests. As per state forest report, 1995 an area of 12,501 square kilometres is actual forest area with density ranging from 10% to 40% and above. This is constituted by 9,565 square kilometres of dense forests, having a crown of 40% and above and 2,936 square kilometres with crown density between 10% to 40%. In addition to this 1845 square kilometres has been described as scrubs. The total green cover and remaining area is covered with only emaciated bush growth due to excessive grazing and other biotic influences. Increase in human and livestock population, spread of agriculture, building of dams, reservoirs and canals, construction of roads, supply of wood for apple boxes etc. have contributed to depletion of forest cover in the state.

According to National Forest Policy at least 60 percent of the geographical area in a hilly state like Himachal should have been under the forests to fulfil both protective and productive functions.

Table 2.2: Actual Forest Cover by Different Types

Types	Area (in sq. km)
Tropical Deciduous Forests	2272
Tropical Thorn Forest	45
Sub-tropical Pine Forests	4088
Sub-tropical Dry Evergreen Forests	500
Himalayan Moist Temperate Forests	4313
Sub-Alpine and Alpine Forests	1283
Total	12501

Source: H.P. Forest Statistics 1996, Forest Dept. H.P.

2.6 Nature of Workforce with Reference to Forest based Activities

There exits a serious under-counting for this sector in census data. The collection of medicinal plants and other minor forest produces, which come under the forestry sector, is

not the primary occupation of the people in Himachal Pradesh. Therefore, the main worker category does not reflect peoples' involvement in this sector. What is more, the census can not capture the employment in this sector even through the marginal workers category, since this category can accommodate only one activity. As this particular activity is rarely ever carried out to more than four months in a year, it is generally left out altogether from census categories.

The mainstay of the people of Himachal Pradesh is agriculture on which 66.71 percent of the population depend. The topography being mostly hilly, the type of cultivation is terraced. Close to 80 percent of all holdings fall in the category of small and marginal farms. Due to ideal climate for fruit cultivation, horticulture has developed rapidly during the past three decades. Percentage of main workers to total population is 34.19 and the percentage of cultivators to total main workers is 63.66 (of which 61.8% is male). The percentage of female cultivators among total female main workers is more (87.23) than among males' (54.55). The percentage of agricultural labourers to total main workers is 3.32, which is much lower than the national average. The percentage of male agricultural labourers among the total main male workers is 3.83, which is more than the females (1.98 %). Only 2.49% of persons among total main workers are engaged in livestock, forestry, fishing, plantations and allied activities. However, it needs to be noted that this sector engages a large number of the workforce on a seasonal / part time basis.

The percentage of marginal worker is 1.59 to the total population. Among the total marginal workers 78.46 percent persons are cultivators. Unlike the main work force, here in marginal working force, lesser number of females (72.24%) are working as cultivators compare to the males (87.67%). But on the other hand, comparatively more number of women (3.63) are engaged in forestry and allied activities than the men (0.97). Though the overall participation in this job is very low only 2.55 percent among all marginal workers.

Table 2.3 shows that in the main worker's category 'livestock, forestry, fishing, hunting and plantations, orchards and allied activities' is fully dominated by men (91.88 %), where as in marginal workers' category the presence of women are more, that is 54.92 percent.

Table 2.4 presents the sector wise participation of female-male workers in different districts. It can be seen that 38 to 71 percent males and 75 and 93 percent females are absorbed as cultivators across the districts in Himachal Pradesh. Females, working as agricultural labourers are as low as 1.98 percent where as male percentage in this category is 3.83 percent. In the forestry sector, male participation varies between 1.53 percent in Hamirpur district to 6.71 in Shimla district. The female participation varies between 0.08 to 2.32

percent across the districts. As a whole out of the total main workers only 2.5 percent are involved in this sector.

It is interesting to note that under livestock, forestry and allied activities highest percentage of male participation is from Shimla, Kangra and Mandi districts. (see table 2.5) Women's participation in this sector is much lower as compared to male.

The three-digit classification of main and marginal workers by NIC codes have been studied in this respect. Even here a massive under-estimation of this sector has been noticed. In 3-digit classification, 054 is the category, where employment in gathering of uncultivated materials such as gums, resins, barks, herbs, wild fruits and leaves from forest is concerned. This is the most important category, as far as collection of medicinal plants is concerned. In this category, in all over Himachal Pradesh, only 957 persons have been identified as main workers, in 1991 census. Where as only 7 persons are identified as marginal worker in this sector. This is obviously misleading, as the number of workers engaged in these activities come out to be much larger in micro studies conducted in different districts of the state. (See Appendix III, for a detailed table)

As noted above, this serious under-estimation occurs due to the nature of multiple activities in this sector. In census accounting and even in the accounting of NSS, when this type of marginal activities are taken care of, only the first one or two important activities are considered. Unless more activities are included in the counting, the potential of the sector as employment and income generator will continue to be neglected. The importance of multiple activities can be studied properly by the micro studies. Through household survey method, the actual employment in this sector can be estimated correctly. The present study captures the dependence of rural people on this sector in different corners of Himachal Pradesh. The study shows that people in areas with subsistence agriculture are much more dependent on forest resources than is revealed through Census or even NSS figures.

Table 2.3 : Distribution of Main and Marginal Workers in Himachal Pradesh by Census Industrial Categories and Sex in 1981 and 1991 Census

	Cultivators	Agricultural Labourers	Livestock forestry, fishing, hunting and plantations, orchards and allied activities	Mining and quarrying	Manufacturing, processing, Servicing and repairs		Construction	Trade and commerce	Transport, storage and communication	Other services	Total
					Households Industry	Other than hhs. industry					
Main											
Male	695618	48891	40392	4543	21845	61430	82361	75312	33583	220677	1275207
	(61.81)	(83.60)	(91.88)	(98.37)	(85.91)	(92.99)	(95.54)	(96.24)	(97.77)	(86.13)	(72.13)
Female	429693	9777	3565	75	3582	4624	3885	2941	756	35514	492617
	(38.18)	(16.71)	(8.11)	(1.62)	(14.08)	(7.00)	(4.50)	(3.75)	(2.22)	(13.86)	(27.87)
Total	***1125311***	***58478***	***43957***	***4618***	***25427***	***66054***	***86202***	***78253***	***34348***	***256191***	***1767824***
Marginal											
Male	29070	2464	320	10	223	245	313	154	90	270	33159
	(45.07)	(45.07)	(45.07)	(45.07)	(45.07)	(45.07)	(45.07)	(45.07)	(45.07)	(45.07)	(40.34)
Female	35422	9773	1779	10	766	427	67	158	12	621	49035
	(54.92)	(54.92)	(54.92)	(54.92)	(54.92)	(54.92)	(54.92)	(54.92)	(54.92)	(54.92	(59.66)
Total	***64492***	***12237***	***2099***	***20***	***989***	***672***	***380***	***312***	***102***	***891***	***82194***
All											
Male	724688	51355	40712	4553	22068	61675	82674	75466	33673	220947	1308366
	(60.90)	(72.62)	(88.39)	(98.16)	(83.54)	(92.43)	(95.48)	(96.05)	(97.74)	(85.94)	(70.72)
Female	465115	19550	5344	85	4348	50511	3952	3099	777	36135	541652
	(39.09)	(27.64)	(11.60)	(1.83)	(16.45)	(7.51)	(4.56)	(3.94)	(2.25)	(14.05)	(29.28)
Total	***1189803***	***70715***	***46056***	***4638***	***26416***	***66726***	***86582***	***78565***	***34450***	***257082***	***1850018***

Source: Census 1981 and 1991.

Table 2.4 : Gender wise Distributio n of Main Workers within each Industrial Category in Different Districts of Himachal Pradesh

	Bilaspur		Chamba		Hamirpur		Kangra		Kinnaur		Kullu		Lahul & Spiti		Mandi		Shimla		Simaur		Solan		Una		Himachal Pradesh		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Cultivators	59.30	91.93	63.22	81.95	46.02	92.63	46.14	78.46	40.72	82.45	70.91	91.80	38.42	75.91	62.68	92.36	47.33	86.55	64.20	91.04	48.10	80.48	50.13	74.65	54.55	87.23	**63.66**
Agricultural labourers	1.64	0.51	1.05	1.18	2.40	0.73	6.55	3.48	4.96	5.46	2.64	1.55	3.60	7.98	1.60	1.12	3.99	2.30	3.92	1.90	2.19	1.50	8.53	4.36	3.83	1.98	**3.31**
Livestock forestry, fishing hunting and plantations, orchards and allied activities	2.12	0.21	3.68	1.39	1.53	0.08	2.62	0.71	3.86	1.24	2.42	0.42	4.71	2.32	2.44	0.28	6.71	1.75	2.59	0.14	2.82	0.80	1.93	0.65	3.17	0.72	**2.49**
Mining and quarrying	0.14	0.06	0.26	0.07	0.10	0.00	0.76	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.15	0.01	0.04	0.01	1.33	0.02	0.24	0.01	0.05	0.01	0.36	0.02	**0.26**
Manufacturing, processing, servicing and repairs																											
(a) Households industry	1.82	0.61	1.33	0.81	2.44	0.59	2.44	1.90	3.57	1.24	1.23	0.74	0.72	0.85	1.58	0.55	0.64	0.15	1.42	0.27	1.49	0.67	2.30	1.81	1.71	0.73	**1.44**
(b) Other than hhs. industry	4.56	0.49	1.91	0.71	4.25	0.24	4.47	1.60	2.08	0.43	2.08	0.67	0.67	0.60	2.62	0.35	2.53	0.26	6.41	0.95	15.03	4.43	8.14	4.04	4.82	0.94	**3.74**
Construction	6.00	0.24	9.52	1.53	6.55	0.34	5.96	0.99	15.40	3.98	3.21	0.51	16.05	5.43	6.42	0.28	7.37	1.04	4.51	0.14	6.23	1.24	4.49	0.46	6.46	0.79	**4.88**
Trade and commerce	4.97	0.43	4.30	0.71	7.79	0.39	7.08	0.86	3.36	0.21	4.50	0.62	2.73	0.75	4.99	0.32	7.11	0.79	4.16	0.43	6.24	1.13	6.43	0.56	5.91	0.60	**4.43**
Transport, storage and communication	2.73	0.11	1.46	0.16	3.60	0.09	3.12	0.24	1.26	0.05	1.51	0.05	1.78	0.07	2.37	0.07	3.17	0.29	1.71	0.06	3.26	0.25	2.80	0.29	2.63	0.16	**1.94**
Other services	16.82	5.41	13.27	11.48	25.07	5.43	20.81	11.97	24.73	4.92	11.46	3.64	31.32	6.08	15.15	4.65	21.11	8.46	9.75	5.04	14.46	9.49	15.21	13.48	17.31	7.21	**14.49**
All	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source : Census of India 1991.

Table 2.5: Gender-wise distribution of main workers in livestock, forestry and allied activities across the districts in Himachal Pradesh

District	Workforce	Livestock, forestry, etc*	Distribution
Bilaspur	91672	**1489 (1.62)**	**3.39**
Male	67956	1440 (2.12)	3.28
Female	23716	49 (0.21)	0.11
Chamba	**128018**	**41154 (3.24)**	**9.45**
Male	103597	3815 (3.68)	8.68
Female	24421	339 (1.39)	0.77
Hamirpur	**110256**	**1152 (1.04)**	**2.62**
Male	73479	1124 (1.53)	2.56
Female	36777	28 (1.53)	0.06
Kangra	**323420**	**7253 (2.24)**	**16.50**
Male	259555	6799 (2.62)	15.47
Female	63865	454 (0.71)	1.03
Kinnaur	**33723**	**1010 (2.99)**	**2.29**
Male	22596	872 (3.86)	1.98
Female	11127	138 (1.24)	0.31
Kullu	**128338**	**2210 (1.72)**	**5.02**
Male	83801	2024 (2.42)	4.60
Female	44537	186 (0.42)	0.42
Lahaul & Spiti	**16954**	**655 (3.86)**	**1.49**
Male	10955	516 (4.71)	1.17
Female	5999	139 (2.32)	0.32
Mandi	**290851**	**4763 (1.64)**	**10.84**
Male	182592	4457 (2.44)	10.14
Female	108250	306 (0.28)	0.70
Shimla	**265986**	**13374 (5.02)**	**30.43**
Male	176405	11828 (6.71)	26.91
Female	89581	1546 (1.75)	3.52
Sirmour	**152296**	**2876 (1.89)**	**6.54**
Male	108604	2814 (2.59)	6.40
Female	43692	62 (0.14)	0.14
Solan	**133728**	**3200 (2.39)**	**7.28**
Male	105311	2973 (2.82)	6.76
Female	28417	227 (0.80)	0.52
Una	**103858**	**1821 (1.75)**	**4.15**
Male	89829	1730 (1.93)	3.94
Female	14030	91 (0.65)	0.21
Himachal Pradesh	**1779100**	**43957 (2.47)**	**100.00**
Male	1284679	40392 (3.17)	
Female	494421	3565 (0.72)	

Source: Census, 1991.

* *Livestock, forestry, fishing, hunting and plantations, orchards and allied activities Figure within brackets in the third column indicates the percentage of the second column.*

2.7 Dependence of Rural Folk on Forest

The variety of 'people and nature' interface in Himachal Pradesh is seen along with the rich diversity of livelihoods; livelihood strategies across the state; diversified flora and fauna and other geo-physical characters ranging from sub-montane, sub-tropical tracts to moist and dry temperate zones and the cold desert across the cities, towns, villages and vast uninhabited areas. The ecological niche and livelihood strategy is primarily an integral part of

the subsistence livelihoods, are present as customs or traditions, which are increasingly becoming irrelevant in the face of codified law.

Local communities have had the longest claim on the natural resources around habitations, especially forests. The dependence ranges from settled pastoralism dependent on local pastures and fodder resources to nomadic pastoralism to higher pastures. Besides agricultural land and pastures, local communities have also been dependent on resources for construction, food, fibre, fertiliser, fuel-wood and medicinal plants.

The forests, besides providing land for expansion of agriculture, were exploited for wood for implements and leafy bio-mass for manure. Besides agriculture, pastoralism has played a major part in the subsistence patterns in Himachal. Cattle, goats, sheep, horses, mules and yak are kept in the villages and grazed in nearby pastures and forests. In many areas these animals are taken to higher forests and alpine pastures in the summer and monsoons. Dependence on nature (forests) for pastoralism has also historically been high and diverse. It varies greatly over different regions and time, but broadly it can be divided into two categories - grazing and collection of fodder.

The use of timber in house construction has traditionally been high in the areas receiving snow, whereas it was very limited in the low-lying areas. Fodder comes from the forests and has been restricted to a few preferred species like deodar, kail, toon etc. Interestingly, shisham a very good timber species, was not used for house construction in large parts of Himachal as its use was reserved for cremation of the dead.

The existence of a local health tradition in Himachal Pradesh is ancient and is manifested through the traditional healers across the state. However the knowledge base of the local traditions is diminishing with the decline in the number of practitioners, and has been rendered redundant by the non-availability of local extinction of most medicinal plants. Bee keeping for household consumption has been a regular practice across the state. In many villages people use banafsha (viola odorata), rakhal (Taxus baccata), chora (Angelica glauca), Kinnow, patela etc. as food.

Prior to state take-over of forests for "scientific" management, forests were largely under the control of local communities. With the exception of exclusion from hunting reserves and, in some cases a grazing tax, state interface was minimal, and the people were left to devise and implement mechanisms to apportion the forest resources amongst themselves. Notwithstanding the onslaught changes in the nature people state interface, remnants of the traditional systems can still be found in a surprisingly robust state and spread over a large area of Himachal.

2.8 Key Issues in Himachal Forest Act: Some Observations

Himachal Pradesh was granted its full statehood in 1971. Prior to that a series of reformation had been taken place in the state. (See section 2.1.1 for details on formation of the state) Coming together of areas from different historical backgrounds has been responsible for somewhat differing systems of administration and rights one comes across in the different districts and zones of the state.

In what may be considered as a departure from colonial history in other parts of the country, the settlement for the native states like Kullu and Rampur resulted in not the termination but the formalisation and acceptance of local people's extensive customary use in forests as codefied rights. As per the settlement reports, the following rights could be exercised without permission — to cut grass, to remove medicinal plants or roots, fruits, flowers, dry fallen wood (except of specified species of commercial value e.g. deodar, walnut, box and ash), to cut bamboo, and to take splinters of deodar and kail stumps. The settlements till date detail out access and use for each forest and specify, among other things, species that can be collected without permission. Local administrative arrangements prevailing prior to the settlement, such as provision for *'kothi funds'* etc. were allowed to continue and do even today by which the panchayat levies fees on the extraction of medicinal herbs for sale by local right-holders. (Navrachna, 1997)

The forest settlement of Mandi, Kinnaur, Solan, Rohru took place in 1904. Since Mandi was a princely state during the time of the settlement, the rights of the local Rajas and jagirdars (which were quite extensive) were protected. However, the tenant farmers were allowed usufruct rights to forests.

Thus, historically people in most parts of Himachal have enjoyed vast and unfettered rights on their forests and these systems have been incorporated for the major part into the formal systems.

No uniform legislation governs the collection and extraction of non-timber produce in the state and separate legislation exist for the local forest settlements in each area. Normally the right to collection and sale is vested entirely with the local right-holders or the *bartandars* who may or not be required to pay a nominal license fee or royalty for collection. In some areas of Kullu, royalty rates are determined and collections made by local panchayats. In most parts the panchayat's role is limited to granting permission to local contractors or agents to procure herbs from right-holders who in turn are allowed to collect these forest produces free of charge and sell them.

Export of herbs by the contractors is better regulated. The salient pieces of legislation relating to this were framed separately for Chamba and Mandi districts and were as follows:

1. The Chamba Minor Forest Produce Exploitation and Export Act, 2003 (1947)
2. Forest Produce Export Rules, Mandi 1956.

By, tradition, the above rules are applied to govern the export of medicinal and aromatic plants from the rest of the state as well. Under these rules Divisional Forest Officers are empowered to issue transit/export permits depending on the ground conditions regarding availability of the produce.

