

**PROJECT ON**  
**CULTIVATION OF MEDICINAL PLANTS**  
**at N. MUALCHENG**  
**SERCHHIP DISTRICT; MIZORAM**



**Total Cost of Project ~ Rs. 2,37,11,373**  
**Project Location ~ N. Mualcheng, Serchhip**  
**Total Proposed Area ~ 30ha**



**BLUE MOUNTAIN DEVELOPMENT AGENCY**  
**MIZORAM**

















**PROJECT ON**









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## I. INTRODUCTION

The state of Mizoram is well-known for its flora, especially in the field of medicinal plants. Since its ancestral times, the use of plants for treating various ailments is common among all the tribal societies of the Mizo people. As such, the use of medicinal plants has its root deeply attached to the mindset of the people. The era of the use of plants for medicine can be summarized into two eras: ancestral era, where people solely base their healing practices through medicinal plants, modern era: where more use of allopathic medicines is prevailing over the traditional plants and, post-modern era: where new realization of the value of medicinal plants for healing is recognized and people start to slowly adopt more use of such medicinal plants. It is undoubtedly clear that we are currently living in the post-modern era, people coming back to the more natural approach has been the more commonly accepted practice, not only in Mizoram, but also all over the world.

The state of Mizoram is blessed with large area of uninhabited land, mostly forest area with a decent percentage of farming land. The people of Mizoram have been depending on agriculture for their living. Cultivation of crops like rice, maize, beans, some winter crops like mustard, and few fruit bearing trees like the *Citrus spp.* is very common. The cultivation or domestication of medicinal plants, under its name and specific to it, is not at all practiced in the state. Obviously few plant species like *Clerodendron colebrookianum*, *Solanum nigrum*, *Embllica officinalis*, *Carica papaya* etc. cultivated do belong to the medicinal plants, but these were/are mostly cultivated for their value as vegetables and fruits and not as medicinal plants. Also, a very large number of medicinal plants are found in nature in different parts of the state. These are neither domesticated nor cultivated; rather, they are naturally occurring. So, the state of Mizoram has very diverse medicinal plants in different places in smaller quantities, while at the same time, possess a huge potential for a number of the naturally occurring medicinal plants.

Mizoram can be categorized as moist tropical or moist sub-tropical region with an average annual rainfall of 254cm per annum. It consists mostly of small hills and hardly any plain area. The climate is suitable for a number of medicinal plants, as such many are found in nature.

From all the previously mentioned points, it is very suggestive that the cultivation of medicinal plants is a very challenging task in the state of Mizoram considering the value of produces from medicinal farms to be higher than most agro or horticultural crops. Although perceived as a comparatively new venture, this aspect of farming can drastically change the conditions of farmers and interested persons in the state. It is strongly believed that with dedicated plots of land, dedicated farmers and dedicated man-power solely for cultivation of medicinal plants, the state can be pronounced as one of the main sources of selected medicinal plants in the country

## **II. ABOUT BLUE MOUNTAIN DEVELOPMENT AGENCY**

Blue Mountain Development Agency was founded on the 2<sup>nd</sup> of April, 2008 and is currently operating through its office at Lalthazova Building, 1<sup>st</sup> Floor, D-25A, Chaltlang Lily Veng, Aizawl.

The following are the aims and objectives of Blue Mountain Development Agency -

1. To export agricultural, horticultural and forest products.
2. To promote for the benefit of artisans and the general public for their socio-economic status in the field of Handloom, Handicraft, Cane and Bamboo Technology.
3. To promote Livestock farming like piggery, cattle, poultry, prawns, fishery etc.
4. To take up any kind of plantation like bamboo, medicinal plant and planting trees to preserve forest.
5. To established organic farming throughout the state of Mizoram
6. To implement the integrated rural development programme in the field of road construction, rural drinking water, rain water harvesting, cannals, dams, rural housing, rural electrification, playground and stadium.
7. To open women and girls hostel for the poor tribal people and to construct their hostel building.

Currently, the agency operates through the following Office Bearers-

Chairman	- Mr. TBC Lalrothara
Vice Chairman	- Mr. Rohmingliana
Secretary	- Mrs. H. Lalsangzauli
Asst. Secretary	- Mr. Lalhriattira
Treasurer	- Mrs. K. Laldingliani
Financial Secretary	- Mr. K. Lalhmingmuana

The main activity that had been undertaken includes marketing of agricultural and horticultural produces from farmers who are lacking the means to reach the markets as they desire. Also, assistance is provided to ambitious farmers in terms of planting materials. Assistance had been provided for the cultivation of plants like orange, ginger, sugarcane and broom grass.

