

## Domestic Trade of Herbal Raw Drugs

Trade of herbal raw drugs in the country has been traditionally happening through a network of conventional herbal mandis strategically located close to the wild sources of the produce. The procurement and sale of the produce gathered from the wild in these mandis is based on negotiated rates that vary from trader to trader and place to place. The smaller herbal mandis located in the remote areas act as conduits for the larger national level herbal mandis for eventual sale to the end users. A large number of herbal raw drug entities, nearly 700, are present in substantial trade in these mandis with about 140 entities in annual trade of more than 100 MT each. Even though a lot more clarity is now there about the chain of custody in respect of herbal entities traded in large quantities, the trade through conventional herbal mandis still remains secretive with many issues still to be resolved.

Of late many medicinal plants have come up under cultivation and their trade is happening through the Krishi Upaj mandis set up by the state governments. Neemuch, Unjha and Sojat Krishi Upaj mandis have developed an internationally recognized niche for trade of cultivated material respectively of 'ashwagandha' (*Withania somnifera*), 'isabgol' (*Plantago ovata*), and for 'mehndi' (*Lawsonia inermis*). Some states like Uttarakhand have also established specialized 'herbal mandis' and some states have entrusted the trade of medicinal herbs to specific Cooperatives, Federations or Corporations. The operations of these specialized trade instruments are, however, limited to a few entities traded in large quantities. A lot more still needs to be done to improve disposal mechanisms by these specialized agencies and ensure better returns to the wild gatherers.

## 7.1. INTRODUCTION

India has a thriving herbal trade to meet the demands of the 8600 odd domestic herbal industrial units, thousands of practitioners of Indian Systems of Medicine who use medicinal herbs for preparing herbal formulations, and millions of households that use herbal raw drugs on day-to-day basis for their healthcare. An idea about the magnitude of this trade can be gauged from the fact that it meets the annual demand of nearly 5 lakh MT of herbal raw drugs obtained from about 1200 medicinal plant species. The medicinal plant species in trade are sourced from many different agro-climatic zones in the country, routed and re-routed under different local names through various raw drug markets before the material finally reaches the herbal industry and the retail shops across different states in the country. This makes this trade in medicinal plants fairly complex.

The herbal raw drug trade in the country involves thousands of traders and commission agents, who act as interface between the primary producers/ wild gatherers of medicinal herbs and the end users. This trade also involves lakhs of local agents who work on behalf of the traders and facilitate collection and aggregation of medicinal herbs from millions of the wild gatherers/ cultivators. The herbal raw drug trade is carried out through various types of herbal markets that have been characterized by Ved and Goraya (2008) based on (a) the 'size of annual transactions' (viz. Large Mandis, Regional Mandis, Intermediate Mandis, and Roadside Mandis) and (b) the 'type of transactions' (viz. Traditional Jari-Buti Mandis, and Organized Agricultural Mandis). Whereas this categorization of the herbal raw drug mandis continues to be largely valid, some new trade practices have been tried over time. To account for these changes in the trade practices, we have attempted to study the herbal raw drug trade in the country under the following headings:

- Trade through Conventional Herbal Raw Drug Mandis
- Trade through Krishi Upaj Mandis
- Trade through Specialized Herbal Mandis
- Trade through Cooperatives/ Federations/ Corporations
- Trade under Buy-back Agreements

Our teams visited more than 40 herbal raw drug mandis of different types across the country, interacted with traders and commission agents and gathered first hand information about the diversity and annual quantum of herbal entities traded through these mandis. At many places where there was doubt about the identity of the material, samples were procured wherever possible and identity of many such material confirmed with the help from experts. These mandis are known to trade a large number of herbal raw drugs to meet the demand of domestic herbal industry, exports and households. Many of these mandis also trade in spices (dalchini, cloves, nutmeg, star anise, cardamom, etc.), food items (cucumber, watermelon & muskmelon seeds) and oil seeds (coconut, castor, linseed, etc.) that are sourced entirely from cultivation.

The present study resulted in documentation of a considerable diversity of herbal raw drugs usually traded in these mandis. Whereas it was possible to document the diversity of medicinal plant species being traded in Krishi Upaj mandis and the specialized herbal raw drug trading organizations set up by states, documentation of complete diversity of the herbal raw drugs traded in conventional mandis was, however, found to be still shrouded in ambiguity due to (a) reluctance of most of the traders to share their statistics of trade, (b) use of local/ vernacular names for traded entities making their correlation to their botanical entities difficult, (c) opportunistic trade of some herbal raw drug entities not known to be normally traded in a



particular mandi, (d) non-sharing of information on the species that are red-listed, (e) non-sharing of samples of herbal raw drugs by most of the traders, and (f) direct sale of some entities from the original source without routing through the mandi. Absence of any official system of record maintenance in the conventional herbal mandis only compounds the issue.



Study teams interacting with traders in different region of the country

An overview of the different trade practices prevalent in the country is given below:

## **7.2. TRADE THROUGH CONVENTIONAL HERBAL RAW DRUG MANDIS**

The major proportion of the herbal raw drug trade in the country occurs through conventional herbal raw drug mandis of different sizes and shapes depending upon their annual trade volumes. Usually operating from narrow lanes of cities' old markets, these mandis make clear statement of their claim to long history. It is not very uncommon to come across trading companies and commission agents in these mandis engaged in herbal trade for over more than three generations!

Bustling with intense activity and trading huge volumes of a large variety of herbal raw drugs every year, these mandis seem to follow their own unwritten code of practice. It is intriguing to understand the smooth transactions, often large scale, happening in the absence of ideal modern day mandi management parameters like (a) formally defined mandi precinct, (b) centralized regulatory and record keeping mechanisms, (c) practice of open auctions of the produce brought to these mandis, and (d) the need for the transacted herbal material to necessarily pass through these mandis. Much of the herbal material is traded through deals made over telephone or internet. This mandi mechanism does not have any provision for facilitating an active interaction between the primary producers and the end users. The chain of custody and knowledge about the origin and authenticity of the material usually gets buried under the layers of agents operating in the system. This system of operation, therefore, brings in a general feeling of secrecy and opaqueness about the trade.

Notwithstanding the lack of ideal mandi management mechanisms as brought out above, the conventional herbal raw drug mandis continue to grow with trade volumes increasing year by year. The diversity of herbal entities traded through these mandis and the trade volumes being very large, different traders have created their own niche areas of trade, specializing in collecting and aggregating large volumes of specific material from different areas through a network of local level agents. This way the traders have been able to create a sort of confidence and trust of both sellers and the buyers.

Since there is no centralized regulatory or record keeping mechanism in these mandis, the estimation of herbal trade in this study has been based on the information that could be gathered from individual traders, and is, thus, far from complete.

Given below are highlights of some of the conventional mandis visited during the study:

### **7.2.1. Conventional Herbal Raw Drug Mandis in Tamil Nadu**

The three herbal mandis of Tamil Nadu i.e. Virudhnagar, Dindigul and Chennai, account for more than 80% of the domestic herbal trade in the state with a collective annual trade volume of more than 20000 MT. Whereas the Chennai raw drug market deals with larger number of raw drug entities sourced from across different parts of the country, the ones at Virudhnagar and Dindigul specialize in trade of a limited number of locally collected herbal raw drugs.

Virudhnagar Herbal Mandi trades about 75 herbal raw drug entities with an estimated annual trade volume of about 10,000 MT. Trade of about 45 herbal raw drug entities with an estimated annual trade volume of 3500 MT was recorded from Dindigul. Both these mandis have an estimated collective annual trade turnover of more than ₹ 100 crore. The major herbal raw drugs collected from the wild that are traded in high volume at these mandis include leaf and seed of



Thuthi (*Abutilon indicum*), Neem leaf (*Azadirachta indica*), stems of Priandai (*Cissus quadrangularis*), roots of Nilapanai (*Curculigo orchioides*), roots of Motha (*Cyperus rotundus*), whole plants of Bhiringraj (*Eclipta prostrata*), dried fruits of Nunaa (*Morinda coreia*), whole plants of Maela nelli (*Phyllanthus maderaspatensis*), whole plants of Vatta thirupi (*Sida acuta*), whole plants of Kozhinji (*Tephrosia purpurea*), and fruits of Siru nerunjil (*Tribulus lanuginosus*). Some medicinal plants of conservation concern viz. Aaduthinna paalai (*Aristolochia bracteolata*) and Karudakodi (*Aristolochia indica*) are also traded in smaller quantities at these mandis. Whereas the 20 odd traders in these mandis deal with an average of 40 herbal raw drugs each, at least one trader in Dindigul has specialized in trade of Etti seeds (*Strychnos nux-vomica*) with an annual trade volume of about 1000 MT. He sources his material from nearby areas and also from Andhra Pradesh, Odisha, Karnataka and Kerala. The traders informed that fast depleting inflows of the roots of Kali musli (*Cuculigo orchioides*) and leaf of Gudmar (*Gymnema sylvestre*) have become a cause of worry.

More than 5,000 local people, of whom about 90% are women, are engaged in collection of herbal raw drugs from the wild in nearby areas. As these collections are mostly done during dry season, these form a very significant income generating vocation for the local people during lean period. These mandis also deal in herbal raw drugs that are locally cultivated viz. Nithyakalyani (*Catharanthus roseus*), Thulasi (*Ocimum tenuiflorum*), Senna (*Senna alexandrina*), and Aavaarai (*Senna auriculata*).

Trade of about 180 herbal raw drug entities with an estimated annual trade volume of about 8,000 MT has been recorded from Chennai herbal raw market. The entities in annual trade of 100 MT or above include Peepal Mool (*Piper longum*) of three grades with respective rates being ₹ 50-60 per kg, ₹ 200-210 and ₹ 300-350 per kg. Another entity in high trade is roots of *Decalepis hamiltonii*, which are sold as substitute of *Hemidesmis indicus*. Supplies in respect of both these commodities are sourced from Andhra Pradesh – cultivated source in case of Peepal Mool and wild collections in case of *Decalepis hamiltonii*. The traders lamented the decreasing availability of the desirable thick root stock of both *Hemidesmis indicus* and *Decalepis hamiltonii*, indicating fast decline in their wild populations. Most of the other entities are traded between 10 to 100 MT each with a few imported entities like Rumi mastaki (*Pistacia lentiscus*), Ustukhudus (*Prunella vulgaris*), Gaozaban (*Onosma bracteata*), etc. being traded in quantities of less than 1MT per annum.

### 7.2.2. Conventional Herbal Raw Drug Mandis in Uttarakhand

Tanakpur and Ramnagar are very prominent conventional herbal mandis of Uttarakhand with estimated annual trade volumes of 8,000 MT and 5,000 MT respectively. These mandis receive most of their material from the high hills of the state, with supplies of some important species also coming from Nepal under free trade agreement with that country. Tejpatta (*Cinnamomum tamala*), collected from wild as well as from cultivated sources is one of the major herbal commodities in trade in these mandis. Chiretta (*Swertia chirayita*), all imported from Nepal, has been another commodity of high trade at these mandis. A large proportion of the material from these mandis gets routed through Khari Baoli, Delhi. However, a part of the material is also traded directly with other herbal mandis in the country and also with herbal manufacturing units.

### 7.2.3. Conventional Herbal Raw Drug Mandis in Chhattisgarh

Chhattisgarh with its vast forest expanses forms a home for a large number of medicinal plants. The major wild collected herbal raw drugs that are in trade in Chhattisgarh include Harar (*Terminalia chebula*), Baheda (*Terminalia bellirica*) and Aonla (*Phyllanthus emblica*) with each of

these entities having an annual trade volume of about 3000 MT. Other important herbal raw drugs in substantial trade include Kalmegh (*Andrographis paniculata*), Baibidang (*Embelia tjerium-cottam*), Bel (*Aegle marmelos*), and Bhilawa (*Semecarpus anacardium*), Dhai (*Woodfordia fruticosa*), Chakoda seeds (*Cassia tora*) with an average annual trade of each of these entities being about 1000 MT (MPVS, 2015). All these herbal raw drugs are collected from the wild, and are traded at weekly markets as well as at larger herbal mandis at Kankar, Katni, Bilaspur, Dhamtari, Jagdalpur, and Raipur.

