

# BAY LEAF CULTIVATION: A SUBSECTOR STUDY IN MEGHALAYA



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## Executive Summary

Indian bayleaf in Meghalaya provides a supplementary income to farmers primarily along the southern slopes bordering Bangladesh. The trees grow in their natural habitat in association with a variety of other native trees. Bayleaf is classified as a Non Timber Forest Produce (NTFP), Minor Forest Produce (MFP) as well as a Medicinal and Aromatic Plant (MAP). Apart from being used as a spice, its oil finds major uses in the perfume, pharmaceutical and ayurvedic sectors.

During the study, information could be gathered on the first two stages of the bayleaf value chain- producers and local or district traders. There is little knowledge about other players in the downstream value chain. The study has revealed that an area of 1–3 acres contains 30–40 bay leaf trees with average yield per tree at 35 kgs and per acre at 525 kgs with net average realisation at around Rs. 4000 per acre. Institutional and policy environment concerning bay leaf is sketchy with only a toll transit tax being collected by the Autonomous District Council. There is no specific initiative either by any department, agency or corporation of the state in propagation, strengthening, or linking the producers to bulk institutional buyers at remunerative prices. There were no grading standards for bay leaf in place at the upstream level except for sorting twigs before being packed in gunny bags. Storage practices at the primary producer level were not adequate to keep out moisture and increase shelf life. The pricing system was non transparent with pricing being decided by the larger traders.

The recommended strategies for enhancing the returns for bay leaf producers include:

Opportunities for value added like powder, oil; processing into finished products; potential to add value locally by producers/collectors

Contractual agreement between suppliers and buyers as means of accessing markets

Maintaining quality by following appropriate grades and standards

Opportunities to increase production by expanding harvesting areas; planting more trees; collectors' and producers' groups aggregating products to increase volumes

Provision of market information related to places of sale, buyers, prices, grades, research information, etc.

Auction yards where producers/collectors bring their produce and sellers gather to bid prices. The highest bidder purchases the Produce.

Access to finance for setting up small enterprises; provision of working capital, revolving funds; bank credit, etc.

Opportunities to improve management of bay leaves and enhance their quality assurance by adopting different certification schemes.

Opportunities to change and adjust current policy barriers for benefit of the bay leaf VC actors, particularly producers and collectors

## Objectives and Methodology

Institute for Livelihood Research and Training (ILRT) is partnering with the Meghalaya Basin Development Authority (MBDA) in providing capacity building support to the project staff in 8 identified blocks out of 39 blocks of the state in enterprise promotion. As part of the project, ILRT undertook livelihood mapping in the seven blocks and identified potential sub-sectors. A further in depth study of these subsectors will be undertaken to understand the livelihood gaps, identify potential for opportunities to improve the sub-sectors and provide recommendation to the state Govt. The core idea of undertaking these sub-sector studies is to assess the opportunities to bring local communities in to the fold of sub-sector, so that the sub-sector gets strengthened at one hand and the livelihood choices are enhanced.

### **The specific objectives of the study are to:**

- understand existing players and their practices/ contribution for improvement of the sub-sector activities
- assess the gaps which are preventing to perform effectively with specific reference to the primary producer
- recommend implementable solutions to enhance the stake of primary producers in the sub-sector

### **Scope of the Study**

To study Bay leaf sub-sector in the state of Meghalaya covering the following parameters:

- Document existing practices of the sub-sector covering the pre-production, production and post-production stages
- Assess the current status of the sector which will include the number of people engaged in the activity, estimated annual income from the activity, contribution of the activity to the overall income portfolio of the household, current market structure and key players
- Understand the existing market situation and nature of relationship between different market players in the study area (relationships, attitudes and behaviors).

Understand the capacity of producers and their organizations (POs) to access services, credit, information and resources.

### **Methodology**

The following methodology was employed (but not limited to) during the assessment.

#### **Literature Review**

Review the existing markets in the state and market regulatory and price control policies and/or laws and mechanisms, any documents on market trends in the target area and any other relevant literature where possible.

- Developing the sub-sector map and map different players in each stage beginning from input supplier to consumer.
- Analysis of subsector dynamics

The analysis focuses on eliciting the information (i) existing practices by different players at each level, (ii) Gaps (iii) opportunities for interventions. Map potential local and regional markets in terms of type, size and volume of market, goods sold and bought, supply chain, type of producers, suppliers and vendors, women led businesses/trades, distance of the market from the target project villages, mode of transportation, market associations/trade organizations,

security arrangement/situation especially for women and competitiveness (number of producers/suppliers /vendors versus items in demand).

### **Study Tools**

- Producer interview/ interaction in the primary bayleaf growing belt of the Khasi hills region.
- Focus Group Discussions (FGDs) with producer groups/ producers
- Semi-structured interviews with Key informants and stakeholders

## 1. Overview of the subsector

Bay leaf (*Cinnamomum tamala*) is a Non-Timber Minor Forest Produce (NTFP). It is a moderate sized evergreen tree with natural habitat mainly grown in the tropical and sub-tropical areas of Meghalaya. It has emerged as a semi-domesticated tree that provides supplementary income to marginal farmers. The leaves are used as a condiment and spice but find major application in the pharmaceutical and ayurvedic medicine industry. In areas of the state conducive for its growth, it is common to find bayleaf trees thriving among other trees in a plantation that could have orange, arecanut or broom grass trees.

### 1.1. Meghalaya's Production Scenario

According to the International Forestry Research, Forest Livelihood 2008, the estimated volume of production marketed annually from Meghalaya is 44370 MT valued at Rs. 576.8 million. The maximum production of bay leaf comes from the War area of Meghalaya which contributes 2798.4 MT/ year. The crop is grown in the villages mainly along the Indo-Bangladesh border towards the southern slope because of the suitable climatic conditions. At present this activity is carried out on a regular basis in some villages in the Khasi Hills part of the state, whereas Jaintia people are still reluctant in collecting this product from the forested area.