The Blue Mountain Development Agency is not a direct government or NGO funded organization. Rather, it functions through the admission fee and subscriptions received from the members of the society. Eventually, the agency does receive few donations and special contributions as well, for the purposeful work and activities.



**III. OBJECTIVES of the project**

1. To enlarge the cultivation of medicinal plants in the state of Mizoram.
2. To provide other sources of income for farmers, away from the traditional cultivation activities.
3. To help and contribute to the self sustenance of the state in terms of medicinal plants production by encouraging farmers through success pictures.
4. To explore and make use of the valuable natural resources that the state is blessed with.
5. To strengthen the State Medicinal Plants Board (SMPB) Mizoram in terms of production of various medicinal plants.

**IV. EXPECTED OUTCOME**

Through this project, the following are the expected outcomes -

1. Increasing income for farmers engaged in the implementation of the project.
2. Expand the concept of medicinal plants cultivation among different farmers in the whole state.
3. Produce more Quality Planting Materials through nursery.
4. Slowly making the state self sufficient with the selected crops, eventually produce enough for inter-state market.
5. To prevent misuse of land for cultivation of different crops and to reduce shifting cultivation and also to help in afforestation.

**V. JUSTIFICATION OF THE PROJECT**

This project for the cultivation of medicinal plants is introduced to help the state of Mizoram in the production of medicinal plants, which will eventually benefit farmers, whose benefits have yet to be directly proportional to their hard work. As a pilot project, it will first concentrate on the production of raw-materials, i.e. farm produces. It will slowly proceed towards Post-Harvest Management, Value Addition and eventually processing of the medicinal plant produces.

Also, it is known that the State Medicinal Plants Board, Mizoram is currently involved in similar project. It can be argued if such project is necessary. But it is essential to note that it is almost practically impossible to reach out to every interested farmer in the state. Thus, Blue Mountain Development Agency has dedicated to extend such help to farmers through the support of the State Medicinal Plants Board Mizoram, by seeking assistance from the National Medicinal Plants Board, therefore, increasing the productivity and success of the State Medicinal Plants Board Mizoram.

## **VI. AREA OF OPERATION**

N. Mualcheng is a village located within the district of Serchhip, Mizoram. The village is one of the fastest developing rural villages in the area. This can be mainly credited to the positive mindset of the people of the village in making use of all kinds of schemes either from the government or other authorities.

Also, the village has great potential, wherein, large uncultivated lands can be transformed into huge medicinal plantation area. As such, this proposal has been brought up.

Among the various districts in Mizoram, the district of Serchhip is blessed with one of the most favourable micro-climate for a number of medicinal plants available in Mizoram. In addition, it is neither the biggest nor the largest inhabited district in the state; it is among the districts with most forest and cultivated areas. Thus, introduction of the concept of medicinal plants cultivation in N. Mualcheng would prove to be most effective considering these entire factors. Also, Blue Mountain Development Agency has its roots in this village, along with acceptance by the villagers which will prove to be an effective tool for the implementation of the program.

The specific areas proposed for this project are -

1. Daithlang huan
2. Theizema tui

The exact location and few photographs of these areas are displayed in Annexure-3.

## VII. COMPONENTS OF THE PROJECT

### 1. Cultivation -

Medicinal plants will be cultivated in the allotted area of land. The following are the selected plant species -

- a) *Emblica officinalis* - commonly known as "Amla" or "Sunhlu" (local language), this tree is suitable for plantation throughout the state of Mizoram. In comparison with other medicinal plants, it probably has the highest prospect in the state. Several value added products like Amla Juice, Amla candy, amla pickle etc. are commonly produced and sold by few well known enterprises in the state.  
The tree starts bearing fruit after 5-7 years of plantation. It requires little to no attention after completion of the first 2 years of plantation.
- b) *Oroxylum indicum* - commonly known as "Syonaka" or "Archangkawm" (local language), this tree is also found in most places of the state. Its climatic requirements are close to ideal in several places. It takes 3-4 years to start bearing fruits. Although the main economic part is the root, the fruits are heavily consumed in Mizoram as vegetable. Thus, the fruits can be either stored for planting materials or be sold as vegetable.
- c) *Solanum nigrum* - this shrub is commonly found in Mizoram and is largely consumed as vegetable. Although presented as highly abundant in the state, it becomes scarce for bulk export. Thus, cultivation of this plant has high potential in terms of self sustainability and export.
- d) *Rauwolfia serpentina* - this is one of the least common plants among the proposed plants. Although such condition may exist, it has been observed that these plants grow very well in Mizoram and considering its important market value, its cultivation is very encouraging for the farmers. The most important economic part being the roots, which is ready for harvest in 2 years, collection of roots before such harvest to obtain planting materials for the next season is very important.
- e) *Phyllanthus amarus* - this herb matures in 80-90 days and can visibly give return in a year. Its fruits are locally consumed as table fruit. However, collection of seeds is done at 110-120 days old crops. The plant can be commonly found in Mizoram as well. It thrives well in the sub-tropical and tropical areas.
- f) *Dioscorea bulbifera* - this vine like plant, also called air potato is also available in nature. Due to its recent recognition of its medicinal value, people have shown great interest towards this plant. It is ready for harvest in 180-200 days, thus provides yearly income as well.

