

Study on Domestic Market of Medicinal and Aromatic Plants (MAPs) in Kathmandu Valley



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Bukhundole, Lalitpur

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Preface

The Non Timber Forest Products (NTFPs), previously known as Minor Forest Products, are one of the major components of global biodiversity. It is now widely recognized that NTFPs play an important role in a country's socio-economic development. One of the major goals of the tenth five-year plan projected by His Majesty's Government of Nepal is to uplift the socio-economic status of majority of the people residing in the rural and remote areas of the country. Therefore, several government and non-government organizations are involved in various activities leading to poverty alleviation through sustainable utilization and marketing of the NTFPs/MAPs.

This survey was conducted to assess the quantity of NTFPs/MAPs consumption in Ayurved product manufacturer/practitioners, herb processors/exporters based in Kathmandu valley. Based on information obtained from different stakeholders and experts the marketing chain is identified and trade status of the common herbs is also known. Assessed NTFPs/MAPs includes trade name, quantity, and tentative price.

Winrock International BDS/MaPS is thankful for the interest and financial support to conduct this project. It gives us immense pleasure to extend our sincere thanks to Dr. Luke Colavito, Team Leader, SIMI Project for his support. We are also thankful to Mr. Pradip Maharjan, Marketing Team leader, BDS-MaPS for the continuous support and constructive suggestions.

We would like to acknowledge all the company managers/proprietors of different Ayurvedic products manufacturers/practitioners, processors and exporters for the kind cooperation during the study. Similarly we are also thankful to the herb retailers of Kathmandu valley for providing their precious time even during the time of the festival. Last but not least, we extend our thanks to all the herb stakeholders who directly or indirectly involved in this survey.

Dr. Narendra N. Tiwari (Team leader)
Ram C. Poudel (Team member)
Yadav Uprety (Team member)

Executive summary

Medicinal and Aromatic Plants (MAPs) play vital role in Nepalese livelihood, health, and socio-economic prospects. The Non-timber Forest Products (NTFPs) trade is ancient and can be traced back to vedic peiod. The poor rural community in the Nepal Himalaya rely on the income made from sale of these NTFPs are still deprived from fair distribution of benefits. Thus, both the challenges and opportunities are ahead in the NTFP sector.

This survey was conducted to assess the status of the Medicinal and Aromatic plants consumed in Kathmandu valley based governmental and non-governmental Ayurvedic companies/trading houses. Herbs consumed by Ayurvedic practitioners and local consumption inside valley is also documented.

Total 214 species/forms of NTFPs/MAPs are recorded. These species are processed and traded in different forms of Ayurvedic formulations or as essential oils. The annual consumption of herbs in Kathmandu valley is 1031481 Kilogram from 186 species and 38975 Kilogram essential oil from 19 species.

Some noteworthy NTFPs/MAPs having more then 1000 kg annual demand are: *Taxus baccata* (350200 kg), *Pinus roxburghii* (190000 kg), *Piper longum* (72500 kg), *Piper chaba* (55000 kg), *Phyllanthus emblica* (50000 kg), *Ocimum santum* (32000 kg), *Rauvolfia serpentina* (30225 kg), *Operculina turpethum* (30000 kg), *Aegle marmelos* (25000 kg), *Swertia chirayita* (21000 kg), *Tinospora sinensis* (20000 kg), *Terminalia chebula* (16625 kg), *Cinnamomum tamala* (16000 kg), *Cinnamomum zeylanicum* (12000 kg), *Terminalia bellirica* (10000 kg), *Bombax ceiba* (7250 kg), *Zingiber officinale* (6000 kg), *Cinnamomum glaucescens* (5000 kg), *Withania somnifera* (4035 kg), *Zanthoxylum armatum* (4000 kg), *Commiphora mukul* (2700), *Cassia senna* (2600 kg), *Gymnema sylvestre* (2520 kg), *Glycyrrhiza glabra* (2500 kg), *Litsea cubeba* (2500 kg), *Morus nigra* (2000 kg), *Eclipta prostrata* (1600 kg), *Delphinium himalayi* (1500 kg), *Tribulus terrestris* (1500 kg), *Rhododendron arboreum* (1480 kg), *Cyperus rotundus* (1400 kg), *Pterocarpus santalinus* (1250 kg), *Asparagus racemosus* (1200 kg), *Valeriana jatamansii* (1200 kg), *Creteva religiosa* (1180 kg), *Litsea glutinosa* (1058 kg), *Curcuma longa* (1000 kg), *Solanum surattense* (1000 kg), *Rubia manjith* (1000 kg), *Piper nigrum* (1000 kg), *Elaeocarpus sphaericus* (1000 kg), Rock exudates (800 kg).

Similarly annual demand of essential oil bearing plants are: *Cymbopogon winterianus* (12350 kg), *Artemisa vulgare* (5500 kg), *Gaultheria fragrantissima* (5000 kg), *Eucalyptus camadulensis* (5000 kg), *Cymbopogon flexuosus* (3100 kg), *Cymbopogon martini* (1700 kg), *Zanthoxylum armatum* (1500 kg), *Mentha arvensis* (1200 kg), *Nardostachys grandiflora* (1000 kg), *Cinnamomum tamala* (600 kg), *Juniperus indica* (450 kg), *Cinnamomum glaucescens* (275 kg), *Rhododendron anthopogon* (250 kg), *Matricaria chamomilla* (250 kg), *Ocimum basilicum* (250 kg), *Curcuma zedoaria* (150 kg), *Valeriana jatamansii* (150 kg), *Abies spectabilis* (150 kg), *Cymbopogon jwarancusa* (100 kg)

Among 214 species 128 NTFPs/MAPs species are fulfilled from Nepal, 75 NTFPs/MAPs species are imported especially from India and 11 NTFPs/MAPs species are usually taken both from either Nepal or India. The priority NTFPs/MAPS species of BDS/MaPS posses the good demand by the Ayurvedic manufacturers and essential oil exporters in the valley. To fulfill this demand, BDS/MaPS need to work with various stakeholders to establish the proper market chain.

Furthermore based on cooperative concept this study has also purposed a market module, for BDS/MaPS pocket districts. This module incorporate BDS/MaPS pocket districts and their integrated work with herb retailers, NTFPs/MaPS processors, manufacturers and exporters residing Kathmandu valley.

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1.1. Introduction

Nepal is a small landlocked country in south Asia extending along the Himalayas in between the latitude of 26° 22' to 30° 27' N and longitude 80° 4' to 88° 12' E. Varying altitudes, climate and geological conditions are responsible for making Nepal a glorious country in the world. There are very few parallels elsewhere in the world where one finds such a great physical, cultural and biological diversity within such a small area as in Nepal. It is this unique diversity which has attracted people from round the globe to Nepal. Climatic conditions in Nepal ranges from the sweltering heat of the Terai in the lowland to the freezing cold of the Himalayas in the northern highland. As a result of extreme variations in altitude and climate, the vegetation of Nepal exhibits a wide range of diversity.

Non timber forest products (NTFPs), an important commodity of the forestry sector, includes all biological materials and different services rendered by forests land, for example, medicinal plants, fibre, wild edible plants (vegetables, fruits, spices and condiments), agricultural implements, thatching grasses, rattan, resins, pesticides, animal bedding, veterinary, green manure, dyes, ornamental plants, cosmetics, ceremonial, tannins, gums, charcoal, honey, etc., and wildlife products (bones for ritual and decoration). Role of NTFPs is crucial in socio-economic progress of the country, soil water conservation, natural resource management, human and animal health as well as environmental conservation. NTFPs harvesting and its trade are a good primary source of earning cash in many parts of Nepal. In Nepal, approximately 14% of plant species are used as NTFPs (Rawal, 1998). NTFPs uses vary from site to site because of heterogeneous community and ethnics groups in Nepal (Updhyay and Shrestha, 2004).

Among all categories of NTFPs Medicinal and Aromatic plants (MAPs) play vital role in Nepalese livelihood, health, and socio-economic prospects. Basnet (2001) has reported 61 species of NTFPs from the Terai area, all having medicinal value. Some of these NTFP species: Bojho (*Acorus calamus*), Kurilo (*Asparagus racemosus*), Harro (*Terminalia chebula*), Barro (*Terminalia bellirica*), Amala (*Phyllanthus emblica*), Bet (*Calamus tenuis*), Sal (*Shorea robusta*), Bhyakur (*Dioscorea deltoidea*), and Sarpagandha (*Rauvolfia serpentina*), etc., from the tropical zone are highly exploited due to deforestation, over-grazing, forest fire, shifting cultivation and massive harvesting. The trade of NTFPs/MAPs in Nepal is traditional and is very ancient. It was also reported that huge amount of NTFPs from the different parts of Nepal are exported to India via border towns (Edwards, 1995).

It has been estimated that around 119 pure chemical substances extracted from some 90 species of higher plants are used in medicines throughout the world. Over 21,000 plant names that have medicinal uses are reported by WHO (1992). In Nepal, more than 1,600 species of wild plants are used in traditional medicinal practice and majority of which await proper documentation (Shrestha *et al.*, 2001).

The poor rural community in the Nepal Himalaya rely on the income made from sale of these NTFPs, however are still deprived from fair distribution of benefits. Thus, both the challenges and opportunities are ahead in the NTFP sector, which if addressed effectively from the concerned stakeholders and government policies, can boost the nation's rural economy. Here the need of effective market information system is lacking which is prime concern of the NTFPs/MAPs business sector.

Several works have been carried out on NTFPs/MAPs of Nepal. Some of the important works so far carried out are: Amatya (1997), Aryal (1993), CECI (1997), DMP (1982), Edward (1995, 1996), Malla *et al.* (1997), Maharjan (2000), Manandhar (2002), Olsen (1997), Rajbhandari (2001), Rawal (1997), Shrestha *et al.* (1998), Shrestha *et al.* (2003), Tiwari and Joshi (1990), Updhyay and Poudel (2004) etc.

1.2. Herbs and their consumption

The history of medicine and medicinal plants in Nepal can be traced back to the Vedic period, where Nepal Himalaya was mentioned as a sacred heaven of potent medicinal and aromatic plants. This is the place where the earliest practitioners of Ayurvedic system, like *Rishis*, *Munies*, *Vaidhyas*, *Kabirajas*, etc. from all over the subcontinents come to collect plants and meditate to discover new plants of therapeutic values. Even to this date, Nepal has been maintaining the tradition of supplying genuine medicinal plants to India and overseas.

Traditional medicines are developing with the social development since ancient time. Indus civilization evolved the Ayurveda medicines. MAPs were used in traditional and Ayurvedic medicine in Nepal from time immemorial. Thus the traditional *Dhami Jhaakri* (traditional healers) and Ayurvedic institution were in existence. Since long time local people and traditional practitioners are managing these herbs in their own way however formally management of MAPs seems to be instituted when Department of Forest added one new section Medicinal Plant section on 1960.

MAPs are termed as one of the important economic resources of Nepal. They have been intertwined with the fabrics of life to supply food, shelter, medicine, clothes, fuel-wood, fodder, timber, etc and have become a good source of subsistence and income, particularly in the rural areas of Nepal (Malla, 2000).

Medicinal plant trade is a blooming business worldwide and the third world countries including Nepal are the main supplier of resources harvested mainly from wild to meet the global demand for the drug discovery. The trade of medicinal and aromatic plants from Nepal is roughly estimated at 10,000-15,000 tons annually representing more than 95% of the quantity harvested from wild worth equivalent to US \$ 8.6 million (Edwards, 1996). It was also observed that about one million US \$ may be added to this figure, if trade of NTFPs are done systematically through proper channel. Only a fraction of the total harvest of plants are processed in Nepal. Trade also includes the plant species which have been either banned for collection, use, trade, transportation and export, or for export without processing in the country under Forest Act (1993) and Forest Regulations (1995); however, collection and trade of these species in raw form continue in Nepal and literally with no restriction.

Nepalese medicinal plants have been well known in the regional and overseas markets. Different conventional oils such as Palmarosa, Citronella, Lemongrass etc. and newly introduced unconventional items like oil of Anthopogon, Jatamansi, Wintergreen, Juniper demand is increasing from the foreign customers. The future of the essential oil industry looks encouraging and promising with foreign companies entering in Nepal for the manufacture of cosmetics soaps, detergents and other herbal based products. Domestic consumption of herbs/herbal products is very limited. The percentage of annual consumption of Nepalese herbal products is 33% and 67% for domestic market and international market respectively (Lacoul and Pant, 2000). The most dominating nations where Nepalese herbs/aromatics are consumed are France, Germany, Italy, United Kingdom, Australia, Spain, Japan, India, Pakistan, America, South Korea.

1.3. Objective of the study

General objective of this study is to assess the market of NTFPs/MAPs consumption in Kathmandu valley by different Ayurvedic manufacturers, traditional practitioners, herb exporters and processors. The specific objectives are as follows:

- a. To assess the status of government and non-governmental companies and trading houses related to the Medicinal and Aromatic plants and its derivative products.
- b. To list out the major MAPs requirements of these companies, source of supply, price and quantity of consumption.
- c. To identify the present networking and links, if any, between supplier and the buyers in Kathmandu.
- d. Identification and recommendations of possible link development between supplier and producers/exporters in BDS/MaPS project district and Kathmandu based companies for the sustainable supply chain development.

1.4. Methodology

The principle approach of the study is by consulting the public and private sector Ayurvedic companies, individuals working on herbs and MAPs traders in Kathmandu valley. The detail methodology follows the steps below.

1.4.1. Literature Review

Literature dealing with different aspects of NTFPs was reviewed from different Libraries. Major library consulted were Tribhuvan University Central Library, Kirtipur; Forestry Library, Babarmahal; WWF Library, Baluwatar; ICIMOD, Library, Jawalakhel; IUCN, Library, Bukhundole; ANSAB Library, etc. Similarly some important wave sites related with this issue were also surfed.

1.4.2. Survey of Stakeholders

Major suppliers/manufacturers of Ayurvedic drugs registered on the Aushadi Baybastha Bivag (Department of Drug Administration), Bijulibajar, of Kathmandu valley were identified and listed. Similarly various stakeholders were also identified from NEHHPA (2004).

Primary data related with different herbs consumed by valley based Ayurvedic pharmaceuticals, Ayurvedic practitioners, and herbs traders were collected through interviews with key persons with systematic checklist prepared. Information on number of Ayurvedic formulations, annual demand of the herbs, tentative price and trade link of each herbal manufacturers, practitioners and traders was highly emphasized during the survey. Interviews were informal but guided by key questions, some designed to initiate general discussion, others to collect specific data.

1.4.3. Secondary Data Collection

Relevant secondary information was obtained from available literature, government officials, personal contact individuals, NTFP experts, Ayurved experts and NGOs and INGOs working in the promotion of NTFPs.

1.4.4. Listing of Major Herbs

Based on the demand and consumption of Ayurvedic manufacturers and practitioners the master checklist of herbs were prepared. These herbs were compared with priority species of BDS-MaPS pocket districts and other species which have high production value in Nepal.

1.4.5. Identification of Trade Links

Trade link of NTFPs/MAPs was identified by consulting various stakeholders of this sector. The link was trace out by direct interview with each and every partner, which reconfirm the annual demand of manufacturers and the stock capacity of the suppliers. Production of the

herbs and their supply sites is also identified. Furthermore market link of each Ayurvedic formulations in different national and international markets and respective consumers were also identified.

1.4.6. Trade Status and Legal Provisions

Based on information obtained from key informants the marketing chain is identified and trade status of the herbs was known. Also the NTFPs in high demand and trade supply, volume of NTFPs in trade were identified. To know the details on legal issues of NTFPs/MAPs government policies, trade routes, market networks and opportunities were reviewed.

1.4.7. Limitations

Market analysis and identification of NTFPs is directly related with the livelihood of the herbal practitioners, manufacturers and suppliers. In most of the time the stakeholders don't want to disclose their practice and knowledge. Conventional business and enterprises planning of the traders and the practitioners is confidential. Again due to the limited time period of this survey intimacy with the key informants can't create further.

1.5. Study Team Composition

A study team consisted of team leader and two team member was formed by Winrock International and BDS/MaPS to furnish the study. Dr. Narendra Nath Tiwari (Ayurvedic Doctorate, NTFPs/MAPs expert) was appointed as a team leader and Mr. Yadav Uprety (Ecologist, NTFPs expert) and Mr. Ram Chandra Poudel (Ethnobotanist, NTFPs expert) were assigned as team members.

1.6. Executive Agency

Winrock International BDS/MaPS, Bukhundole, Lalitpur

2.1. Ayurvedic Manufacturers, Practitioners, Herb Processors and Suppliers in Kathmandu Valley

2.1.1. Public Sector

Singha Durbar Vaidhya Khana, Kathmandu prepares good range of herbal medicines that supply Ayurvedic preparations for Ayurvedic hospitals, clinics, ayurvedic practitioners and people who prefer processed herbal products. At present it is producing over 110 products.