Herbs could be exported out of the state only by the traders subject to the provision of the Himachal Pradesh Forest Produce Transit (Land Routes) Rules, (1978) which decrees a species wise structure of permit fees to be paid by the exporters. In an important amendment to these Rules in August 1933, the right-holders were given the right to transport the forest produce for the purpose of marketing any where within the state and a substantial revision of the hitherto nominal fee structure was carried out, also bringing into its purview a total of 42 species and levying export fee rates reflecting the market prices of these species. These rates range from Rs. 25 to Rs. 10,000 per quintal for different species. (see section 6.2, Table : 6.2) This is roughly 10 percent of price at the final market for most of the herbs.

The extraction and sale of herbs in the state is also subject to the provisions of the Wildlife (Protection) Act, 1972 (including subsequent amendments). No person shall cultivate a specified plant except under proper licence granted by the Chief Wildlife Warden. (Chapter III A, Wildlife Protection Act, 1972) Section 17A of the Act prohibits wilful 'picking, uprooting or collection' from any forest-land. To possess, sell, transfer by way of gift or transport of any specified plant, whether alive or dead is also prohibited. Section 17E of the Act states that "every person cultivating or dealing in a specified plant...should declare...his stocks."

2.9 Role of People and Panchayat in Managing Village Forest

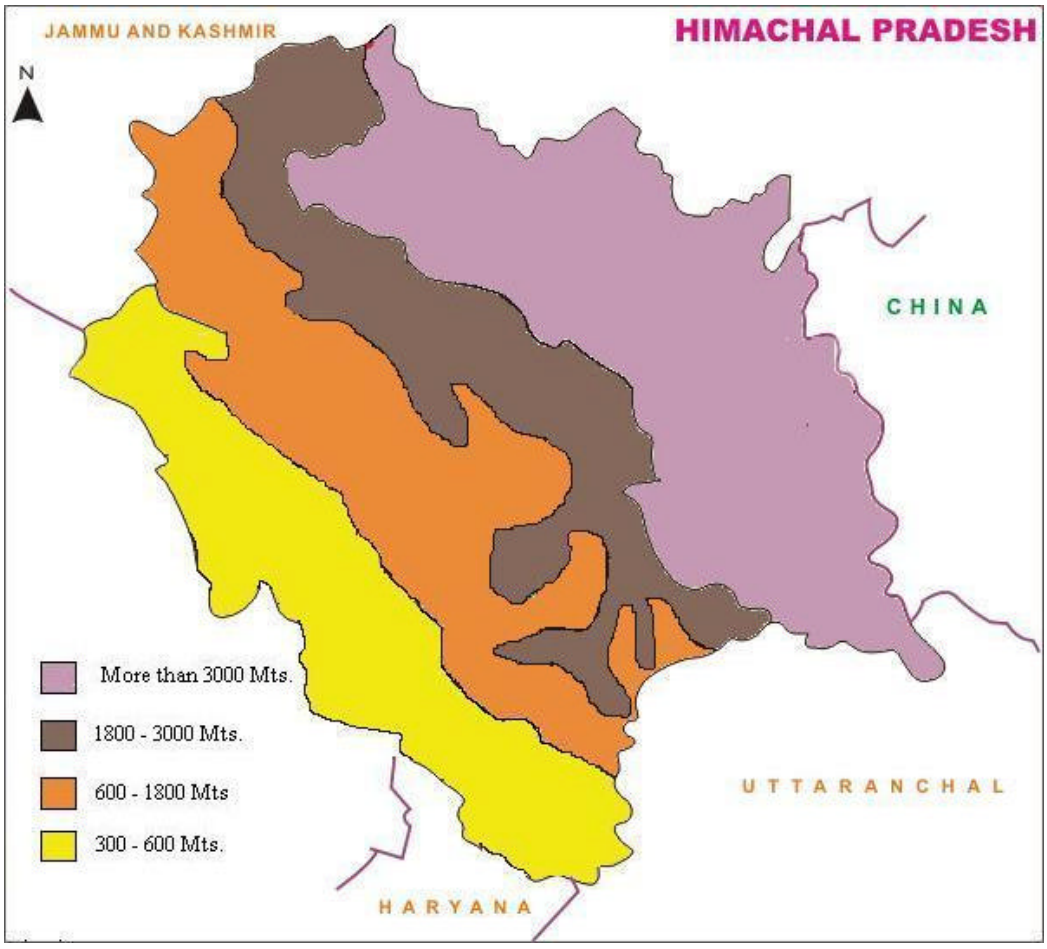
In the course of field investigation it has been found that, the law of extraction of medicinal plants varies from district to district. These varied laws are the results of the state's pre-independent history of different administration in different areas. In the post-independent period, the over exploitation of forest produces compelled the forest department to formulate some micro plans in various administrative units to check the over-exploitation of forest resources with a sharp vigil even for future years. Each divisional micro plan has been developed for that particular division, with the consideration of local social, economic and ecological characteristics has been taken care of. The implementations of these micro plans again have sharpened the differences of rights in the state. Though, it should be mentioned that the basic rights are same across the districts.

It has been found that, in Kullu district the *bartandars* (the right-holders for collection of forest resources) are free to collect any volume of medicinal plants without informing the forest department. Here, the restrictions have been put on the collection of few of the species, which are considered as in 'vulnerable state'.[2] In Kullu, the people who are interested to export the medicinal plant species from the state, should obtain a written permission from the concerned panchayat before he applies to the Divisional Forest Officer for final permission of export by paying an export levy. Where as, in Chamba district the rules of collection are bit different. Here the right holders seek for the permission of collection from the concerned Forest Range Office, thorough a written application forwarded by panchayat. They can only obtain such kind of licence for a period of fifteen days of collection and that is also in the stipulated collection season, set by the Forest Department, by paying only one rupee. The licence can be obtained only for one maund in one season.

In some parts of Shimla and Kinnaur district, the extraction of medicinal plants by employing wage labourers are often done by the contractors. In Kinnaur district large areas of private forest-lands are leased out to the contractors, who in turn extracts various forest produces from the forest by employing wage labourers. Recently in a few incidences local people have objected the action of employing Gurkha labourers to extract medicinal plants.

[2] A large number of medicinal plant species found in H.P. are considered as highly threatened or endangered and an equally large set is in vulnerable/likely to be endangered category. (Bajaj,1997)

Physical Map of Himachal Pradesh



Chapter Three

Spectrum of Medicinal Plants in Himachal Pradesh

3.1 Important Catchment Areas of Medicinal Plants

In Himachal Pradesh, both climate and altitude are considered as important factors in deciding the growth of vegetation of an area. The vegetation of the state consists of two basic types - tropical and temperate. However the additional factor couples further division of these two very broad categories into four smaller areas which have a similar but specific types of vegetation. The four ecological zones are:

I. Sub-montane and low hill sub-tropical Zone (Una, Hamirpur, Kangra, Solan, Sirmour)
II. Midhill subhumid zone (Chamba, Mandi, Kullu, Kangra)
III. Highhills Temperate wet zone (Chamba, Pangi, Kullu, Kinnaur, Shimla)
IV. Highhills Temperate Dry zone (Kullu, Kinnaur, Kangra, Lahaul & Spiti, Shimla)

These zones have their own specific agro-climatic and ecological factors which result in the habitation of different species of medicinal plants in each zone. The growth of HMPs is spread over these ecological zones with more concentrated vegetation in few areas. The important catchment areas of medicinal plants have been identified, as far the growth and trades of these species are concerned. These areas are also strategically significant in the medicinal plant trade.

Chart 1: Ecological Zones and Resource Catchment Areas

Ecological Zones	Resource Catchment Areas
1. Submontane and Lowhills	Changar
2. Midhills and Subhumid zone	Dhauladhar, Karsog (Shikari Devi)
3. Highhill Temperate wet zone	Pangi, Churah, Kinnaur, Upper Beas catchment, Upper Ravi Catchment, Sainj-Tirthan Valley, Parvati Valley, Dhauladhar
4. Highhill Temperate dry zone	Spiti, Lahaul, Kinnaur, Churah, Upper Beas, Upper Ravi, Sainj-Tirthan valley, Parvati, Dhauladhar

Source : Navrachna.

These zones however cut across revenue and forest division boundaries, therefore district and circle data have to be suitably modified in order to understand the actual quantum of herbs being extracted from each ecological zone.

Important medicinal plants, found in the zone I, are Bahera (*Terminalia spp.*), Amla (*Embelica offcinalis*), Khair (*Acacia catechu*), kakarsinghi (*Pistacia integerrima*) and kashmal (*Berberis spp.*). The important medicinal plant species found in the zone two are singli-mingli (*dioscorea deltoides*), Bach (*Acorus calamus*), Banafsha (*Viola serpens*), Brahmi (*Centella asiatica*), kashmal (*Berberis spp.*) and kakarsinghi (*pistacia integerrima*).

A wide variety of wildlife, medicinal and aromatic plants and other genetic resources are found in the highhills of wet temperate zone. The gathering and sale of high value medicinal plants from the surrounding forests as well as pasture-lands above settlements has traditionally been an important source of cash income in these areas. The important medicinal plants are Gucchi (*morchella esculenta*), Mushakbala (*valerina wallichii*), Belladona (*Atropa spp.*), Chora (*Angelica glauca*), Bichhu buti (*Geradiana heterophyllus*) and kapoor kachri (*Hedychium acuminatum*)

The most important species collected from zone IV (Highhills dry temperate zone) are dhoop (*Jurinea macrocephela*), Patish (*Aconitum spp.*), Rewand chini (*Rheum emodi*), Dorigrass (*Potentilla nepalensis*), Salampanja (*Orchis latifolia*), salam mishri (*Polygenatum vertiuilliem*), sathjalori (*Ainaliaea aptra*), karoo (*Picorhiza kuroo*), bankakri (*Podophyllum emodi*), kashmiri patta (*Rhododendron compannlatum*), kuth (*Saussurea lappa*), Seski (*Artemesia spp.*) and Thuth (*Polygenatum vertiuilliem*).

3.2 Methods and Seasons of Extraction

The extraction belts can be broadly divided into two - the forests and the alpine pastures. The collectors have different sets of techniques for the extraction of herbs from the two zones. Herbs growing in the vicinity of farmlands and in the local forests are collected by men, women and children alike in tandem along with their other tasks like gathering fuel and fodder or grazing it, the women are responsible for the collection of larger quantum of herbs from the local forests.

Chart 2: Seasonal Calendar for collection of different medicinal plants in Himachal Pradesh

(Zone 1 & 2)

Herbs	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Bach			*****	*****	*****							
Banafsha				*****	*****	*****	*****					
Brahmi				*****	*****	*****			*****	*****	*****	*****
Dioscorea							*****	*****	*****	*****		
Harar, Bahera, Amla	*****									*****	*****	*****
Kakar singhi									*****	*****	*****	
Neelkanthi								*****	*****			
Patela							*****	*****	*****	*****		
Tejpatta	*****	*****	*****									*****

(Zone 3 & 4)

Herbs	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Dhoop, Ratan Jot								*****	*****	*****		
Gucchi, Kashmiri Patta				*****	*****	*****	*****					
Panja, Karoo, Patis								*****	*****	*****		
Kuth, Thuth, Mathosar,								*****	*****	*****		
Salam mishri, Van kakri							*****	*****	*****	*****		
Mushakbala						*****	*****	*****	*****			
Rakhal									*****	*****	*****	
Sapdotri							*****	*****	*****	*****		
Mehandi							*****	*****				
Chora								*****	*****	*****		

Source: ISST Survey 1998 and Navrachna

The collection of the herbs from the alpine pastures and distant forests is considered to be a specialised task undertaken by physically stronger and young members. The men leave in groups with bags stocked with food and bedding for the long journey. The grazing of cattle is usually combined with the extraction activity. The collectors gather and dry the herbs on the alpine pastures, and from there begin the tough journey home with the heavy load of the collected herbs. Along with herbs for marketing, these men also bring home other plants with either medicinal or religious use in the household. In some instances, women also join the men folk on their trekking to the alpine pastures for collection of the herbs.

The seasonal pattern of collection varies considerably with the bulk of collection concentrated between March and November and coinciding and interspersed with agricultural and livestock activities. Premature and destructive extraction also takes place due to the open access to all collecting villages as also a competition for resources within the collectors of a village.

The collectors generally take out the entire plant from the earth collecting the underground part of the plant. In some cases barks and leaves are collected from big or medium size trees.

The seasonal pattern of bulk collection of different medicinal plants varies among regions. The overall extraction season across the districts concentrates between March and November and coinciding and interspersed with agricultural and livestock activities. This competition for time leads to a deferred extraction time, other than those considered best suited for extraction of herbs. Pre mature and destructive extraction also takes place due to the open access to all collecting villages as also a competition for resources within the collectors of a village. A composite picture of the timing of collection of herbs in high altitudes is presented in Chart 2.

3.3 Community vs. Official Efforts in Conservation of HMPs

The growing demand for rare Indian herbs in the ayurvedic and cosmetic industry inside and outside the country is a cause for concern to environmentalists, who fear this burgeoning demand might soon lead to the total extinction of wild plants from their natural habitat. Unfortunately there is little or next to no statistical data available on many of these slow-growing wild species. Several of these cannot be grown artificially without leading to a loss of their medicinal properties, according to experts in the field.

Himachal has witnessed one of the oldest initiatives in involving local communities in natural resource management in the form of forest co-operatives in Kangra. In the post-

independence era, community involvement was first envisaged under the social forestry programme in the form of protection of fuel-wood plantations on community land. In 1993, the state government issued an order regarding the involvement of local communities in rehabilitating degraded forests in a programme widely known as joint forest management.

A number of traditional efforts in the extraction of natural resources are visible in rural areas of Himachal Pradesh. Unfortunately, barring areas in Chamba, Kullu, Mandi and Kinnaur, such traditional practices are no longer visible in the state. Traditional efforts in conservation had received a big blow in areas where they have come to a direct conflict with the interest of the collected or the trader, as a possible source of higher income.

The Forest settlements clearly define and identify which groups of people have rights and concessions in which particular forests. Subsequently, the people amongst themselves by mutual consensus have further sub-divided the forests and common lands. These agreements are mostly informal and still form the basis in some parts of Kullu and Shimla (Rohru) and many parts of Chamba and Kinnaur. This system of division of rights has played a major role in resolving the conflicts between the collectors of the same village. Since the extraction area is divided, the collectors sit together and decide on a date for collection as well as the approximate number of days for which the extraction will go on, so that the collectors get equal opportunity.

In many panchayats of Kinnaur like, Raksham, Kamru, Chitkul, Baspa valley, the ***'Devta Committee'***[3] decides the date of initiation of the extraction season. The committee plays a major role at the lower rung of the trade, mainly the regulation of collection. Just like the right holders of the villages the '*devta committees*' also have control over fixed demarcated areas in the alpine zone for extraction of medicinal plants and grazing. There are very strict rules for the conservation set by the committee. The extraction rights are auctioned at a pre-decided date of meeting for this purpose. Since one member of every household in the village is a member of the '*devta committee*', the meeting is represented by the *devta* (the priest), villagers and the interested contractors. The experts in the *devta committee* assess the value of the herbs ready for extraction and the bidding begins there on. Except for the person who has taken the contract for the current season and his labour, nobody else is allowed to visit the extraction zone. The rotational closure is done for an average of 3 years, in those areas, where the *devta committee* is controlling the extraction.

At present, the rules of extraction of medicinal plants are same in all parts of the state. Normally the right of collection and sale is vested entirely with the local right holders or

[3] For details on "*Devta Committee*", see the Report, ***Nature in Retreat: Conservation and Development in Himachal Pradesh***, (1998) prepared by Navrachna, Palampur, H.P.

'*bartandars*' who may or may not be required to pay a nominal license fee for collection. Except a few cases, in most parts of the state, the panchayat's role is limited in granting permissions to local contractors or agents to procure herbs from right holders.

Export of herbs by contractors outside the state is better regulated. Herbs can be exported out of the state subject to the provision of Himachal Pradesh Forest Produce Transit Rules, 1978 which decrees a species wise structure of permit fees to be paid by the exporter. A substantial increase of this hitherto nominal fee structure was carried out in August 1993, also bringing into the preview of these Rules a total of 42 species.

The underlining basic principle behind the imposition of export tariff was that there is an environmental cost attached to the collection of herbs for the purpose of trade. Since it is impossible for the forest department to reduce the rights enjoyed by the local communities, by passing on these costs to the trading system, it was thought possible to help in lowering and hence rationalising the high levels of extraction. Moreover, this fee hike served as a source of increased revenue for the government, which in a sense could invest more in the cost of protecting these resources.

In the early 80s, *Dioscorea spp*. was being extensively extracted and the recorded quantams exceeded 1672 quintals, which was quite high for this species. As a counter measure the forest department in 1987 announced a four-year closure policy, according to which the export permits for each range in a division was to be issued once in every four years. This policy change helped in providing adequate strength to the cause of conservation and sustainable extraction of *Dioscorea spp*. resulting in the sharp decline in the recorded quantum.

Almost all the people who so far have been interviewed in H.P. told that number of medicinal species are highly threatened and same number of plants are in the vulnerable category. According to the villagers, number of items like Dhoop, Kadoo, Atish etc., which were earlier found in the high hills near the village are no more found there. Too much extraction in addition to extraction of immature herbs is responsible for this. All of them, the collectors, village agents and even the nodal traders are anxious about the fate of the herbs in Himachal. Unfortunately, necessary steps have not yet taken by them. Even, some of them have a wrong notion that medicinal plant cannot become extinct as it is a gift by the god to the people of Himachal Pradesh. A nodal level trader at Banjar is trying to organise an association called, "J*adibuti Ba(n)chao Samiti*", with an objective towards sustainable extraction of medicinal plants.[4]

[4] Based on the interview with a nodal level trader conducted by ISST Research Team at Banjar in May 1998.

Forest department has taken steps to stop and reduce extraction of few medicinal plants. Department is controlling the extraction of Dioscorea by allowing its collection on rotational basis. Every year, only a single range will be open for collection in one division. In this way the closed areas will get some time for regeneration of that particular species. The forest department claims that the extraction of *Taxus baccata* has been closed in the area for couple of years.[5] However on our visit to the survey village, we found that extraction of *Taxus baccata* is still continuing.