- g) *Cinnamomum verum* - this tree is commonly found in Mizoram, almost throughout the whole state. It is commonly known that this tree can be used for reclamation of waste lands as it easily thrives well in and around places where most other trees and plants wouldn't be able to do well. In addition, the tree has very high medicinal use. It can be stressed that the actual value of this tree has not been explored and exploited in the state of Mizoram, thus, proving to be a very challenging plant species in the field of Medicinal Plants.
- h) *Asparagus racemosus* - the plant is found more commonly in the eastern side of the state. This plant has recently gained popularity among the Mizos. Despite its recent popularity, not many people are engaged in its domestication or plantation; rather, they are often collected from jungle for local market and consumption. Thus, such a plant needs to be more concerned with and as such, is selected.
- i) *Chlorophytum borivillianum* - out of all the plant species selected so far, this is the least popular. It has high concentration of Carbohydrates, Protein, Saponins and root fibres. The saponin content is mainly responsible for its medicinal properties. In India, they have been mainly cultivated in states like Rajasthan, Madhya Pradesh and Gujarat. In recent years, people in the state of Mizoram have recognised this plant and its planting material has been slowly imported in the state and few countable people are now known to be engaged in its plantation.

## *2. Post Harvest Management Support*

For every successful farming system, a post-harvest management support system is inevitable. Therefore, to fulfill such requirements, drying sheds and storage godowns are proposed to be constructed on-farm. These buildings shall be the centre point for each cultivation activity, serving as farm office and other useful purposes.

## *3. Training and Technical Support/Advice*

The farmers shall be taught from top to bottom regarding the plants to be cultivated. This training shall include value addition techniques for better market presentation. In order to accomplish this component, Blue Mountain Development Agency shall organize training for selected farmers under the guidance of State Medicinal Plants Board Mizoram. This training programme shall be conducted two (2) times during the course of implementation of the project. These will be as follows -

- a) *Pre-implementation Training* - This training programme will focus on enlightening the farmers regarding the project, the objectives and different works involved in it. It will also include training in regards to selected plant species.
- b) *Post-implementation Training* - This training programme will be done during the second year of implementation, where farmers are given specific trainings on value addition and semi-processing to processing of their farm produces.

It must be noted that such training programmes are to be implemented in close consultation and support from the State Medicinal Plants Board (SMPB) Mizoram.

## *4. Nursery*

In order to achieve the objective of producing Quality Planting Material, a nursery is also a vital component of the project. It will serve as the main backward linkage of the whole project. These nurseries shall sustain themselves after its establishment, will be registered under State Medicinal Plants Board Mizoram and will be raised to be a reliable source of medicinal plants planting material for both Mizoram and the whole North East part of India.

## *5. Marketing linkages*

This component of the project shall be taken care directly by the State Medicinal Plants Board (SMPB) Mizoram through several programmes and componenets available under their set up. Blue Mountain Development Agency shall also be responsible for establishment of market for proposed species and to also link the marginal farmers to potential regular buyers. Such roles, possible revenue from sales and all matters relating to market shall be well document and recorded as well, and shall be maintained by Blue Mountain Development Agency through their own set up and establishment.

### VIII. LAYOUT OF THE PROJECT

1. This project shall be for a time period of 5 years.
2. The first year of operation shall be intended for preparation of land for cultivation activities and establishment of nursery.
3. From the second year of operation, plantation of selected plant species shall be initiated.
4. The tree species or maybe termed as Major plants, viz. *Emblica officinalis*, *Oroxylum indicum* and *Cinnamomum verum* shall be planted only during the first year of cultivation, i.e. second year of operation; whereas, the rest of the selected plant species or maybe termed as Minor plants, viz. *Phyllanthus amarus*, *Rauwolfia serpentina*, *Solanum nigrum*, *Dioscorea bulbifera*, *Asparagus racemosus* and *Chlorophytum borivillianum* shall be planted every year from the second year of operation.
5. Construction of Post harvest management support structures must be finished during the end of second year of operation, before any form of harvest is made.
6. Training programmes shall be conducted during the 1<sup>st</sup> and 2<sup>nd</sup> year of operation.