Dhamtari herbal mandi, with an annual trade volume of 12,500 MT, receives wild collected material mainly from forests areas of Bastar, Rajnandgaon and Durg falling south of Raipur. Some material is also received from the adjoining areas of Madhya Pradesh. The 18 odd herbal traders also procure some material from the weekly 'Haats'. Whereas MPVS (2015) mentions closing of herbal business by 5 trading firms on account of reducing annual arrivals in the mandi, our field teams didn't notice such a shift. The traders have taken to value addition to the business in the form of grading of material and keeping it in better storage facilities. The material from this market is supplied to the major markets like Khari Baoli, Delhi and also directly to leading herbal industries. The Gol Bazar herbal mandi of Raipur has an annual trade volume turnover of about 21,000 MT. This mandi mainly receives wild collected material from the forest areas north of Raipur. Some of the traders at this mandi also have their own processing units close by. This mandi is an intermediate mandi for further supplies to herbal mandis at Delhi, Aakola, Mumbai, Kanpur, etc.

These mandis have established network of local level agents who procure material directly from wild gatherers or from weekly haats, aggregate the same and forward the material to these larger mandis. Wild gatherers, more than 70% of whom are women and children, are paid in cash as per quality of the material. Even as some traders came forward to share information, the details of exact source of supplies and the quantum of annual trade were withheld by them as 'trade secrets'. It also emerged that many of the local traders have graduated into dealing directly with larger mandis and with herbal industries.

#### **7.2.4. Conventional Herbal Raw Drug Mandis in Madhya Pradesh**

Madhya Pradesh, with its varied physiographic zones and diverse forest types, has been traditionally known to be a very rich repository of medicinal herbs. The areas bordering Chhattisgarh are rich in Harar (*Terminalia chebula*), Baheda (*Terminalia bellirica*), Amla (*Phyllanthus emblica*), Mahua (*Madhuca indica*), Safed Musli (*Chlorophytum tuberosum*), Baibidang (*Embelia tjerium-cottam*), and Kalmegh (*Andrographis paniculata*), the ones bordering Rajasthan and Uttar Pradesh are good sources of Shatavar (*Asparagus racemosus*), Salai Guggal (*Boswellia serrata*), Konch Beej (*Mucuna pruriens*), Bael (*Aegle marmelos*), and Giloe (*Tinospora cordifolia*). Madhya Pradesh also has large scale cultivation of medicinal plants and the produce from cultivation finds way to the Neemuch Agri-Produce mandi. In as far as the wild collected produce is concerned, the major mandis include Shivpuri, Jabalpur, Indore, Betul, Bhopal, Chhindwara, Balaghat, and Shahdol etc. Like in Chhattisgarh, the increasing connectivity and communication has prompted many petty local traders in Madhya Pradesh also to start dealing directly with the end users. The established traders at the intermediate mandis, though, continue to expand their business by engaging other local agents. An increasing trend of value addition in the form making extracts by some of the enterprising traders has also come to notice.



### 7.2.5. Conventional Herbal Raw Drug Mandis in Odisha

Odisha is another state having excellent medicinal plant resources in the wild. The tribal populations in many districts of the state are largely dependent upon the collection of medicinal herbs from the forests and sell these for their livelihood. Most of the material collected in this way is sold through the weekly haats. The local agents then procure such material, aggregate the same and dispatch it to larger mandis like Koraput, and Cuttak in the state. Some 40 odd herbal entities including Harar (*Terminalia chebula*), Baheda (*Terminalia bellirica*) and Aonla (*Phyllanthus emblica*) being traded in large quantities, are traded in these mandis with a cumulative annual trade volume of about 4,000 MT. The material from these mandis goes to Khari Baoli, Delhi, and also to the herbal manufacturing units directly.

### 7.2.6. Conventional Herbal Raw Drug Mandi, Khari Baoli, Delhi

Khari Baoli, Delhi is considered to be the largest spice market in Asia and the largest conventional herbal raw drug mandi in the country. Operating since 17th century from the narrow alleys of Khari Baoli area, near Chandni Chowk, this mandi is still living its old heritage. Most of the traders in this mandi are continuing their inherited family business and it is not uncommon to come across traders here who are in herbal trade for more than 5 generations! The mandi also still retains its ancient flavor in its material carriage tradition i.e. either on porter backs or by hand carts.

Enquiries with traders revealed that more than 300 herbal raw drug entities, received from various parts of the country and abroad, are regularly traded in this mandi, of which about 30 entities are traded in volumes exceeding 1000 MT per year, and about 50 entities are traded in volume between 100 MT and 1000 MT annually. It is estimated that the 250 odd traders having a shop in this mandi collectively handle a trade of about 150,000 MT of herbal raw drugs every year. No official record of such annual trade volumes is, however, available, as no record keeping mechanism exists at this mandi. We also tried to corroborate the annual quantum of trade at this mandi with the daily number of trucks of the herbal raw drugs getting unloaded at this mandi. Interactions with loaders, porters and traders brought out that an average of 70 truckloads of herbal raw drugs was getting unloaded at this mandi every day. At an average of 7 MT per truck load, the daily arrivals of herbal raw drugs at this mandi translate to 490 MT, and taking 300 working days per year, the annual volume of herbal raw drugs received at this mandi works out to 147,000 MT. Some of the material is also known to be traded without its getting physically routed through the mandi. The daily trade of herbal raw drugs alone results in generating wages worth about ₹ 700,000 every day with each of the 700 odd porters/ hand cart owners earning an average of ₹ 1000 per day.

Visit to this mandi is an experience in itself. All day long it is abuzz with activity, whether it is the porters and hand carts ferrying sacs of herbal raw drugs from the unloading points on the outer main roads to the godowns of traders in the narrow alleys, or ferrying of sold material from these godowns to the loading points. The mandi also witnesses a great daily rush of buyers/ traders from across the country who move from shop to shop in search of material of their choice – from both qualitative and rate perspective. Most of the transactions are facilitated by scores of free lance agents who have developed uncanny ability to detect a potential buyer as soon as he enters the area. These agents take upon themselves the responsibility of directing the potential buyers to specific shops, and get a commission from the trader if the deal is closed. The mandi also witnesses lateral trade amongst resident traders of the mandi. It is intriguing to watch most of the transactions happening by way of only slips issued by the traders. There is, however, a definite design in this apparent disorder.

The top ten traded herbal raw drugs at this mandi were recorded to be Mehndi leaf (*Lawsonia inermis*), Mulathi (*Glycyrrhiza glabra*), Tulasi (*Ocimum tenuiflorum*), Karu (*Picrorhiza kurroa*), Daruhaldi (*Berberis* sp.), Amla (*Phyllanthus emblica*), Harar (*Terminalia chebula*), Ritha (*Sapindus mukorossi*), Isabgol (*Plantago ovata*), and Majith (*Rubia cordifolia*).

Interactions with the traders at Khari Baoli mandi brought out that the grading and packaging of the material at the source end had improved over the years and that the traders here were now usually receiving dried, graded and well packed material. Whereas the fast moving items and the items traded in smaller quantities are stored in godowns close to the shops, the bulk items and items susceptible to damage are stored in rented space in cold stores. Even as some of the bigger trading houses have been using the cold store facilities for the past 30 odd years, there was a growing trend to keep large stocks of slow moving herbal raw drugs in cold stores to save the material from insect pests and fungal attacks and to maintain quality of the material. Such storage did result in escalation of cost (extra loading, unloading & transport; storage charges, and loss of an average of 8% weight during storage). However, such cost escalation on account of storage, they said, was very worthwhile to retain quality of the material, to save the material from damage, and to ultimately add to conservation of the resource in the wild.

The traders also shared some of the issues that they felt were impacting the rates of herbal raw drugs. The first major factors they felt was sudden spurt in the demand of some high value material that shifts the focus of local wild gatherers towards that commodity. Citing the specific examples of 'Satva' (*Trillidium govanianum*) that saw very high demand at a very high rate (₹ 1800-₹ 2400 per kg) over the last 4-5 years, they said that it diverted the focus of wild gatherers to this species only, adversely impacting the wild collections of other Himalayan herbs and causing their prices to rise. It was perhaps this effect that prices of 'Karu' (*Picrorhiza kurroa*) shot from ₹ 800 per kg to about ₹ 2500 per kg during 2014-15. The prices stabilized at ₹ 900 to ₹ 1200 per kg only after this price rise resulted in large scale import of 'Karu' from Nepal. They also cited MNREGA effect on the prices of some wild collected medicinal herbs as in case of low value herbs, working for MNREGA was more remunerative to the local gatherers. The traders were in such cases obliged to either pay higher wages or engage outside labour to effect wild collections to meet their supply commitments.

Some of the traders also shared their experiences about the usual trade practices pertaining to wild collected medicinal herbs. The process, they shared, usually starts with spreading a word amongst the local wild gatherers about the demand of given commodities through local agents. The wild gatherers are usually paid some money in advance for the purpose. The local agent procures the material from the primary gatherers and settles their payments at pre-agreed prices. He aggregates the material from different sources and keeps it stored in godown till further transport to the larger trader. The local agent is usually paid his money immediately on receipt of material. Further supplies of the material to the herbal industry/ exporters usually happen on credit. This entire process involves risks of loss at various stages. The first stage of risk, they shared, is at the level of primary producer/ wild gatherer. If the wild gatherer fails to make the agreed supplies due to some reason, the money advanced to him is usually taken as money lost. The second stage of risk is the damages on account of mis-handling of the produce during post harvest handling and during storage. Delays in transport and final disposal of the collected material add to such damage and loss. The third stage of risk is the downward fluctuation in prices. The fourth stage of risk, they shared, is on account of non-receipt of payments against supplies from many end users. Each of the traders interacted with was having small or large bad debts on this count. Since a large amount of money gets locked up at various ends, there is also a loss of bank interest on such investments.





Trade and value addition activities in different herbal raw drugs markets in the country

### 7.2.7. Mandi-wise Estimation of Annual Trade Volumes in Respect of Conventional Herbal Raw Drug Mandis

Quantification of annual trade volumes for each of the 34 conventional herbal mandis visited during this study proved to be very difficult. The estimations have been arrived at on the basis of subjective assessment by the few traders in each mandi who volunteered to come forward and shared information. The information gathering process gets frequently interrupted due to trade enquiries by hundred of potential buyers coming to the respondent trader from across the country. Moreover, the information gathering process is probity driven i.e. asking the trader about

the annual volumes of particular commodities traded by him and his assessment of the total annual trade of that commodity in the whole mandi. With a limited number of respondents coming forward to share information, the results are far from comprehensive. Thus, the figures given in the table 7.1 are based on extrapolation of the subjective information provided by different traders. Attempts to cross check the figures through non-structured interactions with different stakeholder groups viz. traders, commission agents, buyers, coolies, transporters have been made and the mandi-wise data moderated.

**Table 7.1.** Estimation of Annual Trade Volumes in respect of Conventional Herbal Raw Drug Mandies

S. No.	Name of Mandi	Number of Traders in the Mandi (Approx.)	Number of Major Entities Traded	Annual Trade Volume (MT)
1.	Khari Baoli, Delhi	250	300	≈1,50,000
2.	Majith Mandi, Amritsar (Punjab)	35	70	≈20,000
3.	Tanakpur (Uttarakhand)	14	35	≈9,000
4.	Ramnagar (Uttarakhand)	12	28	≈5,000
5.	Sharanpur (Uttar Pradesh)	08	38	≈3,000
6.	Kanpur (Uttar Pradesh)	21	35	≈4,000
7.	Lucknow (Uttar Pradesh)	23	72	≈2,500
8.	Kannauj (Uttar Pradesh)	09	31	≈2,000
9.	Banaras (Uttar Pradesh)	06	29	≈2,500
10.	Jagdapur (Chhattisgarh)	06	23	≈8,500
11.	Dhamtri (Chhattisgarh)	18	20	≈12,500
12.	Kankar (Chhattisgarh)	04	09	≈2,200
13.	Katni (Chhattisgarh)	05	10	≈1,000
14.	Raipur (Chhattisgarh)	21	06	≈21,000
15.	Jabalpur (Madhya Pradesh)	03	08	≈3,000
16.	Indore (Madhya Pradesh)	10	12	≈4,000
17.	Betul (Madhya Pradesh)	02	07	≈1,600
18.	Bhopal (Madhya Pradesh)	11	13	≈500
19.	Chhindwara (Madhya Pradesh)	01	12	≈600
20.	Mumbai (Maharashtra)	250	78	≈17,000
21.	Chandrapur (Maharashtra)	01	02	≈100
22.	Nagpur (Maharashtra)	07	35	≈500
23.	Amravati (Maharashtra)	02	07	≈500
24.	Koraput (Odisha)	09	20	≈3,000
25.	Cuttak (Odisha)	03	49	≈1,000
26.	Patna (Bihar)	04	29	≈500
27.	Ranchi (Jharkhand)	02	11	≈300
28.	Kolkata (West Bengal)	54	31	≈1,000
29.	Chennai (Tamil Nadu)	40	175	≈8,000
30.	Virudhnagar (Tamil Nadu)	15	93	≈10,000
31.	Dindukkal (Tamil Nadu)	06	39	≈3,500
32.	Jammu (Jammu & Kashmir)	37	48	≈500
33.	Srinagar (Jammu & Kashmir)	14	12	≈100
34.	Jaipur (Rajasthan)	39	11	≈2,500



There were limitations in respect of gathering of trade data on at least two other counts. At some places the traders provided only local names in their local dialect, which could not be correlated to their botanical identities due to want of samples. Secondly, there is an issue of many herbal raw drugs flowing from one mandi to another and getting double counted. Thus, the above estimations are at best indicative about the diversity of herbal raw drugs usually traded at these mandis and the approximate volumes traded annually.