### 1.2. Production

Bay leaves are found in the entire southern part of Meghalaya, either found naturally or grown by few people in parts of Khasis, Jaintias and Garos. The subsector could be categorized in to preproduction, production and post-harvest stages. The post-harvest stage includes trading of bay leaves mainly for commercial purposes. Various players such as farmers, agricultural laborers, middlemen, big traders, regulated market, department of horticulture, department of forestry etc. are prime players in the bay leaf economy of Meghalaya.





**Table: Bay leaf production from 1995-96 to 2004-2005**

Year	KHADC (MT)	JHADC (MT)	GHADC (MT)	Total (MT)
1995-96	4,527.13	0	0.28	4,527.41
1996-97	4,340.6	0	0.12	4,340.72
1997-98	5,783.75	0	0.33	5,784.08
1998-99	6,093.3	0	0.41	6,093.71
1999-00	6,546.7	2.5	0.27	6,549.47
2000-01	7,575.5	0	0.61	7,576.11
2001-02	5,671	3.9	1.1	5,676
2002-03	7,291	8.71	0	7,299.71
2003-04	6,777.5	0	0.51	6,778.01
2004-05	7,384	0	0.18	7,384.18
Total	61,990.48	15.11	3.81	62,009.395

Source: KHADC, Shillong; JHADC, Jowai, GHADC, Tura.

Bay leaf is a notified forest product and therefore, it attracts royalty and higher taxes. The traders have to pay these taxes to Syiem (Traditional Chief), District Council and the State Government. The taxes paid by the bay leaf traders to the Syiem are Rs 75/truck and to the district council is Rs. 50/truck. The state government collects tax at two levels - i) purchase tax from the growers which is at the rate of 10% and ii) sale tax which is at the rate of 8 % to outside agency.

### **1.3. Products**

Dried bay leaves are the only product that is currently derived from the bayleaf tree. Value added product as bayleaf oil extract was not observed during the study. The study revealed that an area of 1–3 acres contain 30–40 bay leaf trees. Cleaning and weeding are the main activities involved in the cultivation of bay leaf. Laborers are hired at an average daily wage of Rs. 250 – 300 for male and Rs. 150 – 200 for females for performing these activities. Newly planted trees require greater care and attention as they attain maturity after 5 – 7 years before their leaves are plucked.

The yield per tree is dependent upon the age and size of the tree. The production from small trees ranges from 30-40 kg/tree/harvest and for the bigger trees it ranges from 55-65 kg/tree/harvest. Pruning of the trees is also done at the same time to avoid rapid growth of braches and to remove dead branches.

The transplanted bay leaf in the main field takes 10 to 12 years to get the first produce. Leaves are harvested during November to February. The older branches that have attained a particular diameter are cut down, while the growing younger branches are left to mature.