Herb Production and Processing Company Ltd. Kathmandu produces large quantity of essential oils from the cultivated as well as wild herbs. Besides this company also manufacture and supply different herbal products of valued potentialities.

2.1.2. Private Sector

Gorkha Ayurved Company a joint venture with French NGO, produces some of its formulated products besides herbal teas and other cultivated items of herbs. This company is dealing with 35 herbal products.

Dabur Nepal, Parwanipur, Birgung a subsidy of Dabur India is said to be one of the largest organization. Besides its different Ayurvedic formulations it has productions in diversified fields such as confectioneries, personal hygiene products and foods products including fruit juice.

Exclusive enterprises a NTFPs/MAPs processing and manufacturing company is producing several products since last eight years. The products of this company are doing good business inside and in some extent in overseas.

Everest Herbs Processing Pvt. Ltd. Buddha Nagar, Kathmandu is a herbal products processing, manufacturing and exporting company. Besides its supply of processed and semi-processed products in both local and international market, it is also engaged in the research oriented programs, especially on valued herbs.

Cosmos Herbal Products, a joint venture with Japanese collaborator, produces mainly cosmetics along with its formulated herbal products.

Alternative Herbal Products Pvt. Ltd. is consuming huge amount of Gurjo and Bel for its Gurjo tea and Aegle squace common in local and in some international market of Europe.

Suri Herbal Product Industry, Thimi, Bhaktapur and Traditional Himalayan Herbs, Dillibazar, Kathmandu manufacture 40 and 35 types of Ayurvedic formulations respectively. Besides manufacturing of herbal medicines these organizations also provide traditional healing services.

Male International Pvt. Ltd. Sinchahiti, Lalitpur and Natural Resources Industries Pvt Ltd. Old Baneshwor, Kathmandu are the emerging essential oil exporting companies. These companies are exporting essential oils both of wild and cultivated herbs from their own farm as well as from other organizations owned farms. Male International is the leading organization that deal on the export of the organic certified essential oils and herbs in the valley.

Similarly, Gorkha Exim Pvt. Ltd. and Chaudhary Biosys (Nepal) Ltd. are also engaged in the marketization of various wild and cultivated herbal based essential oils and few products inside Kathmandu valley through export.

Exclusively manufacturing and exporting crude or processed Herbal products from Nepal is the emerging trade started some 10 -15 years ago. Beyond that time identification of potential herbs and their Ayurvedic use was initiated and continued by traditional herbal

practitioners. These practitioners have been not only engaged in the treatment of local people but also prepare different formulations effective for different disorders based on their need. So in the past preparation of the herbal formulations was parallelly move side by side with the treatment. Such practices are still continued by some of the reputed Ayurvedic practitioners residing in the valley. Among them some of the old reputed and popular herbal manufacturers and practitioners are: Piyushbarshi Aushadhalaya, Arogya Bhawan, Sri Krishna Aushadhalaya, etc. These Aushadhalaya are actually family owned, who sell Ayurvedic formulations along with the treatment facilities. Arogya Bhawan is marketing some 21 formulations. The Ayurvedic medicine producer Krishna Aushadhalaya along with its sells through retail shop also export certain Ayurvedic formulations in overseas.

Similarly one of the reputed herbal clinic in Paknajol, Kathmandu, the Kunphen and Himalaya Herbs Udyog, Baudha, Tusal prepare and provide different types of medicines according to the Tibetan system. Mostly Tibetan manufacturer company consume potential herbs from high altitudes.

There are some other small concerns, which use medicinal and aromatic plants for traditional medicine preparations by traditional experienced Vaidhyas. These people inherit knowledge from their ancestors, and are being practicing other ethnic medicines, Yunani and Tibetan medicines systems.

Recently a group of 55 traditional Ayurvedic practitioners and manufacturers of all over Nepal have formed an association "Nepal Traditional Ayurvedic Medicinal Practitioners Association". The major objective of this association is to handover the precious traditional practice to the new generations through well managed Ayurvedic Institution, make aware the concerned stakeholders about the potentialities of exact plant, reduce adulteration in the herbs and to facilitate the government in preparation and implementation of policies that can address all the problems in the conservation of traditional practice and the potential herbs.

Table 1. Ayurvedic/Traditional medicine manufacturers in Kathmandu Valley

- a) Arogya Bhawan, Dillibazar, Kathmandu
 - b) Dabur Nepal Pvt. Ltd., Tinkune Kathmandu
 - c) Gorkha Ayurved Company Ltd., Teku, Kathmandu
 - d) Krishna Aushadhalaya, Bagbazar, Kathmandu
 - e) Kunphen Aushadhalaya, Paknajol, Kathmandu
 - f) Piyushbarshi Aushadhalaya, Mahaboudha, Kathmandu
 - g) Singha Durbar Vidhyakhana Vikash Samiti, Anamnagar, Kathmandu
 - h) Suri Herbal Product Industry, Thimi, Bhaktapur
 - i) Traditional Himalayan Herbs, Dillibazar, Kathmandu
-

Table 2. Herb Producers, Processors and Exporters in Kathmandu Valley

- a) Alternative Herbal Products (P) Ltd.
 - b) Chaudhary Biosys (Nepal) Ltd., Khichapokheri, Kathmandu
 - c) Cosmos Herbal Pvt. Ltd. Baluwatar, Kathmandu
 - d) Everest Herbs Processing Pvt. Ltd., Buddhanagar, Kathmandu
 - e) Exclusive Enterprises, Kupondole, Lalitpur
 - f) Gorkha Exim Pvt. Ltd, Balaju, Kathmandu
 - g) Herb Production and Processing Company Ltd., Koteswore, Kathmandu
 - h) Himalayan Bio Trade (P) Ltd., Balkhu, Kathmandu
 - i) Himalayan Herbs Trader, Baluwatar, Kathmandu
 - j) Male International Pvt. Ltd., Sinchhahiti, Lalitpur
 - k) Natural Resources Industries Pvt Ltd, Old Baneshwor, Kathmandu
 - l) Nepal Mentha Products Pvt. Ltd., Tripureshwor, Kathmandu
 - m) Sashi Overseas Enterprises, Balaju, Kathmandu
 - n) Siddhartha Herbal Industry, New Baneshwor, Kathmandu
-

2.2. NTFPs/MAPs demand

The exact number and quantity of the herbs demand in Kathmandu valley for the above mentioned enterprises is difficult to assess. However, from the interviews and formal discussions with the authority of the above companies, the name and tentative quantity of the herbs were assessed. Besides some common herbal products consumed in domestic market and limited number of formulations exported, majority of herb processing companies supply the products in overseas depend on the demand of foreign parties. **Appendix I** gives the comprehensive list of herbs and quantity demand in Kathmandu valley by various companies.

Assessed information on the annual consumption of some of the major Ayurved medicine manufacturers, herbal product producers and aroma crops producers, processors and exporters shows very small demand of all the herbs. Excluding limited number of Kathmandu based Ayurvedic manufacturers most of the herbal companies showed very low annual consumption of various NTFPs/MAPs. Supply of the herbs differs mainly in the product and its market demand. Various herbal product manufacturers have their own unique products. Companies' consumption is comparatively greater in there own products. Among them the noteworthy plant species are Harro, Barro, Bel, Amala, Pipla, Sutho, Satawari, Ashwagandha, Gurjo, Tejpat, Sarpagandha, Chabo, Chirito, Nisodtha, Pakhenbed and Tulsi, etc. These species consumption is above or around 500 kg in each companies. For other herbs lum sum quantity is approximately 50 - 100 kg in average. Due to unstable political situation, less supportive governmental policies and dominance of Indian Ayurvedic medicinal and other products in the local market, the small scale Ayurvedic medicinal manufacturers need to compete for the real benefits from the products. In such a condition less or equal to 80 kg of other substituted herbs (around 80 species) are sufficient for each companies for their each products to fulfil the annual demand of the local market.

Total 214 species of NTFPs/MAPs are listed which are consumed by various companies. (**Table 3 and Appendix I**). This list includes raw, fresh or processed NTFPs/MAPs. Processing of the herbs mainly includes stem distillation of the main parts to get the essential oil. Name of the same plant is also repeated in the list due to the different trade name for the different parts and use forms of same NTFPs/MAPs. Example of such plant are Bel chana, Bel mul, Pipla mul, Pipla, Jatamansi (raw material), Jatamansi (oil), Talispatra/Tagar (Abies-leaves), Talispatra (Abies oil), Darunhardra (Bark-Berberis); Rasanjan (Berberis-solid water extract), Tejpat (Cinnamomum-leaves), Tamala (Cinnamomum-oil), Kamalkeshar (*Nelumbo nucifera* - Stamens), Nilkamal (*Nelumbo nucifera* – Flower). Like wise some 9 species have duplicated in the list for different purposes. To clear this in some paragraphs NTFPs/MAPs species/forms is also used.

This list is actually prepared through the formal and informal interviews for Ayurveda medicine manufacturers/producers, processors, experts and with herb retailers. Most of the data on consumption quantities and prices are taken from major herb retailers. Those retailers are the main herb suppliers within and outside the valley. So more over almost all the herbs consumption quantity reflects by this list. On the retailer's request, name of the retailers and respective firms are not given else where throughout this text.

Basically, the list holds majority of herbs that are used in the preparation of Ayurvedic medicines. Other NTFPs that might be consumed in huge quantities are not taken into the consideration of the study. So the NTFPs species like *Thysanolaena maxima* (broom grass), *Daphne bholua* (Nepali paper plant), *Edgeworthia gardnerii* (Nepali paper bush), *Girardinia diversifolia* (Himalayan nettle) are intentionally not included in the list.

The list provides the information on consumption quantities of both crude herbs and the essential oils. In case of some of the essential oil bearing plants the crude herbs are consumed by Ayurvedic products manufacturers/practitioners while large quantity of essential oil from the same plant is dealt by essential oil exporting companies.

Table 3. Annual demand of Herbs/Essential Oils in Kathmandu Valley (2060/61)

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
1	Aap ko Koya ko gudi	<i>Mangifera indica</i> Wall. (Anacardeaceae)	Seed	Kg	125	50	Nepal
2	Aduwa (Sutho)	<i>Zingiber officinale</i> Rose. (Zingiberaceae)	Rhizome	Kg	6000	60	Nepal
3	Aguru	<i>Aquilaria agallocha</i> Roxb. (Thymelaeaceae)	Heart Wood	Kg	200	30	Imported
4	Akarkara	<i>Anacyclus pyrethrum</i> Link (Compositae)		Kg	15	1500	Imported
5	Alaichi	<i>Amomum subulatum</i> Roxb. (Zingiberaceae)	Fruit	Kg	600	200	Nepal
6	Amala (Dry)	<i>Phyllanthus emblica</i> L. (Euphorbiaceae)	Fruit	Kg	18000	60	Nepal/Imported
7	Amala (Fresh)	<i>Phyllanthus emblica</i> L. (Euphorbiaceae)	Fruit	Kg	25000	16	Nepal/Imported
8	Amlabetas	<i>Rheum australe</i> D. Don. (Polygonaceae)	Petiole	Kg	60	100	Nepal
9	Arjun ko bokra	<i>Terminalia arjuna</i> (Roxb. ex DC) Wight & Am. (Combretaceae)	Bark	Kg	400	45	Imported
10	Ashogandha Mul	<i>Withania somnifera</i> Dunal. (Solanaceae)	Root	Kg	4035	145	Imported
11	Ashok ko bokra	<i>Saraca asoca</i> (Roxb.) DC. (Leguminosae)	Bark	Kg	800	60	Imported
12	Astismahari (Fresh Hadchur)	<i>Litsea glutinosa</i> (Lour.) C. B. Rob. (Lauraceae)		Kg	1058	140	Nepal
13	Asuro (Dry)	<i>Justicia adhatoda</i> L. (Acanthaceae)	Leaves	Kg	280	25	Nepal
14	Atibala	<i>Abutilon indicum</i> L. (Malvaceae)	Root	Kg	40	60	Nepal
15	Atiras	<i>Taraxacum officinale</i> Weber (Compositae)	Root	Kg	500	175	Nepal
16	Atis	<i>Delphinium himalayi</i> Munz. (Ranunculaceae)	Root	Kg	1500	300	Nepal
17	Babur ko bokra	<i>Acacia nilotica</i> (L.) Willd. ex Del. (Leguminosae)	Bark	Kg	40	60	Nepal
18	Bakaino	<i>Melia azedarach</i> L. (Meliaceae)	Bark	Kg	150	15	Nepal
19	Bakuchi	<i>Psoralea corylifolia</i> L. (Leguminosae)	Seed	Kg	25	25	Imported
20	Bakul (Maulashree)	<i>Mimusops elengi</i> L. (Sapotaceae)	Bark	Kg	15	100	Nepal
21	Balu (Bala)	<i>Sida spinosus</i> L. (Malvaceae)	Root/Seed	Kg	120	60	Nepal
22	Bamsalochan	<i>Bombax ceiba</i> L. (Bombacaceae)	Calcium compound	Kg	7250	58	Imported
23	Barro (Phal ko bokra)	<i>Terminalia bellirica</i> (Gaertn.) Roxb. (Combretaceae)	Fruit pulp	Kg	10000	23	Nepal/Imported
24	Baruntwak	<i>Creteva religiosa</i> Fors. f. (Capparaceae)	Bark	Kg	1180	55	Imported
25	Batsanav bish	<i>Aconitum spicatum</i> L. <i>Aconitum ferox</i> Wall. ex	Root	Kg	500	210	Nepal

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
		Seringe. (Ranunculaceae)					
26	Bayar ko bokra	<i>Ziziphus mauritiana</i> Lam. (Rhamnaceae)	Bark	Kg	50	60	Nepal
27	Bayu bidang	<i>Embelia ribes</i> Burm.f. (Myrsinaceae)	Fruit	Kg	700	130	Imported
28	Bel	<i>Aegle marmelos</i> (L.) Corr. (Rutaceae)	Fruit	Kg	25000	20	Nepal
29	Belmul	<i>Aegle marmelos</i> (L.) Corr. (Rutaceae)	Root	Kg	150	80	Nepal
30	Bhargitwak	<i>Clerodendron serratum</i> (L.) Mool. (Verbenaceae)	Root	Kg	50	58	Nepal
31	Bhringaraj (Dry)	<i>Eclipta prostrata</i> (L.) L. (Compositae)	Whole plant	Kg	1600	50	Imported
32	Bhui amala	<i>Phyllanthus amarus</i> Schumach. & Thonn. (Euphorbiaceae)	Whole plant	Kg	300	80	Imported
33	Bidari kanda	<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC. (Leguminosae)	Root	Kg	250	82	Nepal
34	Bidhara beej	<i>Argyrea spinosa</i> Sweet. (Convolvulaceae)	Seed	Kg	80	135	Imported
35	Bihi	<i>Solanum nigrum</i> L. (Solanaceae)	Fruit	Kg	600	70	Nepal
36	Bijayasal	<i>Pterocarpus marsupium</i> Roxb. (Leguminosae)	Heart wood	Kg	200	65	Nepal
37	Bojho	<i>Acorus calamus</i> L. (Acoraceae)	Rhizome	Kg	400	55	Nepal
38	Bramhi	<i>Bacopa monnieri</i> (L.) Pennell. (Scrophulariaceae)	Whole plant	Kg	300	180	Imported
39	Bridhi	<i>Habenaria</i> sp. (Orchidaceae)	Root	Kg	200	120	Imported
40	Chabo	<i>Piper chaba</i> Hunter. (Piperaceae)	Fruit	Kg	55000	50	Nepal/Imported
41	Chakramarda	<i>Cassia tora</i> L. (Leguminosae)	Seed	Kg	500	40	Nepal/Imported
42	Chiraito	<i>Swertia chirayita</i> Roxb. ex Flem.) Karst (Gentianaceae)	Whole plant	Kg	21000	200	Nepal
43	Kshira kakoli	<i>Roscoeia purpurea</i> Smith. (Zingiberaceae)	Rhizome	Kg	200	60	Nepal
44	Chitu mul	<i>Plumbago zeylanica</i> L. (Plumbaginaceae)	Root/Stem	Kg	800	70	Imported
45	Chiuriko Ghiu	<i>Aesandra butyracea</i> (Roxb.) Baehni (Sapotaceae)	Seed	Kg	280	85	Nepal
46	Chuk (Amilo)	<i>Citrus lemon</i> (L.) Burm. f. (Rutaceae)	Fruit	Kg	1000	170	Nepal
47	Chutro ko bokra (Daruharidra)	<i>Berberis aristata</i> DC. (Berberidaceae)	Bark	Kg	500	70	Nepal
48	Dalchini	<i>Cinnamomum zeylanicum</i> Breyn. (Lauraceae)	Bark	Kg	12000	100	Imported
49	Danti mul	<i>Baliospermum montanum</i> (Willd.) Muell.- Arg. (Euphorbiaceae)	Root	Kg	50	80	Nepal