The visits to herbal mandis did, however, provide good information about the areas of major production and chain of custody of entities traded in large quantities.

### **7.3. TRADE THROUGH KRISHI UPAJ MANDIS**

Different states in the country have set up state-specific Mandi Boards to facilitate trade of the agricultural produce through a network of well laid out Krishi Upaj Mandis (Agriculture Produce Markets). These mandis provide a platform for the farmers and the buyers to come in direct contact with each other. The produce brought to these mandis by the farmers is put to auction by specialized paid auctioners, ensuring that the farmer gets the best returns for the same. Each such mandi is provided with necessary infrastructure for stacking and auctioning of the produce. The auctioned produce is weighed in the presence of the concerned farmer, and he is issued a cash memo recording the quantity of produce sold and the rate of sale. This cash memo enables the farmer to receive his payment from the buyer usually by the day end. In many of the mandis, a layer of commission agents is also present. The commission agents facilitate the auctions on behalf of buyers, arrange for the bags (bardana), get these filled up, weighed and make payment to the farmers. The commission in such cases is charged from the buyer. The mandi charges some fixed fee towards infrastructure and mandi management.

These regulated mandis, set up with the prime objective of catering to the need of conventional agricultural crops like wheat, rice, corn, pearl millet, cotton, ground nut, etc. provide an excellent opportunity to route the trade of medicinal herbs, of both cultivation and wild collected origin, through these. Some of these mandis have already added various commodities of local importance to their auction lists and have, over the years, specialized in the trade of a diversity of commodities, including herbal raw drugs. To formalise this process, various state governments have notified the list of commodities, whether cultivated or wild collected, that have to be necessarily traded through these mandis. Presented below are the examples of some of the mandis that have very successfully made a name in trading of herbal produce:

#### **7.3.1. Neemuch Mandi (Madhya Pradesh)**

Neemuch Krishi Upaj Mandi is the oldest such market in the country that was set up in 1922. Spread over an area of 15 acres, this mandi has separate sections for auctioning different commodities. This mandi is nationally acclaimed for the trade of 'Garlic' and 'Ashwagandha'. It routinely handles more than 50 items - mostly agricultural produce – of which more than 20 items are botanical raw drugs, both cultivated and collected from the wild. There is one dedicated covered yard for auctioning Isabgol seeds and two covered yards for auction of other herbal raw drugs.

An average 17,000 MT of the 20 odd botanical raw drug entities are traded through this mandi annually, of which the major ones are listed in table-7.2:

**Table 7.2.** Herbal Raw Drug Entities Traded at Neemuch Mandi

S. No.	Entities in Trade	Botanical Name	Apprx. Trade Volume during 2015-16 (MT)	Average Rates during 2015-16 (₹/Qtl)
1	Isabgol Seeds	<i>Plantago ovata</i>	7500	7500
2	Ashwagandha Roots	<i>Withania somnifera</i>	2000	9500
3	Ashwagandha Leaf		800	600
4	Ashwagandha Seed		150	1100
5	Kalonji	<i>Nigella sativa</i>	3000	14500
6	Kalmegh	<i>Andrographis paniculata</i>	1300	1250
7	Tulsi Seed	<i>Ocimum gratissimum</i>	1000	8000
8	Mehndi	<i>Lawsonia inermis</i>	300	3300
9	Amla	<i>Phyllanthus emblica</i>	300	5000
10	Neem Giloye	<i>Tinospora cordifolia</i>	100	800
11	Neem Leaf	<i>Azadirachta indica</i>	100	1100
12	Asaliya/ Halon	<i>Lepidium sativum</i>	100	6400

In addition, some other herbal entities brought to this mandi for trade in smaller quantities are 'Satavar' (*Asparagus racemosus*), 'Hingot fruits' (*Balanites aegyptica*), 'Kaith fruits' (*Limonia acidissima*), Bahera (*Terminalia belerica*), 'Amaltas pods' (*Cassia fistula*), Powad seeds (*Cassia tora*), Posta seed (*Papaver somniferum*), Neem Seeds (*Azadirachta indica*), Tulsi Leaf (*Ocimum tenuiflorum*), Safed Musli (*Chlorophytum tuberosum*), Tesu Phool (*Butea monosperma*), Ark roots (*Calotris procera*) and Vilayiti babool pods (*Prosopis juliflora*).

This mandi is one of the few examples where farmers and gatherers of medicinal plants come face to face with traders/ buyers of the produce. The open auction of the produce ensures the best prices to the farmers/ gatherers. Interactions with the farmers and Mandi officials revealed that the auctioned produce is put in jute bags, weighed in the presence of the concerned farmer and sent to the godown of the buyer immediately after auction. The farmer is issued an auction slip and he receives his payment in cash by 3 PM the same day from the buyer. An indicative trade procedure in respect of Ashwagandha and Isabgol Seeds is given in Boxes 7.1 and 7.2 respectively.

In addition to fetching good prices to the farmers, the mandi is also a source of good income to a variety of stakeholders. Jute bag-fillers is one such category working in the mandi precincts itself. The bag-fillers are paid ₹ 4/- per bag of upto 50 kg. Above this weight charges are ₹ 4.50 per bag. Then there are loaders and carriage owners that transport the sold material to godowns of traders.

The inflow of herbal raw drugs to the mandi has been on the increase. Interactions with traders brought out that the space was becoming a big constraint. Even the vast open courtyard outside the two covered platforms earmarked for auction of botanical raw drugs was now inadequate to handle the inflow. It was resulting in damage to the material. The mandi officials informed that a new site of 70 acres has already been procured to provide better space and would become operational soon.

The magnitude of trade in this mandi can be appreciated from the fact that it generates an average monthly collection of ₹ 2 crores @ 2% of the sale value of the produce that is charged from the



buyer. One fourth of this fee is retained in the mandi to meet the routine administrative and operational costs, whereas the remaining three fourth part of the fee is deposited with the Mandi Board general development of mandis in the state.

### Box 7.1. Ashwagandha Trade at Neemuch Mandi

Neemuch mandi is the hub in the country engaged in trading the highest volume of Ashwagandha (*Withania somnifera*) every year. This mandi alone trades about 2000 MT of Ashwagandha roots, about 150 MT of Ashwagandha seeds (asgandh beej) and more than 800 MT of Ashwagandha leaf (asgandh patti) every year. A major portion of the produce is derived from the villages of Piplia Raoji, Uched and Jamniya Raoji in Neemuch district, which with cultivation of Ashwagandha over more than 1000 hectares of land, forms the single largest cluster cultivating Ashwanadha in the country. Ashwagandha is also cultivated sporadically over large areas in the states of Madhya Pradesh, Rajasthan and Andhra Pradesh, and the produce from these areas is also brought to Neemuch mandi for sale.



Ashwagandha stocks ready for auction

The Ashwagandha roots brought to the mandi are carefully graded into different categories depending upon the thickness of the material. The pieces of index finger thickness fetch the highest prices, whereas the lower thin portions (taar) fetch low prices. Prices also vary depending upon the density of the roots. The less the fibre in the roots, the higher the prices it fetches. Thus, material from Kurnool (Andhra Pradesh), being lighter and more fibrous, is usually rated inferior to the one produced in Madhya Pradesh. The produce from Ratitala area in the state is the most prized.



Sizing and grading of Ashwagandha roots

The average rate of Ashwagandha roots in Neemuch mandi varies from year to year. Whereas the average rate was ₹ 158 per kilogram during 2014-15, it was commanding a lower average price of ₹ 95 per kilogram during 2015-16. The reason for this fall in prices is said to be the generally lower quality of the produce during the current year due to rainfall failure.

### Box. 7.2. Trade of Isabgol Seeds at Neemuch Mandi

Isabgol seeds (*Plantago ovata*) form an important herbal entity in trade at Neemuch mandi with a trade volume of about 7500 MT recorded during 2015-16. The inflow of produce faces quite wide annual fluctuations as the crop is much dependent upon the climatic conditions. Depending upon the quality, the rate varies from as low as ₹ 35/ kg to a high of ₹ 86/ kg with an average price of ₹ 75/ kg. There is a separate covered yard for auction of Isabgol. The auction process usually starts at about 0930 hrs. and is over by about 1030 hrs. Mandi officials put each heap to auction in the presence of the concerned farmer.

The filling into bags starts immediately after a stack is auctioned. Isabgol is filled in large jute bags, with each filled bag weighing 60.700 kg (Isabgol seed = 60 kg + jute bag = 700 gms). Weighing takes place in the presence of the concerned farmer. Immediately after his entire auctioned produce is filled in bags and weighed, the farmer is issued a cash memo by the buyer. The filled bags are then loaded on vehicles and transported to the godown of the buyers. The entire auction and after-auction handling process is very efficient and the entire platform is cleared of Isabgol seeds by noon.



Isabgol - auction, packaging and weighing

In addition to Neemuch, there are other krishi upaj mandis in the nearby towns to facilitate trade of produce from those areas. Of these, the Krishi Upaj Mandi, Mandasaur trades more than 1000 MT each of Isabgol, Kalonji, Alsi and Asalia per annum. Small quantities of all the 20 odd botanical raw drugs that are traded at Neemuch mandi are also traded through Jeeran Krishi Upaj Mandi in Neemuch district of Madhya Pradesh.





(1) Neem leaves; (2) Asaliya seeds; (3) Tulsi seeds; (4) Kalmegh in trade process at Neemuch

### 7.3.2. Unjha Mandi (Gujarat)

This Krishi Upaj Mandi is an excellent example of regulated market for trade of agriculture produce. It is known as the largest 'Jeera' (*Cuminum cyminum*) mandi in Asia with an average annual sale volume of 1,25,000MT of this commodity alone. It is also the largest 'Isabgol' (*Plantago ovata*) mandi in the country and trades an average of 50,000 MT of Isabgol every year. The third important item in significant annual trade at this mandi is 'Variali' (Saunf, Fennel) with an average annual trade of 35000 MT. In addition to these three top traded commodities, more than 20 other commodities are brought to this mandi for trade by farmers, prominent of these being mustard seeds, castor seeds, till (sesamum), fenugreek, coriander seeds, suwa (dill seed), etc.

This mandi is in operation since 1954 and handles an average annual trade volume of about 2,75,000 MT of all commodities. This mandi has very successfully introduced good trading practices in the form of (a) standardized weighing equipment and associated protocols, (b) provision of cash payment to farmers on the very day his produce is sold, (c) provision of amenities like drinking water, washrooms, covered auction yards, etc., (d) subsidized quality testing laboratory, established in collaboration with the Spices Board, Ministry of Commerce and Industry, Government of India, and (e) on campus godown facility for storage of unsold and sold material. With modernization of all mandi functions, the auction continues to be in 20 kilogram traditional local units, called 'mann'.

The excellent trade practices and facilities available at the Unjha mandi is encouraging farmers from even far off places to bring their produce to this mandi for sale. With the arrivals to the mandi



on the rise, the management had to procure another piece of land on the city outskirts to handle the inflow, where facilities are under development.

During 2014-15, about 62,000 MT of Isabgol seeds (*Plantago ovata*) were traded at Unjha mandi at an average rate of ₹ 100 per kg. The rates varied from a low of ₹ 1600 per mann to ₹ 2500 per mann depending upon the quality of the seed. About 12 traders regularly participate in Isabgol auctions every day.

The mandi charges a market fee of 0.5% from the purchasers. The mandi is acclaimed for its quality standards and for making on-the-spot cash payment to the farmers at the time of sale for their produce.