To control the over extraction of various medicinal plants in Lahaul valley, the department of forest farming and conservation has included a section on medicinal plants in their divisional working plan which has been enforced from 1993 in Lahaul division. According to the working plan, only one range is kept open in one calendar year for the collection of medicinal plants. The turn of the other ranges would come rotation wise in the following years. A senior official in the divisional office informed the ISST research team that the measures were taken after massive extraction of medicinal plants from the region in eighties.

Here the collector has to apply in written to the concerned range office in advance. In the next step, before collection, (which is approximately restricted upto 150 Kgs.) he has to pay the collection fee which is rupees twenty-five per year and has to collect the *'challan'* issued by the range office.

To export medicinal plants from the state, the traders pay the fees and collect the export permit from the concerned divisional forest office. To check the illegal export, the department has taken several measures. The exporter also has to produce all the challans issued by the concerned range office to the local people against those collected items. But in reality, the persons, who generally extract medicinal plants are contractors. In Lahaul most of the local people are not interested in extracting, due to a number of socio-economic reasons. They come into a contractual arrangements with those contractors by selling off their rights for cash. The contractors collect the challans against different names. Later, he recruits Gurkha labours and extract medicinal plants.[6]

From 1996 onwards, forest department has increased the export tariff for many NTFPs. The imposition of these higher tariff is based on the vulnerability of the species rather its commercial value in the market. Department's objective is to pass the environmental cost to the traders who are earning the profit from the trading of herbs and other NTFPs.

[5] Based on the discussion with the Forest Department officials at Seraj Forest Division in Kullu district.
[6] All the information on Lahaul was collected during the field visit in Lahaul in August 1998 by the ISST research team.

Five years ago, the World Wide Fund's Traffic India cell prepared as inventory of 56 rare Indian plants which are banned from export. Figures on seizures made over the last decade indicate the most varieties of these endangered species still figure in commercial trade. Part of the problem is not having reliable facts and figures. Even the Botanical Survey of India (BSI) seems to have very little information. Customs and wildlife ground staff are inadequately trained to recognise endangered plants. The herbs go out in many forms - oil, perfume bases and extracts - so it becomes difficult to keep tabs on all the vials and bottles.

3.4 An Overview of the Study Regions with Special Reference to HMPs

As it has already been mentioned, eight village clusters were selected across the districts for this study. Of these eight households, four are from mid hills region and the remaining four villages are from high hills. The height of the villages ranges from 600 meters to 2400 meters. Total 177 households are surveyed in these village clusters. In the following table (Table: 3.1) the physical and demographic profiles have been shown.

Table 3.1: Physical and Demographic Profiles of the Village-clusters under our Study

Sl. No. of Village Clusters	1	2	3	4	5	6	7	8
Name of Village Cluster	Beragarh	Lohardi	Reila	Khundail	Gurah	Nahi	Rorhu	Tosh &Pulga
District	Chamba	Kangra	Kullu	Chamba	Mandi	Kullu	Shimla	Kullu
Height of the cluster (in meter)	600	1500	1550	1700	1800	2100	2100	2400
Altitude of the cluster	Mid hills	Mid hills	Mid hills	Mid hills	High hills	High hills	High hills	High hills
Sample population	114	84	158	164	153	118	123	190
Sample Household	25	14	24	25	25	25	14	25
Average H.H. Size	4.56	6	6.54	6.56	6.12	4.72	8.79	7.56
Total Adult Female	36	20	44	43	47	36	35	56
Total Adult Male	36	29	55	40	55	39	37	56
Total Female Child	19	16	34	33	21	16	22	25
Total Male Child	20	16	21	38	28	26	20	35
Total Old Female	0	2	1	4	0	0	3	9
Total Old Male	3	1	3	6	2	1	6	9
Sex Ratio	932	826	1000	952	800	788	952	900
Adult Sex ratio (including Old members)	923	733	776	1022	825	900	884	1000
Child Sex Ratio	950	1000	1619	868	750	615	1100	714
Percentage of rich hh	16	22	nil	Nil	20	12	14	4
Percentage of Avg. hh	40	64	83	24	40	88	72	84
Percentage of Poor hh	44	14	17	76	40	nil	14	12
%age of hh with agrl. as Pri Occu	92	96	100	84	100	92	93	100

Source: Navrachna, Survey Data 1998.

3.5 Concluding Remarks

Himachal Pradesh is a treasure house for varieties of natural resources. Among them medicinal plants occupy a special position. About two hundred medicinal plant species grow in this state. In for ecological zones, two zones namely temperate wet zone and temperate dry zone are more important from the point of view of the growth of medicinal plants. Most of the valuable medicinal plant species grow in these two regions. Every species of medicinal plant grow in a particular eco-system, consequently depletion of any forest resource is directly related to the decline in the growth of medicinal plants. Moreover due to over extraction of medicinal plants, already a number of these species have become endangered species. So far, adequate efforts have not been launched by any levels. Community efforts in some part of the state have restricted over exploitation but in the rest of the state is not at all in practice. On the other hand government efforts are not only inadequate but also impractical. The steps those were taken by the State Forest Department are without any proper objectives, hence not fruitful. Diversified rules and regulation by the Forest Department put limitation in front of any viable centralised effort towards conservation.

Participation of both communities and the government is necessary before formulation of any new strategy in this way.

Map 3: Himachal Pradesh: Village Clusters and Market Nodes

Chapter Four

Contribution of HMPs in the Household Economy of Rural Himachal

4.1 Nature of the HMP Sector at Household Level

4.1.1 Social and Economic Background of the Households Dependent on HMPs

HMP is an important source of income for many people in Himachal Pradesh. Though, it is not the sole source of livelihood in any part of the state, cases have been found where it covers the major part of the household income. Dependence on Medicinal plants varies from region to region depending upon the nature of forest, nature of terrain, and cultivable land and accessibility of that particular area. It has been observed that the dependence on medicinal plants and other non-timber forest produce is comparatively more in those areas where food and cash crops do not grow sufficiently due to soil and other factors; and also in those remote areas where orchards not profitable due to high transport cost. These types of regions mostly fall either in high hill areas or in the alpine zones.

Agriculture is the mainstay for almost all the households in the study villages. In most of these cases, collection of medicinal plants is a secondary occupation. Villagers also opt for other daily labour-based jobs provided either by forest department or block office and panchayat. Collection of medicinal plants from jungle and alpine pastures is very time consuming job. Hence, it is profitable for the villagers, if they can tie up this job with some other work like collection of fodder and fuel-wood from the forest. In post-monsoon season, many villagers go to the high hill areas in search of fodder. At the same time, they also take the cattle with them for grazing. The men folk spend couple of months with their cattle in the forest and collect medicinal plants. The households, where the members go for this kind of trips, naturally collect more valuable medicinal plants than others.

The villages, which fall in the collection zones, are by and large into the collection of medicinal plants. It has been observed that most of the households in these villages are engaged in extraction of medicinal plants, irrespective of economic status. The extraction rather depends on the age and gender profile of a household.

4.1.2 Competition Among Households During Extraction Season

The extraction season for medicinal plants starts in the month of March. The collection of different species in different areas continues for three to four months. A strong competition has been observed among the households during the extraction season. For collection of Gucchi, one has to go early in the morning to the nearby forest areas. Children and women go out early in the morning in search of gucchi, and try to reach there as early as possible,

before others. Mehendi grows on trees and rocks. People who can climb trees remain in a favourable position for collecting mehendi. In the case of other species like mushakbala, singli-mingli, chora etc. There is a competition among the households. Because these species are not very easily available in the forest, one has to venture to the deep forest for these species.

In many cases, households also co-operate with one other in collection. Households often divide the forest areas among themselves for exploration. Sometimes, in the same forest area, they divide the available species among themselves, before starting the extraction. In this case, one group extracts only those species, which the other group is not collecting. According to the villagers, the amount of collection depends on luck, because one can not predict the availability of a particular species in advance. The demand placed by the local trader also lead the villagers of a particular village in higher collection of a particular species. Most of these are treated as perishable goods, hence the collectors can not go for collection unless there is a demand placed by the local agent.

4.1.3 Sale vs. Self Consumption

People collect various medicinal plant items mostly for selling but at the same time they also consume a number of those items at home. The items which have both commercial value as well as some home uses, some portions are kept for household purpose. For instance, dhoop is consumed for religious purpose. Each collector household retains 500 gms. to 1kg. of dhoop for domestic use, wherever it is collected by the people. A small portion of items which can be used either as food or as home remedies, are also retained for these purposes, unless it is an item in the high market value, like gucchi. In one of our study villages in Kullu district, we have found the following picture of domestic consumption :

Table 4.1: Volume of Household Consumption of Medicinal Plants in a Study Village in One Year

Name of the medicinal plant	volume of consumption per household
Kadoo	100 gms.
Panja	100 gms
Patis	50 gms.
Chora	2 - 3 Kgs.
Sathjalori	500 gms.
Daruharidra	25 - 30 gms.
Lal churi	25 - 30 gms.
Banafsha	100 gms.

Source: Survey data 1998, SRDA/Navrachna

Among the above herbs, only three items, Karoo, Panja and Patis are extracted for both commercial and household purposes in this area. Rest of the items are not extracted for commercial purposes. Five to six years back, sathjalori used to be extracted also for

commercial purpose in this village. Today, they use it only for home remedy. Chora is another very important item from the point of view of commercial extraction. But here, Chora is only used as food item. Daruharidra and Banafsha are commercially important in many other parts of the state even in Kullu district. Here we have found only domestic use of these items. During our field visit at Dharwala (Khundail) in Chamba district, we have found that villagers extract Patela and Kinnow for domestic purpose which they consume as food. Though in other places it has a market value. All over Himachal, earlier people used to take Gucchi (black mushroom) as food, later as this particular variety of mushroom gained so much commercial importance, that local people stopped taking Gucchi as food.

After several field visits at different places like Chamba, Kullu, Mandi and Shimla district, we have come to the conclusion that, commercial extraction of herbs depends on several factors.

- The herb should be available abundantly, so that the villagers can collect and sell it to the local traders. If the herb is scarce in that case the trader would not be interested to buy that particular item from that region. As a result, the villagers collect those herbs only for home uses, if necessary. Stopping of the extraction of Sathjalori in the above study village, gives us a hint that the supply might have exhausted in that region due to unsustainable extraction in earlier years.
- The trader should be well informed about the availability of a particular herb. Without prior information the nodal level trader do not extend demand to the local trader for any herb.
- Price of the herb at village level should be economically profitable to the villagers so that they can extract that item from the forest.

Box 1 : Name of the HMP items found in the survey villages, part extracted and uses for domestic and commercial purpose

Name of the HMP	Part Extracted	Domestic use	Commercial Use
Banafsha (Viola serpens)	Flowers	Demulcent used in biliousness and in long troubles	Cough Syrup (Ayurvedic medicine)
Chora (Angelica glauca)	Herb and Roots	In stomach ache and indigestion	Medicine for dyspesia, constipation

Dhoop (Jurinea marcrocephela)	Root	Incense	Colic, fever
Dioscorea (Dioscorea deltoidea)	Rhizomes	Used to kill lice. Food item.	Cortison (Alkaloids)
Gucchi (Morchella esculenta)	Mushroom	Edible mushroom	Aphrodiasic, Narchotic drugs
Kadoo (Picrorhiza Kurroa) (Gentiana Kurroo)	Root	In loss of appetite, worm in fever/ Jaundice as purgative used in scorpion sting	Picrorhizin (Glucocide)
Mendi (Lichens)	Lichens	Nil	Edible colouring agent
Mushakbala (Valerina wallichi)	Root	Antispasmodic medicine	Essential oil Ayurvedic medicine for epilepsy, hysteria and neurosis
Panja (Orchis latifolia)	Root	In diabetes	Ayurvedic health tonic Expectorant tonic
Patish (Aconitum chesnantha)	Root	Stimulant/poison	Medicine for skin disease and cardiac

4.2 Income and Employment Generation

Extraction of medicinal plants by the villagers for sale is an age old practice in various parts of Himachal Pradesh. Extraction is undertaken largely by the family members of different age and sex groups. The present study tries to estimate the contribution HMPs in household economy in Himachal Pradesh. Before going into actual estimation, it should be mentioned that proper care should be taken in assessing the contribution of HMPs to household income. The following points may be discussed in this respect.

(1) Collection cycles: Regeneration of most of the medicinal plants takes two to four years. Consequently, a peak year of collection in a particular area follows a two to four year cycle. A study over a period of 4 to 5 years on patterns of collection of medicinal plants of a particular catchment, would show the ups and downs in the annual earnings, corresponding to the intensity of collection. Study of income from HMP of a particular year may be high or low depending on whether the current season happened to be a peak or trough year for collection.

(2) Variations across the regions: The degree of dependence on medicinal plants varies greatly across the regions. Of the four agro-climatic zones of the state, the people from high altitude regions and the regions beyond the apple zones depend relatively more on medicinal plants. The people from middle and low altitude regions depend on other minor forest produce, besides medicinal plants. It is also to be mentioned that the regions with high income from other sources depend relatively less on the collection of minor forest produce.

(3) Variations across the households: Degree of dependence on medicinal plants varies highly across the households in a same village even among the households in same income group. Basically three factors are responsible for this wide variations. (i) Demographic structure of the concerned household: more number of young member in the household results in more collection of HMPs. (ii) Asset base of the household: Households depending more on agriculture or fruit production depend less on medicinal plants, unless there are more number of household members and leisure time. (iii) Alternative income channel of the household: the average and poor income households who are having some other channel of income even a job as wage labourer depend less on the tiresome and risky job of collecting medicinal plants.

Four high altitude villages (height between 2300m and 2800m) from Kullu district and three lower altitude villages (height between 1000m and 1300m) were studied by Bajaj, through PRA technique and group discussions. In the high altitude villages average annual income from HMPs, per family varies between Rs. 6000 and 18,250, where as in the middle and lower altitude villages the average annual income from HMPs and other NTFPs is much lower and varies between Rs. 1500 and Rs. 4500. Unlike the higher altitude villages, here all the families are not involved in collection of HMPs. A large number of people are involved in basket making, mat weaving and collection of some other NTFPs like anardana, reetha, tejpatta etc., in the middle and lower regions. The average annual income from HMPs in the sample villages comes around Rs. 5125 per family, which is estimated at 15% of the state per-capita income. (Bajaj, 1997)

Box 2 : Profile of a collector household in Himachal Pradesh

Name of the village	:	Tosh and Pulga
Height of the village	:	2400 meter
Occupation of head of the household	:	Agriculture
No. of household members	:	11
Adult male	:	3
Adult female	:	4
Children male	:	2
Children Female	:	2

Items extracted this year	Distance of collection area from the village	No. of persons extracted	Days covered
Dhoop	60-80 km	3 males	90 days
Patish	60-80 km	2 males	25 days
Panja	60-80 km	2 males	20 days
Gucchi	1-10 km	2 females 3 males	90 days
Mushakbala	1-10 km	2 females	15 days

Items	Quantity extracted / sold in market	Price	Sold to whom
Dhoop	180 kg	Rs. 75/kg	Local Agent
Patish	4 kg	Rs. 1700/kg	Local Agent
Panja	3 kg	Rs. 500/kg	Local Agent
Gucchi	4.5 kg	Rs. 2500/kg	Local Shopkeeper
Mushakbala	20 kg	Rs. 22/kg	Local Shopkeeper

4.2.1 Patterns of Collection

In the framework of present study, 177 households from 8 village clusters were surveyed. The clusters spread across the agro-climatic zones of the state (see chapter 3, Section 3.4)

Collection of medicinal plants spread over the seasons in a year. The collection can broadly be divided in two seasons ; 'pre-monsoon' season and 'post-monsoon' season. Gucchi is collected in the pre-monsoon season, whereas items like Dhoop, Kadoo, Patish etc., are

collected in post monsoon season between July and October. Time allocated for collection depend on the available species and their market demand. Those species grow in the high hill regions if found abundantly, the villagers make more than one trip to collect those species. If the items are scarce the villagers do not spend much time in collection. It has been found that, sure availability of the items draws more households in collection. The height of the village cluster along with the cycle of regeneration plays a major role in the involvement of people in collection of HMPs. People from a village of comparatively lower height may spend much time and collect more in a peak year than the trough year collection of a high hill village. Average household income from HMP collection and average person days spent in collection has a direct positive relationship. (See the following table)

Table 4.2: Average Person days Spent in Collection by the Households and Average Income from HMPs

Village No	Altitude	Average annual person days by households	Average household size	Average annual household income (in Rs.)
1. Beragarh	Mid hills	42	4.56	7201
2. Lohardi	Mid hills	37	6.00	3395
3. Reila	Mid hills	155	6.54	11438
4. Khundail	Mid hills	172	6.56	7071
5. Gurah	High hills	60	6.12	4592
6. Nahi	High hills	240	4.72	33455
7. Rorhu	High hills	26	8.79	1736
8. Tosh & Pulga	High hills	150	7.56	17626
All Villages	-	121	6.24	11836

Source: SRDA/Navrachna, Survey data 1998.

Note: The first village is located near the border of Jammu & Kashmir. People could not spend much time in the forest due to the fear of militants' attack. As it was a peak year for this region, the pace of collection was fast here.

Among the 14 medicinal plant items, which are collected across the study villages, seven of them are more or less common in all the regions. Dhoop, Gucchi, Mushakbala, Mehndi and Patish are important items, as far as collection by the households is concerned. Gucchi and Dhoop are two most important items collected by 89 and 58 percent households respectively. (See the following table)

Table 4.3: Items and Percent of household involved in collection

	Percentage of household involved in collection								
Village Items	Vill 1	Vill 2	Vill 3	Vill 4	Vill 5	Vill 6	Vill 7	Vill 8	All Villages
Banafsha	0	0	0	0	4	0	0	12	2
Chora	0	7	0	0	0	0	0	0	-
Dhoop	64	14	83	24	0	92	100	84	58

Dioscorea	0	0	0	0	0	4	0	14	1
Guchhi	100	21	96	96	100	100	57	100	89
Kadoo	0	57	21	0	0	80	0	24	22
Kakar singhi	0	0	0	16	0	0	0	8	3
Mehndi	0	0	75	0	40	96	7	48	37
Mushakbala	44	0	54	96	12	0	0	80	40
Nahani	0	0	0	0	0	96	0	12	15
Palli	8	0	0	0	0	0	0	0	1
Panja	0	0	33	40	0	76	0	56	23
Patela	0	0	0	0	0	0	0	0	6
Patish	8	86	21	0	0	100	36	44	34

Source: Survey data 1998, SRDA/Navrachna.