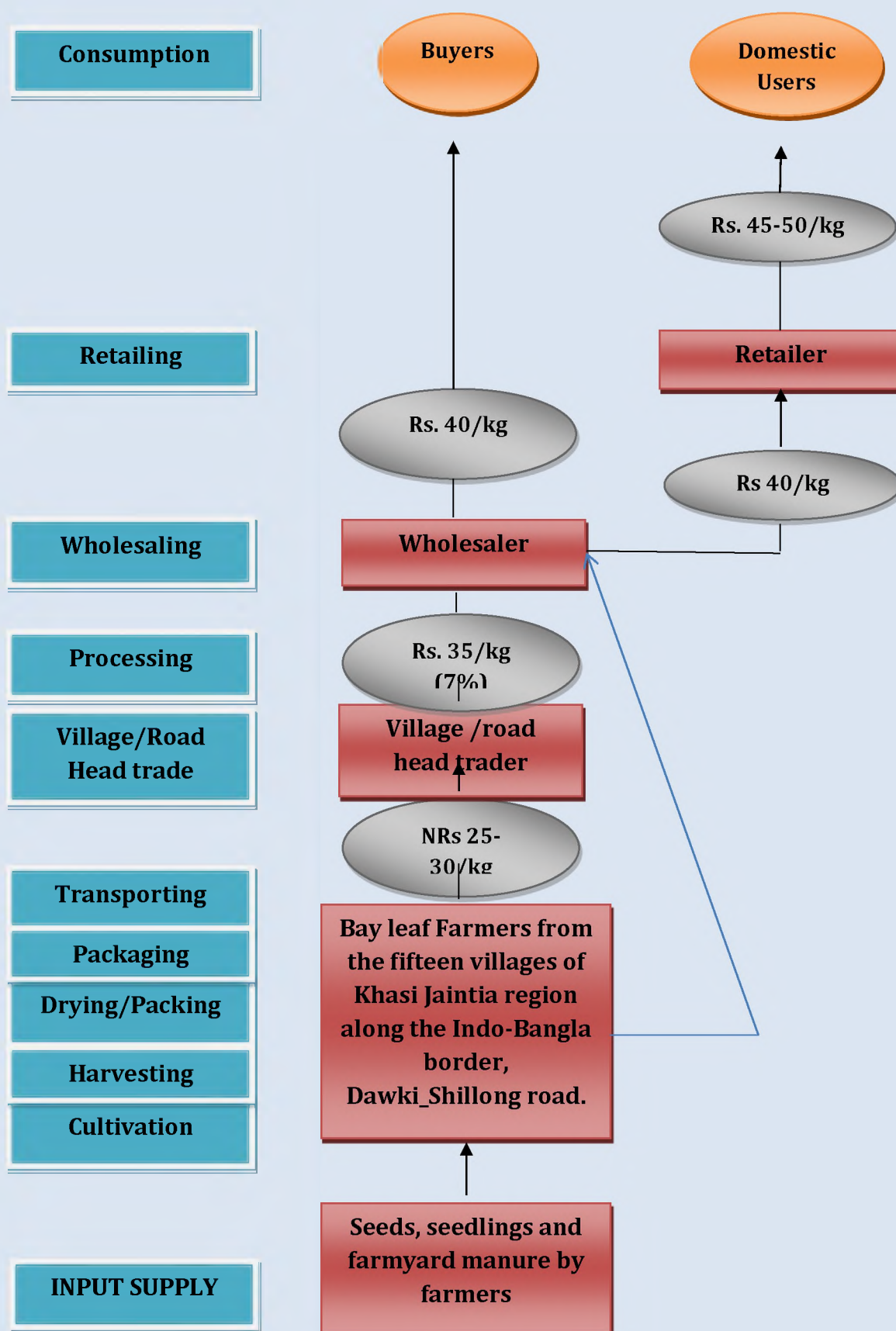
### **1.4. Market**

The study observed similar channels of marketing of produce that was observed in broomgrass, orange, arecanut. Shillong is the primary aggregation point for this produce. From Pynursla, Shella Bholaganj and Amlarem areas, the middlemen comes from Nongsohphan, Amlari rim, Pynrai, Pyndemdkhar, who buys the products and then transport to the main market in Shillong. In the Sohra region in villages such as Mawphu and Umblai, the products are carried by headload to the Sohra market where the traders are stationed. The traders transport the bayleaf from the block markets to the Mawiong regulated market in Shillong. These are then transported outside the state to Assam and onwards on to West Bengal. Despite numerous



attempts to follow the product to its end destination, the study was unsuccessful due to lack of support from the bigger traders. We sensed a lot of unease from the bigger traders in parting with information regarding bulk buyers, pharma companies etc. indicating some level of cartelisation among the big traders

## 1.5 Subsector Map



## 1.6: Economics at primary producer level

Based on discussions with the primary producers, the net earnings per acre from bayleaf is only about Rs. 4000/acre. However, it should be borne in mind that since it is a supplemental rather than a main income generating activity this realization was considered acceptable by the primary producers since it was seen as a low maintenance activity. Orange, Arecanut, Broom grass were the main income earners in areas where bay leaf was also grown.

**Table: Production economics on 1 acre of land**

Average Number of trees per acre	Average yield per Tree (kgs)	Average yield per acre (Kgs)	Average yield for 3 acres (kgs)	
10 to 15	35	525	1575	
Cost of Production/acre	Unit	Unit cost (Rs.)	No. of days	Amount (Rs.)
Saplings	Transplanted from existing tree		0	0
Labour				
Cleaning and Weeding	3	250	5	3750
Harvesting and Sorting	3	250	7	5250
<b>Total Production Cost</b>				<b>9000</b>
Sales Realisation	Unit/acre			
	525	25		<b>13125</b>
<b>Net Realisation/acre</b>				<b>4125</b>

Source: FGD's

## 2. Pre-Production stage

### 2.1. Inputs

#### 2.1.1. Sources of planting material

Bay leaf is a naturally grown crop occurring in areas with suitable climatic conditions. Some villages (5-10 %) plant it every year; in such cases the saplings are taken from the existing trees in the plantation that have the best productivity. The average number of saplings that the farmers plant every year is 15-20 during the months of April-May. The saplings are nurtured in the nursery beds for 4-6 months after which it is transplanted in the field. The depth of the pits in the nursery beds is about 1 foot deep. During the nursery period the area are properly clean and weeding is usually done once in two weeks. For irrigation the saplings solely are dependent on rain.

Preparation of nursery is done by clearing of forest followed by making of bund. In the nursery beds, the farmers depend on nature without the usage of manures or fertilizers. Hand tools like spade, sickle are used. The farmers carry out this activity along with other crops such as beetle vine, arecanut, wild pepper, oranges, ginger etc.

### 2.1.2. Soil Management:

The new bay leaf trees are propagated through saplings and transplanted to the main field during summer. During the transplantation no manure or fertilizer is added to the surrounding soil to supplement nutrients to the plant. The plant is placed in the ground sometimes in a direct sunlight with no watering and fertilizers.

### 2.1.3. Cost of the inputs

Input costs in terms of seeds, saplings, fertilisers are negligible. Additional investment in terms of capital for care, maintenance of the trees was not observed in the study.



### 2.2 Constraints at the pre-production stage

No data was available to determine the germplasm of the bayleaf tree growing in the study areas.

## 3. Production Stage:

The yield per tree is dependent upon the age and size of the tree. The production from small trees ranges from 30-40 kg/tree/harvest and for the bigger trees it ranges from 60-70 kg/tree/harvest. The plucking process requires labourers which are hired at rates of Rs.250/- for males and Rs. 150 for females. Plucking of the bay leaf branches is done by climbing and using a daw and sickle where they cut the branches having leaves, this is mostly done by the male folks. The role of the female is to thrash the cut branches using a stick and collect the falling dried leaves. Pruning of the trees is also done at the same time to avoid rapid growth of braches and also to remove dead branches.

### 3.1 Inter-cropping

Crops such as Black Pepper, Betel leaf, Areca nut are carried as intercrop to provide the farmers with some earnings. From the subsector study conducted in Khasi and Jaintia comprising 15 villages it was found that only 30 % out of the 135 bay leaf cultivators undertake intercropping or mixed cropping.

### 3.2 Orchard and Pest Management

Farmers are not aware of the importance of training and pruning to bring the tree to the required shape. Bay leaf cultivators do not have access to proper training on maintenance and nurturing of bay leaf. They also lack training on disease and pest management like winter damage and browning of much of the foliage and also wind scorch damage. For pruning the farmers learned through indigenous knowledge passed on to them from their ancestors. Preventive insect and pest management practices was not observed with trees left to the vagaries of nature.

### 3.3 Constraints at the production stage

As per the survey conducted there is no common storage in the village where the farmers can store their produce. The farmers store their produce in their own backyard which is small and not of good quality and this leads to pest attack on the bay leaf. There is no storage centre provided by the government as people do not get access to government support and services with regards to bay leaf cultivation.

Knowledge deficit on management of pests and diseases which is a common observation across all crops is also relevant to bayleaf cultivation.