### 7.3.3. Rajasthan Krishi Upaj Mandis

Rajasthan has come to be widely recognized for large scale cultivation of Mehndi, Senna, Castor, and Isabgol. To facilitate trade of these botanical raw drugs, the Rajasthan State Agricultural Marketing Board (RSAMB) has included these commodities for trade through its Krishi Upaj Mandis. However, over the years some of these mandis have specialized for trade of one or more of such botanical raw drugs. Krishi Upaj Mandi at Sojat (Rajasthan) is one such mandi that has made its name in trade of Mehndi (Henna). The mandi has a separate section dedicated to Mehndi and has put in very meticulous quality control mechanisms to ensure quality of the material auctioned through its yards. The mandi usually receives Mehndi from around Sojat where it is cultivated over 40000 hectares. During 2014-15, about 30,700 MT of Mehndi leaf were traded through this mandi. Small quantities of Mehndi are also traded at the Sojat Road mandi, a satellite of the old Sojat mandi.

Data received from the Jt. Director, Agriculture Marketing Committee, Jodhpur reveals that the cultivated botanical raw drugs are traded through a network of about 15 krishi upaj mandis in the circle. In addition to sale of Mehndi from Sojat, during 2014-15, 13680 MT of Isabgol, 15800 MT of Castor seed, and 18310 MT Senna leaf and pods was sold through various Krishi Upaj Mandis in the State.

### 7.3.4. Other Krishi Upaj Mandis

Various other Krishi Upaj Mandis in different states provide platform for trade of medicinal herbs. For example, the state of Himachal Pradesh has also notified some 35 medicinal plant species, cultivated as well as wild collected, for trade through the Krishi Upaj Mandis of the State. However, cultivation of medicinal plants has not yet picked up in the state and as such medicinal plant trade of wild collected medicinal plants continues to be controlled by the local traders.

The Krishi Van Upaj mandis are organized and regulated markets that follow good trade practices and protocols. Meticulous records of all transactions, by volumes traded per day along with daily rates, are maintained and put on mandis' web site. In addition to providing transparency in trade and getting best prices to the farmer, this mandi system also comprehensively addresses the issue related to the chain of custody. As such these mandis provide a good opportunity for trade of cultivated medicinal plants through these. These could be effectively put to use for trade of wild collected medicinal plants for which necessary government orders need to be put in place.

It needs to be noted that conducive regulatory regime about cultivation and transport of medicinal plants is required for efficient working of these mandis. Even as government

notifications in respect of trade of listed wild collected medicinal plant species through these mandis is in place in various states, such trade has not picked up due to very complex and time consuming material transport procedures. To make such mandis effective in all states, the regulatory regimes for cultivation and transport of cultivated and wild collected produce to these mandis and from these mandis to outside the state need to be reviewed and made more facilitative.

#### **7.4. TRADE THROUGH SPECIALIZED HERBAL MANDIS**

Trade of wild collected botanical raw drugs has been long considered to be highly exploitative of the wild gatherers. The various state governments have been trying to find workable mechanisms to ensure remunerative returns to the wild gatherers. The initiative by the Uttarakhand government in this direction is presented below:

The Uttarakhand Government, in 2003, notified a scheme for Conservation, Development and Harvesting of Medicinal and Aromatic Plants from the forest areas and appointed the Uttarakhand Forest Development Corporation (UFDC) as the marketing agency for the wild collected produce. Through another notification in June 2004, procedure for operationalisation of wild harvest and marketing of medicinal herbs was laid. As a result three herbal mandis were set up in the state. These three mandis are Bibiwala (Rishikesh), Aamdanda (Ramnagar), and Tanakpur Depot (Tanakpur). All these three mandis are located in the precincts of the existing timber depots of the UFDC, where some area has been set aside and developed for trade of medicinal herbs. Facilities like godowns and auction yards have been created at these mandis. One of the key factors to locate the herbal mandis at these places was the existence of conventional herbal mandis at these places.

The wild collection of medicinal herbs is carried out by the registered local gatherers under the aegis of either of UFDC, Bhashaj Sangh, Kumaon Mandal Vikas Nigam, Garhwal Mandal Vikas Nigam and Van Panchayats from the forest areas allocated to them by the concerned Divisional Forest Officer. The produce so collected is transported to the nearest herbal mandi under export permit (ravanna) issued by the concerned Divisional Forest Officer. A royalty @ 8% on the notified sale price is collected from the designated harvesting agency at the time of issue of export permit. Auctions at these herbal mandis are conducted on fixed dates i.e. Bibiwala, Rishikesh (01 & 16 of every month), Aamdanda, Ramnagar (06 & 21 of every month), and Tanakpur (10 & 26 of every month). The material received at these mandis is auctioned on 'as is where is' basis and no value addition is carried out in the mandi precincts. The sale proceeds are subject to deductions on account of mandi fee (1%), income tax (2.6%), sales tax (4.5%), and UFDC overheads (10%). In case of sale proceeds from cultivated material, no royalty is charged.

Perusal of the trade volumes at these mandis reveals that the annual trade volume grew from about 2200 MT in 2005-06 to a high of about 3130 MT in 2012-13. The trade volumes, however, decreased to 1980 MT in 2013-14, 1700 MT in 2014-15 and just 1440 MT in 2015-16. The trade value over the past three years was ₹ 18.08 crore (2013-14), ₹ 16.44 crore (2014-15) and ₹ 19.77 crore (2015-16).

Critical analysis of the trade data reveals that Jhula (*Parmelia* spp.) and Moss (*Chondrus* spp.) has been consistently forming nearly 95% of the total annual trade volumes recorded at these mandis. Tejpatta (*Cinnamomum tamala*), with average annual trade of about 30 MT, is another commodity of some significance that is traded in these mandis. Other species that are occasionally brought to

these mandis in much smaller quantities include Chitrak (*Plumbago zeylanica*), Dandasa (*Juglans regia*), Padam kashth (*Prunus cerasoides*), Van haldi (*Hedychium spicatum*), Ritha (*Sapindus mukorossi*), Pashanbhed (*Bergenia ciliata*), Satua (*Paris polyphylla*), Giloe (*Tinospora cordifolia*), Atees (*Aconitum heterophyllum*), Salampanja (*Dactylorhiza hatageria*), Yartsa gumba (*Ophiocordyceps sinensis*), etc. It is a common knowledge that removals of these commodities from the forests are much higher than the mandi data reveals. Presumably, a large proportion of the harvest is getting removed through unauthorized channels.

Interactions with local people and staff of authorized extraction agencies brings out that the procedure to move the harvested material from field depots to the herbal mandis was quite complex and time consuming. That this delay adversely affected the quality of the produce has also been highlighted (UFDC, 2009). The time lag in getting payments was also fairly long, discouraging people from taking the material to the herbal mandis. Moreover, the major buyers at these herbal mandis continued to be the local traders who sell the material procured from these mandis to end users at much higher prices, albeit after adding value in the form of cleaning, grading and packing. These herbal mandis have, therefore, not been able to fulfill the objective of eliminating the intermediary layers from the trade chain.

The government of Himachal Pradesh also tried to emulate the 'successful' (?) medicinal plant trade model of Uttarakhand and established a Medicinal Plant sale depot at Shamshi, Kullu. Basic facilities for collection, storage, drying and auction of the produce received at this mandi were also created. With no commodity available for auction in high quantities, the auctions did not get desired participation, and this experiment, initiated during 2008-09, still remains a non-starter.

The government of Rajasthan has also set up a specialized MFP (Medicinal Plants) Mandi at Udaipur under the Rajasthan Tribal Area Development Cooperative Federation Ltd. and the mandi has become functional from October 2015. To facilitate movement of wild collected material from the forest areas to the mandi within the Scheduled Areas or from the Scheduled Areas, the government of Rajasthan has, by a notification dated September 14, 2015 exempted 26 listed MFP entities from under the provisions of Rajasthan Forest (Produce Transit) Rules, 1957. The mandi is reported to have received a good response during first year of its operations, with better returns having gone to the tribal communities engaged in wild harvest of medicinal herbs.

## 7.5. TRADE THROUGH COOPERATIVES/ FEDERATIONS/ CORPORATIONS

Some states have set up Minor Forest Produce (MFP) Federations, Cooperative or Corporations for collection, aggregation and marketing of minor forest produce, including medicinal plants, in areas where local communities have high dependence upon forest resources, and where wild collected forest produce makes a significant part of their cash income. The central objective of these Cooperatives/ Corporations/ Federations is to ensure remunerative prices to the tribal communities through procurement of produce at the doorsteps and elimination of middlemen.

Girijan Cooperative Corporation Ltd. (GCC), established in 1956 by the State of Andhra Pradesh, is perhaps the first such organization in the country. Originally named the Andhra Scheduled Tribe Cooperative Finance and Development Corporation, it was rechristened as the Girijan Cooperative Corporation Ltd. in 1970. Bifurcation of the State has resulted in bifurcation of this corporation also into the Andhra Pradesh Girijan Cooperative Corporation Ltd. and the Telangana Girijan Cooperative Corporation Ltd.

Data about the annual sales of MFPs was collected from the Telangana Girijan Cooperative



Corporation Ltd. This corporation is engaged in procuring listed MFPs through its various field depots at rates that are pro-decided. Sale data presented in table 7.3 below reveals that the GCC's average annual trade volume of MFPs from 2011-12 to 2014-15 was 1475 MT at an average annual trade value of ₹ 4.35 crore only. Of this, Gum Karaya alone with an annual trade value of ₹ 2.25 crore formed more than 50% of the total trade value of all MFPs. In volume terms, Mahua flowers, Mahua seeds and Nux-vomica seeds remained the major commodities of trade by the GCC with average annual trade volumes of 570 MT, 190 MT and 275 MT respectively over a four year period from 2011-12 to 2014-15.

**Table 7.3.** Time Series Data of Annual Trade of MFPs by Telangana GCC

	2011-12		2012-13		2013-14		2014-15	
	Qty*	Value*	Qty*	Value*	Qty*	Value*	Qty*	Value*
Gum Karaya	3805.9	278.98	1172.8	180.07	960.5	141.59	1721.21	308.39
Myrobalans	27.98	0.22	17.15	0.04	28.65	0.18	24.53	0.14
Nux-vomica ( <i>Strychnos nux-vomica</i> )	3145.6	69.69	357.73	7.73	4682.1	138.8	2877.01	67.94
Tamarind seeded	5	0.11	5.3	0.16	450.93	7.24	1528.48	26.64
Tamarind de-seeded	222.1	7.46	2955.3	101.02	322.28	14.48	574.63	19.95
Pungam seed	151.29	1.45	424.58	4.04	58.54	0.58	274.25	2.37
Cleaning nut ( <i>Strychnos potatorum</i> )	96.4	1.13	27.91	0.34	51.44	0.97	248.76	4.49
Marking nut ( <i>Semecarpus anacardium</i> )	0.12	0	3	0.02	25.34	0.28	4.11	0.05
Mohwa seed	2549.1	30.13	138.31	1.78	2065.4	28.7	2795.45	45.06
Mohwa flower	8641.4	60.54	2217.1	15.52	7695.5	76.93	4230.79	42.3
Soapnut ( <i>Sapindus emarginatus</i> )	642.21	11.75	986.61	9.47	4.26	0.02	193.67	2.08
Naramamidi Bark ( <i>Litsea glutinosa</i> )	91.71	2.57	51.97	1.45	131.64	3.69	147.48	5.46
Maredugeddalalu ( <i>Decalepis hamiltonii</i> )	40.46	3.44	69.17	6.92	59.97	6.46	46.1	4.81
Medicinal Herbs	0	0.29	0	0.45	0	0.12	0	0
<b>Total</b>	<b>19419.27</b>	<b>467.76</b>	<b>8426.93</b>	<b>329.01</b>	<b>16536.55</b>	<b>420.04</b>	<b>14666.47</b>	<b>529.68</b>

Source : GCC Ltd. (Pers. Comm.) and Ravi (2015)

\*Qty (in Quintals); Value (₹ in Lakh)

Analysis of the price data reveals that the prices of Nux-vomica seeds has, over the past ten year period, risen from about ₹ 17 per kg in 2005-06 (Ved and Goraya, 2008) to just about ₹ 23 per kg in 2014-15. These prices, reported to be less than 50% of the ruling market prices of this commodity in 2005-06, continue to be so even during 2014-15. Price analysis in respect of Soapnut (*Sapindus emarginatus*), Cleaning Nut (*Strychnos potatorum*), and Myrobalans (*Terminalia belirica* and *T. chebula*) reveals a similar trend. The only commodity that has shown significant increase in prices over the years is Gum karaya (*Stercuia urens*), the average annual price of which has almost doubled from about ₹ 85 per kg during 2005-06 to about ₹ 179 per kg in 2014-15. The price is,

however, much lower than the MSP of ₹ 220 per kg being offered by the Chhatisgarh MFP Federation.