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
50	Darim ko phal ko bokra	<i>Punica granatum</i> L. (Punicaceae)	Fruit/Bark	Kg	80	58	Nepal
51	Devdaru	<i>Cedrus deodara</i> (Roxb. ex Don) G. Don (Pinaceae)	Heart wood/Bark	Kg	300	20	Imported
52	Dhaniya	<i>Coriandrum sativum</i> L. (Umbelliferae)	Seed	Kg	2000	60	Imported
53	Dhatur beej	<i>Datura metel</i> L. (Solanaceae)	Seed	Kg	30	150	Nepal
54	Dhayero ko phool	<i>Woodfordia fruticosa</i> (L.) Kurz. (Lytharaceae)	Flower	Kg	350	35	Nepal
55	Drona puspi	<i>Leucas cephalotes</i> (Roth) Spreng. (Labiatae)	Whole plant	Kg	70	50	Nepal
56	Durlavha	<i>Fegonia cretica</i>	Stem/Leaf	Kg	120	100	Imported
57	Gandhaprashrini	<i>Paederia foetida</i> L. (Rubiaceae)	Whole plant	Kg	50	100	Nepal
58	Gineri	<i>Premna integrifolia</i> L. (Verbenaceae)	Bark	Kg	450	45	Nepal
59	Gochhur	<i>Tribulus terrestris</i> L. (Zygophyllaceae)	Whole plant	Kg	1500	65	Nepal/Imported
60	Granthiparani			Kg	40	60	Nepal
61	Green tea	<i>Chamalia sinensis</i>	Leaves	Kg	500		Nepal
62	Guchhi Chyau	<i>Morchella conica</i> Pers. (Morchellaceae)	Whole plant	Kg			Nepal
63	Gudh (Babul niryas)	<i>Acacia arabica</i> Willd. (Leguminosae)	Gum	Kg	180	100	Imported
64	Gudmar	<i>Gymnema sylvestre</i> R. Br. (Asclepiadaceae)	Leaf	Kg	2520	80	Imported
65	Guduchi	<i>Tinospora sinensis</i> (Lour.) Merr. (Menispermaceae)	Stem	Kg	20000	22	Nepal
66	Gugul kora	<i>Commiphora mukul</i> Engl. (Burseraceae)	Gum/resign	Kg	2700	195	Imported
67	Gurans	<i>Rhododendron</i> sp. (Ericaceae)	Bark	Kg	380	25	Nepal
68	Harro (Phal ko bokra)	<i>Terminalia chebula</i> Retz. (Combretaceae)	Fruit pulp	Kg	16625	35	Nepal/Imported
69	Heledo (Haridra)	<i>Curcuma longa</i> Roxb. (Zingiberaceae)	Rhizome	Kg	1000	50	Nepal
70	Imili	<i>Tamarandus indica</i> L. (Leguminosae)	Fruit	Kg	50	40	Imported
71	Indarajau	<i>Holarrhena pubescens</i> (Buch.-Ham) Wall. ex G.Don. (Apocynaceae)	Seed	Kg	800	55	Imported
72	Indrayani	<i>Trichosanthes tricuspidata</i> Lour./ <i>Citrullus colosythis</i> Schred. (Cucurbitaceae)	Fruit	Kg	2500	150	Imported
73	Isamgol	<i>Plantago erosa</i> Wall. (Plantaginaceae)	Seed husk	Kg	20		Imported
74	Jamun beej	<i>Syzygium cumini</i> (L.) Skeels (Myrtaceae)	Seed	Kg	50	55	Imported
75	Jatamansi	<i>Nardostachys grandiflora</i> DC. (Valerianaceae)	Rhizome	Kg	300	65	Nepal

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
76	Jayapal	<i>Croton tiglium</i> L. (Euphorbiaceae)	Seed	Kg	80		Imported
77	Jethimadhu	<i>Glycyrrhiza glabra</i> L. (Leguminosae)	Root/Stem	Kg	2500	82	Imported
78	Jipatri	<i>Myristica fragrans</i> Houtt. (Myristicaceae)	Aril	Kg	500		Imported
79	Jira	<i>Cuminum cyminum</i> L. (Umbelliferae)	Fruit	Kg	1500		Imported
80	Jiwak	<i>Micostylis</i> sp. (Orchidaceae)	Root	Kg	100	60	Nepal
81	Jiwanti	<i>Dendrobium</i> sp. (Orchidaceae)	Whole plant	Kg	100	60	Nepal
82	Joytismati	<i>Celastrus paniculatus</i> Willd (Celastraceae)	Seed	Kg	15	120	Nepal
83	Jwano	<i>Tachyspermum ammi</i> (L.) Sprague (Umbelliferae)	Fruit	Kg	1000	55	Imported
84	Kachur	<i>Curcuma zedoaria</i> Rosc. (Zingiberaceae)	Rhizome	Kg	250	30	Nepal
85	Kakanash	<i>Thunbergia grandiflora</i> Roxb. (Acanthaceae)	Fruit	Kg	30	100	Nepal
86	Kaalmegh	<i>Andrographis paniculata</i> Nees. (Acanthaceae)	Whole plant	Kg	350	35	Imported
87	Kakoli	<i>Fritillaria cirrhosa</i> D. Don. (Liliaceae)	Bulb/Seed	Kg	20	90	Nepal
88	Kamalkeshar	<i>Nelumbo nucifera</i> Gaert. (Nelumbonaceae)	Stamen	Kg	90	300	Nepal
89	Kanchanar bokra	<i>Bauhinia variegata</i> L. (Leguminosae)	Bark	Kg	200	45	Nepal
90	Kancho laha	<i>Lacifer lacca</i>		Kg	500	252	Imported
91	Kantakari	<i>Solanum surattense</i> Burm.f. (Solanaceae)	Fruit	Kg	1000	35	Nepal
92	Kaphal ko bokra	<i>Myrica esculenta</i> Buch.- Ham. ex D.Don. (Myricaceae)	Bark	Kg	60	45	Nepal
93	Kapikachhu beej	<i>Mucuna pruriens</i> (L.) DC. (Leguminosae)	Seed	Kg	300	100	Imported
94	Kapur	<i>Cinnamomum camphora</i> (L.) J. Presl (Lauraceae)	Solid extract	Kg	250	300	Imported
95	Karkata shringi	<i>Pistacia chinensis</i> Buange (Anacardiaceae)	Insect gull	Kg	100	590	Nepal
96	Kawakchini	<i>Piper cubeba</i> L. f. (Piperaceae)	Fruit	Kg	200	600	Imported
97	Kayatha	<i>Acacia catechu</i> (L.f.) Willd. (Leguminosae)	Purified solid/extract	Kg	500	60	Imported
98	Khamari	<i>Gmelina arborea</i> Roxb. (Labiatae)	Bark	Kg	200	55	Nepal
99	Krishnaguru	<i>Agaloca aculina</i>	Infected parts	Kg	30	50	Imported
100	Kubhindo	<i>Benincasa hispida</i> Cogn. (Cucurbitaceae)	Fruit	Kg	150	40	Nepal
101	Kustha	<i>Saussurea lappa</i> C.B. Clarke (Compositae)	Root	Kg	200	175	Imported
102	Kutajatawak	<i>Holarrhena pubescens</i>	Bark	Kg	350	36	Nepal

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
		Wall. ex G.Don. (Apocynaceae)					
103	Kutki	<i>Neopicrorhiza scrophulariiflora</i> (Pennell) Hong (Scrophulariaceae)	Rhizome	Kg	750	120	Nepal
104	Lajjalu	<i>Mimosa pudica</i> L. (Leguminosae)	Root	Kg	60	50	Nepal
105	Latakasturi	<i>Hibiscus abelmoschus</i> L. (Malvaceae)	Seed	Kg	700	200	Imported
106	Lodhatwak	<i>Symplocos paniculata</i> (Thunb.) Miq. (Symplocaceae)	Bark	Kg	380	32	Imported
107	Loth salla	<i>Taxus baccata</i> L. (Taxaceae)	Leaf	Kg	350200		Nepal
108	Lwang	<i>Syzygium aromaticum</i> (L.) Merr. (Myrtaceae)	Flower bud	Kg	500	475	Imported
109	Mahameda	<i>Polygonatum cirrhifolium</i> (Wall.) Royle. (Liliaceae)	Rhizome	Kg	30	120	Nepal
110	Majistha	<i>Rubia manjith</i> Roxb. ex Flem. (Rubiaceae)	Root	Kg	1000	50	Nepal
111	Mandukaparni	<i>Centella asiatica</i> (L.) Urbal. (Umbelliferae)	Whole plant	Kg	200	100	Imported
112	Marich	<i>Piper nigrum</i> L. (Piperaceae)	Fruit	Kg	1000	175	Imported
113	Mauwako phul	<i>Madhuca longifolia</i> Mac. (Sapotaceae)	Flower	Kg	30	40	Nepal
114	Meda	<i>Polygonatum</i> sp. (Liliaceae)	Rhizome	Kg	25	120	Nepal
115	Mentha	<i>Mentha spicata</i> L. (Labiatae)	Whole plant	Kg	500		Nepal
116	Mochras	<i>Bombax ceiba</i> L. (Bombacaceae)	Exudates	Kg	250	105	Imported
117	Mothe	<i>Cyperus rotundus</i> L. (Cyperaceae)	Tuberous root	Kg	1400	50	Imported
118	Mugdaparni	<i>Phaseolus tribulus</i> L. (Leguminosae)	Whole plant	Kg	75	65	Nepal
119	Mulberry leaf	<i>Morus nigra</i> L. (Moraceae)	Leaf	Kg	2000		Nepal
120	Mungrelo	<i>Nigella sativa</i> L. (Ranunculaceae)	Seed	Kg	450	90	Imported
121	Murwa	<i>Marsdenia tenacissima</i> (Roxb.) Moon (Asclepiadaceae)	Root	Kg	10	60	Nepal
122	Musabbar	<i>Aloe vera</i> L. (Liliaceae)	Leaf	Kg	130	300	Imported
123	Musali seto	<i>Chlorophytum borivilliam</i> (L.)	Root	Kg	110	1000	Imported
124	Nagarmotha	<i>Cyperus scariosus</i> R. Br. (Cyperaceae)	Root	Kg	300	80	Imported
125	Nagbala	<i>Sida humilis</i> Willd. (Malvaceae)	Whole plant	Kg	200	170	Nepal
126	Nagbeli	<i>Lycopodium clavatum</i> L. (Lycopodiaceae)	Microspore	Kg	75	250	Nepal
127	Nagkehsar	<i>Maesua ferra</i> L. (Gottiferae)	Flower	Kg	500	335	Imported

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
128	Neem ko pat	<i>Azadirachta indica</i> A. Juss. (Meliaceae)	Leaf	Kg	500	45	Nepal
129	Nematwak	<i>Azadirachta indica</i> A. Juss. (Meliaceae)	Bark	Kg	180	65	Nepal
130	Nimbusatwa	<i>Citrus lemon</i> (L.) Burm. f. (Rutaceae)	Fruit	Kg	200	140	Nepal
131	Nilkamal	<i>Nelumbo nucifera</i> Gaert. (Nelumbonaceae)	Flower	Kg	100	100	Nepal
132	Nisotha	<i>Operculina turpethum</i> (L.) Silva (Convolvulaceae)	Root/Bark	Kg	30000	85	Imported
133	Okhar	<i>Juglans regia</i> L. var kamaonia C.DC. (Juglandaceae)	Fruit	Kg	500		Imported
134	Padari/ Patla	<i>Stereospermum chelonoides</i> (L.f.) DC. (Bigoniaceae)	Bark	Kg	300	60	Imported
135	Paiyun ko bokra	<i>Prunus cerasoides</i> D.Don (Rosaceae)	Bark	Kg	10	40	Nepal
136	Pakhanbedh	<i>Berginia ciliata</i> (Haw.) Sternb. (Saxifragaceae)	Stem	Kg	520	250	Nepal
137	Palas ko beej	<i>Betea monosperma</i> (Lam.) Kuntze. (Leguminosae)	Seed	Kg	120	40	Imported
138	Parbar panchang	<i>Trichosanthes dioica</i> Roxb. (Cucurbitaceae)	Whole plant	Kg	300	100	Nepal
139	Parijat	<i>Nyctanthes arbor-tristis</i> L (Nyctagineaceae)	Leaves	Kg	220	20	Nepal
140	Patha	<i>Cissampelos pareira</i> L. (Menispermaceae)	Root	Kg	250	25	Nepal
141	Pipal ko bokra	<i>Ficus religiosa</i> L. (Moraceae)	Bark	Kg	20	50	Nepal
142	Pipla mul	<i>Piper longum</i> L. (Piperaceae)	Root/Stem	Kg	500	75	Nepal
143	Pipla	<i>Piper longum</i> L. (Piperaceae)	Fruit	Kg	72000	50	Imported
144	Pitta papada	<i>Fumaria indica</i> (Hauss) Pugsley. (Fumariaceae)	Whole plant	Kg	120	65	Imported
145	Prishniparni	<i>Uraria lagopus</i> DC (Leguminosae)	Whole plant	Kg	700	80	Imported
146	Priyangu	<i>Callicarpa macrophylla</i> Vahl. (Verbenaceae)	Fruit	Kg	45	80	Nepal
147	Punarnawa mul	<i>Boerhavia diffusa</i> L. (Nyctagenaceae)	Root	Kg	250	54	Imported
148	Puskar mul	<i>Inula racemosa</i> Hook. f. (Compositae)	Root	Kg	170	240	Imported
149	Raasna	<i>Inula cappa</i> DC. (Compositae)	Twigs	Kg	580	46	Nepal
150	Rajbriksha	<i>Cassia fistula</i> L. (Leguminosae)	Fruit	Kg	10		Nepal
151	Raktachandan	<i>Pterocarpus santalinus</i> L. f. (Leguminosae)	Wood	Kg	1250	95	Imported
152	Rasanjan	<i>Berberis aristata</i> DC. (Berberidaceae)	Solid water extract	Kg	330	150	Nepal
153	Resvak	<i>Mictostylis</i> sp. (Orchidaceae)	Whole plant	Kg	100	110	Imported

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
154	Ridhi	<i>Habenaria</i> sp. (Orchidaceae)	Root	Kg	100	120	Imported
155	Rittha	<i>Sapindus mukorossi</i> Gaertn. (Sapindaceae)	Fruit	Kg	500	30	Nepal
156	Rohita ko bokra	<i>Rhododendron arboreum</i> Sm. (Ericaceae)	Bark	Kg	1480	40	Nepal
157	Rudilo	<i>Pogostemon bengalensis</i> Kuntz. (Labiatae)	Leaves	Kg	70	20	Nepal
158	Rudraksha	<i>Elaeocarpus sphaericus</i> (Gaertn.) K. Schum. (Eleocarpaceae)	Fruit	Kg	1000	40	Nepal
159	Sal dhup	<i>Shorea robusta</i> Gaertn. (Dipterocarpaceae)	Exaduate	Kg	300	65	Imported
160	Salla ko khoto	<i>Pinus roxburghii</i> Sargent. (Pinaceae)	Resin	Kg	190000	55	Nepal
161	Sallo ko bokra	<i>Pinus roxburghii</i> Sargent. (Pinaceae)	Bark	Kg	10	35	Nepal
162	Salmali mul	<i>Bombax ceiba</i> L. (Bombacaceae)	Root	Kg	25	40	Imported
163	Salparni	<i>Desmodium gangeticum</i> (L.) DC. (Leguminosae)	Whole plant	Kg	260	80	Nepal
164	Sanayapati	<i>Cassia senna</i> L. (Leguminosae)	Leaf	Kg	2600	80	Imported
165	Sankhapuspi	<i>Evolvulus alsinoides</i> L. (Convolvulaceae)	Whole plant	Kg	100	180	Imported
166	Sariwa kalo	<i>Ichnocarpus frutescens</i> (L.) R.Br. (Apocynaceae)	Root	Kg	100	45	Imported
167	Sariwa seto	<i>Hemidesmus indicus</i> R. Br. (Asclepiadaceae)	Root	Kg	100	45	Imported
168	Sarpagandha mul	<i>Rauvolfia serpentina</i> (L.) Benth. (Apocynaceae)	Root	Kg	30225	340	Nepal/Imported
169	Satawari	<i>Asparagus racemosus</i> Willd. (Liliaceae)	Root	Kg	1200	215	Nepal
170	Satuwa	<i>Paris polyphylla</i> Smith. (Liliaceae)	Root	Kg	10		Nepal
171	Shobhanjan (Sigrubij)	<i>Moringa oleifera</i> Lam. (Moringaceae)	Seed	Kg	8	90	Nepal
172	Shrikhanda	<i>Santalum album</i> L (Santalaceae)	Heart wood	Kg	400	155	Imported
173	Sikakai	<i>Acacia rugata</i> (Lam.) Voigt (Leguminosae)	Fruit	Kg	250		Nepal
174	Silajit	Rock exudates	-	Kg	800	1500	Nepal
175	Sindure	<i>Mallotus philippensis</i> (Lam.) Muell.-Arg. (Euphorbiaceae)	Fruit stellates/hair glands	Kg	150	250	Nepal
176	Siltimbur	<i>Litsea cubeba</i> (Lour.) Pers. (Lauraceae)	Fruit	Kg	2500	125	Nepal
177	Somlata	<i>Ephedra gerardiana</i> Wall. (Gnetaceae)	Whole plant	Kg	10	80	Nepal
178	Soup Madishe	<i>Foeniculum vulgare</i> L. (Umbelliferae)	Fruit	Kg	1500		Imported
179	Soup Nepali	<i>Anthum</i> sp.	Fruit	Kg	500	50	Nepal