In order to assess the importance of HMP's in generating employment and incomes in the villages, it is necessary to have information on time use patterns and prices, both market prices at various levels and imputed prices for non-marketed activities. These are not easy to obtain. Some rough calculations were made to get estimates of these variables on the basis of the data that could be obtained from the household surveys and price information from collectors and traders at various levels. These are recounted in the following sections.

4.2.2 Estimation of Employment and Incomes at the Household Level

Given the nature of collection patterns and the highly non-monetised characteristics of the rural economy, estimation of income and employment has been not very easy. Also, it has not been possible to get exact information on the hours spent in collection or the intensity of effort of individual members. However, we do have information on how many males and females had gone for collecting HMPs from a particular household and how many days were spent in the activity. There is also some information on the number of days spent on processing different items from a sample of the households. Income generated from collection of various items was derived by multiplying the amount sold to traders by the average price of each item. It may be noted here that the price obtained for a particular item has been varied from one household to another, although the standard deviation is pretty low. This may or may not reflect the quality of the product or the relative bargaining power of the collector household vis-à-vis the trader. However, since variations were low within the village, and informations on other dimensions of the transaction were absent, we have taken the average price of each item to calculate the income generated from each. Total household income generated from HMPs at the household level was arrived at by totalling income generated from all items.

In order to arrive at the contribution of women to household incomes generated from HMP collection and processing, we have assumed that men and women have worked with same

intensity and the value of their labour time is the same. If a lot of processing is involved at home, then the contribution of women go up because most of the home processing is done by women. The tables generated in section 4.2.3 and 4.3.1 are calculated on the basis of these assumptions.

4.2.3 Patterns of Employment and Contribution to Income

It has not been possible to estimate total household incomes from all sources. We have only been able to estimate income from HMP on the basis of collection, processing and going local prices. However households were categorized into low, medium, high income groups on the basis of some objectives and perceptional variables. By and large it was found that in any given location, the dependence on income from HMP is inversely related to the economic status of the household.

Nothing concrete can be said on percentage contribution of HMPs to total household income. But chances are that it goes up with lowering household income. In most others, the drop in average income from HMP is lower as one moves from average households to poor households as compared to rich households to average.

Table 4.4: Percapita Income from HMP and its Share in Total Percapita Income in Survey Villages

Village Cluster	Percapita income from HMP (in Rs.)	Percentage of percapita HMP income in total percapita income*
1. Beragarh	1579	14.52
2. Lohardi	566	5.21
3. Reila	1737	15.98
4. Khundail	1078	9.92
5. Gurah	665	6.12
6. Nahi	7088	65.20
7. Rorhu	198	1.82
8. Tosh & Pulga	2319	21.33
All Villages	1886	17.35

Source: SRDA/Navrachna, Survey Data 1998.
** In Himachal Pradesh percapita net SDP at current price is Rs. 10871 in 1997-98.*

The percapita income in Himachal in 1997-98 was stated as Rs. 10871. Assuming no variations across districts, column 2 of the above the table gives a rough estimate of contribution of HMP to per capita income in these villages. The percapita income from HMPs varies from Rs. 198 to Rs. 7088 in the study villages. The average percapita income in these villages is Rs. 1886. The percentage of percapita HMP income in total percapita income varies between 1.82 and 65.20 percent in these villages in 1998-99.

The following table shows that, in each village cluster there are a few items which are collected by most of the households and rest of the items are only collected by few households. When the percentage of households, collecting an item, is high it means that supply of that particular item is relatively abundant, and risk is low. The spread of income across households earned from collections from most of these items is comparatively low.

Table 4.5: Average Household Income by Items, Percentage of Households Involved in Collection of Various Items and Coefficient of Variations of Earnings Across Households in Study Villages

Villages / Items	Vill - 1	Vill - 2	Vill - 3	Vill - 4	Vill - 5	Vill - 6	Vill - 7	Vill - 8	All Villages
BANAFSHA					135 (4) 0			280 (12) 0.65	244 (2)
CHORA		300 (7) 0							300 (negligible) 0
DHOOP	5109 (64) 0.43	2538 (14) 0.42	4166 (83) 1.03	2733 (24) 0.35		10530 (92) 0.52	1325 (100) 0.65	6940 (84) 0.39	5811 (58) 0.81
DIOSCOREA						10500 (4) 0		306 (4) 0	5403 (1) 1.33
GUCCHI	2275 (100) 0.54	652 (21) 0.44	4209 (96) 0.69	3591 (96) 0.75	3330 (100) 0.53	4150 (100) 0.31	453 (57) 0.66	5420 (100) 0.54	3594 (89) 0.69
KADOO		1863 (57) 0.48	2890 (21) 0.53			5035 (80) 0.51		2133 (24) 0.31	3663 (22) 0.66
KAKAR SINGHI				688 (16) 0.23				405 (8) 0.3	593 (3) 0.33
MEHNDI			1488 (75) 1		1584 (40) 0.86	10938 (96) 0.4	150 (7) 0	1294 (48) 0.4	4935 (37) 1.1
MUSHAKBALA	3295 (44) 0.45		1006 (54) 0.54	2673 (96) 0.58	858 (12) 1.16			823 (80) 0.49	1866 (40) 0.81
NAHANI						380 (96) 1.17		2000 (56) 0.4	560 (15) 1.250
PALLI	1980 (8) 1.16								1980 (1) 1.16
PANJA			2036 (33) 0.75			742 (76) 0.43		2779 (44) 0.53	1690 (23) 0.84
PATELA				730 (40) 0.56					730 (6) 0.56
PATISH	600 (8) 0.47	1.14 (86)	4760 (21) 1.44			3740 (100) 0.44	398 (36) 1.21	6161 (12) 0.66	3564 (34) 0.94

Source : Survey Data, SRDA/Navrachna 1998. Notes: In each cell, the figures refer to average household income, percentage of households involved in collection, and coefficient of variations respectively.

The following table shows that the village level price of the HMPs across the regions. At the village level, there was not much variations in prices offered.

Table 4.6 : Average Price of Various HMPs in Each Village Cluster (Price in Rs./Kg.)

	Vill - 1	Vill - 2	Vill - 3	Vill - 4	Vill - 5	Vill -6	Vill - 7	Vill - 8	All Villages
Banafsha					90			93	93
Chora		15							15
Dhoop (wet)	31		10				11		19
Dhoop (Dry)		68	41	80		70		70	65
Dioscorea						35		18	27
Gucchi	1800	2100	2343	2250	1992	2500	1783	2456	2203
Kadoo		58	59			63		40	58
Kakad singhi				275				75	208
Mehndi			24		20	35	3	24	27
Mushakbala	25		26	21	18			21	22
Nahani Palli	18					80		40	76 18
Panja (wet)			186			130			149
Panja (Dry)						300		500	385
Patela				22					22
Patish (wet)							250		343
Patish (dry)	800	358	1717			1100	933	1655	1285

Source: SRDA/Navrachna, Survey data 1998.

4.2.4 Processing of Herbs at Collectors Level before Selling

After the collection of herbs the villagers generally come back to their respective villages. The collected species are required to do some primary level processing, which varies from species to species, before selling the herbs to the traders. Drying, sorting, cleaning, grading, chopping are the most common processes performed by the villagers. The above mentioned processes are basically low cost techniques to protect the collected herbs from degenerating fast by reducing the moisture content. This is also done to negotiate the maximum price with the traders who normally reduce the price of the herbs, if they are not properly dried up.

The collectors keep those collected items in the sun for drying. It takes on an average 6-7 days for drying (see the following table). In the next step, they separate the marketable part of the collected species grade them accordingly before taking them to the traders. Some of those items do not require direct sunlight for drying. In that case, they keep them in the shade for several days, beat them with a stick to separate the dried leaves, which has no market value. In the case of gucchi, the villagers thread each mushroom with the help of a needle in separate strings according to their size and hang them in the kitchen for several days for drying. The villagers, who go to the alpine region for the collection of Dhoop, do not come back to their respective villages necessarily as soon as collection gets over.

Processing of Dhoop does not rely only on sunlight. It might be kept on fire for several hours for drying. The villagers who go to the Alpine region, do the required processing in the forest itself, then go to the nearby village or town from the collection zone to sell those items before coming back to their respective villages. Grading of the HMPs are done mostly by the traders, but in few cases it is also done by the collectors before selling them to the traders.

Table 4.7: The Number of Sunny Days Required for Drying Various Herbs

Herbs	Required number of sunny days for processing
Gucchi	6-7
Musakbala	4-6
Sathjalodi	5-6
Chora	5-6
Singli-mingli	10-15
Hathpanja	6-7
Banafsha	4-5
Talispatra	6-7
Baj	6-7
Chaluchi	6-7
Mehendi	4-6

Source: ISST, Survey data. May 1998.

Box 3 : Collection procedure and household processing of HMP items found in Study Villages

Items	Collection procedure	Household processing
Dhoop Dioscorea Panja Patish Kadoo Mushakbala	Collectors takeout the underground part of the plant with the help of a pick axe	? Drying in the sun ? For Dhoop and Patish, make a pile on the ground and put fire inside it ? Cleaning and sorting according to size and quality ? Mushakbala and Dioscorea is also beaten with a stick while drying in shade (not under direct sun light)
Chora	Take out the entire plant from the ground	? Drying in the sun
Gucchi	Pluck the mushroom from the ground	? Graded according to size ? Threaded with a needle and string ? Dried in the sun or hang in the kitchen for several days for drying
Kakad Singhi	Collect the galls from the back of the leaves	? Drying in shade
Mehndi	Pluck the lichens from the rocks and trees	? Drying in the sun
Banafsha	Pluck the flowers and leaves	? Separating the flowers and drying in the

		sun

4.2.5 Marketing by the Collectors

Villagers sell the collected materials to the local agent or the shopkeepers. They usually sell out the herbs after few days' collection and again set out for further collection. They generally sell the total household collection together. But cases have been found in Kullu district where each member of the household sells his or her collection separately and keep separate account.[7] Minor members of the household and female members sell their collected HMPs jointly. Even if they sell the collected items separately, the head of the household get a stipulated portion from each member of the household. The collectors of a Shimla village informed that in their village people sell out their collected *jadibuti* separately but the heads of the households receive two-thirds of the earning from every member.[8]

Apart from the organised trade network the herbs are also being sold in the open herb markets. We located such a market at Rohru (Shimla district) where the collectors of the surrounding villages bring their high value herbs for sale. They sell those to the trader offering the highest price. In these markets the collector exercises a choice and gets a better price.

Cases have been found where the trader comes from outside the village to collect the herbs from the villagers. At Kutwa village (Chowai Forest Range) in Kullu district, villagers have informed the ISST Research Team that every year one person comes from Banjar to collect medicinal plants. Several cases have been found in Shimla district, where the trader reaches the village to collect materials from the villagers.

At Karsog in Mandi district, the villagers sell a few of the collected items in the local village fair. In a village in Chamba district, villagers even walk upto ten kilometres for selling of their collected herbs.[9]

4.2.6 Problems Faced by Villagers Across the Region in Collection and Marketing of Herbs

In the course of data collection, some of the selected village clusters were visited by our research team and arranged Focused Group Discussions with the villagers. The following section presents some of the important issues that came up in those discussions.

Collection of medicinal plants is not at all an easy task even for the villagers who live in the high hills or in cold desert. Even the local forest areas where the medicinal plants are

[7] Based on the Focused Group Discussion conducted by ISST Research Team at Banogi village (Sainj Forest Range) in Kullu district in May 1998.

[8] Based on the interview with few villagers conducted by ISST Research Team at Sharan in Shimla District, June 1998.

[9] Information gathered from a Focused Group Discussion with women at Khundail village, conducted by Navrachna and ISST Research Team in Sept. 1998.

available not easily accessible. To go to those forests, the collectors have to travel around 15 to 20 kilometres on foot in one day along the hilly tracks. They carry food, one or two small tools, and a bag to carry herbs and fodder etc. While coming back to the village, they carry 30 to 40 kilograms of weight on their back. Some time, they take their mules to carry the load. Search of medicinal plants in the jungle, is again a tough job. Detailed knowledge of the habitation of local forest is required for that. Often, they do not find anything at all, after a long search. Some time, it is too dangerous to climb the rocks. The collectors, who go to the alpine pastures in search of dhoop etc., face much difficulty. They set out for weeks together, travel not less than one hundred kilometres on foot, to reach the extraction zone. They have to carry the food and blankets along with them. The young men go for this kind of exploration. Cases have been found, where the women also go for the collection of dhoop.

Many a time, the villagers face legal problems in extraction and marketing. In some districts, the forest department has enforced a rule of paying a token extraction fee to the department. Collectors are reluctant to make permit by paying the fee on two counts. Firstly, it takes a lot of time and energy to go to the district office to get permit and secondly their names get recorded as collectors and they come under the scrutiny of forest guards and officials.

The traders always enjoy a better bargaining positions than the collectors. They exploit the local villagers with various excuses. The traders through manipulations in the weight of herbs often exploit women. The usual practice that prevails in Chamba, is that for every kilogram of herb, the trader keeps 100 grams for himself, which is locally known as '*Chamba Tol*'. Secondly, collectors are usually harassed on the pretext that herbs are not sorted and dried out properly, unclean and poor quality. Hence the price is lower than actual market rate.

4.3 Intra-household Dynamics

4.3.1 Intra household dimensions of HMP Collection and Marketing

It is difficult to capture the multiple activities that each member of the household involved in. However, it is assumed that, males and females spend same amount of time for collection, and collect same quantity of raw materials. However, a few things cameup while probing further which are important for understanding the role of men and women in the trading of HMPs. For example, processing of herbs is mainly a woman's domain, except for the items those are found in the alpine region where women do not go for collection.

During our discussions, women revealed that they go for collection for 3-4 days in a week. Rest of the days they stay back to do the processing of the herbs, which is usually looked upon as a domestic activity. Everyday they devote 2-3 hours for carrying out these activities

which are in a way invisible and are not accounted for. It is difficult to gauge this, unless time disposition study based on observation method is applied.

The following table shows that the female contribution in total household income from HMPs varies between 0 and 100 percent. The picture of women contribution in HMP income could be related to the collection pattern of a particular village. The villages where people are more dependent on high altitude items, women's contribution is comparatively less.

Table 4.8: Percentage Share of Female Members in the Total Income from HMP in the Households Across Village Clusters

Vill - 1	Vill - 2	Vill - 3	Vill - 4	Vill - 5	Vill - 6	Vill - 7	Vill – 8
9.76	0.00	0.00	0.00	0.00	0.00	0.00	4.98
11.51	0.00	5.68	15.38	27.95	4.48	0.00	9.67
12.84	0.00	9.49	25.59	42.35	7.39	0.00	13.15
18.43	0.00	10.02	37.81	45.15	7.92	0.00	14.49
19.19	0.00	13.01	38.65	50.00	8.67	0.00	15.18
21.41	0.00	16.16	39.54	50.00	8.92	5.56	15.66
21.87	0.00	18.18	40.11	50.98	9.41	32.93	16.24
22.12	0.00	19.20	40.91	51.43	9.68	35.95	17.94
23.05	0.00	19.46	42.41	51.61	9.87	38.52	18.11
23.18	0.00	21.30	44.25	51.63	10.73	50.00	19.61
24.20	13.03	25.15	45.05	51.92	11.83	62.22	20.28
24.39	40.85	28.21	47.06	51.92	12.90	83.42	22.55
26.12	50.00	31.09	48.97	52.33	13.53	89.33	23.69
28.67	69.23	33.80	53.13	53.02	13.64	100.00	24.44
30.50		36.61	57.99	60.58	13.86		25.42
30.65		38.71	66.62	60.66	15.57		28.02
33.01		41.35	66.67	67.21	16.23		29.55
36.96		43.33	68.96	68.87	17.26		31.65
53.49		43.89	70.00	74.19	18.57		35.20
54.55		45.04	74.38	100.00	21.76		37.23
55.00		46.49	76.39	100.00	24.98		43.25
62.86		51.95	81.26	100.00	30.21		50.00
68.75		53.34	85.07	100.00	33.25		68.38
74.94		55.33	100.00	100.00	39.59		100.00
100.00			100.00	100.00	48.26		100.00

Source: SRDA/Navrachna, Survey data 1998.

There are some herbs which are collected mostly by women. In our study villages we have tried to find out those herbal items, which have a special importance from the point of view of women's contribution in household economy. These items are Banafsha, Gucchi, Mehndi, Mushakbala. On the other hand items like Dhoop, Panja, Patish are collected by men. These items are found in distant forest lands and naturally priced highly compared to the local items. In many cases it has been found that women in a household spent more time but earned much less than the male members. Except these, women also collect few more items

which are mostly used for domestic purpose and home consumption. They are not accounted for as income substitute since it is considered to be a routine activity of women to look for such items in the forest for subsistence.

Table 4.9: Item-wise Percentage Share of Females in the Village Income from HMP

	Vill-1	Vill-2	Vill-3	Vill-4	Vill-5	Vill-6	Vill-7	Vill-8	**All villages**
Banafsha					67			100	96
Chora		7							7
Dhoop	11	17	7	0		0	33	1	4
Dioscorea						0		0	0
Gucchi	60	90	55	57	61	80	45	65	64
Kadoo		5	0			0		0	0.6
Kakar singhi				0				0	0
Mehndi			31		55	21	0	96	26
Mushakbala	19		77	64	54			97	56
Nahani						0		0	0
Palli	21								21
Panja			0			0		0	0
Patela				21		0			21
Patish	19	17	0				24	0	2

Source: SRDA/Navrachna, Survey Data 1998.

4.3.2 Role of Women in Marketing

Once the herbs are gathered, the women play a very important role in processing. Marketing is generally done by the men folk. Men carry the processed materials to the local agents. Many a time the local agent collects a few items at the doorsteps of the collectors. Guchhi is one of those items, which are collected by the local trader at home. In Chamba, the story is completely different. Here women play a very important role in marketing of medicinal plants.