GCC's MFP trade data also reveals that the trade of medicinal plants is limited to only about 12 commodities with large annual trade volumes. There are likely to be a large number of other medicinal plant entities that are collected in lesser volumes from the command area of the GCC. It is assumed that these are sold directly to the local traders through weekly haats or other means. Further, even as the traders have been legally prohibited from purchasing minor forest produce directly from the tribals, the Corporation itself sells the produce in the open market to these very private traders and whole sale dealers without adding any value to it.

The states of Madhya Pradesh and Chhatisgarh have their own MFP Federations, namely the MP State Minor Forest Produce (Trading & Development) Cooperative Federation Ltd. and the Chhatisgarh State Minor Forest Produce (Trading & Development) Cooperative Federation Ltd. to procure and trade MFPs in their respective states. Both these Federations have been dealing with a large number of MFPs till 2003 when the rights to harvest and trade MFPs were devolved to the Panchayats. The MP MFP Federation now retains monopoly rights over 3 specified commodities i.e. Tendu leaf, Sal seed and Kullu gum. The Chhatisgarh MFP Federation retains monopoly rights over 5 specified commodities i.e. Tendu leaf, Kullu gum, Dhawada gum, Khair gum and Babool gum. Both these Federations have also joined hands with the Ministry of Tribal Affairs and are implementing its 'Mechanism for Marketing of MFPs through Minimum Support Price (MSP) and Development of Value Chain'. For the year 2015-16, the the state of Madhya Pradesh has fixed MSP for Harar, Mahua Seeds, Mahua Flowers, Neem Seed, and Karanj Seeds (table-7.4).

**Table 7.4.** MSP of Botanicals fixed by Madhya Pradesh and Chhattisgarh

S. No.	Commodity	MSP Fixed by MP (Rs. / Kg)	MSP Fixed by Chhattisgarh (Rs. / Kg)
1	Sal Seed	-	10.00
2	Kullu Gum	-	220.00
3	Dhawada Gum	-	29.00
4	Khair Gum	-	17.40
5	Babool Gum	-	17.40
6	Harar	10.00 (Common), 20.00 (Kachariya) 35.00 (Bal harar)	11.00
7	Mahua Seed	9.00	22.00
8	Mahua Flower	(ground collected) 14.00 (net collected) 20.00	-
9	Tamarind		22.00
10	Chironjee Seed		100.00
11	Neem Seed	7.00	-
12	Karanj Seed	35.00	-

As the things stand today, Tendu leaf (*Diospyros melanoxylon*) remains the major commodity of trade accounting for nearly 99% of the Federation's annual procurement and sales. The other MFPs, including medicinal herbs, which the Federations receive in much smaller volumes, are

disposed off through open auction to the traders without adding any value at the Federation depots. With wild gatherers now free to sell their produce to anyone, the inflow of non-specified commodities at Federation depots has become much less than when these commodities were listed as specified. It goes on to show that major procurement of medicinal herbs in these states is now once again in the hands of the local traders.

The state of Gujarat has made the Gujarat State Forest Development Corporation Ltd. as the lead agency in respect of collection, processing and marketing of MFPs. The Corporation has got monopoly rights over the collection and trade of nationalized entities that include Timru (tendu) leaf (*Diospyros melanoxylon*), Mahuda flowers, Mahuda doli, and all types of gums. In addition, the Corporation has also notified other 90 odd MFPs, including medicinal herbs, for trade through its depots. The mechanism of collection of MFPs is through appointed agents who get 10% commission *ad valorem*. The collected produce is stored in the Corporation warehouses and on getting adequate quantities, it is disposed off through auction on 'as is where is' basis. The proceeds are transmitted to the wild gatherers after retaining Corporation expenses.

The above discussion makes it amply clear that the Federations/ Cooperatives/ Corporations, assigned the responsibility of collection and trade of MFPs with the objective to get optimum returns to the wild gatherers, have fallen short on that count. Neither these organizations have been able to deal with the diversity of medicinal herbs usually collected from their areas, nor have these been able to get the gatherers prevailing market rates of the commodities traded through these. These organizations have been sustaining on the strength of sale proceeds of a few major commodities or through their other functions that absorb the losses due to trade of miscellaneous herbal raw drugs. MoPR (2011) also records that 'these corporations/ federations take up the trade of only the more viable MFPs, leaving the rest for free trade'. This widely glorified model of procurement and trade of medicinal herbs needs a hard review and refinement to be able to meet the noble objectives set by these organizations.





## 7.6. TRADE ACROSS LINE OF CONTROL

Field enquiries in Jammu and Kashmir revealed that a large number of botanical raw drug entities are in trade from across Line of Control (LoC). Data of botanical raw drug entities received from across LoC during 2014-15, as maintained at two forest check posts, one in Srinagar and the other in Jammu, has been procured, collated and is presented below (table 7.5):

**Table.7.5.** Herbal Raw Drugs Recorded in Trade across LoC during 2014-15

S. No.	Species	Common Name	Part Traded	Receipt at Jammu (kg)	Receipt at Srinagar (kg)	Total Inflows across LoC (MT)
1	<i>Acacia senegal</i>	Gound choura	Gum extract	5688	3276	8.96
2	<i>Aconitum heterophyllum</i>	Atees/ Patis	Root/ Tuber	19785	0	19.79
3	<i>Acorus calamus</i>	Buch	Root/ Rh.	9838	2564	12.40
4	<i>Aesculus indica</i>	Ghoon	Fruit	750	0	0.75
5	<i>Allium sativum</i>	Lasun	Bulb/ Seed	115	430	0.55
6	<i>Aquillaria agallocha</i>	Ood saleb	Root	32015	4268	36.28
7	<i>Argyrea speciosa</i>	Salib dana	Fruit	7871	4305	12.18
8	<i>Arnebia benthamii</i>	Ratanjot	Root	35922	45065	80.99
9	<i>Artemisia absentium</i>	Tethwan	Root	0	10852	10.85
10	<i>Asperagus racemosus</i>	Shatavar	Roots	12330	9800	22.13
11	<i>Berberis lycium</i>	Rasount	Gum extract	79300	0	79.30
12	<i>Betula utilis</i>	Bhoj patter	Bark	104276	24568	128.84
13	<i>Bombax ceiba</i>	Mochras	Gum extract	7510	0	7.51
14	<i>Borago officinalis</i>	Gouzaban	Whole plant	15506	5440	20.95
15	<i>Bunium persicum</i>	Sha Zeera	Seed	0	2360	2.36
16	<i>Butea monosperma</i>	Kamarkas	Gum extract	520	0	0.52
17	<i>Centaurea behan</i>	Bavan	Root	22082	0	22.08
18	<i>Cetraria islandica</i> (?) <i>Parmelia</i> spp.	Charela	Lichen	22660	20964	43.62
19	<i>Chlorophytum</i> spp.	Musli	Root	52052	2454	54.51
20	<i>Cochlospermum religiosum</i>	Gund katira	Gum extract	5472	0	5.47
21	<i>Colchicum luteum</i>	Suranjan	Corm/ Root	54818	5688	60.51
22	<i>Commiphora wighiti</i>	Gugal	Gum extract	204534	32100	236.63
23	<i>Crocus sativus</i>	Zainbed	Seed	70	0	0.07
24	<i>Curcuma longa</i>	Haldi	Rh./ Root	880	1245	2.13
25	<i>Cuscuta reflexa</i>	Aftimoon	Stems	2559	0	2.56
26	<i>Dactylorhiza hatagirea</i>	Salam panja	Root	4072	2054	6.13
27	<i>Eclipta postrata</i>	Bringraj	Seed	2030	0	2.03
28	<i>Embelia tjerium-cottam</i>	Wowring	Seed	232862	5300	238.16
29	<i>Ephedra gerardiana</i>	Somlata	Twig	57344	0	57.34
30	<i>Erysimum cheiri</i>	Safed tadri	Seed	1780	965	2.75

S. No.	Species	Common Name	Part Traded	Receipt at Jammu (kg)	Receipt at Srinagar (kg)	Total Inflows across LoC (MT)
31	<i>Ferula asafoetida</i>	Hing	Resin extract	60	0	0.06
32	<i>Ficus bengalensis</i>	Bar pipal	N.A	1840	0	1.84
33	<i>Ficus carica</i>	Anjeer	Fruit	635	1588	2.22
34	<i>Glycyrriza glabra</i>	Mulathi	Root	166630	45742	212.37
35	<i>Hyssopus officinalis</i>	Zoofa	Flower	13916	8758	22.67
36	<i>Juniperus macropoda</i>	How ber	Fruit	0	40865	40.87
37	<i>Jurinea dolomiaea</i>	Dhoop	Root	763	0	0.76
38	<i>Morchella esculenta</i>	Guchies	Fungus	1658	870	2.53
39	<i>Nelumbo sp.</i>	Col Doda	Seed	16730	0	16.73
40	<i>Origanum vulgare</i>	Sattar patti	Flower tops	6772	1260	8.03
41	<i>Peganum hermala</i>	Lal dana	Seed	70935	52340	123.27
42	<i>Phoenix dactylifera</i>	Dates	Fruit	785	64390	65.18
43	<i>Picrorrhiza kurroa</i>	Koda kutki	Root	16815	0	16.82
44	<i>Pinus gerardiana</i>	Chilgoza	Seed	2870	0	2.87
45	<i>Pistacia integerrima</i>	Kakar sanghi	Galls	37316	9865	47.18
46	<i>Podophyllum hexandrum</i>	Bankakri	Root	9021	6754	15.78
47	<i>Polygonatum verticillatum</i>	Salam misri	Corm/ Root	2391	1800	4.19
48	<i>Punica granatum</i>	Anardana	Dried fruit	43501	0	43.50
49	<i>Quercus infectoria</i>	Maju	Gall	50567	0	50.57
50	<i>Rosa spp.</i>	Gulab	Petals	9390	5400	14.79
51	<i>Rubia cordifolia</i>	Majeeth	Root	14120	2652	16.77
52	<i>Santalum album</i>	Sandalwood	Wood Pwdr	69520	28760	98.28
53	<i>Saussurea costus</i>	Kuth	Root	1250	1320	2.57
54	<i>Terminalia chebula</i>	Harad	Fruit	442100	0	442.10
55	<i>Trachyspermum ammi</i>	Ajwain	Seed	974	0	0.97
56	<i>Tribulus terrestris</i>	Gokhroo	Gall	3357	5430	8.79
57	<i>Trillium govanianum</i>	Nagchatri	Root	199741	97655	297.40
58	<i>Valeriana hardwickii</i>	Tagar	Root	0	20900	20.90
59	<i>Valeriana jatamansii</i>	Mushakbala	Roots	193479	32974	226.45
60	<i>Viola odorata</i>	Banafsha	Flower	22398	10200	32.60
61	<i>Vitis venifera</i>	Monaka	Fruit	1900	2396	4.30
62	<i>Withania coagulans</i>	Paneer Dodi	Fruit (Berry)	13600	3200	16.80
63	<i>Withania somnifera</i>	Ashwagandha	Fruit (Berry)	500	1865	2.37
64	<i>Zizyphus jujuba</i>	Anab	Fruit (Berry)	1250	0	1.25
65	<i>Myristica fragrans</i>	Jalwatry	Aril	0	2320	2.32

These inflows from across LoC are very significant, especially for resolving the supply related issues in respect of red-listed species like 'atees', 'bankakri', 'salam mishri', 'salampanja', etc.

## 7.7. TRADE UNDER BUY BACK AGREEMENTS

The herbal industry in the country has initiated limited programs to get some key medicinal plants cultivated under buy-back agreements with the farmers. Some of these species are Bhui Amla (*Phyllanthus amarus*), Tulasi (*Ocimum tenuiflorum*), Prishnparni (*Uraria picta*), Chiretta (*Swertia chirayita*), Atees/ Patis (*Aconitum heterophyllum*), and Karu (*Picrorhiza kurroa*). The industry has assigned the task of operationalisation of this mechanism to some local community based NGOs. These NGOs first identify village clusters suitable for cultivating specific medicinal plant species. They then enroll farmers under the program, build their capacity and provide time to time technical inputs. The harvested produce is collected and the farmers handed over bank cheques towards their produce procured at pre-agreed prices. The farmers, under this mechanism, are provided liberty to sell their produce in open market. Currently, Dabur India Ltd. is the major player in this field with good interventions by Natural Remedies, Himalayan Drug Company, Sami Labs, etc. The rates pre-fixed under the buyback agreement are usually better than the going rates in the open market.