Year	Activity
1	a) Clearing of land for cultivation b) Setting up of Nursery c) Construction of Post Harvest Management structures d) Training of farmers (pre-implementation training)
2	a) Training of farmers (post-implementation training) b) Cultivation of all selected medicinal plants c) Harvest from Minor plants
3	a) Cultivation of Minor plants b) Harvest from Minor plants
4	a) Cultivation of Minor plants b) Harvest from Minor and Major plants (if any)
5	a) Cultivation of Minor plants b) Harvest from all medicinal plants (from all plants, if any)

It is important to note that: financial assistance seek for cultivation shall include only upto the 3<sup>rd</sup> year of cultivation as it is expected that the nursery established will provide for future planting materials. Thus, the final year of the project shall be a test year to see the self sustainability of the project.

## **IX. SWOT ANALYSIS**

### **Strength**

- a) Huge potential considering the climatic conditions and natural occurrence of the plants in the state.
- b) The selected plants are either locally consumed or can be marketed for further processing.
- c) There is only very little effort needed for the success of the selected plant species, thus ensuring higher level of success.

### **Weakness**

- a) Most plant species were not previously domesticated/cultivated, thus, making it less acceptable for farmers.
- b) Lesser knowledge of cultivation due to lesser practical knowledge by the farmers.

### **Opportunities**

- a) Conservation of naturally occurring plants and trees.
- b) Increase income of farmers.
- c) Utilize the naturally occurring floral resources of the state.

### **Threats**

- a) Theft and destruction of the plants by anyone for any reason.
- b) Unlikely event of pest/disease/weed outbreak which cannot be anticipated.

## **X. MONITORING, EVALUATION AND DOCUMENTATION**

All aspects of monitoring and evaluation are subjected to the authorities at State Medicinal Plants Board Mizoram, National Medicinal Plants Board, Ministry of AYUSH and any other third party deemed worthy by the aforementioned authorities.

However, in order to keep track of the success and unlikely failure of the project, it is necessary to maintain proper evaluation and documentation from the first year of implementation. Therefore, this documentation and evaluation activity shall be done directly by Blue Mountain Development Agency, at its own expenses to keep track of its own progress over the days, months and years.

## XI. FINANCIAL OUTLAY

## 1. Cultivation

YEAR 2	Sl. No.	Name of plant	Total area (ha)	Cost per ha (Rs.)	Total cost (Rs.)
	1	<i>Oroxylum indicum</i>	10	1,25,000	12,50,000.00
	2	<i>Emblica officinalis</i>	10	1,13,769.65	11,37,696.50
	3	<i>Phyllanthus amarus</i>	8	48,133.31	3,85,066.48
	4	<i>Rauwolfia serpentina</i>	5	1,09,393.89	5,46,969.45
	5	<i>Solanum nigrum</i>	8	43,757.55	3,50,060.40
	6	<i>Dioscorea bulbifera</i>	5	1,09,393.89	5,46,969.45
	7	<i>Cinnamomun verum</i>	10	1,35,648.43	13,56,484.30
	8	<i>Chlorophytum borivilianum</i>	5	5,46,969.46	27,34,847.30
	9	<i>Asparagus racemosus</i>	8	1,09,393.89	8,75,151.12
<b>Total</b>			<b>69</b>	<b>91,83,245</b>	
YEAR 3	Sl. No.	Name of plant	Total area (ha)	Cost per ha (Rs.)	Total cost (Rs.)
	1	<i>Phyllanthus amarus</i>	8	48,133.31	3,85,066.48
	2	<i>Rauwolfia serpentina</i>	5	1,09,393.89	5,46,969.45
	3	<i>Solanum nigrum</i>	8	43,757.55	3,50,060.40
	4	<i>Dioscorea bulbifera</i>	5	1,09,393.89	5,46,969.45
	5	<i>Chlorophytum borivilianum</i>	5	5,46,969.46	27,34,847.30
	6	<i>Asparagus racemosus</i>	8	1,09,393.89	8,75,151.12
<b>Total</b>			<b>39</b>	<b>54,39,064.20</b>	
YEAR 4	Sl. No.	Name of plant	Total area (ha)	Cost per ha (Rs.)	Total cost (Rs.)
	1	<i>Phyllanthus amarus</i>	8	48,133.31	3,85,066.48
	2	<i>Rauwolfia serpentina</i>	5	1,09,393.89	5,46,969.45
	3	<i>Solanum nigrum</i>	8	43,757.55	3,50,060.40
	4	<i>Dioscorea bulbifera</i>	5	1,09,393.89	5,46,969.45
	5	<i>Chlorophytum borivilianum</i>	5	5,46,969.46	27,34,847.30
	6	<i>Asparagus racemosus</i>	8	1,09,393.89	8,75,151.12
<b>Total</b>			<b>39</b>	<b>54,39,064.20</b>	
<b>Grand Total</b>				<b>2,00,61,373.4</b> <b>or 2,00,64,373</b>	