Chapter Five

Network in the Trade and Marketing of Medicinal Plants: A Sub-sector Analysis

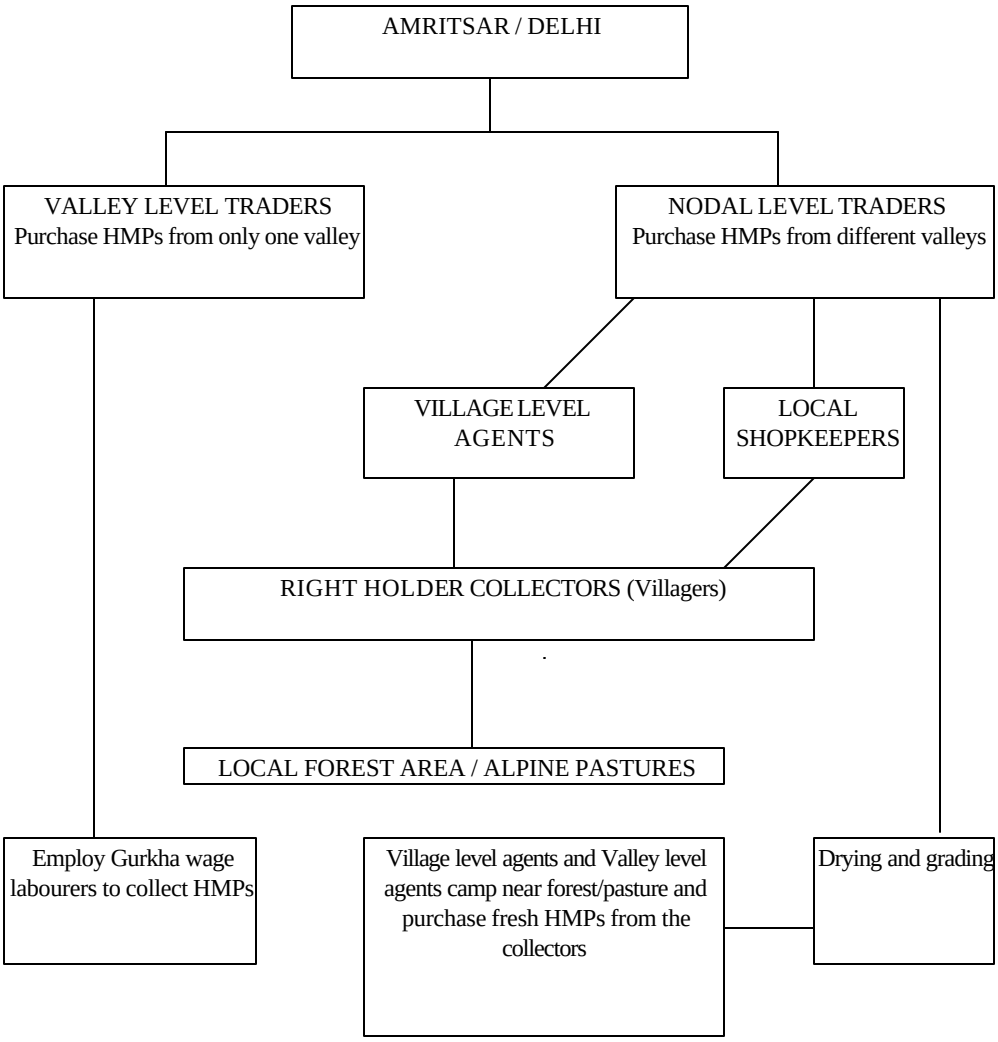
5.1 Basic Characteristics of Market Structure in HMP

As mentioned earlier in the methodology section that some agendas have been adopted to the study market structure of HMPs, in Himachal Pradesh. The trading points and people involved at various stages of trading were identified and presented in a diagram. This helps in understanding the trading chain and flow of information from one stage to other. The diagram of the market structure has been prepared on the basis of the survey at Kullu, Joginder Nagar and Chamba. Almost same market structure prevalent in whole of Himachal.

From the diagram, it can be seen that the main market inside the state of Himachal Pradesh is mainly operated by two groups of traders namely the valley level traders and the nodal level traders. From the survey it seems that the nodal level traders are more acquainted with the market outside the state (mainly to Delhi and Amritsar). It has been found that almost all of the collected resources travel outside the state except a minor proportion which are used by the local people for household consumption and the local *vaidyas* to prepare ayurvedic medicines. Valley level trader keeps information about the rate at Delhi and Amritsar market. On the other hand the nodal trader keeps information about both demand and rate in Delhi and Amritsar market. Valley level trader purchases HMPs only from valley and he has direct contact with the villagers who are the right holders and collect HMPs. Nodal traders purchase HMPs from number of valleys and they purchase materials from village level agents or the village shopkeepers. So in village level two types of traders have been identified (i) village level agents and (ii) local shopkeepers. Village agents are not necessarily the residents of that locality. Several cases are found where they come from other valleys or nearby towns. For both of these two groups of agents, the local villagers are the sole suppliers of raw medicinal plants. Villagers go to forest or alpine pastures to collect different species. They go the forest, collect those plants and come back to village and after some processing (mainly drying) sell those items to the village agents or shopkeepers or the valley level traders. Village level agents and local shopkeepers sell those same items to the nodal level traders (*Bada Lala*) according to the demand placed by *bada lala*. In the last stage, *bada lala* again after a bit of processing (drying and grading e.g. A, B and C) sell them to Amritsar or Delhi. The main demand comes from outside the state only. The nodal level traders try to extract the resources via the village level traders. In several areas, the forest department has declared some measures to restrict the over extraction by putting a limit of

extraction for each right-holder households, but in most of these cases actual extraction is far more than the regulated extraction.

Chart 3: Market Structure of Medicinal Plants in Himachal Pradesh



Nearly, five/six years back a new effort was put to extract more resources in order to meet the rising demand of HMPs in Indian market. The valley level traders started employing Gurkha labours to collect HMPs from the private forests they take in lease. The efficient Gurkha labours are employed on daily wage basis to extract these valuable forest resources. Though in several areas, this system of extraction is totally illegal. In the recent years villagers lodged series of protests against this system of extraction in some places. As a result, in some places new incidences have not been recorded for last two to three years.

In some cases, village level and valley level traders also came close to the forests and alpine meadows. They started purchasing different raw herbal species from the right holder collectors at the spot of collection without any processing. They do the entire processing and grading before sending those to nodal traders or *bada lala* on the way to Delhi and Amritsar. In many a case, these valley level traders export these materials directly to Delhi or Amritsar market. The demand of medicinal plants from outside the state has resulted in illegal extraction and over extraction in the state. The women and children, have started to engage themselves fully in extraction of medicinal plants with the increase of its market demand. Cases have been recorded where the traders reach even to the distant forest areas or alpine pastures to purchase the raw herbs from the collection.

In each stage of transaction, credit and advance from one level of trader to the other may have an indirect but important role in deciding the price and profit of the products. If it is possible to uncover the role of this informal market, the real price structure and profit making can be revealed. The informal credit market also controls the output market to some extent. When the same man simultaneously acts as a creditor and the bulk buyer, he controls the price structure in his favour. The discussion with the local traders has revealed that in all most all the cases the nodal level traders provide some advances to the village level traders. Even the traders of Delhi and Amritsar markets provide advance in cash to the nodal level traders. Incidences have been found where the right holders cannot sell their collected items to the traders according to their own will. It seems that a strong case of market inter-locking is very much prevalent between credit and output market and credit and labour market.

5.2 Price Structure and Mark-ups in Each Level of Trade- A sub sector Analysis

In order to study the value addition and mark-ups of various HMPs products, collectors and traders were interviewed in all the study villages. A village level trader from Sainj valley were interviewed at length. Sainj valley falls in one very important resource catchment area in Himachal, which is also selected as study area for the present project. A good amount of information on the species grown in the region, species collected directly from the right holder collectors and other village level agents, species sold to exporters, and data on price structure, etc. was collected.

The village level trader at a Sainj village, who was interviewed by us was found to be basically an agriculturist and horticulturist. Buying herbs from the villagers and selling them to the traders of Kullu and Bhuntar is his secondary occupation. Villagers come to him with small quantity of different species, which he purchases on cash payment (Table: 5.1). He does not feel it necessary to sell the whole collection of any particular species to a single trader. Quite often he gets demand on telephone from different traders of Kullu and Bhuntar for a particular species. At the same time he also gets cash in advance from those traders who later export the herbs to Delhi and Amritsar.

The village trader hires mules to take the materials to Sainj. The owner of the mules charges about Rs. 50 per mule. One mule can carry 75 to 100 kgs. of material. From Sainj he takes a bus to take the herbs to Kullu and Bhuntar. Approximately he spends around one rupee per kilograms of HMPs as transportation cost. The income from HMP constitutes around 20 to 25 percent of total household income.

Table 5.1 : Estimated Income Earned by a Local Agent from HMPs

Items	Avg. Buying price (Rs./Kg.)	Qnty. Bought (Kg.)	Amount spent (in Rs)	Avg. selling price (Rs./Kg)	Amount earned	Gross margin
Gucchi	2000.00	100	200000.00	3000.00	300000.00	100000.00
Musakbala	25.00	450	11250.00	32.50	14625.00	3375.00
Sathjalodi	4.50	250	1125.00	9.00	2250.00	1125.00
Chora	11.00	50	550.00	14.50	725.00	175.00
Singli-mingli	11.00	400	4400.00	21.50	8400.00	4000.00
Hathpanja	300.00	50	15000.00	375.00	18750.00	3750.00
Banafsha	100.00	150	15000.00	165.00	24750.00	9750.00
Baj	13.00	300	4050.00	22.50	6750.00	2700.00
Chaluchi	2.50	150	375.00	11.00	1650.00	1275.00
Mehendi	19.00	200	3800.00	22.50	4500.00	700.00
Total		2100	254925.00		382400.00	126850.00

Source: ISST Survey, May 1998

In another study village cluster at Sainj, four village level traders were interviewed. All these traders are basically commission agents for the nodal level traders. One among those traders, also runs a grocery shop in the village. Three of them are in this trade for last 4 to 6 years. The man who runs the grocery shop have been in the business for last 8 to 10 years. The average buying price does not vary for more than 8 percent, though in cases it may vary according to the quality of the material, they are buying. Selling price differ 6-7 percent only for couple of items. In case of other items the selling price is more or less constant.

An effort was made to measure the trend of the trade and to examine the order of returns on investment in the herb trade by focusing twenty eight traders operating in the village level across the study villages. The table presents an analysis of the volume of business managed by the village level traders and profitability thereof.

Data show that, the price of the items did not differ much this year from the year last. Annual investment for this year varies from as low as Rs. 4230 to Rs. 2467000. The small village traders supply their items to other big traders in nearby towns or villages. The big traders have direct access to Delhi and Amritsar. The traders in Nahi village cluster had a comparatively better season than others. The fourth trader in Reila cluster, who also runs a grocery shop in the village, invested a huge capital in the trade this year, which is more than thrice than the other traders. In 1998 he alone procured 200 quintals of dhoop from surrounding villages, for which he invested a sum of Rupees thirteen lakhs.

Table 5.2: Traders' Profiles in the Study Villages

Village Clusters	Investment	Return	Percentage Mark-ups
Beragarh			
Trader 1	4230	4900	13.67
Trader 2	5400	6000	10.00
Trader 3	188000	244800	23.20
Lohardi			
Trader 1	276400	309100	10.58
Trader 2	422700	480800	12.08
Reila			
Trader 1	402110	466900	16.11
Trader 2	203400	229900	13.02
Trader 3	598600	693600	15.87
Trader 4	1883160	2149000	14.11

Cont…

Village Clusters	Investment	Return	Percentage Mark-ups
Khundail			
Trader 1	44000	47000	6.38
Trader 2	136750	165400	17.32
Trader 3	82750	114000	27.41
Trader 4	78500	89000	11.80
Gurah			
Trader 1	150000	183750	18.37
Trader 2	8000	10800	25.93
Trader 3	120000	144000	16.67
Trader 4	10000	13500	25.93
Nahi			
Trader 1	1434200	1622800	11.62
Trader 2	2467000	2781500	11.31
Trader 3	371500	493000	24.65
Trader 4	214600	255000	15.84
Rorhu			
Trader 1	58900	66900	11.96
Trader 2	63000	87500	28.00
Trader 3	76500	118000	35.17
Tosh & Pulga			
Trader 1	776060	1017000	23.69
Trader 2	824450	1087500	24.19
Trader 3	98000	118065	16.99
Trader 4	1084720	1430150	24.15
All Villages			
All traders	12084600	14431895	16.26

Source: SRDA/Navrachna, Survey Data, 1998.

Note: percentage mark-ups are mark-ups over investment

On the basis of reported data, the gross profit margin of the local traders range between 6.38% to 35.17%. The profit margin is more for those traders, who supply the procured materials directly to Delhi or Amritsar. It may be noted that there might be serious reporting bias. The Fourth trader in Reila cluster (cluster no. 3), who claims to have invested the large sum of Rs. 13,00000 in the purchase of dhoop, he also reportedly sold the entire amount in the nearby market place at Sainj, like others did. It is debatable whether such a large amount of dhoop could have been disposed of at a small market place like Sainj, that too at a price of only Rs. 75 per unit, unless under somewhat unusual or extraordinary circumstances. It is quite possible that this is s case of under or mis-reporting by the trader.

A nodal trader of Banjar in Kullu district, was interviewed. He collects a large quantity of HMPs from Tirthan valley and Great Himalayan National Park region. He collects both from the village level agents and right holder collectors or individual collectors. He exports a few of those collected species to Amritsar. Rest of the collected materials he sells to the traders at Kullu or Bhuntar. The above trader exports Musakbala, Mehendi, Chora and Sathjalodi to Amritsar. He also deals with Gucchi, Chaluchi, Banafsha, Hath panja, Singli-mingli, Nihani and Dorigrass. For these items, he works as a middleman between village agent and the exporter. He also collects several items from number of village agents and sells those herbs to the traders in Kullu. Table: 5.3 gives details on quantity of items sold to Amritsar and income earned by a nodal trader. The differential rates of HMPs in different markets are given in Table 5.4.

Table 5.3 : Quantity Exported to Amritsar by a Nodal Level Trader in the Last Season

Items	**Quantity exported in Kg.**	**Rate (Rs./ Kg.)**	**Income earned**
Musakbala	10000	39	390000
Mehendi	12500	32	400000
Chora	850	19	16150
Sathjalodi	20000	16	320000

Source : ISST Survey, June 1998.

Price difference between village market and nodal market varies between 50 percent and 340 percent for different herbal items (see Table: 5.4). The extent of price increase between village market and Amritsar market varies between 20 percent and 177 percent for selected items. The extent of profit differs from item to item, and may be from region to region. Moreover, the price of a specific item moves ups and downs in a single season, according to the availability of that species in the local forest and finally according to the demand from Amritsar and Delhi.

Table 5.4 : Price Difference between Village Market, Nodal Market and Amritsar Market

Items	Village Rate (Rs./ Kg.)	Nodal Market Rate (Rs./ Kg.)	Amritsar Market Rate (Rs. / Kg.)	Nodal market price as a percentage of village price*
Gucchi	2000.00	3000.00	3200-3500	149.95
Musakbala	25.00	32.50	40-75	126.00
Sathjalodi	4.50	9.00	15-18	177.78
Chora	11.00	14.50	18-22	122.73
Singli-mingli	11.00	21.50	28-32	186.36
Hath panja	300.00	375.00	550-1000	124.67
Banafsha	100.00	165.00	150-300	164.00
Baj	13.00	22.50	25-30	165.38
Chaluchi	2.50	11.00	--	400.00
Mehendi	19.00	22.50	30-35	113.16

Source : ISST Survey, June 1998.

**An amount of Re 1/- as transport cost per Kg. of HMP has been deducted from the nodal market price to arrive at the margins.*

5.3 Demand from Delhi and Amritsar Market and its Impact on State Market

From the talks with the traders in Himachal, it seems that entire market in the state is operating on the demand from outside the state. There is no report of government purchase of HMPs from the villagers, neither any report of helping them directly or indirectly to sell out the HMPs. It has to be noted down at this point that, there are 14 ayurveda hospitals in the state and over 200 ayurveda dispensaries spread all over the state. Probably, they procure raw herbal medicines, but information yet to be gathered on it. As far the processing of herbal medicines in the state is concerned, we do not have any data on it, but from various discussions with the people in the state, it seems there are not many processing units are there in the state.

The entire market in the state runs on the basis of personal and oral contract. On the basis of the demand and minimum rate placed by the Amritsar and Delhi traders, the nodal level traders in the state contact the village level agents and the valley level agents and even provide some cash in advance to purchase the HMPs from the villagers. The demand of some new species also come from the traders in Amritsar and Delhi, which do not have any local use or commercial value in the local market. For example, for last couple of years, there comes a high demand for "Basanti" (*Hypericum Patulum*), a local wild flower found in H.P.

A change in the market structure has been noticed during recent years. Earlier, Rampur used to hold a very important position in the trading of medicinal plants for entire Kinnar district and western part of Shimla district. The importance of Rampur as a nodal market has declined in last few years. The main reason is emergence of a number of valley level traders in the region. The valley level traders either directly purchase from the right holder collectors or they recruit Gurkha labourers to extract medicinal plants directly from the forest before exporting them directly to Amritsar or Delhi. As a result, huge volumes of medicinal plants are going out of the state, bypassing the nodal markets like Rampur.[10] Secondly, the improvement of transport facility also has influenced the market structure to some extent. Previously, the HMPs used to come to the nodal markets on foot from the distant inaccessible areas. Nowadays, transport facilities have made it easier for the traders to send the materials by trucks from many of those areas, which were inaccessible earlier.

[10] Based on the discussion between a nodal level trader and ISST Research Team at Rampur in June 1998.

Box 4 : Buying Price of selected HMPs at different stages (Rs./kg)

Items	Village Trades	Nodal Market Trader	Delhi/Amritsar Trader
Banafsha	90-95	150-165	180-300
Chora	12-15	14.5-18	18-22
Dhoop	40-80	65-80	90-120
Dioscorea	18-35	30-45	40-60
Gucchi	1750-2200	2000-3000	3000-4000
Kadoo	40-65	70-85	140-160
Kadad Singhi	75-275	100-350	NA
Mehndi	3-35	10-40	30-45
Mushakbala	18-26	30-35	40-80
Nahani	40-80	65-90	NA
Palli	18-20	NA	NA
Panja	300-500	375-600	550-1000
Patela	20-22	NA	NA
Patish	800-1700	900-2000	NA

Source : Survey data, Navrachna, ISST (1998).