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
		(Umbelliferae)					
180	Sugandhakokila	<i>Cinnamomum glaucescens</i> (Nees.) Drury. (Lauraceae)	Root	Kg	5000		Nepal
181	Sugandhawal	<i>Valeriana jatamansii</i> Jones. (Valerianaceae)	Root	Kg	1200	80	Nepal
182	Sukmel	<i>Elektaria cardamomum</i> Maton. (Zingiberaceae)	Fruit	Kg	1000		Imported
183	Supari	<i>Areca catechu</i> L. (Palmae)	Fruit	Kg	1200		Nepal/Imported
184	Surankandha	<i>Amophophullus campanulatus</i> Blume (Araceae)	Bulb	Kg	400		Nepal
185	Talamkhana	<i>Ural ferox</i> (Hygrophila auriculita (Schumach.) Heine. (Acanthaceae)	Seed	Kg	20	270	Nepal/Imported
186	Talispatra	<i>Abies spectabilis</i> (D.Don) Mirb. (Pinaceae)	Leaf	Kg	250	45	Nepal
187	Tatelo	<i>Oroxylum indica</i> (L.) Kurz. (Bigononiaceae)	Bark/Fruit	Kg	400	55	Imported
188	Tejpat	<i>Cinnamomum tamala</i> (Buch.-Ham.) Ness & Eberm. (Lauraceae)	Leaf	Kg	16000	46	Nepal
189	Til ko tel	<i>Sesamum indicum</i> L. (Pedaliaceae)	Seed	Kg	2850	115	Imported
190	Timur	<i>Zanthoxylum armatum</i> DC. (Rutaceae)	Fruit	Kg	4000		Nepal
191	Tori ko tel	<i>Brassica campestris</i> L. (Brassicaceae)	Seed	Kg	400	90	Nepal
192	Tuilsipatra	<i>Ocimum santum</i> L. (Labiatae)	Whole plant	Kg	32000	83	Nepal/Imported
193	Usir	<i>Vetiveria zizanioides</i> (L.) Nash (Gramineae)	Root	Kg	70	26	Nepal
194	Yarsagumba	<i>Cordyceps sinensis</i> (Berk.) Sacc. (Clavicipitaceae)		Kg		90000-200000	Nepal
195	Eerand mul	<i>Ricinus communis</i> L. (Euphorbiaceae)	Root	Kg	50	35	Nepal
		Total (Herbs)			1031481		
ESSENTIAL OILS							
196	Anthopogon	<i>Rhododendron anthopogon</i> D.Don. (Ericaceae)	Leaves	Kg	250	4000	Nepal
197	Artemisia	<i>Artemisa vulgare</i> L. (Compositae)	Leaves	Kg	5500	2200-6000	Nepal
198	Chamomile	<i>Matricaria chamomilla</i> L. (Compositae)	Flower	Kg	250	13000	Nepal
199	Citronella	<i>Cymbopogon winterianus</i> Jowitt	Leaves	Kg	12350	440	Nepal

SN	Name of species		Parts used	Unit	Required Amount	Tentative price kg ⁻¹	Remarks
	Trade name	Scientific name					
		(Graminae)					
200	Dhasingre	<i>Gaultheria fragrantissima</i> Wall. (Ericaceae)	Leaves	Kg	5000	1050	Nepal
201	Eucalyptus	<i>Eucalyptus camadulensis</i> Sm. (Myrtaceae)	Leaf	Kg	5000	850-600-1000	Nepal
202	French basil	<i>Ocimum basilicum</i> L. (Labiatae)	Whole plant	Kg	250	3798	Nepal
203	Jatamansi	<i>Nardostachys grandiflora</i> DC. (Valerianaceae)	Rhizome	Kg	1000	7000-12000	Nepal
204	Juniper	<i>Juniperus indica</i> Bertol. (Cupressaceae)	Leaf	Kg	450	4200-2500	Nepal
205	Kachur	<i>Curcuma zedoaria</i> Rosc. (Zingiberaceae)	Rhizome	Kg	150	1700	Nepal
206	Lemongrass	<i>Cymbopogon flexuosus</i> (Nees ex Steud.) W. Watson (Gramineae)	Leaf	Kg	3100	710	Nepal
207	Mentha	<i>Mentha arvensis</i> L. (Labiatae)	Leaf	Kg	1200	745	Nepal
208	Palmarosa	<i>Cymbopogon martini</i> (Roxb.) Wats (Graminae)	Leaf	Kg	1700	940	Nepal
209	Soti ghans	<i>Cymbopogon jwarancusa</i> (Jones) Schultes (Gramineae)	Leaf	Kg	100	500	Nepal
210	Sugandhawal	<i>Valeriana jatamansii</i> Jones. (Valerianaceae)	Rhizome	Kg	150	25000	Nepal
211	Sugandhakokila	<i>Cinnamomum glaucescens</i> (Nees.) Drury. (Lauraceae)	Stem	Kg	275	1500-2000	Nepal
212	Talispatra	<i>Abies spectabilis</i> (D.Don) Mirb. (Pinaceae)	Leaf	Kg	150	4-5000	Nepal
213	Tejpat	<i>Cinnamomum tamala</i> (Buch.-Ham.) Ness & Eberm. (Lauraceae)	Leaf	Kg	600	3-3500	Nepal
214	Timur	<i>Zanthoxylum armatum</i> DC. (Rutaceae)	Fruit	Kg	1500	3000	Nepal
		Total (Essential oils)			38975		

The crude herbs and essential oils demand is given in the metric unit Kilogram. For crude herbs consumers like Ayurvedic companies the quantities are the same but for oil exporting companies residing Kathmandu valley their subsequent oil quantity is many fold greater than the oil quantity. Because crude herbs quantity depends on the oil yield of the plant. For example *Dhasingre* have 0.5 % essential oil yield, 4% oil yield in Lemon grass, 0.9 -1% in Citronella, Eucalyptus (1.3 –3%), Nepali Peeper (2 – 3%), and in Indian Valerian 0.2-0.5% essential oil yield.

Market analysis of the above-mentioned herbs reveal that large number of NTFPs/MAPs are supplied from Nepal however in comparison with use of native NTFPs/MAPs species the list of imported plants is also not short. Among 214 species 128 NTFPs/MAPs species are fulfilled from Nepal, 75 NTFPs/MAPs species are imported especially from India and 11 NTFPs/MAPs species are usually supplied both from either Nepal or India.

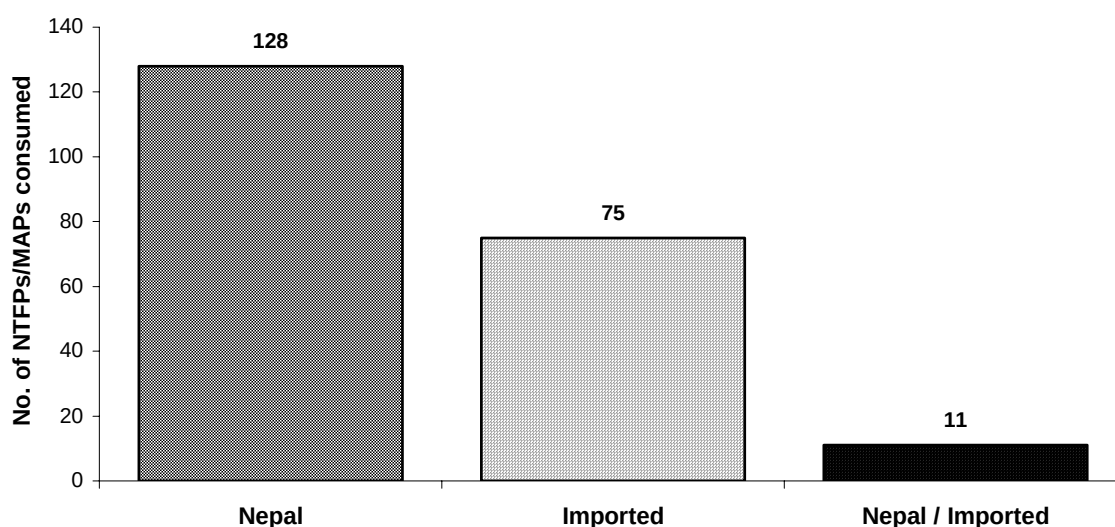


Figure 1. Source and number of NTFPs/MAPs consumed in Kathmandu Valley

A great number, 75 NTFPs/MAPs are imported from India. Excluding some strictly Indian species that are not available in Nepal, this number also includes lots of Nepalese NTFPs/MAPs, that are available in Nepal but not still introduced in the trade. For example *Creteva religiosa*, *Eclipta prostrata*, *Phyllanthus amarus*, *Cedrus deodara*, *Coriandrum sativum*, *Tamarandus indica*, *Hollarhena pubescens*, *Syzigium cumini*, *Acacia catechu*, *Saussurea lappa*, *Centella asiatica*, *Bombax ceiba*, *Cyprus rotundus*, *Operculina turpethum*, *Stereospermum chelonoides*, *Butea monosperma*, *Boerhavia diffusa* etc are very common in Nepal but neglected in the Nepalese herb market. Annually large quantity of these herbs are imported from India to fulfil the demand of Kathmandu valley.

Some of the NTFPs/MAPs could be fulfilled by the domestic production but due to lack of proper identification, quality control, processing practices and lack of government policies these species are not supplied in the market. For example Nishod (*Operculina turpenthum*) is abundant in Terai forest however this species is still not exploited for the commercial purposes. Similarly Harro, Barro, Amala are available in Terai forests but due to lack of appropriate harvesting, processing, and storage facilities these goods are not supplied in good quality. Furthermore the retailer claimed that Dalchini (*Cinnamomum zeylanicum*) collected from various parts of Nepal do not possess the marketable quality and necessary test so the demand of Dalchini is fulfilled from India.

It can be argued that the quality of Harro, Barro and Amala from Nepal is not maintained by the collectors. The practices of the quality control for these species is poor in Nepal. But it is the matter of the study that the quality of Nepalese Dalchini need to be further verified.

The herb retailers estimation is far more different than this estimation. They claim that Nepalese NTFPs/MAPs species are only 20% in the market while 80% NTFPs/MAPs are fulfilled by Indian herbs. Furthermore, in this case the personnel biasness of the retailers is also prominent because they prefer to take all the herbs from India which is very easy for them. While taking other exotic herbs they also take common herbs with guarantee of quantity and quality according to their need.

In the case of Imported and Nepal/Imported categories of NTFPs/MAPs if the quantity and quality of Nepalese NTFPs/MAPs would be assessed, then there will definitely reduction in the import of such Herbs in Nepal. After the quality assessment of these species, it is necessary to supply required quantity regularly to the retailers through several Community forest cooperatives.

Among the total 214 different traded NTFPs/MAPs species/forms the least 24 number of herbs species/forms are traded in between 501-1000 kg quantity which are then followed by 26, 33, 36, 43 and 52 number of NTFPs/MAPs species/forms in 1001-5000 kg, 0-50 kg, above 5001 kg, 251-500 kg and 51-250 kg respectively. Here also 36 numbers of NTFPs/MAPs species/forms came under above 5000 kg categories which is due to the assumption that the raw material of the consumed quantity of 19 essential oil bearing conventional/wild herbs need more than 5000 kg raw material to acquire the mentioned oil demand of subsequent NTFPs/MAPs (see essential oil category; SN. 196-214 in table 3).

Table 4. Number of species with annual quantity of the consumption

Quantity of the herbs (in kg)	Number of NTFPs/MAPs species/forms
0-50	33
51-250	52
251-500	43
501-1000	24
1001-5000	26
above 5001	17 (herb) + 19 (oil) = 36

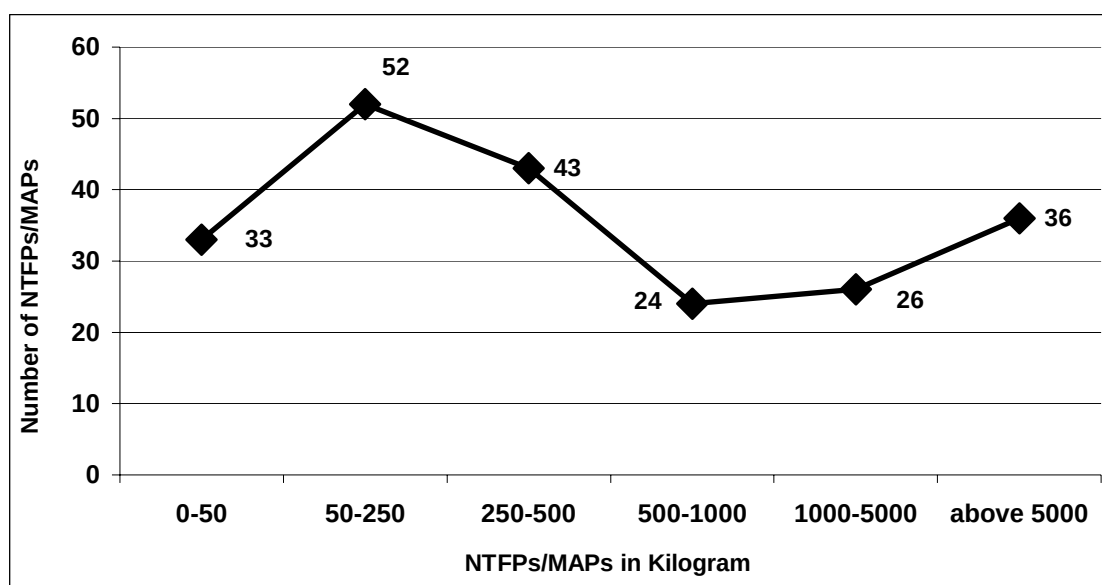


Figure 2. Consumption quantity of number of NTFPs/MAPs in Kathmandu Valley

2.3. Traditional Market links of NTFPs/MAPs in Kathmandu Valley

Kathmandu, the capital city holds most of the herbal based companies of the country. These companies either manufacture their own products or just collect processed or crude herbs and directly export it. The ultimate target of both types of the organizations is to increase the production for local consumption as well as to meet the international market.

Kathmandu valley an important junction of India-Tibet market channel for bi-directional movement of Himalayan and tropical herbs is still playing vital role in the movement of different herbs from different parts of Nepal to India and vice versa. Since time immemorial the indigenous community of Kathmandu valley, the Newars, were the major suppliers of herbs for the different Ayurvedic manufacturers residing different parts of Nepal. These traders have facilitated various Indian herbs for low land, midhills, high hills ayurvedic manufacturers/practitioners and Tibetan herbal practitioners/manufacturers (Edwards,1996).

These traders were also the trade link of potential NTFPs/MAPs from Himalayan and Tibetan part to the south (India). This kind of practice still can be observed in Tibetan medicine and Nepal/India based Ayurvedic practitioners/manufacturers. As time passed on Newar traders of Kathmandu valley are then gradually replaced by the Marwadi retailers to whom the Kathmandu based local traders were dealing on the herbs. These well established major Marwadi or Terai traders supply not only the Nepalese herbs of different rural parts but also fulfil the demand of huge amount of Indian herbs inside the country.