## 4. Post Production Stage

### 4.1.1 Storage

The harvesting period of bay leaf is between November and February and this activity is done once in every 2 years. Bay leaf is harvested manually by the farmers using a sickle or through handpicking. The harvested bay leaf are left in the field for a period of 2 – 3 weeks till it is dried after which it is being carried by the farmers to their own backyard. The sorting and grading is done by the farmers at the field itself depending on the type of quality. The farmers store sun dried material in gunny bags in their own house before selling the product to the nearest market or to the middleman.



### 4.1.2 Grading

Rudimentary grading of bay leaves is done by the farmers in the villages based on the presence/absence of unwanted objects in a bundle. Two grades of bay leaves are available as follows:

S. No	Grade	Characteristics	Price per kg ( in Rs)
1	Grade 1	Leaves with twigs	30-34
2	Grade 2	Leaves without twigs	20-25

The price of Bay leaf varies from one month to the other and as per the data recorded from the Meghalaya State Agricultural Portal (**See Annexure IV**) the Modal price during the month of March 2014 to August 2014 is as follows:



*In 2002, the Medicinal and Aromatic Plants Programme in Asia (MAPPA) assisted community forest user groups (CFUGs) in Udayapur district of Nepal to improve their management of species in community forests and to establish enrichment plantations. The intervention drew the attention of an entrepreneur who established a distillation facility to process the leaves into oil, and the project facilitated a contractual arrangement for essential oil with the Herbs Production and Processing Company Limited (HPPCL), a Government of Nepal undertaking. The arrangement is still operational and cultivation of bay leaves is a major source of income in Udayapur district. Similarly, development agencies and community-based organisations have targeted the bay leaf sector by developing cooperatives for the marketing of value added products in Palpa district of Nepal.*

*Source: Pro-Poor Value Chain Development for High Value Products in Mountain Regions: Indian Bay Leaf*

*Dyutiman Choudhary, Bishnu Hari Pandit, Giridhar Kinhal, and Michael Kollmair – ICIMOD International Centre for Integrated Mountain Development©*

Months	Modal Price per Quintals
March	3000
April	2700
May	3200
June	3200
July	3200
August	3200

The current price is Rs. 2800- Rs. 3400 per quintal depending on the quality of the products. Bay leaf traders have to pay a loyalty charge at the rate of Rs. 20/- per 100 kg as Transit Pass (TP) to the Autonomous District Council. The annual export of bay leaves during the year 2012-2013 was 1, 15, 680 quintals and 1, 36, 190 during 2013-2014 (Source: Khasi Hills Autonomous District Council).

#### 4.1.3 Local Value Addition:

In the current context majority of the bayleaf are packed in bundles and transported with no value addition at the local level. An SHG federation in the Nongsohphan-Nongtyngur cluster of East Khasi Hills under the MRDS initiative undertook bulk supply to buyers in Kolkata. Another SHG federation in Pyndemdkhar village packaged bayleaf in 50gms and 100 gms for retail sale in some outlets in Shillong and Sohra. However, these are well meaning but random initiatives and do not deflect the absence of large scale local value addition initiatives at the local level.

### 5. Institutional Support Mechanisms:

#### 5.1. Infrastructure:

Bay leaf cultivators at present do not have any infrastructure for drying and grading of the product. The farmers carried out the activity in their own yard with uncovered roof and even for storing the dried product they have to store in their own houses.

#### 5.2. Input supply

Bay leaf is naturally grown in the forest without propagating it in the nursery beds. Since it grows naturally in the forest farmers only have to clean the surrounding area of the plant. Absence of a germplasm bank to determine appropriate saplings hinder possible productivity enhancements through better saplings.

#### 5.3. Constraints in institutional support

It is high time to develop an institutional framework for supporting Bay leaf growers in the state involving pre-production, production, processing and marketing. At present there is no support for bay leaf from the government institutions as it is considered a forest product except in the past where agencies like Meghalaya Rural Development Society (MRDS) link the farmers to traders from outside the state for exporting the product. An Institutional Analysis and Development approach would be required to explore how community attributes such as socio-economic and cultural characteristics, rules and physical and material condition to determine the outcome of such institutional design. In absence of proper support system, compels the bay leaf growers to look at the product as a subsidiary occupation and not as a major source of their livelihood activity.

## 6. Constraints

Similar to most plantation crops, the use of appropriate saplings, orchard management, pest and nutrient management have remained rudimentary and unchanged. It is based on local knowledge which has been passed from generation to generation. While some of these practices may have a scientific basis, pest management is largely non-existent and requires more intensive scientific intervention.

- The storage practice currently adopted comprise of temporary shelters in most cases which do not protect the harvested leafs from moisture, pest attacks etc. As a result this results in low shelf life and compels the producers to resort to distress sale.
- Grading of bay leaf is rudimentary which ignores size, color, etc. but is based on presence or absence of twigs in a gunny bag. While the trader determines the value based on this grade, AGMARK and API specify more detailed grading of the bayleaf based on certain attributes (*see annexure*)
- Absence of value addition in the form of bay leaf oil extraction by steam distillation, packaging into retail packs for retail sale etc. is non-existent. Bulk sale of raw produce to the village level trader is the norm.
- The absence of a market information system leads to an unequitable relationship between the producers and the traders. Market demand, prevailing prices in other markets are not available from sources other than the village or mid-level trader. Price negotiations are therefore loaded in favour of the trader.
- At the institutional and policy level, there has been limited attention to bayleaf both as a Non Timber Forest Produce (NTFP) and as a Medicinal and Aromatic plant (MAP). Reliable figures on annual bayleaf produced in the state also compound difficulty in estimating actual production and supply of the state.