Note : The Buying Prices for the processing units/firms, who procure these items from the Delhi/Amritsar traders, are not known to us.

Chapter Six

Growth Potential of Herbal Medicinal Sector

6.1 Volumes and Values of Raw Materials Exported from the State

The medicinal herbs which are collected from the forests of Himachal Pradesh are mostly exported out of the state. The major destinations for the produce are Majith Mandi in Amritsar and Khari-Bawli in Delhi. Other destinations include Calcutta, Saharanpur, Mumbai and few other cities of India. From those places the produce is either exported or auctioned off to various pharmacies and processing units. This level of trade could not be examined due to lack of data.

A high degree of secrecy prevails in the trading of medicinal plants in Amritsar. The entire trade is undertaken on the basis of personal contacts by each of the traders with the local agents in the remotest villages of Himachal Pradesh or by the commission agents working in various areas of Himachal. The information they keep about different herbal items, source of procurement, buyers, prices or rates of commission are so personal that they do not want to share them with anybody else. The nature of transaction and its illegal dimension is partly responsible for this high degree of secrecy. Moreover, it also acts as an entry barrier for new traders in this business so that the old traders can maintain their oligopoly in the trade. It should be mentioned that trade in herbal medicinal plants also involves a high risk of investment. As a result, the trading of herbs has become a hereditary occupation here. From the discussion between the President of the Traders Association in Amritsar and our research team, it was revealed that there is no new man in the business. A senior trader informed us that the traders primarily deal with the dry fruits and spices and only secondarily in herbal items. The statement could not be proved in the absence of information on the extent of investment in the herbs trade. We were also informed that the traders mostly act as commission agents for Indian and foreign processing units. They do not keep any stock. They mediate between the traders of Himachal Pradesh and bulk buyers from India and abroad.

The traders of Amritsar repeatedly told us that the quantity of HMPs, which are coming from Himachal Pradesh, is not more than 20 to 25 percent of the total product of Himachal Pradesh. According to them, Amritsar herbal market is more dependent on the herbs coming from other countries like Pakistan and Nepal. The traders say that it is easier for the Himachal Pradesh traders to transport the herbal items to Delhi rather than to Amritsar that Delhi is the main market as far as medicinal herbs are concerned. Consequently it is also easier for bulk buyers to purchase/procure herbal medicinal items from Delhi itself rather

than coming down to Amritsar. Also it is easy to export those items from Delhi. It was stated that the unfavourable tax structure (both sales tax and road tax) of the Punjab Government is responsible for low trading in comparison to surrounding states.

Before independence, the Amritsar market had been very important trading centre of HMPs. The importance of this market has gone down drastically since then. However, Amritsar remains an important trading centre. Medicinal plants are imported from many countries including Pakistan, Nepal, Afghanistan and Iran. Many of the herbal items are imported and re-exported to foreign countries. There are around two hundred traders in the town who deal in HMPs or act as commission agents.

As the business runs on the basis of personal contact and it is an age old tradition of Amritsar traders to deal with HMPs, they do play a major role in the transactions. It may be true that the HMPs are not coming directly to Amritsar, as the importance of the market has dropped due to its geographical location but the traders certainly can play the role of middlemen between the markets in Himachal Pradesh and Delhi. It may not be easy for the traders in Delhi and Himachal Pradesh to identify each other without the help of the middleman of Amritsar.

An effort was made to gauge the extent of export from the state. As it was not possible to collect data from individual exporters, forest department data was analysed to measure the quantum. Unfortunately, the inconsistency of the forest department data has restricted the scope of any rigorous analysis with the data. Forest Department of Himachal Pradesh collects data from various circles such as Chamba, Dharamashala, Kullu, Mandi, Rampur and Shimla. Till 1989, the total extraction was divided into two categories, i.e. quantities on which export and collection fees were collected and quantities collected by right holders. However, in recent years it is mentioned that no reliable data are available with the department regarding market value and quantity of herbs consumed locally by the right holders. Table in the appendix collates the detailed Forest Department data on year-wise extraction of various categories of HMPs from 1984-85 to 1995-96. The following table (Table: 6.1) provides a sub-set of some items of importance.

Table 6.1: Year-wise Extraction of HMPs in Himachal Pradesh

Years	Quantity of selected Species collected (in quintals)								
	Dhoop	Karu/ Kaur	Mushak bala/ Nihani	Kuth/ Tuth	Gucchi	Chora	Banafsha	Salam Panja	Sath Jalori
1984-85	4468.11	2444.07	1457.41	67.00	267.44	33.75	21.10	10.75	8.50
1985-86	5325.00	2347.07	857.08	0.21	154.66	17.00	19.14	17.00	5.00
1986-87	5927.35	1243.47	499.14	0.00	1280.34	34.27	84.05	16.00	1.00
1987-88	3548.13	674.08	1323.35	5.00	560.22	139.03	449.11	39.00	55.00
1988-89	5844.93	1468.33	1954.47	3.00	402.99	122.24	26.76	0.00	183.00
1989-90	4064.05	199.95	1247.31	648.00	137.68	8.00	195.30	4.00	6.00
1990-91	4939.83	2899.50	2014.43	667.92	2800.89	27.60	0.00	7.52	21.00
1991-92	5743.85	4181.60	5561.98	810.15	1492.31	100.00	19.30	60.00	50.00
1992-93	2518.60	609.85	1839.80	553.60	1209.38	199.50	97.30	0.00	0.00
1993-94	2166.00	321.00	1079.00	212.00	475.00	46.00	47.00	0.00	0.00
1994-95	3260.00	343.00	483.00	321.00	490.00	66.00	71.00	0.00	0.00
1995-96	2025.00	430.00	1487.00	196.50	363.00	12.00	39.00	0.00	0.00

Source: Annual Administration Report, Dept. of Forest Farming and Conservation, Himachal Pradesh.

From the above table it is clear that in case of some species, extraction rate in terms of quantity has come down over the years. The other important aspect is lack of consistency in the order of extraction. The data suggest that there are fluctuations in the amount extracted of various species over the years. This could very well be the result of temporary decreases in supply due to over extraction in some years necessitating time for rejuvenation. Alternatively, it could be more a reflection of fluctuations in demand. There is no explanation available with Himachal Forest Department on these issues.

6.2 Revenue Collected by the State Government from Raw Herbs

Forest department collects export tariff from the traders, before sending the raw materials outside the state. The State Forest Department has fixed a new rate in the year 1993, covering only 42 species. Though in reality, many more species are exported from the state. Due to the incomplete market and botanical information with the department, it may not be possible for them to prepare an exhaustive list of medicinal plant of the state with commercial value. The following table presents the forest department list of export fees for different species.

Except this export fee, the department also collects a minimal collection fee in few areas. The collection fees vary from district to district. There is no data with the department on the collection fees over the years.

Table 6.2: Export Tariff of HMPs as per Forest Department Notification issued in 1993

Serial No.	Botanical Name of the plant	Local Name of the plant	Export Permit Fees (Rs. Per qntls.)
1.	Ainaliaea aptra	Sathjolari	50.00
2.	Aconitum chesunanthus	Karvi Patish	7500.00
3.	Picorhiza kuroo	Karoo	540.00
4.	Jurnia macrocephala	Dhoop	500.00
5.	Podophyllum emodi	Bankakri	450.00
6.	Angelica glauca	Chora	125.00
7.	Viola odorata	Banafsha	2250.00
8.	Valeriana wallichi	Mushakbala	590.00
9.	Rheum emodi	Rewandchini	110.00
10.	Dioscorea spp.	Shingli mingli	900.00
11.	Thalictrum	Mamiri	335.00
12.	Artimisia bravifolia	Seski	50.00
13.	Thynus sephyllum	Banajwain	100.00
14.	Atropa accuminate	Belladona	60.00
15.	Morchela esculenta	Gucchi	10000.00
16.	Potentilla nepalensis	Dori	40.00
17.	Pistacia integrima	Kakarsinghi	1000.00
18.	Polygenatum	Salam mishri	1000.00
19.	Aconitum heterophyllum	Mithi Patish	1500.00
20.	Aconitum vilecium	Mitha telia	500.00
21.	Salvia morcattiana	Thuth	180.00
22.	Banium persimum	Kala zira	2000.00
23.	Solinium vaginatrum	Butkesh	400.00
24.	Taxus baccata	Birmi	600.00
25.	Rhododendron compannlatum	Kashmiri patta	150.00
26.	Tinospora cordifolia	Gloe	100.00
27.	Orchis latifolia	Salam panja	6000.00
28.	Valerina hardickii	Nihani	300.00
29.	Acorus calamus	Buch	130.00
30.	Pinus wallichina	Kail cones	150.00
31.	Berberis spp.	Kashmal/Daruharidra/Rasaunt	500.00
32.	Swerita chirata	Chiryata	700.00
33.	Adiantum lanulatum	Duagtuli	80.00
34.	Nardostachys grandiflora	Jatamanasi/Balchora	690.00
35.	Lichens	Chalora	225.00
36.	Abies webbiana	Talispatra	85.00
37.	Ephedra spp.	Ephederina / Butchur	50.00
38.	Saussurea lappa	Kuth	300.00
39.	Hedychium acuminatum	Kapur kachri	70.00
40.	Hyosoyaxus riger	Khurassni ajwain	150.00
41.	Heracleum spp.	Patishan roots	25.00
42.	Geradiana heterophyllus	Bichhu buti	150.00

Source: Financial Commissioner cum Secretary, Government Order No. Fts (A) 3-1/77, Annexure D, Rule 11(5), 17 August 1993, Govt. of H.P.

Table 6.3: Revenue Collected by the Government from Medicinal Plants, 1993-94 to 1995-96

Name of the Species	Export Tariff Rs./Qntl.	Volume of Export 1993-94 in qntls.	Revenue collected by the Govt. (1993-94)	Volume of export 1994-95 in qntls.	Revenue collected by the Govt. (1994-95)	Volume of export 1995-96 In qntls	Revenue collected by the Govt. (1995-96)
Dhoop	500	2166	1083000	3260	1630000	2025	1012500
Dioscorea	900	533	479700	5	4500	130	117000
Karu	540	321	173340	343	185220	430	232200
Mushakbala	590	1079	636610	483	284970	1487	877330
Tejpatra	No levy	745	0	675	0	308	0
Brahmi	N.A.	5030	0	921	0	500	0
Buch/birch/B.Patra	130	0	0	15	1950	65	8450
Efedra	50	1892	94600	0	0	127	6350
Kuth	300	212	63600	321	96300	134	40200
Tuth	180		0		0	259	46620
Gucchies	10000	475	4750000	490	4900000	363	3630000
Chora	125	46	5750	66	8250	12	1500
Banafsha	2250	47	105750	71	159750	39	87750
Kakarsinghi	1000	15	15000	17	17000	26	26000
Dorighas	40	385	15400	25	1000	561	22440
Bankakri	450	65	29250	122	54900	224	100800
Bach/Baryan	130	8	1040	9	1170	80	10400
Mithipatis	1500	30	45000	0	0	52	78000
kauri patis	7500	17	127500	25	187500	0	0
Talispatra	85	508	43180	782	66470	592	50320
Nihani	300	605	181500	1159	347700	0	0
Butkeshi	400	82	32800	74	29600	32	12800
chukri / rewardchini	110	90	9900	94	10340	832	91520
Rewardchini	110	95	10450	80	8800	0	0
Bajh	130	10	1300	0	0	75	9750
Salammisri	1000	18	18000	0	0	0	0
berbery roots	500	3946	1973000	0	0	111	55500
Neoza	N.A.	0		403		572	
Others	not applicable	7519	N.A.	9387	N.A.	5822	N.A.
Total		25839		18827		14724	
Total revenue collected (in Rs.)			73296000		77182000		54630595*

Source :H.P Forest Statistics, Annual Administration Report,Govt.Order No. Fts (A) 3-1/77, Annexure D, Rule 11(5), 17 August 1993, Financial Commissioner cum Secretary, Govt. of H.P.

Note : The figure originally published in this column (Rs.4559000) is likely to be wrong, as appears from a comparison with the other years' figures. Revenue collected for the first two years from selected items calculated as 11.93% (avg.) of total revenue collected from HMPs. We have used this average for estimating the total revenue for 1995-96. Here we have put that estimated figure of Rs. 54630595.*

We have calculated the export tariff collected by the government of Himachal Pradesh from selected medicinal plant items from the year 1993-94 to 1995-96. For the first two years, total tariff collected from the medicinal plants are much lower (Rs 9895670 and Rs. 7995420 respectively) than the total revenue collected by the government. But for the year 1995-96, export tariff collected from selected items (Rs. 6517430) is much higher than the total revenue collected from medicinal plants that year. There may be a serious mistake (either in printing or in estimation) in the published data for this year.

6.3 Extent of Illegal Exports and Failure of the Government Machinery

Government machinery has not been competent enough to capture all illegal exports from the state. The main exporters of the state do not pay the tariff for the entire produce they export from the state. One of the reasons may be the narrow gap between the rate of export tariff and the prevailing market price of some of the species. Our discussions with traders at various levels suggest that most of the time the traders export three to four times more than the volume for which they hold permit of export.

6.4 Foreign Export of HMPs - A National Picture

A growing demand for Indian herbs in the Ayurvedic and cosmetic industry has lead to massive foreign export of medicinal plants, parts of medicinal plants and also medicinal plants in the forms of - oil, perfume bases and extracts from India. India hosts over 2000 known wild plant species, sought through out the world for their medicinal properties. Globally, close to four billion people rely on herbal medicine. India ranks second only to Brazil in the use and supply of herbal products. (Sachdeva, 1999)

The foreign export data of medicinal plants and the various HMP products in terms of quantity and value has been studied. There is no state level foreign export data of medicinal plants. A few herbal medicinal items which are also found in the state of Himachal Pradesh have been selected from national level foreign export data. This has been done assuming that some portion of the national level exports comprises of the export of HMPs from Himachal Pradesh.

Also the four digit HMP categories i.e. 1211, 1301, 1404, 3001, 3003, 3004 have been studied over a period of nine years (1988-89 to 1996-97) in terms of values in order to study the past and present contribution of HMP to the national level exports and to assess the future potentialities of the HMPs. It has been found that values of all these seven categories have increased between 152.34% and 784.63% in 1996-97 from 100% in 1988-89.

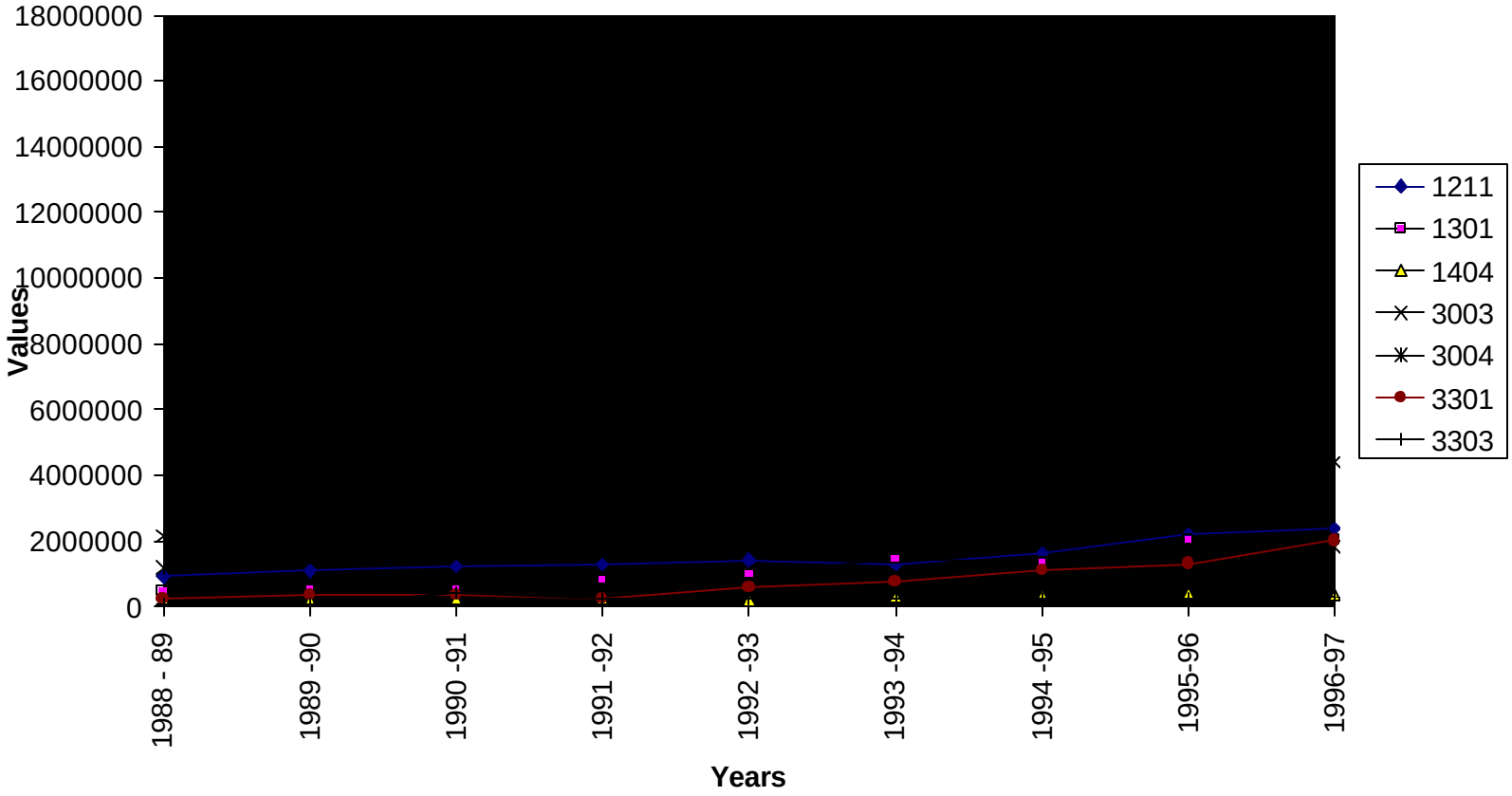
Table 6.4: Year-wise Export Values of HMPs and Various Extracts from HMP

Articles Codes	Articles	1988 - 89 Values	1989 -90 Values	1990 -91 Values	1991 -92 Values	1992 -93 Values	1993 -94 Values	1994 -95 Values	1995-96 Values	1996-97 Values
		(Rs.'000)	(Rs.'000)	(Rs.'000)	(Rs.'000)	(Rs.'000)	(Rs.'000)	(Rs.'000)	(Rs.'000)	(Rs.'000)
1211	Part and parts of Plants including seed and fruit used for perfumery and phar. etc.	920161 (100.00)	1092272 (118.70)	1217079 (132.27)	1299828 (141.26)	1429334 (155.34)	1276062 (138.68)	1638048 (178.02)	2203910 (239.51)	2373892 (257.99)
1301	Lac/ naturalgums/resin/gum - resins and balsams	464058 (100.00)	515042 (110.99)	518653 (111.76)	832052 (179.30)	1021375 (220.09)	1469383 (316.64)	1325508 (285.63)	2056816 (443.22)	2036023 (438.74)
1404	Veg. Products n.e.s. or included	176088 (100.00)	227176 (129.01)	265919 (151.01)	282065 (160.78)	228688 (129.87)	298603 (169.58)	359775 (204.32)	416459 (236.51)	380616 (216.15)
3003	Medicaments (excl. goods MDG No. 3002, 3005 or 3006) consisting of 2 or more constituents mixed together HMN medicine not for retail sale	2163851 (100.00)	3915089 (180.93)	4385753 (202.68)	2947536 (136.22)	2387268 (110.32)	3266048 (150.94)	3572207 (165.09)	3227392 (149.15)	4395545 (203.14)
3004	Medicaments (excl. items of 3002, 3005, 3006) for therepeutic, prophyllacticuses in measured doses for retail sale	1202447 (100.00)	2510485 (208.78)	2880267 (239.53)	7807794 (649.33)	7242579 (602.32)	9589187 (797.47)	11628389 (967.06)	16330148 (1358.08)	1831801 (152.34)
3301	Essential oils incl. concentrates and etc.	256990 (100.00)	354215 (137.83)	381576 (148.48)	270360 (105.20)	596922 (232.27)	758309 (295.07)	1106873 (430.71)	1318160 (512.92)	2016411 (784.63)
3303	Perfume and toilet waters	66878 (100.00)	94940 (141.96)	404208 (604.40)	222030 (331.99)	271655 (406.19)	249008 (372.33)	234650 (350.86)	264540 (395.56)	326238 (487.81)

Source: DGCIS, Calcutta. Monthly Statistics of the Foreign Trade of India Annual number for 1988-89 to 1995 - 96, volume 1 exports and re-exports March 1989 to March 1996. The data in the Table have been reproduced in the following graph.