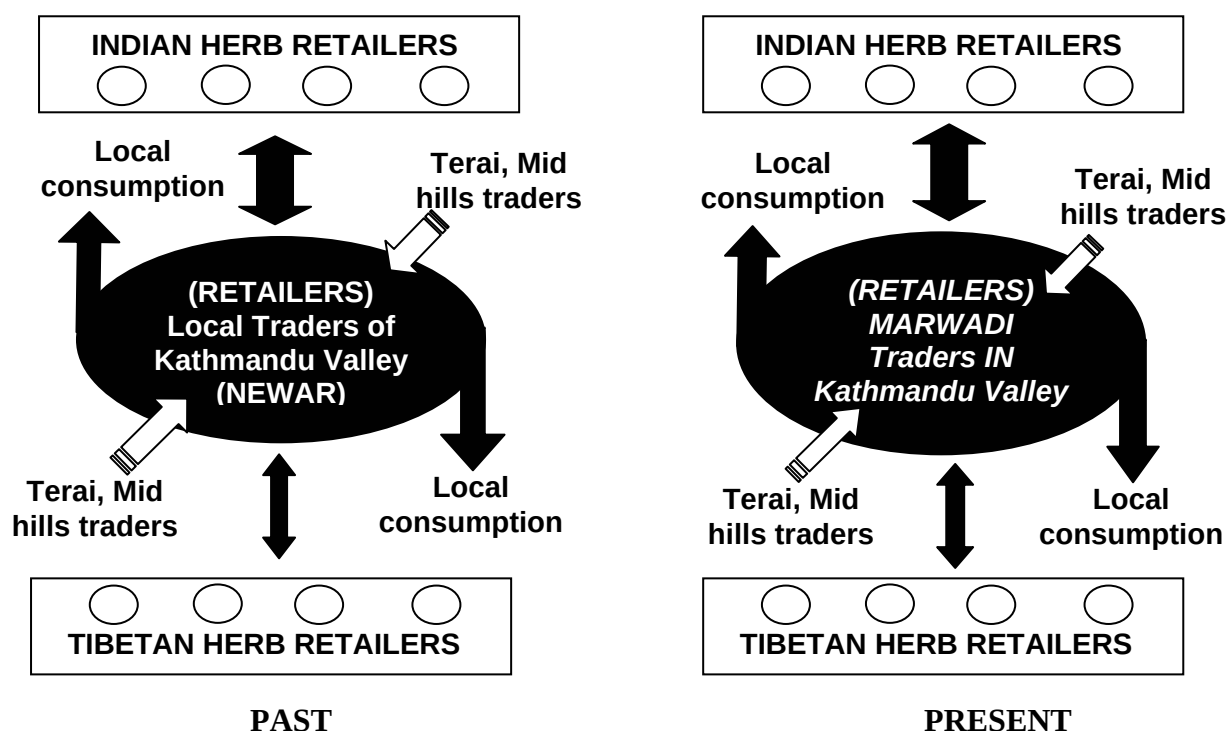


Figure 3. Past and Present Herbs trade chain in Kathmandu Valley

Due to lack of information on the herbs to the consumers, monopoly of the traders and weak government policies, herbs business is one of the secret business where the trade channel is the confidential part which could not disclosed through the stakeholders. In many cases the harvesters, collectors, transporters and even the small suppliers are quite unaware about their quality, origin and final consumption of their products.

Besides the NTFPs/MAPs supplied by the retailers of the Kathmandu valley the herbal practitioners/manufacturers also purchase the raw materials from the local collectors nearby

Kathmandu valley. **Figure 3 and 4** gives the conventional market channel of the herbs in Kathmandu valley. Dealing with the trade linkage and channels **Figure 3** describes herbs movement in India, Nepal and its neighbouring Tibetan parts in brief.

In general, trade channel of herbs begins from the harvesters/collectors (CFUGs, herders, farmers), who function as the primary suppliers of the herbs. Herbs from the collectors then decentralises to the different tiers of stakeholders. Collectors have good knowledge on the available local resources, whose assistance in the marketing chain improves the economics of collection and increases the volume of the trade. The collectors are close linked with village traders and village traders with road head traders. In this way roadhead traders have more control over the village traders of different localities with diverse resources. To establish and continue the control over the NTFPs/MAPs the roadhead traders also supply working capital as monetary advances, which further reach up to collectors via village traders.

This type of practice summarise the trade channel however due to advance money taken by collectors from roadhead traders/village traders, hazardous collection, premature collection and illegal poaching also observed to pay back the advances. Due to accessibility of road and communication facilities roadhead traders are the main centre of NTFPs /MAPs trade. For this reason roadhead traders pay government royalties and obtain permission to export the NTFPs/MAPs. Further the roadhead traders are connected with the most powerful group of intermediaries the Terai or midhills trader. These traders have large catchment areas from where varieties of NTFPs/MAPs come. The terai traders are typically Marwari a cultural group with close links in India. They are in regular communication with Indian business to obtain the latest market information.

These Terai or Midhills traders are so interconnected that herbs from roadhead traders/village traders can't by pass them. Roadhead traders or village traders should negotiate for the price of their herbs according to the terai traders. These practices have reducing the bargaining power of the roadhead/village traders and maintain the monopoly of the Terai traders over the price and quality fixing of the herbs from north. Due to this the harvesters up to roadhead traders always get very little sum of the money that increases several folds in the markets of India and western countries.

Herbs supply in Kathmandu valley also shows similar trend where herbs passes up to processing/exporting companies from various tiers of stakeholders. The retailers residing Kathmandu valley get highest margin while the harvesters/collectors get the least. Furthermore, due to the secret connection of the retailers to different Nepalese and Indian traders even the Ayurveda manufacturers/practitioners can't trace the herbs they consume, whether it is form Nepal or India.

The Kathmandu based processing/exporting companies some times fulfil their annual demand of the herbs directly from the collectors or road head traders. Due to successful launch of community forest approach, now the CFUGs can also come and discuss with the concerned authority of the herbal company and supply their herbs in the mutually understanding prices. In this case the herbs retailers in Kathmandu are by passed, however due to discontinuous supply of herbs from community forest people, again manufacturer/processors need to depend on retailers. The herbs that are very common in Nepal can not directly get access up to processing/exporting companies of Kathmandu valley and forced to enter the secret supply business of retailers. Within the chain of retailers it is hard to trace out that which is the Nepalese and which of Indian origin and also their quality too. Sometimes it is also said that some Nepalese common herbs have low quality than Indian herbs, which totally depends on the amount of benefits and ease of control over the trade of the herbs by the retailers.

Despite the interwoven market chain built by the retailers from Kathmandu or Terai some of the manufacturing/processing/exporting companies are now quite sure about the origin of

their products and also the sustainability of their trade. The manufacturing/processing or exporting companies own large hectares of conventional crop farms. They fulfil their own demand from their own farm. If they could not fulfil their demand they encourage community forest user groups to plant the herbs whose buy by guarantee is provided by the company. Several CFUGs are benefited from this system. Mentha, Lemongrass, Citronella, French basil, Chamomile, Mulberry leaf, Cinnamomum leaf are such crops that are providing real benefit to the farmers and processors with market transparencies.

Similarly same trend in some wild herbs like Wintergreen, Abies, Juniper, Anthopogon, Artemisia, Xanthoxylum, Calamus, Jatamansi, Valerine can be seen. There is not any cheating in these products and both collectors and exporters are sharing good benefits. Hence from the market survey of different herbs what also becomes clear that until and unless we can't deal or export our products in processed form we can't get real benefit from the products.

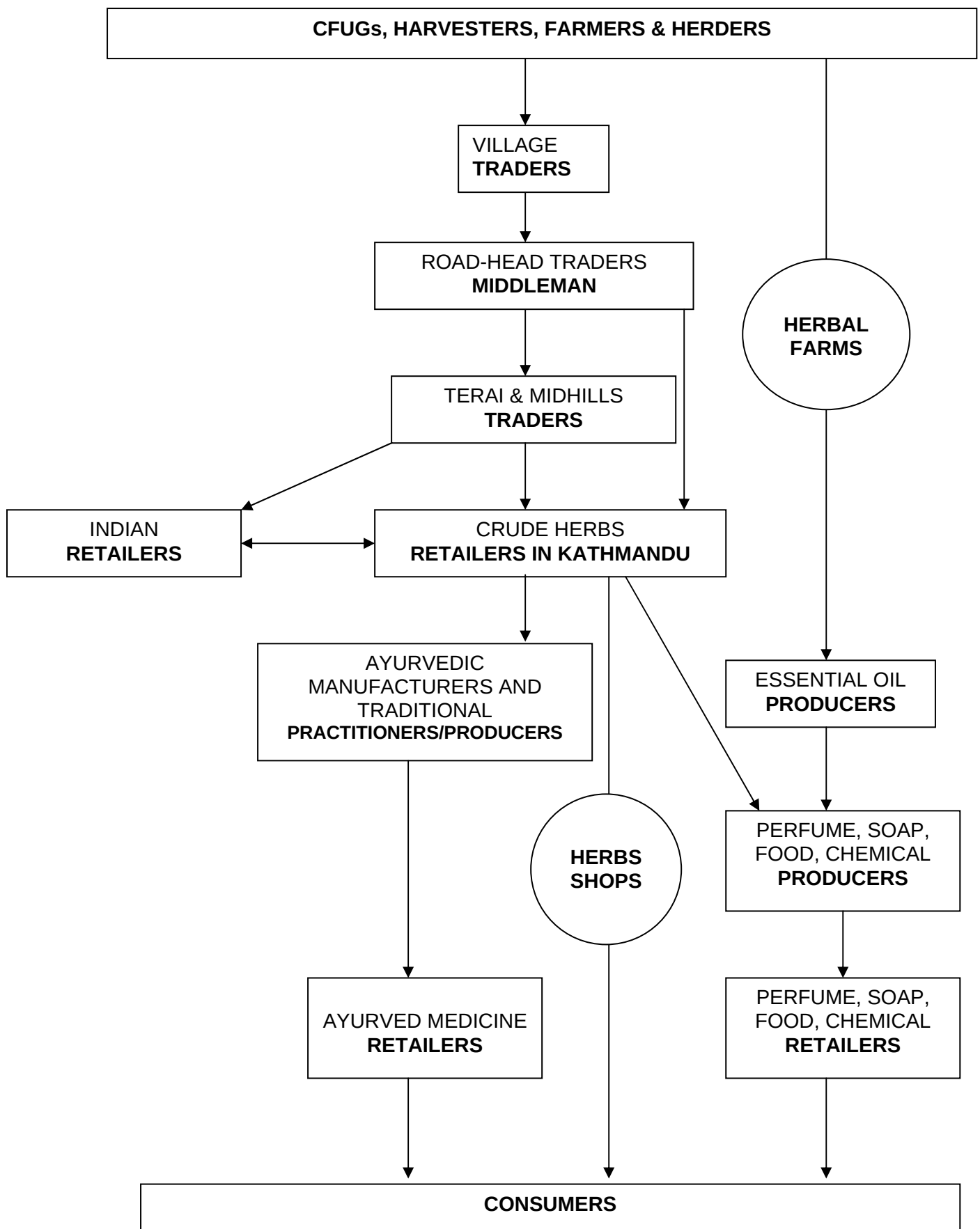


Figure 4. Conventional trade link of NTFPs/MAPs in Kathmandu Valley

2.4. BDS-MaPS priority NTFPs/MAPS and consumption in Kathmandu

The market survey shows that the priority NTFPs/MAPS species of BDS/MaPS also possess the good demand by the Ayurvedic manufacturers and essential oil exporters in the valley (Table 5).

Table 5. BDS-MaPS Project priority herbs/products and their demand in Valley

SN	Trade names	Types of products	Scientific Names	Amount in Kg
1	Alaichi	Dry fruits	<i>Amomum subulatum</i> Roxb Zingiberaceae	600
2	Amala	Fresh/Dry fruits	<i>Phyllanthus emblica</i> L. Euphorbiaceae	18000 (dry) 25000 (fresh)
3	Ashwagandha	Dry roots	<i>Withania somnifera</i> Duna Solanaceae	4035
4	Bel	Fresh/Dry fruits	<i>Aegle marmelos</i> (L.) Correa Rutaceae	25000
5	Bish	Dry roots	<i>Aconitum spicatum</i> Ranunculaceae	--
6	Chamomile	Dry flower/ Essential oil	<i>Matricaria chamomilla</i> L. Asteraceae	250 (oil)
7	Chiraito	Dry plant	<i>Swertia chirayita</i> Karst. Gentianaceae	21000
8	Citronella	Essential oil	<i>Cymbopogon winterianus</i> Jowitt Gramineae	12350 (oil)
9	Dalechuk	Ripe fruits	<i>Hippophae tibetana</i> Schlecht Elaeagnaceae	--
10	French Basil	Essential Oil	<i>Ocimum basilicum</i> L. Labiatae	250 (oil)
11	Ginger	Dry, green rhizome/ / Essential oil	<i>Zingiber officinale</i> Rosc. Zingiberaceae	6000
12	Gucchi chyau	Fresh/Dry plants	<i>Morchella conica</i> Pers. Morchellaceae	--
13	Haledo	Rhizome powder	<i>Curcuma longa</i> L. Zingiberaceae	1000
14	Jatamansi	Essential oil	<i>Nardostachys grandiflora</i> DC. Valerianaceae	1000 (oil)
15	Lemon grass	Dry leaves/ Essential oil	<i>Cymbopogon flexuosus</i> W. Watson Gramineae	3100 (oil)
16	Mentha	Essential oil	<i>Mentha arvensis</i> L. Labiatae	1200 (oil)
17	Padamchal	Dry roots	<i>Rheum australe</i> D. Don Polygonaceae	--
18	Palmarosa	Essential oil	<i>Cymbopogon martini</i> Wats. Gramineae	1700 (oil)
19	Pipla	Dry fruits	<i>Piper longum</i> L. Piperaceae	72000
20	Safed Musali	Root	<i>Chlorophytum borivillianum</i> Liliaceae	--
21	Satawari	Dry roots	<i>Asparagus racemosus</i> Willd. Liliaceae	1200
22	Shilajit	Crude material	Rock exadute	800
23	Soti ghans	Essential oil	<i>Cymbopogon jwarancusa</i> Schultes Gramineae	100 (oil)
24	Tej pat	Dry leaves/ Essential oil	<i>Cinnamomum tamala</i> Nees & Eberm. Lauraceae	16000 (dry) 600 (oil)
25	Timur	Dry fruits/ Essential oil	<i>Zanthoxylum armatum</i> DC. Rutaceae	4000 (dry) 1500 (oil)
26	Yarsagumba	Dry plant	<i>Cordyceps sinensis</i> (Berk) Sac. Hypocreaceae	--

Except Silajit, Jatamansi, Mentha and Yarsagumba other species from the pocket areas of BDS/MaPS are either not traded in Kathmandu valley or they could not be traced out in the market of Kathmandu valley whether they are from the BDS/MaPS pocket areas or not. The species like Alaichi, Amala, Bel, Pipla, Tejpat, Soti ghans and Timur having good demand in valley are common in the pocket districts. So for the promotion of these priority species a proper market chain can be followed as discussed in **Figure 5**.

HMG has also listed thirty NTFPs/MAPS species in National priority list of the herbs and twelve species in list of plants for cultivation and research (**Appendix III**). In this context to gain the optimum benefits, BDS/MaPS should integrate and revise the priority list according to the Government priority and the high demand herbs in Kathmandu valley.

2.5. Market opportunities

From the present study it is concluded that the demand of the priority species of BDS/MaPS in the valley is high. For example commonly available Silajit from Dolpa is scarce in the valley because it has been not supplied due lack of trade link. Like wise Nepalese Tejpat (*Cinnamomum tamala*) is not available in the market, because the retailers claimed that it possesses low quality than Indian Tejpat. To address such species the quality should be ensured and try to introduce in the market. Similarly, other species can be supplied regularly in the valley through the cooperative based market chain.

Collection and supply of market through micro or macro entrepreneurs can fulfil the demand of both collectors and processors/manufacturers. For the Kathmandu based production companies, company need to work with the different cooperatives from different localities. This practice might be helpful for the promotion of the NTFPs/MAPS trade, and livelihood upliftment of the stakeholders involved. Cooperative concept would energise the government capital as well as maintain the sustainable conservation of the NTFPs/MAPS.

Forty one NTFPs/MAPS species with thousand kg or more demand are listed in **table 6**. Avoiding spices and condiments from India this table only includes the NTFPs/MAPS supplied from Nepal and India as well. Among the total number of species Nepalese species comprises 20, Imported 14 and Nepal/Imported species 7. So it shows that including both categories Imported and Nepal/Imported, the Imported NTFPs/MAPS accounts 21(14+7) species. To fulfill this demand detail species status and proper market chain is needed.

The market module developed in **Figure 5** describes the cooperative concept of different BDS/MaPS pocket districts and their integrated work with retailers and NTFPs/MAPS processors, manufacturers and exporters in Kathmandu valley and outside.