## 2. Nursery

Sl. No.	Type of Nursery	Quantity	Cost norm (Rs.)	Total (Rs.)
1.	Small Nursery	2	6,25,000	12,50,000
<b>Total</b>		<b>2</b>		<b>12,50,000</b>



### 3. Training and Technical Support

#### a) Pre-implementation training

Sl. No.	No of trainee	Cost per trainee (Rs.)	Total (Rs.)
1.	100	2,000	2,00,000

#### b) Post-implementation training

Sl. No.	No of trainee	Cost per trainee (Rs.)	Total (Rs.)
1.	100	2,000	2,00,000

**Total - Rs. 4,00,000**

### 4. Post Harvest Management Support

Sl. No.	Type of support	Quantity	Cost norm (Rs.)	Total (Rs.)
1.	Drying shed	2	5,00,000	10,00,000
2.	Storage Godown	2	5,00,000	10,00,000
<b>Total</b>				<b>20,00,000</b>

Thus,

To sum up the financial outlay of the project, each component is added up -

**Component 1 + Component 2 + Component 3 + Component 4**

**Rs. 2,00,61,373 + Rs. 12,50,000 + Rs. 4,00,000 + Rs. 20,00,000 = Rs. 2,37,11,373**

**Rupees Two Crore Thirty Seven Lakhs Eleven Thousand Three Hundred Seventy Three Only**

Therefore, total cost of the project for a duration of 5 years = Rs. 2,37,11,373.

***NB: All financial costs to be incurred are calculated as per existing cost norms for each respective component under National Medicinal Plants Board and Medicinal Plants Component of National AYUSH Mission.***

**Annexure - 1**

**Cultivation Explanation -**

Two shrub/herb plant species each will be mixed planted with one tree species as follows -

*Emblica officinalis* + *Phyllanthus amarus* + *Rauwolfia serpentina*  
*Oroxylum indicum* + *Solanum nigrum* + *Dioscorea bulbifera*  
*Cinnamomum verum* + *Asparagus racemosus* + *Chlorophytum borivilianum*

*Emblica officinalis* proposed for an area of 10 ha shall be planted, wherein the same 10 ha of land shall be made available for plantation of *Phyllanthus amarus* (8ha) and *Rauwolfia serpentina* (5ha). This means that the same plot of land shall be managed in such a way that these 3 plant species fit well with each other and maximize outcome.

The same method will be adopted for *Oroxylum indicum* (10ha) along with *Solanum nigrum* (8ha) and *Dioscorea bulbifera* (5ha) as well as *Cinnamomum verum* (10ha) with *Asparagus racemosus* (8ha) and *Chlorophytum borivilianum* (5ha).

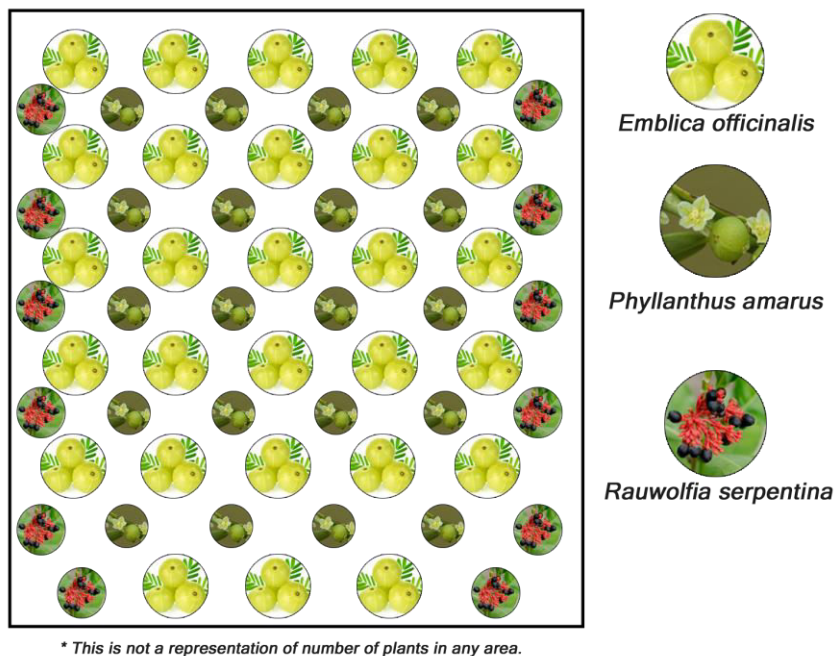


Fig. 1: Physical representation of plan of cultivation for 1 ha of land for *Emblica officinalis*, *Phyllanthus amarus* and *Rauwolfia serpentina*