## 7. Areas for support and recommended strategies :

### Observations and Recommendations

There are numerous studies in India and Nepal which document the skewed nature of relationship between primary producers of Bay leaf, a non-timber forest produce, (NTFP), and the 'downstream' actors or 'lead firms' in forest based value chains. Our field studies have also corroborated most of the findings of these studies with one exception. In the study villages, Bay leaf is cultivated in community or privately owned land as opposed to government land in other areas. The study reveals the following points:



- Being a secondary activity, there is minimal investment both in terms of finance and time by the primary producers. Orchard management, pest management and nutrient management are rudimentary and sick trees are left to their own fate by farmers with the notion that it is only one among the many trees in the orchard.
- Grading is rudimentary at best with leaves and twigs being sorted manually and is a time consuming activity being undertaken exclusively by women. Storage practices are susceptible to moisture and bug attacks in the absence of moisture free storage facilities.
- Imperfect market information with primary producers having little access to information on terminal market locations, price trends, demand estimation and other market requirements. Limited access to market information tends to result in an exploitative relationship between primary producers and traders/wholesalers. This is also a reason for primary producers not keen on enhancing productivity as it would not result in enhanced returns for their incremental produce.

**Table A: Value Chain actors and functions**

Sl. No	Actors	Functions
1	Primary Producers	Collect bay leaves from the forests; pack and supply to village contractors
2	Village level traders	Aggregate produce at the village level;
3	District Traders	They are the link between upstream collectors and downstream traders and do not have information on end markets
4	State-level Traders	Large wholesalers located in major market centres e.g. Mawiong Regulated market. Have links with spice traders in India
5	National traders	Are based outside the State and supply bay leaves to other market centres in India and to spice industries. Receive demand from end users and exporters and set the standards for bay leaf and prices

(Source: Field studies and Forest Products (NTFP) Value Chains: The Case of Indian Bay Leaf in Nepal and India, Dyutiman Choudhary, S.P. Kala, N.P. Todaria, S. Dasgupta and M. Kollmair, Development Policy Review, 2014, 32 (1): 71-87)

### **Collective action through producer groups**

Producer groups will ensure proper monitoring of the harvesting process. The formation of local groups increased the bargaining power of the collectors and cultivators; they obtained a higher price for their leaves as the groups possessed the required volume to enter into contracts with buyers and to participate in auctions.

## **Value Addition and Quality parameters in bayleaf trade**

Bayleaf oil is a commonly used product in the Ayurvedic and pharmaceutical industry and much of the raw bayleaf ends up large pharma, ayurvedic medicine and perfumery manufacturing firms. Bayleaf oil extract is usually termed according to the major constituent present in the oils and can be cinnamic aldehyde type, eugenol-type, cinnamic-cum-aldehyde-linalool type.

The current value chain structure is exploitative to primary producers selling bay leaf and prices being not remunerative a case exists for community based production of bayleaf oil or powder on a pilot basis in select areas.

There exists a formal grading system of AGMARK standard (Tejpat Grading and Marketing Rules, 1996) which prescribe three grades to contain 1.5, 1 and 0.5ml/100 grams of volatile oil. However they do not specify physical parameters for leaf size. On the other hand the Ayurvedic Pharmacopoeia of India (API) provide the physical parameter of leaves (*See Annexure*). However, the current practice is of grading of bay leaf at the producer level into leaves with or without twigs and price is determined by the trader on this basis. Market grading of bay leaf is decided by the larger traders and the primary producers have little say on this. As such there is now a need to create a certification mechanism for bay leaf based on the physical parameters, oil content type and certification standards that are transparent and acceptable to primary producers, traders and end user firms.

The creation of a certification system branding the produce as 'Organic' or such other terms would enhance its potential market value. Going further, a detailed oil extraction analysis of produce from the major producing areas is needed. Based on the oil content, the products can be targeted at bulk institutional buyers requiring the bayleaf oils as an ingredient in their manufacturing process. The provision of market access could be initiated through the appropriate agency of the Meghalaya Basin Development Authority (MBDA)

## **Creating pro poor market structures**

There exists an unequal relationship between primary producers and downstream value chain players in bayleaf as also in other agri value chain products in the state. The local traders control market access by procuring the product at the farm gate. The primary producer is relieved of the task of finding potential buyers who may have offered a better price. There were also instances of exploitation by offering low prices on pretext of low market demand or inferior quality. The skewed nature of the relationship between producers and buyers is indicative of the stagnant growth of this product despite the product continuing to have steady demand in the market due to its oil content. The Uttarakhand Model for bayleaf cultivation has lessons for Meghalaya. In Uttarakhand, bayleaf is auctioned by the Forest Development Corporation and buyer seller meets are organized on a regular basis which are moderated by the Forest department officials. Such interactions enable the fixation of prices which is transparent, based on market demand, conforms to agreed grades and certifications and reduces chances of exploitation of primary producers.

## **Collective bargaining and Capacity Building**

Our study has indicated that primary producers indicate an unequitable relationship between primary producers and downstream actors in the value chain. There is a lack of horizontal coordination among the primary producers which limit the access to information on alternate

markets, prices, quality grades and long term contract with buyers. No coordination was observed in selling and aggregating the produce. The creation of organisations such as Self Help Groups, Farmers associations, co-operatives are essential to increase the bargaining power of producers. Clustering enables small enterprise to counter the challenges that limit their development- financial bottlenecks, limited risk taking ability, economies of scale.

Sl. No	Factors	Explanations
1	Value-added	Opportunities for value added like powder, oil; processing into finished products; potential to add value locally by producers/collectors
2	Contracts	Contractual agreement between suppliers and buyers as means of accessing markets
3	Finance	Access to finance for setting up small enterprises; provision of working capital, revolving funds; bank credit, etc.
4	Quality control	Maintaining quality by following appropriate grades and standards
	Market information	Provision of market information related to places of sale, buyers, prices, grades, research information, etc.
5	Production increase	Opportunities to increase production by expanding harvesting areas; planting more trees; collectors' and producers' groups aggregating products to increase volumes
6	NTFP Mandi	Auction yards where producers/collectors bring their produce and sellers gather to bid prices. The highest bidder purchases the Produce.
7	Policy	Opportunities to change and adjust current policy barriers for benefit of the bay leaf VC actors, particularly producers and collectors.
8	Sustainable harvesting	Options to harvest leaves by following good harvesting practices leaving scope for sustained future yields
9	NTFP certification	Opportunities to improve management of bay leaves and enhance their quality assurance by adopting different certification schemes such as Organic, FairWild, Forest Stewardship Council, etc.