The retailers, Ayurvedic manufacturers and traditional practitioners are ready to consume the species, if the supply could be made regularly whenever needed with good quality. So there is a great opportunity for the extension of the market in Kathmandu valley. For this a well managed trade link can be incorporated with all the stakeholders. Here the role of BDS/MaPS is very crucial for the initiation and development of the proper market chain. The market chain (**Figure 5**) is purposed by taking inputs from retailers, Ayurvedic manufacturers, traditional practitioners, exporters and experts.

Table 6. NTFPs having annual demand more than 1000 kg in Kathmandu Valley

SN	Name of species		Parts used	Required Amount	Remarks
	Trade name	Scientific name			
1	Loth salla	<i>Taxus baccata</i> L. (Taxaceae)	Leaf	350200	Nepal
2	Salla ko khoto	<i>Pinus roxburghii</i> Sargent. (Pinaceae)	Resin	190000	Nepal
3	Pipla	<i>Piper longum</i> L. (Piperaceae)	Fruit/Root/Stem	72500	Imported
4	Chabo	<i>Piper chaba</i> Hunter. (Piperaceae)	Fruit	55000	Nepal/Imported
5	Amala (Dry/Fresh)	<i>Phyllanthus emblica</i> L. (Euphorbiaceae)	Fruit	50000	Nepal/Imported
6	Tuilsipatra	<i>Ocimum santum</i> L. (Labiatae)	Whole plant	32,000	Nepal/Imported
7	Sarpagandha mul	<i>Rauvolfia serpentina</i> (L.) Benth. (Apocynaceae)	Root	30225	Nepal/Imported
8	Nisotha	<i>Operculina turpethum</i> (L.) Silva (Convolvulaceae)	Root/Bark	30,000	Imported
9	Bel	<i>Aegle marmelos</i> (L.) Corr. (Rutaceae)	Fruit	25000	Nepal
10	Chiraito	<i>Swertia chirayita</i> Roxb. ex Flem.) Karst (Gentianaceae)	Whole plant	21000	Nepal
11	Guduchi	<i>Tinospora sinensis</i> (Lour.) Merr. (Menispermaceae)	Stem	20,000	Nepal
12	Harro (Phal ko bokra)	<i>Terminalia chebula</i> Retz. (Combretaceae)	Fruit pulp	16625	Nepal/Imported
13	Tejpat	<i>Cinnamomum tamala</i> (Buch.-Ham.) Ness & Eberm. (Lauraceae)	Leaf	16000	Nepal
14	Dalchini	<i>Cinnamomum zeylanicum</i> Breyn. (Lauraceae)	Bark	12000	Imported
15	Barro (Phal ko bokra)	<i>Terminalia bellirica</i> (Gaertn.) Roxb. (Combretaceae)	Fruit pulp	10,000	Nepal/Imported
16	Bamsalochan	<i>Bombax ceiba</i> L. (Bombacaceae)	Calcium compound	7250	Imported
17	Aduwa (Sutho)	<i>Zingiber officinale</i> Rose. (Zingiberaceae)	Rhizome	6000	Nepal
18	Sugandhakokila	<i>Cinnamomum glaucescens</i> (Nees.) Drury. (Lauraceae)	Root	5000	Nepal
19	Ashogandha Mul	<i>Withania somnifera</i> Dunal. (Solanaceae)	Root	4035	Imported
20	Timur	<i>Zanthoxylum armatum</i> DC. (Rutaceae)	Fruit	4000	Nepal
21	Gugul kora	<i>Commiphora mukul</i> Engl. (Burseraceae)	Gum/resign	2700	Imported
22	Sanayapati	<i>Cassia senna</i> L. (Leguminosae)	Leaf	2600	Imported
23	Gudmar	<i>Gymnema sylvestre</i> R. Br. (Asclepiadaceae)	Leaf	2520	Imported
24	Jethimadhu	<i>Glycyrrhiza glabra</i> L. (Leguminosae)	Root/Stem	2500	Imported

SN	Name of species		Parts used	Required Amount	Remarks
	Trade name	Scientific name			
25	Siltimbur	<i>Litsea cubeba</i> (Lour.) Pers. (Lauraceae)	Fruit	2500	Nepal
26	Mulberry leaf	<i>Morus nigra</i> L. (Moraceae)	Leaf	2000	Nepal
27	Bhringaraj (Dry)	<i>Eclipta prostrata</i> (L.) L. (Compositae)	Whole plant	1600	Imported
28	Atis	<i>Delphinium himalayi</i> Munz. (Ranunculaceae)	Root	1500	Nepal
29	Gochhur	<i>Tribulus terrestris</i> L. (Zygophyllaceae)	Whole plant	1500	Nepal/Imported
30	Rohita ko bokra	<i>Rhododendron arboreum</i> Sm. (Ericaceae)	Bark	1480	Nepal
31	Mothe	<i>Cyperus rotundus</i> L. (Cyperaceae)	Tuberous root	1400	Imported
32	Raktachandan	<i>Pterocarpus santalinus</i> L. f. (Leguminosae)	Wood	1250	Imported
33	Satawari	<i>Asparagus racemosus</i> Willd. (Liliaceae)	Root	1200	Nepal
34	Sugandhawal	<i>Valeriana jatamansii</i> Jones. (Valerianaceae)	Root	1200	Nepal
35	Baruntwak	<i>Creteva religiosa</i> Fors. f. (Capparaceae)	Bark	1180	Imported
36	Astismahari (Fresh Hadchur)	<i>Litsea glutinosa</i> (Lour.) C. B. Rob. (Lauraceae)	Whole plant	1058	Nepal
37	Heledo (Haridra)	<i>Curcuma longa</i> Roxb. (Zingiberaceae)	Rhizome	1000	Nepal
38	Kantakari	<i>Solanum surattense</i> Burm.f. (Solanaceae)	Fruit	1000	Nepal
39	Majistha	<i>Rubia manjith</i> Roxb. ex Flem. (Rubiaceae)	Root	1000	Nepal
40	Marich	<i>Piper nigrum</i> L. (Piperaceae)	Fruit	1000	Imported
41	Rudraksha	<i>Elaeocarpus sphaericus</i> (Gaertn.) K. Schum. (Eleocarpaceae)	Fruit	1000	Nepal

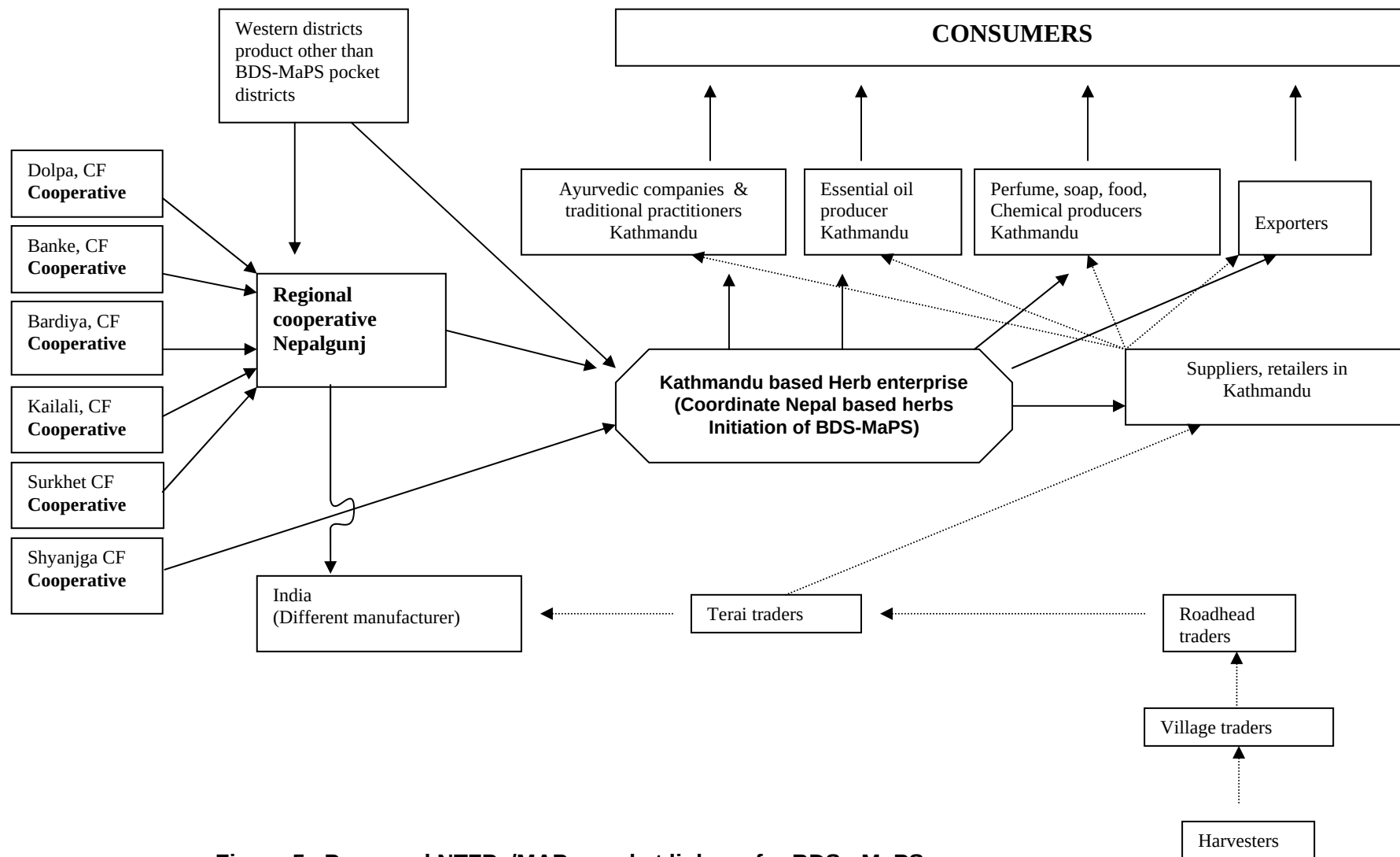


Figure 5. Purposed NTFPs/MAPs market linkage for BDS - MaPS

2.6. Existing National Policies on NTFPs/MAPs Management, Marketing and Trade

The policy and regulatory environment plays a very significant role in all the facets of trade including the trade of NTFPs/MAPs. Policies greatly influence the regulatory mechanism and procedures in which the NTFPs have been traded. Generally, the national policy framework is innovative and provides opportunities for sustainable use and equitable sharing of benefits. However, in practice, the national policy objectives do not seem to be properly translated into regulations and practices in order to generate desired impacts on local communities and conservation (Subedi, 2000).

Nepal does not have specific policy and legal framework relating to NTFPs/MAPs sub-sector, however, several policies, plans, acts and law interact to regulate and set the context in which NTFPs/MAPs are managed and utilized for subsistence and commerce (Subedi, 2000). The most relevant legal provisions include Master Plan for Forestry Sector 1989, Forest Act 1993, Forest Regulation 1995 and their amendments, Tenth Five Year Plan etc.

The existing acts and regulations are still restrictive in nature to support efficient and sustainable use of forests resources, particularly the NTFPs/MAPs. The role of government agencies is perceived to be a controlling authority rather than an agency that enables local environments. The Forest Act (1993) restricts NTFPs/MAPs use by imposing a licensing systems for NTFPs removal, sale, transportation, and export; a royalty system; controlling authority at the local district forest office; and severe punishment for NTFPs collection. The Forest Rules (1995) further describes the regulations.

The Forest Rules (1995) stated that species not mentioned in the legislation cannot be traded until sanctioned by the government. It further states that the government may impose a ban on the collection, use, sale, distribution and export of any products without any justification. Accordingly, in pursuant with section 70 (a) of the Forest Act 1993, HMG, with a notice published in Nepal Rajpatra in 31 December 2001, has imposed restrictions on the collection of 19 different forest products under three different categories mentioned below.

Table 7. Plants under HMG protected list categories

Plants banned for collection, use, sale, distribution, transportation and export				
SN	Scientific name	Local name	English name	Use
1	<i>Dactylorhiza hatagirea</i>	Panchaule	Orchid	Medicinal and Tonic
2	<i>Juglans regia</i>	Okhar ko Bokra	Walnut	Dye
3	<i>Neopicrorhiza srcophulariifolia</i>	Kutki	Gentian	Medicine
Plants banned for export outside the country in unprocessed form				
4	<i>Nardostachys grandiflora</i>	Jatamansi	Spikenard	Medicine and incense
5	<i>Rauvolfia serpentine</i>	Sarpagandha	Rauvolfia	Medicine
6	<i>Cinnamomum glaucescens</i>	Sugandhakokila	Nepali Sassafras	Aromatic
7	<i>Valeriana jatamansi</i>	Sugandhawal	Valerian	Medicine and incense
8	<i>Parmelia spp.</i>	Jhyau	Lichen	Medicine
9	<i>Abies spectabilis</i>	Talis Patra	Fir	Incense
10	<i>Taxus baccata</i>	Lauth salla	Himalayan Yew	Medicine
11	<i>Cordyceps sinensis</i>	Yarshagumba	-	Tonic
12	Stone exudates	Silajit	Stone exudates	Medicine
Plants banned for Transportation, export and felling for commercial purpose				
13	<i>Michelia champaca</i>	Chanp	Magnolia	Timber
14	<i>Acacia catechu</i>	Khayar	Cutch Tree	Medicine
15	<i>Shorea robusta</i>	Sal	Common Sal	Timber
16	<i>Bombax ceiba</i>	Simal	Silk cotton tree	Timber
17	<i>Dalbergia latifolia</i>	Satisal	Rose wood	Timber
18	<i>Pterocarpus marsupium</i>	Bijaya Sal	Indian Keno tree	Timber
19	<i>Juglans regia</i>	Okhar	Walnut	Timber

The procedures and provisions in NTFPs trade that are in current practice seem to contain a set of complex and restrictive provisions to obtain permits and to extract and utilize forest products. These procedures lack institutional support and the provisions for public goods (such as information, research, technology, infrastructure, and finance) to private and community enterprises (Subedi, 2000).

Moreover, Nepal is also a signatory of some of the major international regulations such as Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and Convention on Biological Diversity (CBD). These provisions are also significant for the trade and conservation of NTFPs/MAPs.

Recently, HMG has formed the Herbs and NTFP coordination committee for the promotion of all NTFPs. A new policy 'Herbs and NTFP development policy 2060' has been drafted. Though the details of this document is till not available but some of the changes are made. The policy try to address the royalty issues, conservation issues, quality issues, market information issues, benefit sharing issues, and the contribution for the overall poverty alleviation issues. HMG has also proposed MAP list for development of herbs, research and its cultivation based on national and international demand as per distribution, local use, medicinal importance etc. The priority list is provided in **Appendix III**.

3. Conclusion and Recommendation

Among all categories of Non timber Forest Products, medicinal and aromatic plants are of special significance to the Nepalese economy because of their value to the local collectors, the small traders, herb retailers, Ayurvedic practitioner, Ayurvedic companies and essential oil producers/exporters. The market of MAPs is expanding day by day and this is an opportunity as well as a challenge for a more sustainable, efficient and equitable management of these resources.

It is beyond doubt that the country and the people involved in medicinal herbs utilization will benefit highest if finished consumer products can be produced with the available or cultivable raw material. The priority of the country should be to market such products. The domestic market for traditional medicine should not be ignored. For this government should have specific policy for the promotion of the domestic companies. Import of such products is to check if that product replaces the domestic products.

Nepal has been regarded as a leading supplier since quite a long time. But the recorded information on the status of this resource is crucially lacking. Continuous MAPs inventory, action plan development and its monitoring is one of the main means to arrive at a better planning for sustainable management of the resources.

There is a increasing trend in the production of traditional medicines. But the share taken by the domestic products is minimal. Some Ayurvedic practitioners guess that the domestic production fulfils 15% of the consumption (Amatya, 2000). From the present study it is known that the data on the import or domestic production of traditional Ayurvedic medicines has not yet been compiled in detail.

NTFPs/MAPs trade in the Kathmandu valley is a very traditional and unpredictable. Herb retailers and manufacturers are not ready to provide the information about the consumption. Herb business which directly links with the Nations capital and livelihood of different levels of the stakeholders is still not considered seriously by the government and civil society.

Total 214 species of NTFPs/MAPs are listed which are consumed by various companies. These items are used as raw, fresh or processed forms. Most of the data on consumption quantities and prices are taken from major herb retailers. Those retailers are the main herb suppliers within and outside the valley. Among 214 species 128 NTFPs/MAPs species are fulfilled from Nepal, 75 NTFPs/MAPs species are imported especially from India and 11 NTFPs/MAPs species are usually taken both from either Nepal or India. Majority of common species having high demand in valley are fulfilled from the Indian market. To promote the Nepalese species there is an urgent need of quality and quantity assessment.