The traders at Neemuch, however, had a different version about the buying back arrangements with farmers and preferred to continue with the open auction system in the mandi precincts. The system of open auction, they shared, ensured that the farmers brought cleaned material to the mandi, which was not the case under buyback arrangements.

## 7.8. BOTANICALS IN HIGH TRADE IN DIFFERENT MANDIS

Commodity-wise trade data in respect of all the 40 odd herbal mandis surveyed during the study has been collated. A total of 700 herbal entities have been recorded in this trade from the mandis visited. The list of herbal 165 raw drug entities corresponding to 138 plant species plus 1 rock exudate (Shilajit) that are traded in high quantities of 100 MT or more per year is given in table 7.6.

**Table 7.6.** Botanicals Recorded in High Trade in Herbal Mandis for the year 2014-15

S. No.	Botanical Name	Trade Name	Parts Traded	Trade Volume (MT/ Year)
1	<i>Abrus precatorius</i>	Kundumani, Ratti	Seed	100-200
		Kunnimuthu	Leaf	10-50
2	<i>Abutilon indicum</i>	Thuthi	Leaf	50-100
		Thuthi	Seed	100-200
3	<i>Acacia concina</i>	Shikakai	Fruit (Pod)	1000-1500
4	<i>Achyranthes aspera</i>	Nayuruvi, Apamarga	Whole Plant	200-500
5	<i>Acorus calamus</i>	Bach	Root	200-500
6	<i>Aegle marmelos</i>	Bael, Bel, Vivam	Fruit Pulp	200-500
		Bael Guda	Fruit (Dry)	500-1000
		Bael Pattri	Leaf	10-50
7	<i>Aloe barbadensis</i>	Elva, Kumari, Ghritkuwari	Leaf	100
8	<i>Alpinia galanga</i>	Perarathai, Kulanjan	Rhizome	100-200
9	<i>Althaea officinalis</i>	Khatmi	Seed	200-500
		Gul-e-Khatmi	Flower	10-50
10	<i>Apium graveolens</i>	Ajmoda	Seed	1000-1500
11	<i>Andrographis paniculata</i>	Nila vembu, Kalmegh	Whole Plant	2000-3000
12	<i>Asparagus racemosus</i>	Shatawar	Roots	500-2000
13	<i>Asphaltum punjabianum*</i>	Shilajit	*Rock exudate	100-200



S. No.	Botanical Name	Trade Name	Parts Traded	Trade Volume (MT/ Year)
14	<i>Azadirachta indica</i>	Neem, Vaeppan	Leaf	500-1000
		Neem seeds	Seeds	10-50
		Neem	Bark	10-50
15	<i>Bacopa monnieri</i>	Neer brahmi	Whole Plant	200-500
16	<i>Berberis</i> spp.	Daruhaldi	Stem/Root	1000-1500
17	<i>Berginia ciliata</i>	Pashan Bhed	Root	1000-1500
		Pashan Bhed	Leaf	50-100
18	<i>Betula utilis</i>	Bhojpatra	Bark	100-200
19	<i>Boerhavia diffusa</i>	Punarnava, Mukarattai	Whole Plant	200-500
		Punarnava, Mukarattai	Root	200-500
20	<i>Bombax ceiba</i>	Semal musli	Root	100-200
21	<i>Boswellia serrata</i>	Mani kundrikam, Kunduru, Salai Guggal	Gum	500-1000
22	<i>Buchanania cochinchinensis</i>	Kashlu	Seed	100-200
23	<i>Butea monosperma</i>	Murukkam	Bark (Stem)	10-50
		Tesu Phool, Palas Phool	Flower	100-200
24	<i>Calendula officinalis</i>	Marigold/ Gulasharfi	Flower	100-200
25	<i>Carthamus tinctorius</i>	Kusum Phool	Flower	100-200
26	<i>Catharanthus roseus</i>	Nithyakalyani	Leaf	200-500
27	<i>Celastrus paniculatus</i>	Malkangni	Seed	100-200
28	<i>Centratherum anthelminticum</i>	Vaaluluvai, Malkangni	Aerial Parts	10-50
		Kali Zeeri	Seed	200-500
29	<i>Centella asiatica</i>	Brahmi, Mandukparni	Whole Plant	100-200
30	<i>Chamaecrista absus</i>	Chaksu	Seed	100-200
31	<i>Chlorophytum borivilianum</i>	Safedmusli	Root	100-200
32	<i>Cichorium intybus</i>	Kaasini	Seed	100-200
33	<i>Cinnamomum cassia</i>	Dalchini	Bark	200-500
34	<i>Cinnamomum tamala</i>	Tejpatta	Leaf	4000-5000
35	<i>Cinnamomum verum</i>	Dalchini	Bark	500-1000
36	<i>Cissus quadrangularis</i>	Pirandai, Hutjodi	Stem	200-500
37	<i>Citrullus colocynthis</i>	Indrayan	Fruit	200-500
38	<i>Chondrus</i> spp.	Moss	Whole Plant	200-500
39	<i>Commiphora wightii</i>	Guggulu, Gugal	Gum Resin	1000-1500
40	<i>Convolvulus prostratus</i>	Shankpuspi	Whole Plant	200-500
41	<i>Curculigo orchioides</i>	Nilapanai	Tuber	200-500
42	<i>Curcuma zedoaria</i>	Poolan kizhangu	Root	200-500
43	<i>Cyperus rotundus</i>	Motha, Korai kizhangu	Root	500-1000
44	<i>Cyperus scariosus</i>	Nagarmotha	Root	200-500
45	<i>Datura metel</i>	Oomaththai, Umatham	Leaf	10-50
		Oomaththai, Umatham	Seeds	100-200
46	<i>Eclipta prostrata</i>	Bhringraj	Whole Plant	1000-1500
47	<i>Embelia ribes</i>	Vai-Vidang	Fruit	200-500
48	<i>Phyllanthus emblica</i>	Amla	Fruit (Fresh)	1000-2000
		Nelli	Fruit (Dry)	2000-3000

S. No.	Botanical Name	Trade Name	Parts Traded	Trade Volume (MT/ Year)
49	<i>Ferula asafetida</i>	Hing	Exudate	500-1000
50	<i>Ficus benghalensis</i>	Aal, Bargad	Bark, Jata	200-500
51	<i>Ficus religiosa</i>	Arasu	Bark, Fruit	200-500
52	<i>Glycyrrhiza glabra</i>	Mulethi, Adhi Madhuarm	Root	1000-1500
53	<i>Gymnema sylvestre</i>	Sarkarai kolli, Gudmar Siru kurinjaan	Leaf	200-500
54	<i>Hedychium spicatum</i>	Kapur Kachri	Root	200-500
55	<i>Helicteres isora</i>	Valampuri-Idampuri	Root	100-200
56	<i>Hibiscus rosa-sinensis</i>	Gudhal	Flower	100-200
57	<i>Holarrhena pubescens</i>	Inderjau, Kutaja	Seed	100-200
58	<i>Holostemma ada-kodien</i>	Jeevanti	Whole Plant	500-1000
59	<i>Homalomena aromatica</i>	Sugandh-mantri	Root	200-500
60	<i>Hyoscyamus niger</i>	Khurasaniu Ajvayan	Seed	100-200
		Kurarani Omam		
61	<i>Inula racemosa</i>	Pushkarmool	Root	100-200
62	<i>Ipomoea hederacea</i>	Kaladana	Seed	100-200
63	<i>Jasminum sambac</i>	Bela Mogra	Flower	100-200
64	<i>Juniperus macropoda</i>	Dhoop, Dhoopi Lakkad	Seed	100-200
65	<i>Justicia adhatoda</i>	Adusa, Basuti, Vasa	Leaf	500-1000
66	<i>Lactuca sativa</i>	Kahoo	Seed	100-200
67	<i>Lawsonia inermis</i>	Mehandi	Leaf	>30000
68	<i>Lepidium sativum</i>	Aali vidhai, Asaliya	Seed	1000-1500
69	<i>Linum usitatissimum</i>	Alsi	Seed	500-1000
70	<i>Litsea glutinosa</i>	Maida Lakri,	Bark	500-1000
71	<i>Madhuca longifolia</i> var. <i>latifolia</i>	Mahaua Phool	Flower	200-500
		Mahaua Beej	Seed	100-200
72	<i>Mollugo cerviana</i>	Parpadagam	Whole Plant	500-1000
73	<i>Momordica charantia</i>	Pavakkaai, Karela	Fruit	100-200
74	<i>Morinda coreia</i>	Nunaa	Fruit	200-500
75	<i>Moringa oleifera</i>	Murungai	Leaf	500-1000
		Murungai	Seed	10-50
		Murungai	Bark (Stem)	10-50
76	<i>Mucuna pruriens</i>	Kaunch beej	Seed	100-200
77	<i>Murraya koenigii</i>	Kadipatta	Leaf	200-500
78	<i>Nardostachys grandiflora</i>	Jatamansi	Root	100-200
79	<i>Nigella sativa</i>	Karunjeeragam, Kalonji	Seed	2000-3000
80	<i>Ocimum basilicum</i>	Tukmaria	Seed	100-200
81	<i>Ocimum tenuiflorum</i>	Tulsi	Whole Plant	2000-3000
		Tulsi	Leaf	200-500
82	<i>Onosma bracteata</i>	Gaozeban, Gule-e-Gaozeban	Flower	100-200
83	<i>Onosoma hispidum</i>	Ratanjot	Root	100-200
84	<i>Operculina turpethum</i>	Shivadi	Root	200-500
85	<i>Papaver somniferum</i>	Afeem, Khas-Khas, Posta	Fruit	1500-2000

S. No.	Botanical Name	Trade Name	Parts Traded	Trade Volume (MT/ Year)
86	<i>Parmelia</i> spp.	Jhula, Chhadila, Dagarphool, Kalpaasi, Mehndi, Pathar ka Phool, Shilapushpa, Stone Flower	Thallus	500-1000
87	<i>Peganum harmala</i>	Harmal	Seed	100-200
88	<i>Phyllanthus amarus</i>	Keezhaa nelli, Bhui aonala Bhumi amla	Whole Plant	200-500
89	<i>Phyllanthus maderaspatensis</i>	Mevaa nelli	Whole Plant	1000-1500
90	<i>Picrorhiza kurroa</i>	Kutki	Root	1000-1500
91	<i>Piper longum</i>	Pipli	Fruit	1000-1500
		Piplamool	Root	200-500
92	<i>Pistacia integerrima</i>	Kakarsingi	Galls	100-200
93	<i>Plantago ovata</i>	Isabgol	Seed/ Husk	>20000
94	<i>Plumbago zeylanica</i>	Chitrak, Chitramulam	Root	200-500
95	<i>Pterocarpus santalinus</i>	Lalchandan	Wood	100-200
96	<i>Rauvolfia serpentina</i>	Sarpgandha	Root	100-200
97	<i>Rheum australe</i>	Padmachal, Revand Chini	Root	1000-1500
98	<i>Ricinus communis</i>	Arandi Mool	Root	50-100
		Arandi Beej	Seed	>10000
99	<i>Rosa damascena</i>	Gulab	Flower	1000-1500
100	<i>Rosa cymosa</i>	Gulab	Flower	200-500
101	<i>Rubia cordifolia</i>	Majith	Root	500-1000
102	<i>Santalum album</i>	Chandan	Wood	500-1000
103	<i>Sapindus mukorossi</i>	Reetha	Fruit	1500-2000
104	<i>Saussurea costus</i>	Kuth	Root	100-150
105	<i>Semecarpus anacardium</i>	Senkottai	Fruit	200-500
		Bhilva	Seed	100-200
106	<i>Senna alexandrina</i>	Senna	Leaf	>20000
107	<i>Senna auriculata</i>	Aavaarai	Leaf	500-1000
		Aavaarai	Flower	100-200
108	<i>Senna tora</i>	Oosi Thagarai	Seed	2000-3000
109	<i>Sida acuta</i>	Vatta thirupi	Whole Plant	100-200
110	<i>Sida cordifolia</i>	Bala	Whole Plant	1000-1500
111	<i>Solanum americanum</i>	Makoi, Manathakkali	Seed/ Fruit	100-200
		Makoi	Whole Plant	200-500
112	<i>Solanum virginianum</i>	Kateli, Kantakari	Whole Plant	200-500
113	<i>Sterculia urens</i>	Gum Karaya/ Kullu Gum	Gum Exudate	100-200
114	<i>Strychnos nux-vomica</i>	Etti, Kuchada, Kuchla	Seed	500-1000
115	<i>Swertia chirayita</i>	Chiretta	Whole Plant	2000-3000
116	<i>Symplocos racemosa</i>	Lodh, Lodhra	Bark (Stem)	100-200
117	<i>Syzygium jambos</i>	Jamun	Seed	100-200
118	<i>Tamarindus indica</i>	Imli	Fruit	>20000
119	<i>Tephrosia purpurea</i>	Kozhinji	Whole Plant	200-500