Source: Forest Products (NTFP) Value Chains: The Case of Indian Bay Leaf in Nepal and India, Dyutiman Choudhary, S.P. Kala, N.P. Todaria, S. Dasgupta and M. Kollmair, Development Policy Review, 2014, 32 (1): 71-87

#### ***Reclassification of various "forest products" into agricultural products:***

Royalties and taxes that apply to products collected from the wild should be removed or significantly reduced for products that are also cultivated. These should be exempted from royalties or reclassified as agricultural crops which are not charged royalties and often times receive subsidies.

### 10 Conclusion:

Currently, in Meghalaya Bay Leaf cultivation has not become as an important commercial crop and is sold in bulk in its raw form and no sort of standard Packaging, Labeling and Branding is done.

Some strategic efforts has been initiated by the Government of Meghalaya towards agricultural crops in the recent past but no specific initiative towards Bay Leaf as a commercial crop. There is a need for a determined policy shift to re-classified Bay Leaf as an Agriculture product to lift the burden of the growers from paying tax revenue. Inputs, structures and processes that augment the production of Bay Leaf in Meghalaya need to be considered as an important development intervention. Among many constraints, some major strategic constraints include limited skills and knowledge of improved agricultural technologies resulting in a very slow rate of technology adoption, high post-harvest losses, poor quality products and generally low production levels as found from the study in Khasi and Jaintia Hills District.

## Annexure I

### **Profile of some Bayleaf producers**



Mr. Alfred Buhphang, aged 50 years has 5 children, 3 boys and 2 girls and resides at Wahkhen Village. He is currently working as a farmer and is practicing broom grass as a primary activity and also bay leaf as a secondary activity. According to him cultivating bay leaf is a good commercial produce because it is very easy to look after as it doesn't require much attention being a natural forest product. Weeding is mostly done during the month of May and June and alongside the harvesting period. Harvesting starts in the month of October – December. In the harvest months labour is hired only when it is necessary and they are paid Rs. 400/- per day. Bay leaf branches are cut down and then collected at one place to dry up. It takes one to two weeks to get dried. After they are dried, they are pack into a sack of 100 kg. Buyers do come from outside but most of them are from the village itself. Bay leaf is a good commercial crop because he doesn't have to wait for long to sell the product and also it can be sold at a good price (Rs.3000/- per quintal). Three sacks of 100 kg makes 1 quintal. According to him he produces 6-8 quintal of bay leaf approximately. Therefore, which gives him an annual income from bay leaf at Rs.21000/-. Production of broom grass on the other hand, he gets 8-10 quintals in year at Rs. 4000-5000 per quintal which gives him an annual income of Rs.36000-45000 on an average. Thus, apart from broom grass Mr. Buhphang found that bay leaf serve as a good livelihood that supplements income for his family. The market price fluctuates from year to year. In the last two years (2012-2013) bay leaf has risen from 2500-3000 in the year 2012 and 3000-4000 in the year 2013 per quintal. Depending on the demand and the quality of the product there are times that it reaches Rs. 4000/- per quintal. Proper storage is not available thus farmers have to sell the products at the earliest. But for those who have space for storage it can fetch up to 9000 per quintal if they sell it in the late summer (August-September) where the demand is more and supply is less.





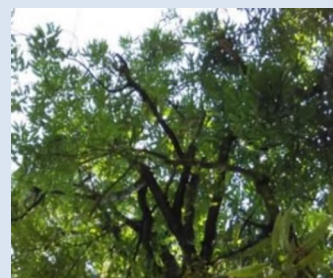


Mr. Snap Piar Tynsong, aged 60+ years has 8 children, 3 boys and 5 girls is a resident of Wahkhen village. Practicing broom stick is his main source of income while on the other hand he said that compare to broom stick, practicing of bay leaf is very easy and simple and thus it gives him good return with minimum efforts. Hence, these trees do not require too much attention like other crops they grow and when it's the time to harvest they hire labour

where they are paid Rs. 400/- per day. Depending on the size of the land, labour is hired accordingly. A person can cut up to 3 trees (Big) and 15 trees (Small) in a day. After the leaves are cut down they are collected at one place, spread them to dry up. When these leaves are dried they are packed into a sack and they are sold at Rs. 3000/- per quintal. On an average he can produce 5 -7 quintals in a year. So which him an annual income from bay leaf of Rs. 18000/-. For him proper storage is not available therefore he does not hold the price for too long. If proper storage is available he could sell this product in the months of July and August at a very good price because the demand is more and supply is very less. When compared to broom grass, he is able to produce 10-12 quintals of broom grass in a year. He sells it at Rs. 4000-5000 per quintal which gives an annual income of Rs. 44000-55000 on an average. Fluctuation of price in bay leaf always varies from years to years. In 2012, the price was Rs. 2500-3000 and in 2013 it had risen to 3000-4000 per quintal. Better prices are possible in the late summer (August-September) where the demand is more and supply is less. In these months prices can go up to 8000-9000 per quintal.