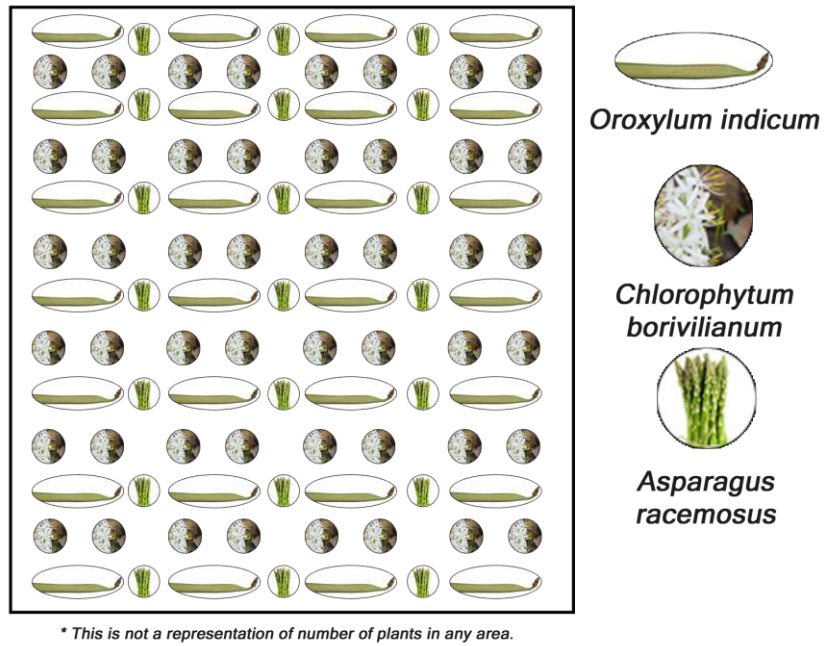


Fig. 2: Physical representation of plan of cultivation for 1 ha of land for *Oroxyllum indicum*, *Chlorophytum borivilianum* and *Asparagus racemosus*

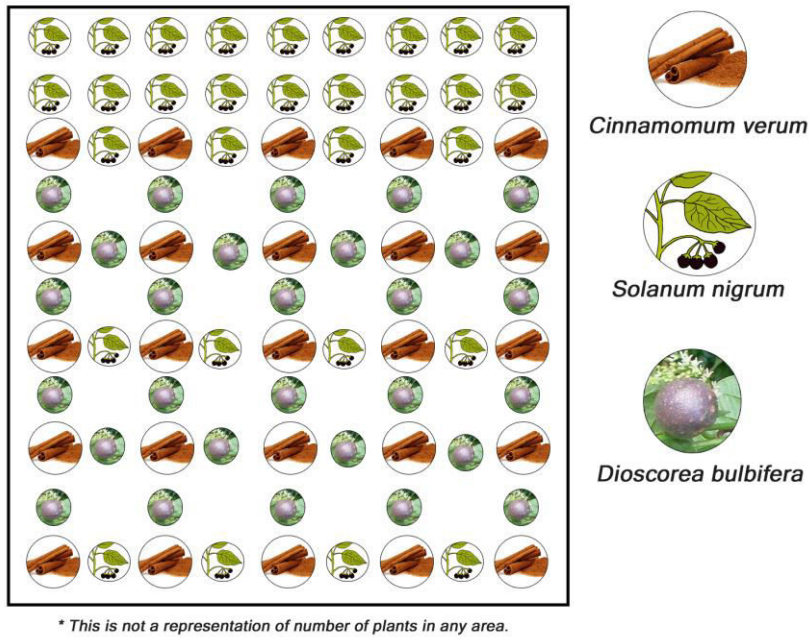


Fig. 3: Physical representation of plan of cultivation for 1 ha of land for *Cinnamomum verum*, *Solanum nigrum* and *Dioscorea bulbifera*

**Annexure - 2**

**Farmer Details -**

A total of pre-selected 100 farmers are assigned under 3 farming clusters, headed by 5 individuals from each group, who will be directly responsible for any reports, problems and solutions pertaining to the all field activity. Also, each farming cluster will be assigned with the 3 different plant species packages. This is better observed from the table below -