S. No.	Botanical Name	Trade Name	Parts Traded	Trade Volume (MT/ Year)
120	<i>Terminalia arjuna</i>	Arjun	Fruit	100-200
		Marudham	Bark	100-200
121	<i>Terminalia bellirica</i>	Baheda	Fruit	3000-4000
122	<i>Terminalia chebula</i>	Harda, Kadukkaai	Fruit	3000-4000
123	<i>Tinospora cordifolia</i>	Giloe, Seendhil, Amruthvalli	Stem	1000-1500
124	<i>Trapa natans</i>	Singhara	Fruit (Dry)	100-200
125	<i>Tribulus lanuginosus</i>	Gokhru	Fruit	200-500
126	<i>Tribulus terrestris</i>	Gokhru	Fruit	1000-1500
127	<i>Trigonella foenum-graecum</i>	Methi	Seed	1000-1500
128	<i>Trillium govanianum</i>	Nagchatri	Root	200-500
129	<i>Valeriana jatamansi</i>	Muskbala, Tagarganth, Sugandhbala, Asaroon	Root	1000-1500
130	<i>Chrysopogon zizanioides</i>	Khas	Leaf	100-200
		Khas, Vetiver	Root	200-500
131	<i>Viola odorata</i>	Bansfsha	Whole Plant	100-200
132	<i>Vitis vinifera</i>	Kishmish	Fruit	1000-1500
133	<i>Withania somnifera</i>	Amukkuraa, Ashwagandha	Root	3000-4000
			Leaf	1000-1500
			Seed	100-200
134	<i>Woodfordia fruticosa</i>	Thaathiri	Flower	3000-4000
135	<i>Wrightia tinctoria</i>	Indrajau (Meetha)	Seed	100-200
136	<i>Zaleya decandra</i>	Vellai saaranai	Root	100-200
137	<i>Zanthoxylum armatum</i>	Timru	Seeds	100-200
138	<i>Zingiber officinale</i>	Sukku, Saunth, Adrak	Rhizome	1000-1500
139	<i>Ziziphus jujuba</i>	Baer	Fruit	100-200

### 7.9. RETAIL SALE OF HERBAL RAW DRUGS

Millions of households in the country continue to rely upon herbal medicines, self prepared in the house or dispensed to them by local practitioners, for taking care of their day-to-day health care needs. These health care recipes are usually specific to the region and involve a very large diversity of herbal entities many of which need to be procured from the local retail shops in small quantities. These retail shops, located in almost all towns and cities in the country, procure major part of their material from the established herbal mandis. However, some of the material of purely local importance is also got directly collected by them from the wild. Sample survey of the retailers at Dehradun, Bangalore, Shimla, and Hyderabad confirms the findings by Ved and Goraya (2008) that each of these retailers deals in 300-500 entities in annual quantities ranging from 1 kg to 100 kg. The retailers usually keep the material in containers that are arranged in an order specific to the retailers to make the retrieval easier.

### 7.10. THE TRADE WEB

As discussed above, the trade of herbal raw drugs is much more than the primary producers mandi open auction system as is prevalent for the agricultural produce. In the case of herbal raw drugs, there is a complex chain comprising of local agents, more than one layer of intermediate traders and large traders in terminal mandis. Many a times, different constituents of this chain

have no interface with each other. Moreover, the flow of material from the primary source to the end user is far from unidirectional, often cross-traded from one mandi to other before reaching end users. In case of some entities, the local level dealers are sometimes able to strike direct deals with end users and the entire process of the material passing through the mandis is skipped. Similarly, sometimes some industries are also able to get herbal raw drugs directly from the primary gatherers/ cultivators, by-passing the mandi route. Ved and Goraya (2008) have provided a very comprehensive graphic representation of the complex herbal raw drug trade web.

The very complex trade web makes it very difficult to document the diversity of herbal raw drug entities in trade. It, therefore, also makes it very difficult to make projections of the demand of herbal raw drugs over time.

### **7.11. A TYPICAL HERBAL RAW DRUGS TRADE CHAIN**

The herbal trade in the country is usually considered exploitative of the primary producers i.e. the wild gatherers and the farmers. Much of this inference is drawn from the difference between the low prices the primary producer gets and the high prices at which the end user procures the material. This price difference for many commodities was reported to be more than hundred percent of the prices the primary producer was receiving. It is believed that most of the profits on this count are pocketed by middlemen and the traders, putting both the primary producer and the end user at loss. The issue was sought to be thoroughly investigated as a part of the recently concluded GEF-UNDP project 'Mainstreaming Conservation and Sustainable Use of Medicinal Plant Diversity in Three Indian States' implemented in the States of Uttarakhand, Chhattisgarh, and Arunachal Pradesh. One of the reports prepared under the projects records the following:

“Apart from this, the trade in medicinal plants was found to be shrouded in mystery and uncertainty (arising from variation in quantity in good and bad crop years, sudden shortage of raw material and its upward demand, extremely variable market rates, etc.). Most of it appeared to be dictated by unknown actors – pharmaceutical companies, export agencies, overseas demand, stockiest, commission agents and others but seldom by the poor gatherer. The gatherer was always a loser for being branded as supplier of substandard material which deserved much lower price than expected, suffering from helplessness due to being unorganized, the material brought by them being in small quantity which (s)he was desperate to sell to purchase daily need commodities. Their bargaining power is very low as they have to do marketing on their own with economics of scale not being in their favour” (MPVS, 2015).

The trade web being very complex, interactions were held with traders and the various activities along this chain studied in order to understand the various activities along the trade chain. A typical value chain pertaining to wild harvest involves the following levels:

**a) Primary Gatherer:** On coming to know of the demand for the year, the wild gatherers go to the forest, sometimes camp there for days together, make collections of raw drugs, clean, wash and dry the material and bring it to the road head for supplying to the local aggregator or sale through weekly haats. The wild gatherers run the risk of non-lifting of the material by local aggregators if there is sudden drop in the demand of the material, making their labour on wild collection of such material infructuous.

**b) Local Aggregator:** The village level shopkeeper usually acts as the local aggregator and collects the material from the wild gatherers at pre-agreed rates or from weekly 'Haats' on cash payment;

transports the material to his godown; dries, cleans and repacks the material in bags of given specification and makes it transport ready; procures necessary export permits from the designated authorities; transports the material to clients in different herbal mandis. The process involves incurring of expenses on account of (i) procurement of material on cash from the wild gatherers, (ii) collection and transport of material from roadside depots to the godown, (iii) cleaning, drying, grading and re-packing of material, (iv) procurement of packaging material, (v) godown rent, (vi) running around to procure transit passes (export permit) for transport of material, (vii) loss of bank interest on the investments on holding the collected material for 2-4 months before transport, (viii) transport of material from godown to different herbal mandis, and (ix) loss of bank interest on the investment from date of transportation to the actual receipt of payment from clients. The local aggregator also bears the risk of (a) damage to the material during post harvest handling including wastage, (b) sudden drop in rates of procured material due to extraneous reasons, and (c) bad debts on account of wild gatherers not being able to fulfill commitment due to some reasons.

**c) Large Traders:** The large trader usually receives dried, graded and well packed material and gets it stored in ware houses/ cold stores till final disposal. The process involves costs on account of (i) unloading and stacking of material in warehouses, (ii) rent of warehouse/ cold stores, (iii) loss of bank interest on account of holding the material for 2-6 months and money remaining locked till the material is disposed off. The traders run the risk of bad debts on account of non-realisation of money towards supplies of material to the end users, i.e. herbal industry, on short credit. The traders also run the risk of sudden fall in prices of the procured material due to extraneous reasons.

There could be one or more layers at the level (b) and level (c) mentioned above, with each layer playing its part. The primary gatherers have neither the commercial quantities of the material nor wherewithal to engage in trade of the material with mandis located far off. The local aggregators usually have to make small investments as they handle relatively small quantities of material from their area. As the material reaches the larger traders from many local aggregators, the quantity with each trader swells and so his investments. The direct costs involved in handling of the material from primary producers to its landing at the large mandis need to be taken into account while making inferences about the price difference between the one paid to primary producer and the one at which the end user procures the material. As per market information, after paying the primary producer and accounting for the direct costs, each level works at 6-8 percent profit margin. If there are three layers of local aggregators and traders involved in the trade chain, the price escalation on account of profit margins alone over the prices paid to the primary gatherers is likely to be between 18-24 percent. The marketing forces are, however, continuously making corrections in the herbal raw drug trade in the country. With the primary producers (wild gatherers, and cultivators) now increasingly getting into direct interaction with the large traders or herbal units, the layers of commission agents are gradually getting reduced.

## 7.12. VALUE ADDITION AND PRICING OF HERBAL RAW DRUGS ALONG TRADE CHAIN

The herbal raw drug material undergoes a complex journey from the primary producers to the end users. Along this trade chain expenses are incurred and value is added at almost every step. Aggregation of material by the village level agent from primary producers from various villages involves labour, transportation and storage cost. The aggregator, many a times has to dry, grade and re-pack the material to make it transport worthy. Storage of material by large traders in cold stores to enhance its shelf life is also a value addition that adds to the cost.



### 7.12.1. Trade Chain of Karu (*Picrorhiza kurroa*) – A Case Study from Himachal Pradesh

The trade chain of Karu along with costs at each level was studied in Kullu, Himachal Pradesh. Karu occurs naturally at altitudes above 3000 m asl in the Western Himalayas. Harvest and trade of the species usually follows the stages given below:

**Stage-I:** A word about the demand for the year is usually spread by the traders to their village level agents, usually local shopkeepers, who in turn inform the local wild gatherers accordingly. A rate of procurement is also usually agreed before initiating collections.

**Stage-II:** At right time, which is not being religiously followed in most of the cases, the wild herb gatherers proceed to the high altitudes for collection of Karu and camp there, usually in rock shelters, for a period of one month or so normally between June end to August end. The harvested rhizomes are washed in the alpine streams near camp site and spread for drying in the rock shelters.

**Stage-III:** The material is usually almost dry when it is carried to the village level agent, who procures the material against cash payment after adjusting advances if any given to the gatherers. The village level agent gathers the material from various wild gatherers, checks the drying and spreads the material for drying if needed, and stores in his godown. Usually, the normal retention time at this stage is about a month for which the local agent has to keep the material in godowns.

**Stage-IV:** The village level agent takes the material to the traders at Kullu, who weigh the material and take it to their godowns, usually against cash payment after adjusting advances if any given to the village level agent.

**Stage-V:** Since the material received is in different types of crude packing material, the Kullu traders usually re-package the material into good quality jute packing material (bardana). During the process, wastage occurs on account of loss of material and removal of foreign particles, like attached soil, etc. In addition, the material also tends to lose weight due to further drying on exposure to air. An estimated wastage/ drying of 3-5 percent occurs.

**Stage-VI:** The traders at Kullu apply for and procure necessary transit documents from the designated offices for export of the material to different destinations in the country. Till the material is exported, it remains in the godowns of the traders. The period of retention of the material sometimes goes to more than six months.

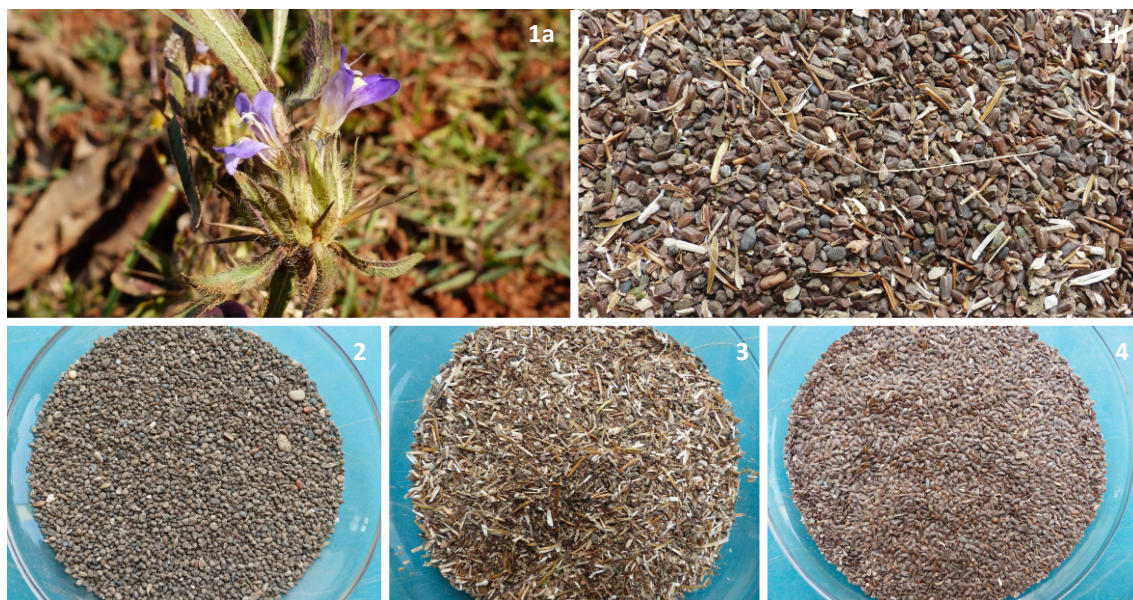
It is evident from the above that cash value is added at each stage. The prices of Karu along the value chain during 2015 were recorded as ₹ 500-550 per kg at the level of wild gatherers and ₹ 800-900 per kg at Delhi market.