Mr. Droka Tynsong, aged 35 years is a resident of Wahkhen Village lives with his wife and 4 children, 2 boys and 2 girls. Presently, he is working as a farmer and he is practicing broom grass which is his main livelihood. Side by side on his own efforts he is practicing bay leaf as a secondary source of income. He found it very easy to practice bay leaf because attention is not a priority. Practising starts in the month of May-June and harvesting is done once in alternate years in the month of November and December. Hiring of labour depends on the area of land it is cultivated. If a tree is big a person can cut up to three trees in a day and up to 15 trees if they are small. When these leaves are dried they are packed into a sack of 100kg and are sold at Rs. 3000/- per quintal. These products are stored at home to protect from the damages caused due to insects and other spoilages. Buyers are from the village itself. According to Mr. Tynsong he produces 4 to 6 quintal of bay leaf on an average in a year. Thus he gets an annual income from bay leaf at Rs. 15000/- per year. On the other hand, Mr. Tynsong produces broom grass from 8-10 quintals at Rs. 4000-5000 per quintal which will give him an annual income of Rs. 36000-45000 on an average. Fluctuation of bay leaf price for the last two years (2012-2013) bay leaf has risen from 2500-3000 in the year 2012 and 3000-4000 in the year 2013 per quintal. There are times that it reached to Rs. 4000/- per quintal depending upon the demand and supply of markets. For those who have space for storage it can fetch up to 9000 per quintal if they sell it in the late summer (August-September) where the demand is more and supply is less.



## **Annexure II**

### **List of Bayleaf growers through FGD from Amlarem & Pynursla Block**

<b>SL. NO</b>	<b>NAME</b>	<b>GENDER</b>	<b>AGE</b>	<b>VILLAGE</b>
1.	Thresidalin Khongsdier	F	40	Mawlam
2.	Siir Dkhar	M	36	Mawlam
3.	Shar Tynsong	M	55	Mawlam
4.	Pynkyndit Khongkhrom	M	58	Mawlam
5.	Phiang Tangsong	M	62	Mawlam
6.	Marphil Khongjee	F	27	Mawlam
7.	Kje Tangsong	M	40	Mawlam
8.	Phan Buhtep	M	30	Mawlam
9.	Tharba Khongsdier	F	46	Mawlam
10.	Nem Suja	M		AMLARI
11.	Lewis Supooh	M		AMLARI
12.	Solwon Pala	M		AMLARI
13.	Kyrduh Suja	M		AMLARI
14.	Kross Pala	M		AMLARI
15.	Phraisingh Supooh	M		AMLARI
16.	Lakhi Pohplet	F		AMLARI
17.	Drosimai Patwad	F		AMLARI
18.	Stephan Phawa	M		AMLARI
19.	Hamran Sapooh	M		AMLARI



**Annexure III: Grade designations and definitions of quality of Tejpata**

**SCHEDULE-II**

[See rule 3 and 4]

Grade designations and definitions of quality of Tejpat

**Definition of quality**

<b>Grade Designation</b>	<b>Extraneous Matter, percent by mass (Maximum)</b>	<b>Shriveled damaged and discolored leaves, percent by mass (Maximum)</b>	<b>Cut leaves percent by mass (Maximum)</b>	<b>Inset bored and diseased leaves percent by mass (Maximum)</b>	<b>Twigs leaf stalk, percent by mass (Maximum)</b>	<b>Moisture, content, percent by mass (Maximum)</b>	<b>Volatile oil ml/100 gms (Minimum)</b>
Grade-I	0.25	5.0	10.0	5.0	5.0	10.0	1.5
Grade-II	0.5	7.0	15.0	10.0	7.0	10.0	1.0
Grade-III	1.0	10.0	20.0	15.0	10.0	10.0	0.5
*Non – Specified	-	-	-	-	-	-	-

**Explanations:**

1. Extraneous matter-means stones, dust, other dirt and all organic and vegetable matters not of Tejpat origin.
2. Damaged, discolored and shriveled leaves-means leaves that are damaged or discoloured or not properly developed which materially affect the quality, shriveled leaves do not include small and tender leaves.
3. Insect bored and diseased leaves that are partly or wholly bored or eaten by insects or diseased which materially affect the quality.
4. Twigs and leaf stalk-mean small branches and stalks attached with the tejpat leaves.

*(Source: Directorate of Marketing and Inspection, Ministry of Agriculture, Govt. of India\_www.agmark.nic.in)*

***Bay Leaf has both nutritional and medicinal value. Products from bay leaf can be used as follows:***

Bay leaf is used as a spice to impart flavor to a variety of dishes in the region, both vegetarian and non-vegetarian. Crushing the leaves imparts a more intense flavor than when they are used whole. It is one of the constituents of the Indian Garam masala - a mixture of spices. Bay leaves also have the property of repelling flies, moths, roaches, mice etc.


Bay leaves also yield many volatile oils like a-pinene, camphene, myrcene, limonene, p-cymene, eugenol etc. with eugenol being the .major essential component.

The leaves are also exceptionally rich in many vitamins and minerals as can be seen in the table below.

### **Ayurvedic Cures With Indian Bay Leaf**

Bay leaf is an important ingredient in Ayurvedic tea which is used for treating coughs and colds and other sicknesses. The most common sickness where bay leaf can be used as a medicine is:

- problems like headache, even severe headache
- problems like cough, cold, excess mucus, allergy and other respiratory problems etc.,
- For getting rid of head lice,
- In respiratory diseases like asthma etc.,
- Those who suffer from indigestion and bloating or any other digestive problem
- For kidney problems, kidney infections and even for kidney stone
- For heart disease and anxiety,
- For uterus problems like infection,

(Source:  *The Indian Bay Leaf - An Indian Spice And Its Health Benefits*\_  
<http://rajanjolly.hubpages.com/hub/The-Indian-Bay-Leaf-An-Indian-Spice-And-Its-Health-Benefits>)S