Sl. No.	Farming Cluster number	Plant species engaged with	Name of farmer leaders	List of farmers	Address
1	1	<i>Emblica officinalis</i> <i>Phyllanthus amarus</i> <i>Rauwoflia serpentina</i>	K. Lalzika Changliana Chawimawii Lalsipaia Zairemthanga	Zorami	N. Mualcheng, Serchhip District Mizoram
				Zaikungpuia	
				L. Rinzuala	
				R. Lawmzuala	
				Sangzaphangi	
				R. Ruatpuia	
				Lalruati	
				Vanlalruati	
				Tluangpuii	
				Rengchhawna	
				Dinthara	
				Zampuii	
				Laltemawii	
				Huaichhinga	
				Rambuatsaihi	
				Lalfeli	
				Biakmuana	
				Mawitea	
				Lalthari	
				Rualkima	
				Rinmawii	
L. Tluangzela					
Siamhlira					
Lalngaiha					
Liansangi					
R. Dawngliana					
Hmingsangi					
Dinliana					

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Sl. No.	Farming Cluster number	Plant species engaged with	Name of farmer leaders	List of farmers	Address
2	2	<i>Oroxylum indicum</i> <i>Solanum nigrum</i> <i>Dioscorea bulbifera</i>	Zohmingi Thangmawia Thankima Hlawnziki Rochhara	Zomawii	N. Mualcheng, Serchhip District Mizoram
				Zohmuni	
				Zuimawia	
				Rimawii	
				Biakthara	
				Kimi	
				Lalnutei	
				Lalduata	
				Hriatzuala	
				Lalmahruaia	
				Biaknghilhlovi	
				Rohlupuii	
				Tharchunga	
				Lalfaki	
				Rebeki	
				Ruata	
				Hriati	
				Zawmliana	
				Duhsaki	
				Hrangbuanga	
				Rawngbawli	
Thanglunga					
Kawlngaii					
Fangzauva					
Tlanliani					
Hunchhunga					
Laltawni					
Lalduha					

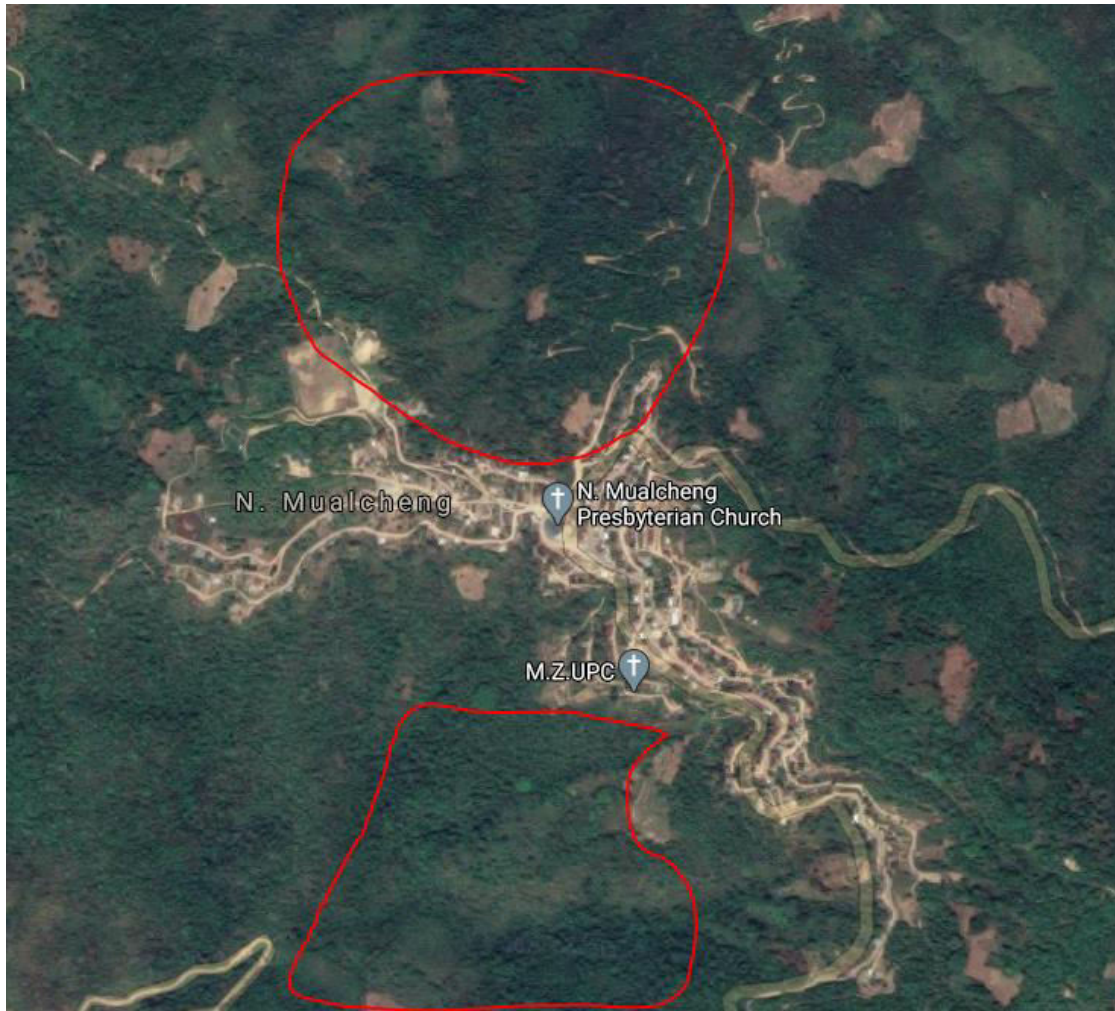
Project on Cultivation of Medicinal Plants