Note: Figures in the brackets represents the growth percentage, where 1988-89 has been taken as base year.

Chart 4 :Yearwise Export Data of HMPs and various extracts from HMPs (values in Rs '000)



6.5 Contribution of HMP in National Economy

Herbal Medicinal plants are considered as a part of minor forest produce, consisting of a large number of heterogeneous items for the purpose of National Income Accounts. Moreover, there is only a couple of documents which throw some light on how CSO estimates the contribution of HMPs to the national income.

The limitation with regard to the availability, quality and completeness of forestry data have been briefly mentioned at various places in NASSM, 1989. The current data available from the states on production and prices suffer from a number of limitations viz., (a) non-availability of data on species-wise production and prices, (b) time lags.

Data published on forestry are not useful for estimation of gross value added (GVA) from forestry sector because of the time lag. Hence, CSO collect data on outturn of forest product and prices on a financial year basis for building up these estimates. But a serious and a substantial quantity of production goes unrecorded. CSO had been using a norm of 10 percent of the value of unrecorded production from forestry sector uniformly for all the states. Data on quantity and producer prices of most of the minor forest products (MFPs) are not available. For some states data on production and prices are available in respect of some of the important MFPs, whereas for some other states only the royalty value realised is available. Royalty value does not reflect the economic value of the product but at the same time there is no alternative except to use the royalty receipt in the absence of any other information. The final conclusion that emerges is that the economic value of HMPs may be taken as 10 times of the royalty value. However, it is suggested that the results on the subject by any state may be considered an estimation for that particular state. (For details, see appendix I)

Chapter Seven

Conclusions and Policy Recommendations

7.1 Major Findings

Herbal Medicinal Plants are important source of livelihood in Himachal Pradesh. In many areas of mid-hills and high-hills regions of the state, and in those areas, where agriculture remains at a subsistence level, people depend on multiple non-agricultural activities and forest resources. In several areas, collection and gathering of forest resources is a very important economic activity, though it may not be reflected in the Census or NSSO Reports. This sector also has enormous importance from the point of view of women's employment. Women, all over Himachal, take a very active part in collection and processing of medicinal plants.

There is a great demand for the medicinal plants of Himachal in Delhi and Amritsar the main herbs' market in India. Thousands of quintals of medicinal plants are exported every year to these two cities from this state. Though State Forest Department data shows that after 1992-93, the extraction of HMPs has come down drastically, the actual extraction might not have declined down in that fashion. And there may be a serious under-reporting in the government data. In reality the extraction of medicinal plants is going on in an unsustainable manner. Due to this, a number of medicinal plant species have become endangered or are in a vulnerable state. The extraction of medicinal plants in the state depends on the demand placed by the traders from outside the state. The demand comes to the village level agent in a backward movement through the multi layer market channel. The village level agent places his demand in front of the villagers accordingly. The serious competition among the households during the collection season results in extraction of immature plants and over extraction without providing time for regeneration. Lack of market facility compel the villagers to sell the materials only to these middle men, in a much lower price than the actual market price. On the other hand, inconsistent and inappropriate forest laws put the villagers in trouble in many areas of the state.

Extraction of medicinal plants in unsustainable manner will lead to destruction of forest habitat and imbalance of forest ecology. Continuing loss of medicinal plants and their natural habitat and loss of local control over natural resources and their management will lead to a livelihood problem for those people who are primarily dependent on the forest resources.

Apart from the above the following features of the sector emerges from this study:

?? The activities associated with extraction, processing and trading of HMPs are not merely seasonal, but they are also fraught with various kinds of uncertainties both of availability, as well as of market demand.

?? To the extent collector households depend on HMPs for sustenance, such uncertainties contribute greatly to the vulnerability of these households.

?? The species that grow in nearby forest areas are mostly collected by women and children and are comparatively low priced. Young male members collect species from high-hill regions and alpine pastures, which are high priced items.

?? Patterns of collection vary across the regions and also according to regeneration cycles of the species in the same region.

?? Amount of collection and income generated from HMPs is directly related to the demographic structure of the household.

?? Women's employment is restricted only to collection and primary processing. Marketing is done by men at both household and higher level.

?? The extent of profit margins in the trade in HMPs even within the state are very high with the middlemen usurping much of the difference between the value of the products in the final market and village level price.

?? Much of this difference can be explained by the absence of access: physic al access to larger markets and absence of information and contacts.

?? The multiplicity of legal provisions dealing with extraction of and trade in HMPs across the districts of Himachal coupled with the legal loopholes they entail, often go against the interest of the collector households as well as turn out to be inimical to biodiversity considerations.

7.2 Importance of Government Level Information

Herbal medicinal plant sector has a vast importance both from the point of view of maintaining the eco-system and also for generating employment and income for rural poor. At the same time, it has also been observed that lack of government support and care have damaged the sector over the years. Failure of the Forest Department machinery in taking care of the growth of Medicinal Plants has made a number of medicinal species highly vulnerable from the point of view of their regeneration. The State Forest Department does not seem to have any exhaustive list of the medicinal plant species. Even if any such list really exists, forest officials are not aware of it. Forest officials do not have any clear-cut idea about the location and regeneration patterns of different items across the state. Lack of motivation and specialised knowledge has made the condition worse. The data section of

forest department is in poor condition. The Forest Department does not have correct figures for the revenue collected from medicinal plants, nor do they have even any idea of this sector's potential for employment or income generation for the rural poor. Ignorance results in the inefficient management by the government.

7.3 Reform of the Institutional Framework

Existing roles played by the Forest Department in medicinal plant sector is quite limited and contradictory. Starting from collection to export, forest department's role needs strengthening. There is no single regularised rule for collection of medicinal plants through out the state. In many places, rules are not people friendly, and they create problems for the villagers. Lots of illegal extraction and over extraction takes place due to the illogical rules imposed by the forest department. Inconsistency exists in issuing export permits and collecting export fees, verification at the forest check post and maintaining basic records related to transaction.

Before starting any new venture to rectify the above problems, one needs to chart out a clear vision of the objectives. The primary goals of the government should be to safeguard the forest resource from harmful extraction and enhance the productivity towards the maximum benefit for the rural poor. Since local communities have long been closely associated with the management and utilisation of various resources and are the first layer of people who are directly dependent on it, their involvement should be the first step that needs to be taken towards achieving the above goals.

It appears that Joint Forest Management format would be the right choice for active involvement of Forest Department in the sector. The main elements of a possible strategy under the JFM approach to reap maximum benefit from medicinal plants and other NTFPs in a sustainable manner may be developed in the following way:

?? Identification of geographical location of key resource catchments.
?? Formulations of village level working plans involving villagers, panchayat officials and the forest department on managing the local forest and sustainable harvesting practices.
?? Further research on HMPs and possibility of their cultivation under forest conditions by using people’s knowledge and practice at local level.

The above venture should be backed by some institutional mechanism. Village Forest Protection Committee (VFPC) may be a possible solution. The committees may involve themselves in the following tasks:

?? Establishing overall extraction limits for the local forest area and enforcing extraction timings.

?? Collection of royalties through VFPC, to avoid the official delays and complications.
?? Involving VFPC in negotiating prices with bulk purchasers in each locality.

Majority of the medicinal products grow within natural forest systems, and form a substantial part of income and subsistence of a large number of people. The role of the forest department should be to devise and implement strategies for managing the forests in such a way that income earned from medicinal plants and other NTFPs can be optimised and sustained over the long run.

Quality of forests is directly related to the growth of HMPs. A particular species of medicinal plant only grows in a particular eco-system. Depletion of other forest resources again will lead to the depletion of medicinal plant species. Hence, the Forest Department has to keep a vigil on all major and minor forest resources.

Appendix I

A Note on the Estimation Procedure for Measuring the Contribution of HMPs in National economy [*]

Because of the very nature of this sector, it is very difficult to estimate the value of the total production and hence its contribution to National Income. So herbal medicinal products are considered as a part of minor forest produce consisting of a large number of heterogeneous items such as bamboo, fodder, lac, sandalwood, honey, resins, gums, tendu leaves etc. for the purpose of National Income Accounts.

National Accounts Statistics, Sources and Methods (NASSM), (CSO, 1989) is a document which describes how 'National Income Statistics in India' are being compiled. In March 1994, National Accounts Statistics, Factor Income (New series) 1980-81 to 1989-90 was also published with a brief description of how factor Incomes are compiled. Till date these are the only two documents which throw some light as to how Central Statistical Organisation (CSO) estimates the contribution of Herbal Medicinal Products to the National Income. The present note is based on these two documents and the discussions held with the officials dealing with the subject and is presented in the following paragraphs.

Data published on forestry are not useful for estimation of gross value added (GVA) from forestry sector because of the time lag. Hence CSO has been collecting data on outturn of forest product, and the prices there of prevailing in the assembling centres directly from the state forest departments on a financial year basis for building up these estimates. As per the above sources the response is reasonably good and the data is available with a time lag of one or two years for most of the states.

To quote from NASSM 89, 'though the statistics on major forest products are to some extent complete, statistics on minor forest products are generally not satisfactory. A serious limitation of these outturn data is that they represent only the authorised exploited forest resources and a substantial quantity of production goes unrecorded. This unrecorded production comprises of (i) authorised (but unrecorded) and unauthorised removals of timber and firewood from reserved/protected forests and (ii) unrecorded production from private owned forests and non-traditional forest areas (e. g., tree in village commons, field ridges, canal sides, road sides, fruit trees no longer productive etc.). The authorised removals are those done by the right holders staying in the periphery of natural forests and are generally not recorded in the official records of production. CSO had been using a norm of 10 percent of the value of recorded production for estimating the value of unrecorded

[*] This section has been written by D. V. Rukmini

production from forestry sector uniformly for all the states. This norm was based on "The Timber Trends Study for the Far East Country Report for India" (TTS) for the year 1957-58. However, this study is very old and the applicability of this norm needed a thorough review keeping in view the changed pattern of supply and consumption of forest products.'

Because of the above said limitations Herbal Medicinal Products get included into the national accounts mostly in an implicit form as a part of minor forest products (MFPs) and where-ever recorded outturn figures are available they get accounted for explicitly.

Data on quantity and producer prices of most of the minor forest products (MFPs) are not available. The items of MFPs vary from state to state. The agencies/arrangements for gathering the MFPs are also different from state to state. For some states data on production and prices are available in respect of some of the important MFPs whereas for some other states only the royalty value realised is available. The status of MFPs statistics was also reviewed in the CSO Meeting of February, 1987. It was observed during the discussions that the royalty value does not reflect the economic value of the product but at the same time there is no alternative except to use the royalty receipt in the absence of any other information on production and prices of minor forest products. The final conclusion that emerged was that the economic value of MFPs be taken as 10 times of the royalty value. However, it is suggested that if some states have conducted studies on the subject, the results of their studies may be used for the respective states. It was also suggested that the output of the MFPs should be evaluated separately for the products for which quantity and prices are available and for the rest of the products for which only royalty receipts are available. With the setting up of Tribal Development Corporations and Forest Development Corporations, the reliability of the MFPs statistics is likely to improve in future.

Since, even in NASSM 89 the emphasis is on Timber and firewood one has to satisfy oneself with the available norms. To arrive at the net value added from outturn data a norm of 10 percent is used for inputs. In the absence of information on the unorganised part of forestry sector net value added from this sector is taken as the residual after deducting the net value added from the organised forestry sector. This residual is treated as mixed income from self employed as this cannot be further broken into factor income.

The limitation with regard to the availability, quality and completeness of forestry data have been briefly mentioned at various places in NASSM 89. The current data available from the States on production and prices suffer from a number of limitations viz., (a) non-availability of species-wise production and prices, (b) incomplete coverage of reporting of overall production, (c) the non-availability of data on production and prices of the minor forest products, (d) time lag.

The forestry products have a lot of variability with regard to their quality and the prices vary even within the same species. Depending upon the climatic and other factors, trees belonging to the same species may belong to different quality classes. The products of these various quality classes may also fetch prices which are largely varying from one quality class to another. Thus, for proper evaluation of forestry products, it is necessary to have the production as well as price data, not only species-wise but also quality/class-wise for the same species. However, under the present system of reporting of forestry statistics, many SFDs (State Forest Department) are reporting a single figure for production and a single price against that volume. This has a telling effect on the quality of the estimates. Another major drawback of the available statistics of production is that there is no way to check its completeness.

Appendix II

Year-wise extraction of HMPs in Himachal Pradesh(in quintals)

		1984-85	*1985-86*	*1986-87*	*1987-88*	*1988-89*	*1989-90*	*1990-91*	*1991-92*	*1992-93*	*1993-94*	*1994-95*	*1995-96*
1.	Dhoop	4,468.11	5,325.00	5,927.35	3,548.13	5,844.93	4,064.05	4,939.83	5,743.85	2,518.60	2,166.00	3,260.00	2,025.00
2.	Diascorea	1,159.60	2,391.00	2,071.00	3,371.00	1,672.00	180.00	380.00	85.00	315.00	533.00	5.00	130.00
3.	Karu / Kour	2,444.07	2,347.07	1,243.47	674.08	1,468.33	199.95	2,899.50	4,181.60	609.85	321.00	343.00	430.00
4.	Mushak Bala / Nihani	1,457.41	857.08	499.14	1,323.35	1,954.47	1,247.31	2,014.43	5,561.98	1,839.80	1,079.00	483.00	1,487.00
5.	Tej Patra	802.41	528.00	83.31	1,409.50	1,430.93	849.50	0.00	372.00	663.00	745.00	675.00	308.00
6.	Brahmi	232.78	134.00	562.65	537.00	417.98	166.50	335.50	329.00	8,858.00	5,030.00	921.00	500.00
7.	Birch / Buch /	259.44	124.00	55.85	315.65	16.00	32.20	68.00	0.00	257.35	0.00	15.00	65.00
	Bhojpatra												
8.	Yew leaves	124.00	183.00	175.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.	Efedra	235.00	270.00	310.00	615.00	471.00	531.00	480.00	525.00	738.00	1,892.00	0.00	127.00
10.	Kuth / Thuth	67.00	0.21	0.00	5.00	3.00	648.00	667.92	810.15	553.60	212.00	321.00	259.00
11.	Guchhies	267.44	154.66	1,280.34	560.02	402.99	137.68	2,800.89	1,492.31	1,209.38	475.00	490.00	363.00
12.	Chora	33.75	17.00	34.27	139.03	122.24	8.00	27.60	100.00	199.50	46.00	66.00	12.00
13.	Banafasha	21.10	19.14	84.05	449.11	26.76	195.30	0.00	19.30	97.30	47.00	71.00	39.00
14.	Kakkar singi	117.66	174.03	173.06	69.12	129.41	473.85	278.25	1,153.27	138.48	15.00	17.00	26.00
15.	Dorighas	126.70	248.00	167.00	0.00	40.00	154.00	333.44	222.00	790.15	385.00	25.00	561.00
16.	Bankakri	76.13	59.64	1.38	171.32	445.55	21.60	205.60	1,147.20	512.92	65.00	122.00	224.00
17.	Jarka	38.90	45.00	59.70	3.98	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.	Baryan/bach	41.01	25.96	116.40	639.20	124.67	92.00	10.00	50.97	41.55	8.00	9.00	80.00
19.	Balchhar	14.00	11.00	7.20	0.00	20.00	15.00	22.00	40.00	0.00	0.00	0.00	0.00
20.	Mithi Patties	332.17	37.56	122.63	22.55	60.75	12.14	48.24	56.18	60.32	30.00	0.00	52.00
21.	Kauri Patties	18.99	0.84	4.51	1.22	189.81	1.01	2.71	992.00	33.14	17.00	25.00	0.00
22.	Talis Pattar	1,293.10	5.90	0.00	0.00	8.45	0.40	654.45	9.50	492.80	508.00	782.00	592.00
23.	Viola Flowers	100.00	0.00	32.85	8.00	0.00	2.25	118.00	21.40	0.00	0.00	0.00	0.00
24.	Acer	2.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.	Nihani	1.48	2.20	4.00	12.00	12.55	54.00	3.50	0.00	12.00	605.00	1,159.00	0.00
26.	Kala Zira	16.88	10.46	18.23	17.40	70.18	5.38	5.45	526.83	5.03	0.00	0.00	0.00
27.	Butkesi	96.56	26.00	0.00	0.00	53.37	57.00	163.70	455.00	157.29	82.00	74.00	32.00
28.	Thuth	356.30	392.39	463.50	739.40	582.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29.	Chukri /	10.00	10.00	76.35	119.00	276.58	261.28	8.61	0.00	417.86	90.00	94.00	832.00
	Reward chini												
30.	Reward chini	56.07	9.32	0.00	28.66	20.11	72.00	212.20	957.42	48.40	95.00	80.00	0.00
31.	Mitha Tila	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32.	Bajh	50.34	530.00	67.00	136.00	0.00	275.30	87.00	153.00	138.00	10.00	0.00	75.00
33.	Kail cones	285.52	32.00	641.00	60.50	0.00	417.50	1,000.00	0.00	0.00	0.00	0.00	0.00
34.	Bhoj patra	73.00	0.00	138.00	148.00	0.00	286.00	51.56	136.00	25.00	0.00	0.00	0.00
35.	Salam Panja	10.75	17.00	16.00	39.00	0.00	4.00	7.52	60.00	0.00	0.00	0.00	0.00
36.	Chuchi	83.65	0.00	0.00	10.00	0.00	490.00	273.00	135.00	0.00	0.00	0.00	0.00
37.	Anjwar	50.00	56.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38.	Salam Misri	93.42	96.00	65.20	93.25	8.20	60.00	1.54	3.58	50.38	18.00	0.00	0.00
39.	Sath Jalari	8.50	5.00	1.00	55.00	183.00	6.00	21.00	50.00	0.00	0.00	0.00	0.00
40.	Lichens	181.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