**Annexure IV**  
**Sample Price Trends of Bayleaf Arriving at Mawiong Regulated Market**

Date	Market	Varieties	Arrival	Unit	Minimum Price	Maximum Price	Modal Price
11/03/2014 to 18/03/2014	Mawiong Regulated Market	Local	259	Quintal	2500	3000	2800
		Local	196	Quintal	2500	3200	2900
		Local	321	Quintal	2600	3000	2800
		Local	516	Quintal	2600	3000	2800
		Local	263	Quintal	2600	3000	2800
		Local	208	Quintal	2500	3000	2700
		Local	123	Quintal	2600	3200	2800
		Local	233	Quintal	2600	3400	3000
		Local	252	Quintal	2600	3400	3000
		Local	240	Quintal	2500	3400	3000
		Local	448	Quintal	2600	3200	2800
		Local	277	Quintal	2600	3200	2800
		Local	301	Quintal	2600	3200	2800
02/04/2014 to 09/04/2014	Mawiong Regulated Market	Local	403	Quintal	2400	3300	2800
		Local	410	Quintal	2400	3300	2800
		Local	189	Quintal	2500	3000	2800
		Local	252	Quintal	2500	3000	2800
		Local	305	Quintal	2500	3000	2800
		Local	228	Quintal	2600	3200	2900
10/04/2014 to 17/04/2014	Mawiong Regulated	Local	259	Quintal	2500	3000	2800
		Local	196	Quintal	2500	3200	2900
		Local	321	Quintal	2600	3000	2800
		Local	516	Quintal	2600	3000	2800

	Market	Local	263	Quintal	2600	3000	2800
		Local	208	Quintal	2500	3000	2700
		Local	123	Quintal	2600	3200	2800
18/04/2014 to 25/04/2014	Mawiong Regulated Market	Local	441	Quintal	2400	3000	2700
		Local	193	Quintal	2400	3000	2700
		Local	322	Quintal	2600	3000	2800
		Local	126	Quintal	2500	3000	2700
		Local	256	Quintal	2600	3200	2800
		Local	161	Quintal	2500	3300	2800
26/04/2014 to 03/05/2014	Mawiong Regulated Market	Local	56	Quintal	2600	3200	2900
		Local	105	Quintal	2600	3200	2900
		Local	137	Quintal	2500	3000	2800
		Local	186	Quintal	2800	3400	3100
		Local	217	Quintal	2500	3000	2800
		Local	46	Quintal	2800	3400	3100
04/05/2014 to 11/05/2014	Mawiong Regulated Market	Local	56	Quintal	2600	3200	2900
		Local	105	Quintal	2600	3200	2900
		Local	137	Quintal	2500	3000	2800
		Local	186	Quintal	2800	3400	3100
		Local	217	Quintal	2500	3000	2800
		Local	46	Quintal	2800	3400	3100
12/05/2014 to 19/05/2014	Mawiong Regulated Market	Local	264	Quintal	2600	3200	2700
		Local	322	Quintal	2800	3500	3000
		Local	336	Quintal	2400	3200	2800
		Local	249	Quintal	3000	3500	3200
		Local	445	Quintal	3000	3500	3200
		Local	907	Quintal	2800	3600	3200
		Local	280	Quintal	2800	3600	3200

20/05/2014 to 27/05/2014	Mawiong Regulated Market	Local	256	Quintal	2800	3400	3000
		Local	172	Quintal	2200	3200	3000
		Local	252	Quintal	2200	3200	3000
		Local	242	Quintal	2800	3400	3000
		Local	240	Quintal	2800	3400	3000
		Local	242	Quintal	2800	3400	3000
28/05/2014 to 04/06/2014	Mawiong Regulated Market	Local	264	Quintal	2600	3200	2700
		Local	322	Quintal	2800	3500	3000
		Local	336	Quintal	2400	3200	2800
		Local	249	Quintal	3000	3500	3200
		Local	445	Quintal	3000	3500	3200
		Local	907	Quintal	2800	3600	3200
		Local	280	Quintal	2800	3600	3200
05/06/2014 to 12/06/2014	Mawiong Regulated Market	Local	145	Quintal	2600	3200	3000
		Local	229	Quintal	2600	3200	3000
		Local	120	Quintal	2600	3200	3000
		Local	246	Quintal	2800	3400	3000
		Local	161	Quintal	2500	3000	2800
		Local	63	Quintal	2800	3400	3000
13/06/2014 to 20/06/2014	Mawiong Regulated Market	Local	145	Quintal	2600	3200	3000
		Local	229	Quintal	2600	3200	3000
		Local	120	Quintal	2600	3200	3000
		Local	246	Quintal	2800	3400	3000
		Local	161	Quintal	2500	3000	2800
		Local	63	Quintal	2800	3400	3000
21/06/2014 to 28/06/2014	Mawiong Regulated	Local	123	Quintal	2800	3400	3200
		Local	112	Quintal	2800	3400	3200
		Local	172	Quintal	2800	3400	3200
		Local	77	Quintal	2800	3400	3200

	Market	Local	252	Quintal	2800	3400	3200
31/07/2014 to 07/08/2014	Mawiong Regulated Market	Local	154	Quintal	2500	3500	3200
		Local	60	Quintal	2500	3500	3200
		Local	172	Quintal	2500	3400	3200
		Local	119	Quintal	2800	3500	3200
		Local	172	Quintal	2800	3500	3200
08/08/2014 to 15/08/2014	Mawiong Regulated Market	Local	165	Quintal	2500	3500	3200
		Local	25	Quintal	2500	3500	3200
		Local	102	Quintal	2500	3500	3200
		Local	137	Quintal	2800	3500	3200
		Local	56	Quintal	2500	3500	3200
16/08/2014 to 23/08/2014	Mawiong Regulated Market	Local	84	Quintal	2600	3500	3100
		Local	46	Quintal	2800	3500	3200
		Local	86	Quintal	2800	3500	3200
		Local	238	Quintal	3000	3400	3200
		Local	235	Quintal	3000	3300	3200
		Local	147	Quintal	3000	3300	3200
		Local	259	Quintal	2800	3500	3200
24/08/2014 to 31/08/2014	Mawiong Regulated Market	Local	86	Quintal	2800	3400	3200
		Local	18	Quintal	3200	3500	3400
		Local	238	Quintal	2800	3300	3000
01/09/2014 to 08/09/2014	Mawiong Regulated Market	Local	86	Quintal	2800	3400	3200
		Local	18	Quintal	3200	3500	3400
		Local	238	Quintal	2800	3300	3000