The priority NTFPs/MAPs species of BDS/MaPS posses the good demand by the Ayurvedic manufacturers and essential oil exporters in the valley. To fulfil this demand, BDS/MaPS need to work with various stakeholders for the establishment of proper market chain.

There are several constrains if the domestication and the formal development of NTFPs/MAPs market to be address, these includes:

- lack of infrastructure in the rural areas, making access to markets difficult
- low volume of products
- poor or variable quality of products
- no continuity of supply
- poor handling and storage qualities
- limited knowledge of the product among consumers
- ineffective enforcement of rules and regulations

- weak Institutional capacity of CFUGs, government officials on NTFPs management
- lengthy and costly export formalities
- inequitable and unfair distribution of profits among the NTFPs collectors and traders
- lack of NTFP processing facilities in local level
- control of limited retailers in the market
- lack of market information system among the Nepalese collectors in local level

Some plants of high market potential are available in fewer numbers. In order to exploit the comparative advantage of these potential NTFPs/MAPs well managed agroenterprises need to be established. Collection/harvesting of NTFPs is more on individual basis. To organize and develop this trade on a sustainable basis, micro-enterprises need to be developed with the active participation of Community Forest User Groups or trained local people/collectors.

Under the provisions of the Forest Act, 1993 and the Forest Regulations, 1995 there are restrictions/ and ban on exporting, felling and transportation of certain valuable NTFPs/MAPs. Some restricted herbs can't be marketed or exported in crude forms. These should be processed. Normally in our case processing of NTFPs is not an easy task for the commodity group with very limited technical, financial and marketing capacity. So the technical, financial and marketing capacity of the local people needs to be promoted.

A holistic approach to the domestication and commercialization of NTFPs should involve the local community at grassroots level from the very beginning. This is a long-term slow process. There are no quick-fix solutions. It requires a multidisciplinary team, preferably by collaborating agencies, each having its own specialist inputs. Coordination among the promoting organization, government offices, farmers and traders is very important.

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Appendix I

Annual consumption of herbs by different organizations residing Kathmandu Valley (in Kg)

SN	Trade of the Herbs	Alternative Herbal Products Pvt. Ltd.	Singhadurbar Vaidyakhana VS	*Dabur Nepal Pvt. Ltd.	Gorkha Ayurveda Company	Natural Resources industries	Male International Pvt. Ltd.	Everest Herbs Processing Pvt. Ltd.	*Cosmos Herbal Products Pvt. Ltd.	Traditional Himalayan Herbs	Suri Herbal Product Industry	Krishna Aushadhalaya	Piyusbari Aushadhalaya	Siddhartha Herbal Industry	Kunphen/Other Tibetan Aushadhalaya	Aarogya Bhavan Works
1	Aap ko Koya ko gudi	-	25	-	-	-	-	-	-	4	-	3	-	-	-	6
2	Aduwa (sutho)	-	-	3000	600	-	-	-	-	-	-	-	-	-	-	-
3	Aguru	-	7	-	150	-	-	-	-	2	3	2	-	-	32	2
4	Akarkara	-	2	-	-	-	-	-	-	1	1	1	-	-	-	1
5	Alaichi	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-
6	Amala (Dry)	700	3500	10000	5000	-	-	-	150	800	500	500	100	-	115	800
7	Amala (Fresh)	-	10000	20000	5000	-	-	-	350	150	200	75	25	-	-	200
8	Amalbetas	-	15	-	-	-	-	-	-	4	6	3	-	-	-	4
9	Anthopogon	-	-	-	-	100	70	70	-	-	-	-	-	1	-	-
10	Argeli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Arjun	-	40	-	100	-	-	-	-	10	50	30	-	-	-	10
12	Artemisia	-	-	-	-	5000	500	50	-	-	-	-	-	-	-	-
13	Ashogandha Mul	-	1345	-	1000	-	-	-	-	100	100	100	50	-	22	120
14	Ashok	-	75	-	300	-	-	-	-	30	25	35	15	-	-	30
15	Astismahariri (Fresh Hadchur)	-	705	-	-	-	-	-	-	15	5	10	10	-	-	15
16	Asuro (Dry)	-	70	-	500	-	-	-	-	10	10	5	5	-	45	15
17	Atibala	-	10	-	-	-	-	-	-	2	1	5	-	-	-	3
18	Atiras	-	380	-	-	-	-	-	-	15	2	10	-	-	-	18
19	Babur ko bokra	-	10	-	-	-	-	-	-	2	1	3	-	-	-	4
20	Bakainu	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-
21	Bakuchi	-	25	-	-	-	-	-	-	3	3	3	3	-	-	5

SN	Trade of the Herbs	Alternative Herbal Products Pvt. ILtd.	Singhadurbar Vaidyakhana VS	*Dabur Nepal Pvt. Ltd.	Gorkha Ayurveda Company	Natural Resources industries	Male International Pvt. Ltd.	Everest Herbs Processing Pvt. Ltd.	*Cosmos Herbal Products Pvt. Ltd.	Traditional Himalayan Herbs	Suri Herbal Product Industry	Krishna Aushadhalaya	Piyusbarsi Aushadhalaya	Siddhartha Herbal Industry	Kunphen/Other Tibetan Aushadhalaya	Aarogya Bhavan Works
22	Bakul (Maulashree)	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
23	Balu (Bala)	-	45	-	-	-	-	-	-	10	10	13	-	-	-	10
24	Bamsalochan	-	725	-	300	-	-	-	-	60	50	50	30	-	-	65
25	Barro (Phal ko bokra)	700	2367	-	4000	-	-	-	-	370	300	100	75	-	39	350
26	Baruntwak	-	1	-	-	-	-	-	-	1	1	1	1	-	-	1
27	Batsanav bish	-	100	-	-	-	-	-	-	10	5	2	-	-	-	17
28	Bayar ko bokra	-	10	-	-	-	-	-	-	5	-	2	-	-	-	10
29	Bayu bidang	-	180	-	200	-	-	-	-	10	15	10	10	-	-	15
30	Belchana	-	265	-	300	-	-	-	-	140	150	20	-	-	-	120
31	Belmul	-	15	-	-	-	-	-	-	10	30	10	10	-	-	25
32	Bhagitwak	-	17	-	-	-	-	-	-	2	3	2	-	-	-	4
33	Bhringaraj (Dry)	-	326	-	150	-	-	-	1000	10	15	5	5	-	-	30
34	Bhui amala	-	50	-	200	-	-	-	-	2	1	5	-	-	-	5
35	Bidari kanda	-	45	-	150	-	-	-	-	3	5	1	2	-	-	5
36	Bidhara biz	-	24	-	-	-	-	-	-	2	3	2	2	-	-	3
37	Bihi	-	60	-	80	-	-	-	-	20	30	8	10	-	-	25
38	Bijayasal	-	5	-	-	-	-	-	-	1	1	1	-	-	-	1
39	Bojho	-	90	20	100	-	-	-	-	4	3	2	1	-	23	5
40	Bramhi	-	10	-	-	-	-	-	-	5	1	2	2	-	-	7
41	Bridhi	-	14	-	-	-	-	-	-	1	1	-	-	-	-	1
42	Chabo	-	15	50000	300	-	-	-	-	10	10	-	-	-	-	15
43	Chakramarda	-	20	-	-	-	-	-	-	5	-	-	-	-	-	-
44	Chaku	-	115	-	-	-	-	-	-	22	20	-	-	-	-	25
45	Chamomile	-	-	-	-	200	300	30	-	-	-	-	-	-	-	-
46	Chiraito	-	100	20000	100	-	-	-	-	18	10	12	10	-	40	15
47	Chiraka koli	-	10	-	-	-	-	-	-	2	1	1	-	-	-	1

SN	Trade of the Herbs	Alternative Herbal Products Pvt. ILtd.	Singhadurbar Vaidyakhana VS	*Dabur Nepal Pvt. Ltd.	Gorkha Ayurveda Company	Natural Resources industries	Male International Pvt. Ltd.	Everest Herbs Processing Pvt. Ltd.	*Cosmos Herbal Products Pvt. Ltd.	Traditional Himalayan Herbs	Suri Herbal Product Industry	Krishna Aushadhalaya	Piyusbarsi Aushadhalaya	Siddhartha Herbal Industry	Kunphen/Other Tibetan Aushadhalaya	Aarogya Bhavan Works
48	Chitu mul	-	25	-	300	-	-	-	-	80	100	10	10	-	-	75
49	Chiuriko Ghiu	-	215	-	-	-	-	-	-	5	-	-	-	-	-	-
50	Chuk (Amilo)	-	200	-	-	-	-	-	-	10	-	-	-	-	25	2
51	Chutro ko bokra (Daruharidra)	-	130	-	300	-	-	-	-	8	10	6	5	-	-	10
52	Citronella	-	-	-	-	2000	2000	1000	-	-	-	-	-	-	-	-
53	Dalchini	-	-	10000	400	-	-	-	-	5	-	1	-	-	-	-
54	Danti mul	-	27	-	-	-	-	-	-	2	1	2	1	-	-	1
55	Darim ko phal ko bokra	-	35	-	-	-	-	-	-	4	-	5	5	-	55	3
56	Devdaru	-	65	-	150	-	-	-	-	2	3	2	1	-	-	4
57	Dhaniya	-	-	-	300	-	-	-	-	5	-	-	-	-	-	-
58	Dhasingre	-	-	-	-	2000	2000	1000	-	-	-	-	-	500	-	-
59	Dhatur biz	-	5	-	-	-	-	-	-	2	3	-	-	-	-	2
60	Dhayeri ko phool	-	200	-	-	-	-	-	-	30	25	-	-	-	-	35
61	Drona puspi	-	10	-	-	-	-	-	-	5	-	15	10	-	-	-
62	Durlavha	-	10	-	-	-	-	-	-	25	20	10	10	-	-	15
63	Eucalyptus	-	-	-	-	500	2500	500	-	-	-	-	-	100	-	-
64	French basil	-	-	-	-	200	200	100	-	-	-	-	-	-	-	-
65	Ghambhari	-	-	-	200	-	-	-	-	5	-	-	-	-	-	-
66	Gandhaprashri ni	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
67	Geranium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	Gineri	-	20	-	-	-	-	-	-	15	20	7	5	-	-	20
69	Gochhur	-	260	-	50	-	-	2500	-	35	25	-	-	-	-	30
70	Granthiparani	-	10	-	-	-	-	-	-	5	-	2	-	-	-	-

SN	Trade of the Herbs	Alternative Herbal Products Pvt. ILtd.	Singhadurbar Vaidyakhana VS	*Dabur Nepal Pvt. Ltd.	Gorkha Ayurveda Company	Natural Resources industries	Male International Pvt. Ltd.	Everest Herbs Processing Pvt. Ltd.	*Cosmos Herbal Products Pvt. Ltd.	Traditional Himalayan Herbs	Suri Herbal Product Industry	Krishna Aushadhalaya	Piyusbarsi Aushadhalaya	Siddhartha Herbal Industry	Kunphen/Other Tibetan Aushadhalaya	Aarogya Bhavan Works
71	Green tea	-	-	-	-	-	-	500	-	-	-	-	-	-	-	-
72	Guchhi Chyau	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	Gud	-	2710	-	-	-	-	-	-	120	150	50	-	-	-	100
74	Gudh (Babul niryas)	-	40	-	-	-	-	-	-	15	10	2	-	-	-	10
75	Gudmar	-	5	-	-	-	-	-	-	2	1	2	-	-	-	1
76	Guduchi	10000	180	-	7000	-	-	325	500	200	250	80	75	-	50	200
77	Gugul kora	-	1350	-	-	-	-	-	-	40	50	15	15	-	29	60
78	Gum acacia	-	45	-	-	-	-	-	-	5	-	-	-	-	-	-
79	Gurans	-	-	-	300	-	-	-	-	10	-	-	-	-	-	-
80	Harro (Phal ko bokra)	700	2325	-	5000	-	-	-	-	600	500	100	75	-	111	550
81	Heledo (Haridra)	-	150	-	100	-	500	-	-	50	25	10	15	-	-	25
82	Imili	-	5	-	-	-	-	-	-	2	-	-	-	-	32	-
83	Indarajau	-	100	-	500	-	-	-	-	7	5	3	6	-	11	5
84	Indrayani	-	5	2000	-	-	-	-	-	1	-	1	-	-	-	-
85	Isamgol	-	-	-	-	-	-	-	-	5	-	2	-	-	-	-
86	Jamun biz	-	15	-	-	-	-	-	-	3	3	1	-	-	-	4
87	Jatamansi	-	-	-	200	200	300	200	-	15	30	10	15	50	7	-
88	Jayapal	-	20	-	-	-	-	-	-	5	-	5	5	-	-	-
89	Jethimadhu	-	590	-	700	-	-	-	250	50	60	-	-	-	18	75
90	Jhyau	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
91	Jipatri	-	-	-	50	-	-	-	-	10	-	-	-	-	-	-
92	Jira	-	-	-	200	-	-	-	-	5	-	-	-	-	-	-
93	Jiwak	-	15	-	-	-	-	-	-	3	1	1	-	-	-	2
94	Jiwanti	-	15	-	-	-	-	-	-	2	2	1	-	-	-	4
95	Joytismati	-	5	-	-	-	-	-	-	1	0.5	-	-	-	-	1

SN	Trade of the Herbs	Alternative Herbal Products Pvt. ILtd.	Singhadurbar Vaidyakhana VS	*Dabur Nepal Pvt. Ltd.	Gorkha Ayurveda Company	Natural Resources industries	Male International Pvt. Ltd.	Everest Herbs Processing Pvt. Ltd.	*Cosmos Herbal Products Pvt. Ltd.	Traditional Himalayan Herbs	Suri Herbal Product Industry	Krishna Aushadhalaya	Piyusbarsi Aushadhalaya	Siddhartha Herbal Industry	Kunphen/Other Tibetan Aushadhalaya	Aarogya Bhavan Works
96	Juniper	-		-	-	125	150	150	-	-	-	-	-	50	-	-
97	Jwano	-		-	150	-	-	-	-	5	-	2	-	-	-	-
98	Kachur	-	15	-	100	25	100	25	-	3	2	-	-	-	-	3
99	Kaju	-		-		-	-	-	-	-	-	-	-	-	-	-
100	Kakanash	-	15	-		-	-	-	-	1	1	1	-	-	-	1
101	Kakoli	-	5	-		-	-	-	-	3	2	2	2	-	16	3
102	Kalmegh	-		-	250	-	-	-	-	4	-	-	-	-		-
103	Kamalkeshar	-	5	-	70	-	-	-	-	1	-	10	-	-	51	-
104	Kanchanar bokra	-	35	-		-	-	-	-	15	25	-	10	-	-	30
105	Kancho laha	-	100	-	300	-	-	-	-	10	5	12		-	18	7
106	Kantakari	-	60	-	70	-	-	-	-	35	30	1	10	-	21	25
107	Kaphal ko bokra	-	5	-	-	-	-	-	-	5	2	1	2	-	-	3
108	Kapikachhu beej	-	60	-	-	-	-	-	-	3	5	2	2	-	-	5
109	Kapur	-	40	-	-	-	-	-	-	2	4	2	3	-	-	7
110	Karkata shringi	-	80	-	-	-	-	-	-	2	5	-	2	-	-	3
111	Kauso	-		-	100	-	-	-	-	5		2	-	-	-	-
112	Kawakchini	-	155	-	-	-	-	-	-	10	3	-	2	-	-	5
113	Kayatha	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-
114	Khamari	-	5	-	-	-	-	-	-	10	30	-	-	-	-	25
115	Khayar seto	-	130	-	-	-	-	-	-	8	5	-	-	-	16	5
116	Krishnaguru	-	15	-	-	-	-	-	-	2	1	-	-	-	-	1
117	Kubhindo	-	20	-	-	-	-	-	-	30	40	-	-	-	-	30
118	Kustha	-	60	-	-	-	-	-	-	5	3	-	2	-	55	3
119	Kutajatawak	-	215	-	-	-	-	-	-	25	20	3	10	-	-	30
120	Kutki	-	-	-	500	-	-	-	-	10		15	-	-	-	-