Sl. No.	Farming Cluster number	Plant species engaged with	Name of farmer leaders	List of farmers	Address
3	3	<i>Cinnamomum verum</i> <i>Asparagus racemosus</i> <i>Chlorophytum borivillianum</i>	Siamliana Tlanthangi Bawla Siamtluanga	Biakzami	N. Mualcheng, Serchhip District Mizoram
				Mahlua	
				K. Chungnungi	
				Nunnema	
				Zahmuaka	
				Thangzami	
				Sangkima	
				Lalthangpuii	
				Sangzuala	
				Niseii	
				Nunthara	
				Dawngkima	
				Suaktluanga	
				Darhmuaka	
				Tlanthangi	
				Thlengliana	
				Lalrami	
				Darzinga	
				Thanmawii	
				Lalval	
Thankhuma					
Dingi					
Athari					
Laltlana					
Lianzingi					
Ramsanga					
Lalruata					
Bawithanga					

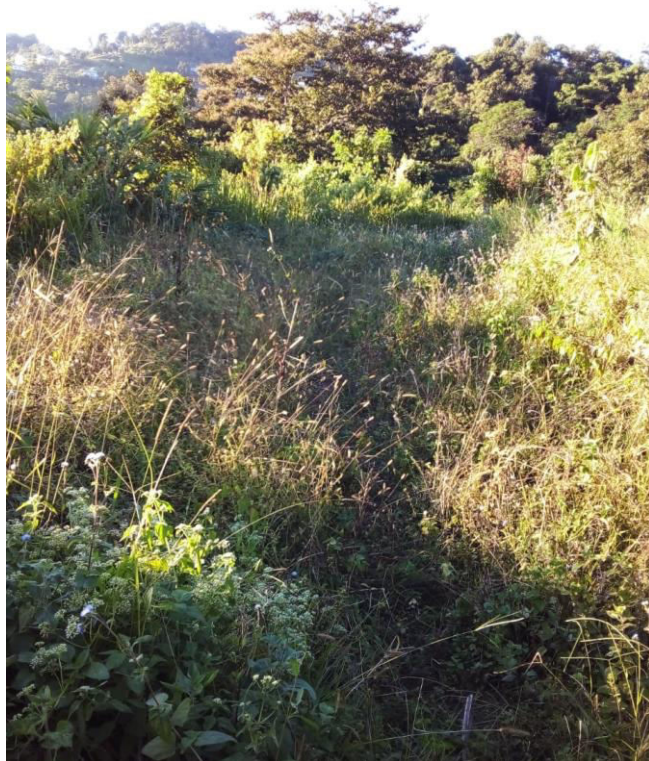
**Annexure - 3**

**Details of land for area of operation**

The following are a few images of the area for operation - both satellite and eye level photography.



Satellite view



Eye-level Photography of few locations of the proposed area



**Annexure - 4**

**Images of proposed plant species**



*Oroxylum indicum*



*Emblica officinalis*



*Cinnamomum verum*



*Phyllanthus amarus*



*Rauwolfia serpentina*



*Solanum nigrum*



*Dioscorea bulbifera*



*Chlorophytum borivilianum*



*Asparagus racemosus*

**Annexure – 5**

- (i) List of Prioritized Species of National Medicinal Plants Board (*proposed species highlighted*)**
- (ii) Certificate of Registration of Blue Mountain Development Agency**
- (iii) Land Availability Certificate**