### 7.12.2. Trade Chain of Amla (*Phyllanthus emblica*) – A Case Study from Madhya Pradesh

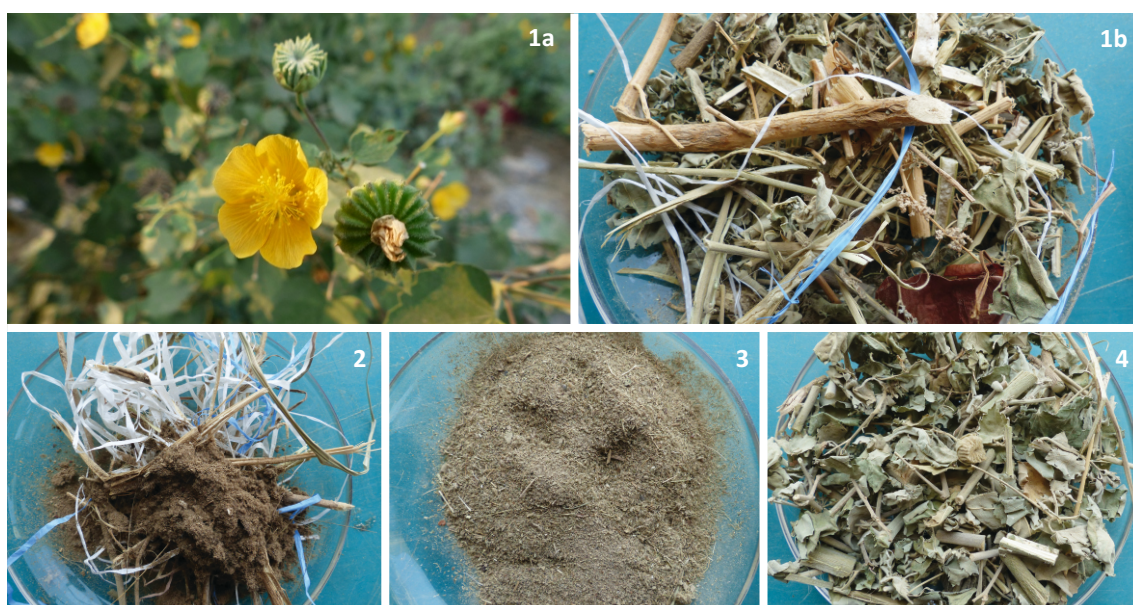
Amla is collected from wild in very large quantities from forests in Madhya Pradesh. The fresh fruit so collected is sold in the weekly haats at ₹ 7-8 per kg in Katni area. However, the wild gatherers, of late, with the help of some local NGOs, have started adding value to the wild collected amla. The fruit is now deseeded, dried, and cleaned before selling it to larger buyers. The amla during such processing dries to about one fourth of its fresh weight. The value added produce, however, now fetches prices ranging from ₹ 40-45 per kg to the local people. The dried deseeded amla is then transported to different markets in the country where it is temporarily stored. The value added commodity is commanding a sale rate of ₹ 55-65 per kg in Delhi mandi.

### 7.12.3. Value Addition through Cleaning of Material – a Case Study

Sample study of the impurities in raw drugs carried out at the Herbal Health Research Consortium Pvt. Ltd. (HHRC), Amritsar reveals that the impurities vary from as low as 0.5% to as high as 35% for different species. It was noticed that the impurities in the form of attached soil were the highest in case of herbs like Mandookparni (*Centella asiatica*) and Nagarmotha (*Cyperus scariosus*) those are collected from moist localities. Similarly, the seeds like that of Talmakhana (*Hygrophylla schulli*) and Gokhru (*Tribulus terrestris*) that require drying of the plants by spreading on soil and thrashing contain large impurities in the form of pebbles and soil that get collected while collecting the separated seed. Indicative examples of cleaning of Talmakhana and Atibala raw drug samples received from the field are given below as example:



(1a) Talmakhana (*Hygrophylla schulli*) plant; (1b) Talmakhana raw drug received; (2 & 3) Pebbles and chaff segregated from raw drug; (4) Clean Talmakhana seeds



(1a) Atibala (*Abutilon indicum*) plant; (1b) Atibala raw drug received (2 & 3) Foreign matter and dust segregated from raw drug (4) Clean raw drug



### 7.13. WASTAGE ALONG THE TRADE CHAIN

Interactions with traders at different levels brings out that there always is an element of wastage of material along the trade chain. Wastage is different from weight loss that happens due to loss of moisture along the trade chain, cleaning of the material of foreign matter, and the like. Detailed discussions with the primary producers brought out that the traders usually build the potential weight loss on account of cleaning of material and drying along the trade chain while weighing the material to be procured from primary producers. The primary producer bears costs on account of weight loss at an average rate of 5% on this count.

Wastage is the loss of material due to improper post harvest handling of the material including rot, insect and rodent attacks, and during transportation. The major cause of wastage was reported to be non-proper drying of the material that resulted in fungal infestation and rotting of the material causing lowering of quality or rendering the material unfit for use. Insect borers and rodents were reported to be the second major cause of wastage, especially during storage. Transportation losses were mainly due to poor packaging of the material.

At most of the places, the traders were not able to separate the two issues of wastage and weight loss and insisted upon treating these as one, as both these resulted in financial loss to them. However, careful observations at different stages along trade chain reveal that some herbal raw drugs, were more prone to damage during storage than others. The wastage was estimated to vary from as little as 2% for some entities (wood, bark, roots) to as high as 8% for some other entities (fruits, fleshy flowers, etc.) under proper storage conditions. The inference from these consultations is that wastage of material along trade chain makes a significant impact on the availability of the resource. Taking in view the part-wise distribution of the herbal raw drug entities in trade, an average wastage of 3% for all herbal raw drug entities has been worked out for the purpose of estimating total demand of the medicinal plants in the country.

### 7.14. QUALITY IMPROVEMENT INTERVENTIONS

The availability of authentic and quality herbal raw material, especially which is collected from the wild, is increasingly becoming a challenge for the industry engaged in making ASU and wellness formulations. Some attempts to organize and train wild gatherers in good harvest and post harvest handling techniques have been initiated in different parts of the country with a view to ensure authenticity and quality of the herbal material at the wild collection level itself. Whereas some of these initiatives are being driven under the various government incentive schemes and under various externally funded projects by the state forest departments and the local CBOs; herbal industry is also partnering in some of these initiatives. These efforts have made a definite improvement in the quality of the herbal raw drugs like Tejpatta (*Cinnamomum tamala*), Karu (*Picrorhiza kurroa*), and Triphala (*Terminalia chebula*, *Terminalia bellirica*, and *Phyllanthus emblica*) coming from the wild gatherer groups organized and trained under these initiatives. Such efforts, however, are still limited to a few groups and a few species only, with bulk of the species and material entering the herbal raw drug markets requiring authentication and quality check.

Of the wild collected herbal raw drugs that enter the trade chain, a part is selectively subjected to some cleaning, grading and re-packing at the end of traders and stockists to fulfill quality requirements of export or some specific manufacturing units. The basis of quality check even in such cases remains largely physical inspection of the material. Quality certification in accordance with API parameters is done for very specific supplies only. At the consumer end, some herbal industries do get some consignments of herbal raw drugs tested at laboratories to ensure



conformation to the API standards. Such quality check is, however, again too limited to have any significant impact on the total scale of operations in this sector.

The NMPB and the Ministry of AYUSH, striving to improve quality of the herbal medicines and wellness formulations in the country, have launched schemes to set up herbal raw drug testing and certification facilities in different regions of the country. These facilities, being set up on a cluster approach in a project mode, are under various stages of completion. One such facility was visited during the course of the present study (Box.7.3).

**Box.7.3. Herbal Health Research Consortium Pvt. Ltd.' (HHRC) – An Initiative towards Ensuring Quality of Herbal Raw Drugs**

Recognizing the need for quality herbal raw drugs, a group of 29 Ayurvedic manufacturers has come together to form 'Herbal Health Research Consortium Pvt. Ltd.' (HHRC), a private limited company based at Amritsar (Punjab) with a vision to support and strengthen AYUSH industry to produce quality medicine. This consortium has been supported by the Department of AYUSH (now Ministry of AYUSH), Government of India to set up raw drug testing and certification facilities at village Khyala Khurd near Amritsar with a mission to make available 'authentic', 'cleaned', 'dried', 'graded', and 'tested' herbal raw material to the Ayurvedic industry. Part of the investment in creating the infrastructure has been borne by the consortium.



This collaborative approach envisages leveraging the geographical proximity of the competing herbal enterprises in collaborating towards cost effectiveness and production of quality medicine by getting certified quality raw material from their common central facility. Living up to the promise, HHRC has established a state of the art laboratory facility equipped with necessary high-end instruments. The unit directly procures herbal raw material from various sources. The procured material is stacked in the godown and authenticated, cleaned, graded, tested for physio-chemical properties, microbial load, primary alkaloid percent, and packed lot-wise and labeled accordingly. Presently the company is dealing with nearly 200 herbal raw drug entities and has capacity to clean, grade and pack 4 MT of the raw material per day.

The entire cleaning, grading and certification process adds to the cost of the material. A large portion of the certified material is procured by the constituent herbal units of the consortium. HHRC strives to keep the sale prices of certified material competitive through measures such as direct procurement from the primary producers. It, however, sometimes finds it difficult to get buyers of the certified raw material at even slightly higher prices.



Cleaning, grading, packaging & stacking operations at HHRC

The HHRC is also using its facilities for organising awareness and training programs for the personnel from regulatory and quality control authorities, and students from various disciplines.

### **7.15. DISCUSSION**

The data and case studies presented above make it clear that a lot of value and costs are added from the time the herbal raw material is procured from the primary producers (wild gatherers/ cultivators) till its final disposal to the end users. The average returns per unit volume of non-value added material of most of the species thus received by the primary producers hover around 50% of the market price of the material. The returns to the primary producers also depend upon the quality of the material, with the material having impurities fetching lower price.

The various systems of trade of herbal raw drugs prevalent in the country have their strengths and weaknesses. The specialized herbal trade instruments set up by various state governments ensure transparency of deals. However, the primary producers continue to get less than half of the ruling market prices for their produce. These agencies, therefore, need to do much more to ensure better returns to the primary producers. Another flip side of this effort is the lack of specialization in dealing with a diversity of herbal raw drugs, as the staff at these organizations is subjected to frequent transfers. Moreover, the protocols for accounting for wastage, damages, drying percent, low prices than the procurement prices, etc. are yet to be developed.

The Krishi Upaj Mandi system is better in that it provides good decision making opportunity to the primary producers to sell their material at the auction prices or not. All arrivals at the mandi and disposals are recorded, providing authentic clues to chain of custody. However, once the material comes to larger mandis the backward linkage gets difficult to establish. These mandis need to put in place mechanisms for attaching passport data with each consignment leaving the town.

The major strength of individual herbal traders lies in their experience, often running over generations, to identify the material from look, smell and taste. These traders have been patronizing primary producers of their niche areas over decades and have over time developed trust of wild gatherers and local aggregators on one hand and the end users on the other. Whereas it is neither easy nor desirable to replace the experience of herbal raw drug traders, it is necessary to create awareness amongst them and do their hand holding in developing mechanisms for better maintenance of records, especially in respect of passport data. Such an effort will go a long way in creating wider clientele of the product under Indian Systems of Medicine and will also help in better managing and strengthening the herbal raw drug resource.