SN	Trade of the Herbs	Alternative Herbal Products Pvt. ILtd.	Singhadurbar Vaidyakhana VS	*Dabur Nepal Pvt. Ltd.	Gorkha Ayurveda Company	Natural Resources industries	Male International Pvt. Ltd.	Everest Herbs Processing Pvt. Ltd.	*Cosmos Herbal Products Pvt. Ltd.	Traditional Himalayan Herbs	Suri Herbal Product Industry	Krishna Aushadhalaya	Piyusbarsi Aushadhalaya	Siddhartha Herbal Industry	Kunphen/Other Tibetan Aushadhalaya	Aarogya Bhavan Works
121	Lajjalu	-	31	-	-	-	-	-	-	5	2	-	-	-	-	3
122	Latakasturi	-	15	-	-	-	-	-	500	5	3	2	-	-	-	2
123	Lemongrass	2000	-	-	-	1500	2000	2000	-	-	-	-	-	50	-	-
124	Lodhatwak	-	91	-	200	-	-	-	-	15	10	2	-	-	-	17
125	Lokta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
126	Loth salla	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
127	Lwang	-	-	15000	400	-	-	-	-	5	-	-	-	-	-	-
128	Mahameda	-	14	-	-	-	-	-	-	2	1	-	-	-	-	1
129	Majistha	-	77	-	300	-	-	-	-	1	2	3	2	-	-	2
130	Marich	-	-	-	200	-	-	-	-	5	-	-	-	-	-	-
131	Mandukaparni	-	5	-	-	-	-	-	-	3	5	2	-	-	-	5
132	Masaparni	-	13	-	-	-	-	-	-	2	3	1	-	-	-	3
133	Mauwako phul	-	18	-	-	-	-	-	-	1	1	-	-	-	-	1
134	Mayur ko putchar	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-
135	Meda	-	13	-	-	-	-	-	-	1	1	-	-	-	-	2
136	Mentha	-	-	-	500	500	-	500	-	-	-	-	-	200	-	-
137	Mochras	-	80	-	150	-	-	-	-	-	0.5	-	-	-	-	1
138	Mothe	-	862	-	200	-	-	-	-	30	40	15	15	-	-	50
139	Mudilo	-	40	-	-	-	-	-	-	1	-	1	-	-	-	-
140	Mukdaparni	-	13	-	-	-	-	-	-	2	3	2	-	-	-	3
141	Mulberry leaf	-	-	-	-	-	-	2000	-	-	-	-	-	-	-	-
142	Mungrelo	-	5	-	350	-	-	-	-	3	1	1	-	-	-	1
143	Murwa	-	5	-	-	-	-	-	-	1	0.5	1	-	-	-	1
144	Musabbar	-	5	-	-	-	-	-	-	15	25	3	-	-	-	20
145	Musali seto	-	40	-	50	-	-	-	-	3	5	2	-	-	-	3
146	Nagarmotha	-	25	-	150	-	-	-	-	40	50	10	10	-	19	45

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147	Nagbala	-	15	-	150	-	-	-	-	2	2	1	3	-	-	3
148	Nagbeli	-	-	-		-	50	-	-	-		-	-	-	-	-
149	Nagkehsar	-	190	-	100	-	-	-	-	50	60	3	-	-	-	60
150	Neem ko pat	-	60	-	400	-	-	-	-	10	5	4	5	-	-	5
151	Nematwak	-	110	-	50	-	-	-	-	1	-	-	-	-	-	-
152	Nimbusatwa	-	55	-		-	-	-	-	15	20	-	-	-	-	25
153	Nirgundi	-		-	200	-	-	-	-	5		-	-	-	-	-
154	Nirkamal	-	20	-		-	-	-	-	15	20	2	-	-	-	20
155	Nisodh	-	5785	-	800	-	-	-	-	250	300	-	-	-	-	325
156	Okhar	-	-	-		-	-	-	-	1	-	-	-	-	-	-
157	Paanch Aulae	-	-	-		-	-	-	-	1	-	-	-	-	-	-
158	Padari	-	-	-	120	-	-	-	-	2		-	-	-	-	-
159	Paiyun ko bokra	-	5	-	-	-	-	-	-	1	-	-	-	-	20	-
160	Pakhanbedh	-	5	-	-	-	-	-	-	5	-	3	3	-	-	-
161	Palas ko biz	-	10	-	80	-	-	-	-	3	3	2	2	-	-	4
162	Palmarosa	-	-	-	-	1500	3000	-	-	-		-	-	-	-	-
163	Parbar panchang	-	30	-	-	-	-	-	-	1	-	-	-	-	-	-
164	Parijat	-	-	-	200	-	-	-	-	1	-	1	-	-	-	-
165	Pashanbeda	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
166	Patha	-	220	-	50	-	-	-	-	2	3	2	1	-	-	4
167	Patla	-	20	-	-	-	-	-	-	32	30	-	-	-	-	35
168	Pipal ko bokra	-	15	-	-	-	-	-	-	2	-	-	-	-	-	-
169	Pipla	-	-	70000	500	-	-	-	500	75	-	1	-	-	-	-
170	Pipla mul	-	70	-	100	-	-	-	-	15	25	10	10	-	25	30
171	Pitta papada	-	100	-	-	-	-	-	-	1	2	-	-	-	-	3
172	Prishniparni	-	30	-	-	-	-	-	-	20	30	10	10	-	-	30

SN	Trade of the Herbs	Alternative Herbal Products Pvt. ILtd.	Singhadurbar Vaidyakhana VS	*Dabur Nepal Pvt. Ltd.	Gorkha Ayurveda Company	Natural Resources industries	Male International Pvt. Ltd.	Everest Herbs Processing Pvt. Ltd.	*Cosmos Herbal Products Pvt. Ltd.	Traditional Himalayan Herbs	Suri Herbal Product Industry	Krishna Aushadhalaya	Piyusbarsi Aushadhalaya	Siddhartha Herbal Industry	Kunphen/Other Tibetan Aushadhalaya	Aarogya Bhavan Works
173	Priyanku	-	25	-	-	-	-	-	-	1	1	-	-	-	-	2
174	Punarnawa mul	-	50	-	100	-	-	-	-	25	20	5	5	-	-	21
175	Puskar mul	-	140	-	-	-	-	-	-	3	5	-	-	-	-	5
176	Raasna	-	58	-	150	-	-	-	-	2	3	3	2	-	-	3
177	Rajbriksha	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
178	Raktachandan	-	1012	-	-	-	-	-	-	10	20	4	8	-	-	25
179	Rasanjan	-	311	-	-	-	-	-	-	5	10	-	-	-	-	10
180	Resvak	-	20	-	-	-	-	-	-	1	1	-	-	-	-	1
181	Ridhi	-	20	-	-	-	-	-	-	1	1	-	-	-	-	1
182	Rittha	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-
183	Rohita ko bokra	-	296	-	-	-	-	-	-	15	20	10	10	-	-	25
184	Rudhilo	-	-	-	50	-	-	-	-	2	-	-	-	-	-	-
185	Rudrakshya	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-
186	Sal dhup	-	146	-	100	-	-	-	-	1	3	1	2	-	25	5
187	Salla ko khoto	-	170	-	-	-	-	-	-	2	2	-	-	-	-	2
188	Sallo ko bokra	-	5	-	-	-	-	-	-	-	-	1	1	-	-	-
189	Salmali mul	-	15	-	-	-	-	-	-	2	1	-	-	-	-	2
190	Salparni	-	26	-	-	-	-	-	-	20	30	10	15	-	-	25
191	Sanayapati	-	260	-	-	-	-	-	-	40	50	25	30	-	-	60
192	Sankhapuspi	-	10	-	50	-	-	-	-	1	1	-	-	-	-	1
193	Saphed chandan	-	-	-	250	-	-	-	-	1	-	-	-	-	-	-
194	Sariwa kalo	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-
195	Sariwa seto	-	10	-	-	-	-	-	-	2	3	1	-	-	-	3
196	Sarpagandha mul	-	20	-	100	30000	-	-	-	25	20	12	10	-	-	20
197	Satawari	-	455	-	500	-	-	-	-	6	5	5	5	-	18	10
198	Satuwa	-	-	-	-	-	-	-	-	5	-	2	-	-	-	-

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199	Silajit	-	-	-	201	-	-	-	-	15	-	1	-	-	-	-
200	Sipligan	-	-	-	150	-	-	-	-	10	-	-	-	-	-	-
201	Shobhanjan (Sigrubij)	-	2	-	-	-	-	-	-	1	0.5	1	-	-	-	1
202	Shrikhanda	-	30	-	-	-	-	-	-	30	50	1	-	-	50	45
203	Sikakai	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
204	Siltimbur	-	100	-	-	-	-	-	-	2	-	-	-	-	-	-
205	Sindure	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-
206	Somlata	-	5	-	-	-	-	-	-	1	1	-	-	-	15	1
207	Soup Madhise	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-
208	Soup Madhise	-	-	-	300	-	-	-	-	2	-	-	-	-	-	-
209	Soti ghans	-	-	-	-	-	50	100	-	-	-	-	-	-	-	-
210	Sugandhakokila	-	-	-	-	250	25	-	-	2	-	-	-	-	-	-
211	Sugandhawal	-	75	-	-	50	50	50	1000	1	1	1	1	-	15	1
212	Sukmel	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-
213	Supari	-	-	-	-	-	-	-	-	1	-	0.5	-	-	-	-
214	Surankanda	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-
	Sutho (Aduwa)	-	-	-	600	-	-	-	-	-	-	-	-	-	-	-
215	Tagar	-	5	-	-	-	-	-	-	1	-	2	1	-	-	-
216	Talamkhana	-	10	-	-	-	-	-	-	2	1	1	-	-	-	1
217	Talispatra	-	20	-	-	50	50	50	-	15	15	10	8	-	-	20
218	Tatelo	-	25	-	-	-	-	-	-	32	30	15	10	-	-	30
219	Tejpat	-	985	7000	300	-	50	50	300	35	40	35	30	-	-	45
220	Til ko tel	-	865	-	-	-	-	-	-	120	100	-	-	-	-	125
221	Timur	-	-	3000	-	400	500	50	100	5	-	-	-	-	-	-
222	Tori ko tel	-	170	-	-	-	-	-	-	15	20	-	-	-	-	25
223	Tuilsipatra	-	4300	-	300	-	-	-	-	3	3	2	3	-	-	10

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224	Usir	-	25	-	-	-	-	-	-	2	-	5	6	-	-	-
225	Yarsagumba	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
226	Yelandamul	-	30	-	-	-	-	-	-	3	-	-	5	-	-	-
227	Yelbalu	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-

* Amatya, 2000. The Bold case of the amount represents the essential oil.

Appendix II

Checklist for Market Study of NTFPs/MAPs in Kathmandu Valley

1. What are the NTFPs/MAPs species your company use to manufacture the Herbal products ?
2. What is your annual demand for the specified herbs ?
3. From where and whom do you consult to purchase the herbs ?
4. Are you satisfied with the supply system, quality and quantity of the herbs ?
5. What is the status of the Nepalese herbs ?
6. Do you have any trade linkage with Nepalese collectors/CFUGs/Harvestors/Herb retailers ?
7. Can you propose any alternative supply system ?
8. Does the government policies favours your herbal business ?
9. How can we supply the Nepalese raw materials in the market?
10. Which NTFPs/MAPs have high demand in your company ?
11. What is the local and international market for your products ?
12. How many products are you manufacturing regularly ?
13. What is your suggestions for the promotion of the Nepalese NTFPs/MAPs ?
14. What do you expect from BDS-MaPS for the establishment of trade link of the BDS-MaPS priority NTFPs/MAPs up to your company ?

Appendix III

National Priority list of Herbs

SN	Species
1.	Panchaule <i>Dactylorhiza hatagirea</i> (D.Don) Soo Jones
2.	Kutki <i>Neopicrorhiza scrophulariifolia</i> (Pennel) Hong
3.	Jatamansi <i>Nardostachys grandiflora</i> DC.
4.	Sughandhawal <i>Valeriana jatamansi</i> Jones
5.	Chiraito <i>Swertia chirayita</i> (Roxb. ex Fleming) Karstrn
6.	Sarpaghandha <i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz
7.	Yarshagumba <i>Cordyceps sinensis</i> (Berk.) sacc
8.	Lotha Salla <i>Taxus baccata</i> Linn.
9.	Timur <i>Zanthoxylum armatum</i> DC.
10.	Satawari <i>Asparagus racemosus</i> Willd.
11.	Dhasingare <i>Gaultheria fragrantissima</i> Wall.
12.	Bojho <i>Acorus calamus</i> Linn.
13.	Tejpat <i>Cinnamomum tamala</i> (Buch.-Ham) Ness & Eberm.
14.	Ritha <i>Sapindus mukorossii</i> Gaertn.
15.	Gurjo <i>Tinospora sinensis</i> (Lour.) Merr.
16.	Bikha <i>Aconitum spicatum</i> (Bruhl) Stapf
17.	Lagupatra <i>Podophyllum hexandrum</i> Royle
18.	Pakhanved <i>Berginia ciliata</i> (Haw.) sternb.
20.	Pipla <i>Piper longum</i> Linn.
21.	Jhau Lichens
22.	Padamchal <i>Rheum australe</i> Royle
23.	Majitho <i>Rubia manjith</i> Roxb.ex Fleming
24.	Sughandhakokila <i>Cinnamomum glaucescens</i> (Ness) Hand.-Mazz
25.	Okhar <i>Julans regia</i> Linn.
26.	Neem <i>Azadirachta indica</i> A. Juss.
27.	Bhakur <i>Dioscorea deltoidea</i> Wall.
28.	Guchichau <i>Morchella conica</i> Pers
29.	Jangali Sayapatri <i>Tagetes minuta</i> Linn.
30.	Amala <i>Phyllanthus emblica</i> Linn.

List of plants for cultivation and research

SN	Species
1.	Panchaule <i>Dactylorhiza hatagirea</i> (D.Don) Soo Jones
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3.	Chiraito <i>Swertia chirayita</i> (Roxb. ex Fleming) Karstrn
4.	Jatamansi <i>Nardostachys grandiflora</i> DC.
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6.	Lotha Salla <i>Taxus baccata</i> Linn.
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8.	Sarpaghandha <i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz
9.	Satawari <i>Asparagus racemosus</i> Willd.
10.	Pipla <i>Piper longum</i> Linn.
11.	Sughandhakokila <i>Cinnamomum glaucescens</i> (Ness) Hand.-Mazz
12.	Gurjo <i>Tinospora sinensis</i> (Lour.) Merr.

Source: DPR, 2004

Appendix IV

List of Organizations and Persons Visited and Interviewed

Name of the Organization	Person visited with	Position
Suri Herbal Product, Thimi, Bhaktapur Ph: 6633605	Mr. Sumir Rimal	Proprietor
Singh Darbur Baidhya Khana Bikas Samiti, Anamnagar, Kathmandu Ph: 4770174	Dr. Ram Narayan Sah	General Manager
Herb Production & Processing Company Ltd. Koteswor, Kathmandu Ph: 6633125	Dr. Narendra N Tiwari	General Manager
Everest Herbs Production Private Ltd, Buddha Nagar, Kathmandu Ph: 4781769	Dr. Rana Bdr Rawal	General Manager
Darbur Nepal Pvt Ltd, Tinkune, Kathmandu Ph: 4478010	Dr. Badri Narayan	General Manager
Piyusbarshi Ausadhalaya, Mahaboudha, Kathmandu	Dr. Madu Bajra Bajracharya	Proprietor
Kunfen Ausadhalaya, Paknajol, Kathmandu	Amchi Kunsang Dorge Lama	Proprietor
Nepal Traditional Ayurved Practitioners Association Mahaboudha, Kathmandu Ph: 4223960	Dr. Madu Bajra Bajracharya	President
Male' International Pvt Ltd, Sinchahiti, Lalitpur Ph: 5530518	Mr. Govinda Pokhrel	General Manager
Siddhartha Herbal Industry, Baneshwor, Kathmandu Ph: 4492174	Mr. Dhurba R Bhattari	General Manager
Arogya Bhavan Works, Dillibazar, Kathmandu Ph: 4412407	Mr. Sudeep Rimal	Proprietor
Trade house, Nardevi	Mr. Dharma Ratna Shakya	Proprietor
Sagarmatha Ayurvedic Ausadhi Udyog, Gaushala, Kathmandu Ph: 4469892	Mr. Rajan Pokhrel	--
Alternative Herb Production, Bhaktapur Ph: 6632942	Mr. Govinda Ghimire	General Manager
Aggrawal Traders, Newroad, Kathmandu	Mr. Rakesh Aggrawal	Proprietor
Traditional Himalayan Herbs, Dillibazar, Kathmandu Ph: 4413462	Mr. Kedar Uprety	Proprietor
Lo Kunfen Ausadhalaya, Mustang Ph: 2023016	Mr. Gysto Bista	Proprietor
Himalaya Herbal Udyog, Baudha, Tusal	Mr. Wangchuk Lama	Proprietor
-	Mr. Kedar N. Dhananjaya	Traditional practitioner
Gorkha Ayurved Company Ltd. Teku, Kathmandu Ph:	Mr. Prem Raj Tiwari	General Manager