41.	Churachi	0.00	85.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42.	Ajwain	0.00	85.00	65.60	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43.	Walnut bark	0.00	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44.	Berbery roots	0.00	1,100.00	450.00	1,201.00	2,981.25	0.00	12,824.00	5,222.46	8,153.75	3,946.00	0.00	111.00
45.	Wild merry-gold	0.00	100.00	0.00	600.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46.	Shirla	0.00	40.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
47.	Cedar Oil	0.00	655.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48.	Baryass	0.00	0.00	0.00	131.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49.	Mushrooms	0.00	0.00	0.00	0.40	37.80	15.50	0.00	0.00	0.00	0.00	0.00	0.00
50.	Kins	0.00	0.00	0.00	285.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51.	Kashmiri Patta	0.00	0.00	0.00	11.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.	Dari	0.00	0.00	0.00	289.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53.	Balchora	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54.	Cidar Roses	0.00	0.00	0.00	470.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55.	Buj	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56.	Soth Falari	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57.	Bethar	0.00	0.00	0.00	96.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58.	Balchhal	0.00	0.00	0.00	23.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59.	Baj	0.00	0.00	0.00	22.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.	Romarsi	0.00	0.00	0.00	113.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61.	Pathish	0.00	0.00	0.00	11.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62.	Atish	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
63.	Karvi	0.00	0.00	0.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64.	Safed Lathi	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65.	Nanai	0.00	0.00	0.00	22.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
66.	Dekeru	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67.	Mameda	0.00	0.00	0.00	241.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
68.	Pathrikh	0.00	0.00	0.00	0.00	10.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69.	Neoza	0.00	0.00	0.00	0.00	656.83	0.00	0.00	0.00	116.00	0.00	403.00	572.00
70.	Kashmal roots	0.00	0.00	0.00	0.00	0.00	11,195.00	0.00	0.00	0.00	0.00	0.00	0.00
71.	Chilgoza/Neoza	0.00	0.00	0.00	0.00	0.00	562.63	600.00	0.00	0.00	0.00	0.00	0.00
72.	Others	156.23	148.08	700.60	83.35	1,553.85	2,046.57	6,579.90	17,278.57	18,440.71	7,519.00	9,387.00	5,822.00
	Total	**15,263.82**	**16,393.54**	**15,717.64**	**19,143.47**	**21,586.65**	**24,839.90**	**38,125.34**	**47,890.57**	**47,493.16**	**25,939.00**	**18,827.00**	**14,724.00**

Source : Forest Department Record, Himachal Pradesh.

Note : The Forest Department of Himachal Pradesh collected the above data from various circles such as Chamba, Dharamshala, Kullu, Shimla. Till 1989 the total extraction was mentioned in terms of quantities on which collection and export fees were collected and quantities collected Mandi, Rampur and by right holders. However, in recent years it is mentioned that no reliable data are available with the department regarding market value and quantity of herbs consumed locally by the right holders.

Appendix III

Gender Desegregated Classification of Main and Marginal Workers (other than cultivators and agricultural labourers) by N.I.C. Codes

HIMACHAL PRADESH

Section, Division & Group of N.I.C.		006	007	009	01-	018	05-	054	304	305
Main Workers	*Males*	686	197	611	9056	0	8093	897	465	175
	Females	218	16	93	1461	1	337	60	39	2
Marginal Workers	*Males*	41	0	2	191	0	19	4	0	0
	Females	283	0	4	1145	0	31	3	0	0
CHAMBA										
Main Workers	*Males*	2	10	16	126	-	-	8	3	4
	Females	0	0	9	6	-	-	0	0	0
Marginal Workers	*Males*	0	0	0	4	-	-	0	0	0
	Females	0	0	0	0	-	-	0	0	0
KANGRA										
Main Workers	*Males*	9	27	159	338	-	-	441	-	-
	Females	0	3	33	123	-	-	35	-	-
Marginal Workers	*Males*	0	0	0	2	-	-	3	-	-
	Females	0	0	1	17	-	-	2	-	-
HAMIRPUR										
Main Workers	*Males*	4	5	26	9	0	284	74	7	12
	Females	0	1	0	1	1	10	1	0	0
Marginal Workers	*Males*	0	0	0	0	0	1	0	0	0
	Females	0	0	0	0	0	0	0	0	0
UNA										
Main Workers	*Males*	8	9	36	83	-	655	78	19	34
	Females	10	0	8	25	-	23	16	0	0
Marginal Workers	*Males*	2	0	0	0	-	4	0	0	0
	Females	3	0	0	0	-	0	0	0	0
BILASPUR										
Main Workers	*Males*	2	37	24	25	-	535	16	14	10
	Females	0	1	0	1	-	5	0	0	0
Marginal Workers	*Males*	0	0	1	2	-	1	0	0	0
	Females	0	0	2	0	-	0	0	0	0
MANDI										
Main Workers	*Males*	1	16	64	245	-	1494	168	34	17
	Females	1	1	3	35	-	66	6	0	0
Marginal Workers	*Males*	0	0	1	2	-	4	0	0	0
	Females	0	0	0	8	-	1	0	0	0
KULLU										
Main Workers	*Males*	30	13	27	325	-	811	17	7	7
	Females	3	0	0	33	-	36	0	2	0
Marginal Workers	*Males*	0	0	0	11	-	2	1	0	0

	Females	**0**	**0**	**0**	**33**	**-**	**5**	**0**	**0**	**0**
LAHUL AND SPITI										
Main Workers	***Males***	**199**	**5**	**3**	**3**	**-**	**163**	**0**	**-**	**-**
	Females	**61**	**3**	**1**	**2**	**-**	**27**	**1**	**-**	**-**
Marginal Workers	***Males***	**12**	**0**	**0**	**0**	**-**	**1**	**0**	**-**	**-**
	Females	**148**	**0**	**1**	**0**	**-**	**18**	**0**	**-**	**-**
SHIMLA										
Main Workers	***Males***	**189**	**27**	**92**	**7592**	**-**	**1953**	**60**	**6**	**3**
	Females	**46**	**1**	**20**	**1195**	**-**	**86**	**0**	**0**	**1**
Marginal Workers	***Males***	**4**	**0**	**0**	**170**	**-**	**2**	**0**	**0**	**0**
	Females	**1**	**0**	**0**	**1085**	**-**	**2**	**0**	**0**	**0**
SOLAN										
Main Workers	***Males***	**230**	**19**	**73**	**72**	**-**	**1050**	**23**	**232**	**50**
	Females	**96**	**1**	**11**	**11**	**-**	**27**	**0**	**27**	**1**
Marginal Workers	***Males***	**23**	**0**	**0**	**0**	**-**	**2**	**0**	**0**	**0**
	Females	**131**	**0**	**0**	**1**	**-**	**4**	**1**	**0**	**0**
SIRMAUR										
Main Workers	***Males***	**11**	**7**	**68**	**148**	**-**	**922**	**10**	**142**	**38**
	Females	**1**	**0**	**3**	**7**	**-**	**9**	**1**	**10**	**0**
Marginal Workers	***Males***	**0**	**0**	**0**	**0**	**-**	**2**	**0**	**0**	**0**
	Females	**0**	**0**	**0**	**1**	**-**	**1**	**0**	**0**	**0**
KINNAUR										
Main Workers	***Males***	**1**	**22**	**23**	**90**	**-**	**226**	**2**	**1**	**-**
	Females	**0**	**5**	**5**	**22**	**-**	**48**	**0**	**0**	**-**
Marginal Workers	***Males***	**0**	**0**	**0**	**0**	**-**	**0**	**0**	**0**	**-**
	Females	**0**	**0**	**0**	**0**	**-**	**0**	**0**	**0**	**-**

Source : Census 1991.

Note : 006 - Growing of roots and tubers, vegetables, singhara, chillies and species (other than pepper and cardamom)

007 - Floriculture and horticulture including tree nurseries

009 - Agricultural production n.e.c.

009.1 - Growing of medicinal plants

01 - Plantations

018 - Growing of ganja, cinchona and opium etc.

05 - Forestry

054 - Gathering of uncultivated materials such as gums, resins, lac, barks, herbs, honey, wild fruits, leaves etc. by exploitation of forests.

304 - Manufacturing of drugs, medicines and allied activities.

304.3 - Manufacturing of ayurvedic/unaini medicines.

305 - Manufacturing of perfumes, cosmetics, lotions, tooth paste etc.

A***ppendix IV***

List of Important Medicinal Plants of Himachal Pradesh by Local names, Botanical names and Uses

Sl. No.	Local Name	Botanical Name	Use
1	Agar kali		
2	Amaltash	*Cassia fistula*	Ayurvedic / Unani medicines
3	Amla	*Embelica officinalis*	Ayurvedic / Unani medicines
4	Anardana/Daru	*Pnnica granatum*	Spice
5	Anjwar		
6	Arjun	*Terminalia arjuna*	Ayurvedic / Unani medicines
7	Atis	*Aconitum heterophyllum*	Ayurvedic medicines
8	Bach/Barre	*Acorus calamus*	Calamus oil
9	Banafsha	*Viola serpens*	Medicinal
10	Ban ajwain	*Thymus sechyllum*	medicinal
11	Bankakri	*Podophyllum emodi*	Source of Podophyllin
12	Basanti	*Hypericum Patulum*	Medicinal
13	Basuti	*Adhatoda vasica*	Alkaloids and essential oil
14	Behera	*Terminalia belerica*	Ayurvedic / Unani medicines
15	Bhang	*Cannabis sativa*	fibre, medicinal, marijuana
16	Bhojpatra	*Betula utilis*	Ayurvedic medicines
17	Brahmi / Minaki	*Centella asiatica*	Ayurvedic medicines
18	Chora	*Angelica glauca*	medicinal
19	Chraita	*Swertia chirayita*	Medicinal
20	Deodar	*Cedrus deodara*	Cedarwood oil
21	Dhara phool	*Woodfordia fruitiocosa*	Ayurvedic medicine
22	Dhoop	*Jurinea macrocephala*	Incense
23	Dori grass	*Potentilla nepalensis*	Ayurvedic medicine
24	Galoi / Gulchhe	*Tinospora cordifolia*	Ayurvedic medicine
25	Guchhi	*Morchella esculenta*	Edible mashroom
26	Harar	*Terminalia chebula*	Ayurvedic medicine
27	Hauber	*Juniperus communis*	Medicinal oil
28	Jatamansi / Balchad	*Nardostachys grandiflora*	Essential oil
29	Jharka	*Atropa belladona*	
30	Kahda sindhi		
31	Kakar singhi	*Pistacia intergerrima*	Medicinal
32	Kala zira	*Carum carvi*	Flavouring / Medicinal
33	Kapoor kachri	*Hedychium acuminatum*	Medicinal
34	Kamila	*Mallotus philippinensis*	
35	Karroo / Kutki	*Picrorhiza kurroa*	Medicinal

36	Kashmol / Daruharidra	*Berberis spp.*	Medicinal
37	Kuth	*Saussurea lappa*	Medicinal
38	Languli	*Gloriosa superosa*	Ayurvedic medicines
39	Lichens	*Parmelia spp.*	Medicinal
40	Mal kangni	*Celastrus paniculatus*	Medicnal oil
41	Mamira	*Thalictrum foliolosum*	Medicinal
42	Manu / Poshkar	*Inula racemosa*	Medicinal
43	Musakbala / Nihani	*Valerina wallichi*	Essential oil
44	Nirbisi	*Delphinium denudatum*	Medicinal
45	Pashanbhed	*Bergenia ciliata*	Medicinal
46	Patish	*Aconitum chesnantha*	Medicinal
47	Patthar Mehendi	Lichens	Edible colouring agent
48	Pokhar mool	*Polygonum hydropipu*	Essential oil / Medicinal
49	Pudina	*Mentha longifolia*	Flavouring / Essential oil
50	Rakhal / Talispatra / Birmi	*Taxus Baccata*	Medicinal
51	Reetha	*Sapindus mukrossi*	Soapnuts
52	Rewand chini / Chhuchi	*Rheum emodi*	Medicinal
53	Safed musli	*Aspergus adscendens*	Medicinal
54	Salam mishri	*Polygonum amplexicaule*	Medicinal
55	Salam panja	*Orchis latifolia*	Tonic
56	Sathjalodi	*Ainaliaca aptra*	
57	Seski	*Artemesia maritima*	Medicinal
58	Singli mingli	*Dioscoria deltoidea*	Alkaloid
59	Somlata	*Ephedra geradiana*	Medicinal
60	Tejpatta	*Cinnamomum tamala*	Flovouring
61	Tirmara	*Zanthoxylum armatum*	Medicinal
62	Tuth	*Salvia moorcroftiana*	Essential oil / Medicinal
63	Wild marigold	*Targetus minuta*	Essential oil

Source:Bajaj (1997), Dhiman (1976)

Appendix V

A List of Select Medicines Consisting of Herbs found in Himachal Pradesh

Name of the Product	Name of the species found in Himachal	Name of the Firm
Dabur Swapnahari	Belladonna	Dabur
Liver Tone	Brahmi	DBT Pharmaceuticals
Stomach Cure	Belladona	DD Chemicals
Sarascoatichurna	Brahmi	DD Chemicals
Sinkara	Jatamansi/ Balchar	Hamdard
Joshina	Banafsha	Hamdard
Geriforte Tab. Rog Nashak	Brahmi Kutki	Himalaya Drugs Indo-German Alkaloids
Shakti Vikas	Brahmi	-do-
Shikakai Oil	Brahmi	-do-
Sodha	Kutaki	-do-
Surma	Kashmal	-do-
Vitaplex	guggal, Karwa Atis, Salam-mishri	-do-
Bharangyadi Quath	Patela	-do-
Hynotensan Tab.	Brahmi	-d0-
Katphaladi Churna	Kakar-singhi	-do-
Livotrit (Liquid)	kashmal	-do-
Kumari Asara	Pushkar mool	-do-
Lodhrasava Mushalyadi Tab.	Ativish Mushli	-do- -do-
Madhya Rasayan Churna	Brahmi	-do-
Kepidya	Belladona	Centaur Pharma
Koflet	Kuth, Amla	Himalaya Drugs
Kuftone	Manu (Pushkar mool)	Dharmani Drugs
Kynotomine	Rewadchini, Kutki	J and J Dechane Lab.
Lectare	Safed Musli, Manu	TTK Pharma
Laxeen Forte	Amla	Kamal Pharmacy
Laxeen	Harrar, Amla	-do-
Lipochen	arjun, karoo	Libra Drugs
Liv-up	amla, katuki	Walter Bushnell
Livibell	Bach	Shilpa Chem.
Livotrit	kashmal	Zandu
Liv-52	Arjuna, Daruharidra, Amalaki	The Himalaya Drugs
Lukol	Mushakbala	The Himalaya Drugs
Mansedon Minintone (Baby tonic)	kashmol, Arjun, Belladona Amla, Bach, Behra	Mendine Pharmaceuticals Mycil Pharmaceuticals
Myson	Guggal, Bhang	Alarsin Marketing Pvt. Ltd.

Neurocalm	Mushakbala, Ashwa-gandha	Swastik Formation
Octine Expectorant	Banafsha, Jatamanasi, Talispatra	Mycil Pharmaceuticals
Ovin	Satvari	Vinrek Lab.
Ovoutoline	Satvari	Zandu
Pachan sudha	anardana	Shilpa Chem.
Pee-Fee-Forte	Salampanja, salam-mishri, ashwa-gandha	Aimil Pharmaceuticals
Pektoline with Belladonna	Belladona	Libra Drugs
Piline Psynil	kashmal, Harrar Jatama nashi, Ajwain, Butch, Ashwa-gandha	Kamal Pharmacy Shilpa Chemicals
Preptone	Patela, Amla, Kutki	Swastik Formation
Polymix	Kashmal	Synthochem

Source: Kapoor, S.L. and R. Mitra, "Herbal Drugs in Indian Pharmaceutical Industry", National Botanical Research Institute, Lucknow; Journal of Medicinal and Aromatic Plant Sciences, Central Institute of Medicinal and Aromatic Plants, Lucknow, Vol. 18, No.3, Sept. 1996.

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