

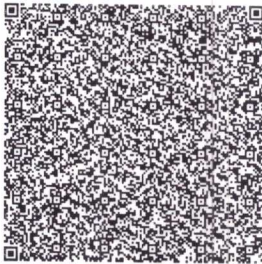


सत्यमेव जयते

# INDIA NON JUDICIAL Government of Karnataka

## e-Stamp

Certificate No. : IN-KA96242586313572Q  
Certificate Issued Date : 16-Feb-2018 12:31 PM  
Account Reference : NONACC (FI)/ kacrsf108/ NELAMANGALA3/ KA-BR  
Unique Doc. Reference : SUBIN-KAKACRSFL0842011542859310Q  
Purchased by : THE HIMALAYA DRUG COMPANY  
Description of Document : Article 12 Bond  
Description : AGREEMENT  
Consideration Price (Rs.) : 0  
(Zero)  
First Party : THE HIMALAYA DRUG COMPANY  
Second Party : GRAM TARANG FOODS PVT LTD  
Stamp Duty Paid By : THE HIMALAYA DRUG COMPANY  
Stamp Duty Amount(Rs.) : 200  
(Two Hundred only)



*Slobha. B.*  
Authorised Signatory  
Town Co-Op. Society (Ltd.)  
B.H. Road, Nelamangala.

-----Please write or type below this line-----

### CONFIDENTIALITY AND NON- DISCLOSURE AGREEMENT

This Confidentiality and Non-Disclosure Agreement ('Agreement') executed on this \_\_\_\_ day of February 2018 ("Effective Date"):

BETWEEN:

The Himalaya Drug Company, a partnership firm registered as per the laws of India, having its principal place of business at Makali, Bangalore 562 162, India (hereinafter referred to as 'Himalaya which expression shall mean and include its successors and assigns); and

- 1 -

#### Statutory Alert:

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2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.



**Gram Tarang Foods Private Limited**, a company organised and validly existing under the laws of India and having its factory at Plot No.1, IDCO Industrial Estate, Ramaswamipur Village, Paralakhemundi, Gajapati District, Odisha, 761200 (hereinafter referred to as '**GTFPL**' which expression shall include its affiliates, successors and assigns).


"Himalaya" and "GTFPL " are hereinafter individually or collectively referred to as the "Party" or the "Parties".

**WHEREAS:**

- I. Himalaya is, interalia, engaged in the research and development, manufacturing and commercialization of Herbal healthcare, consumer care, mother care, baby care, animal care and wellness products worldwide;
- II. GTFPL is engaged in Research and development, Manufacturing and Commercialization of Super Critical Fluid extracts from Herbal materials.
- III. Himalaya and GTFPL propose to enter into certain negotiations and evaluation to explore a potential future relationship and/or transaction in relation to the extraction of Herbal Actives involving of Super Critical Fluid extracts from Herbal materials, for use in Himalaya's products, in course whereof either of the party may disclose ("**Disclosing Party**") to the other party ("**Recipient**") certain Confidential Information (as defined hereunder).
- IV. The Disclosing Party intends that the Recipient uses the Confidential Information only for the purpose of enabling the Parties to assess and evaluate the possibility of mutually beneficial collaboration in relation to the extraction of Herbal Actives from Herbal materials subject to the terms and conditions agreed herein.
- V. The parties desire to assure the protection and preservation of the confidential or proprietary nature of information that may be disclosed or made available in the course of such evaluation.
- VI. This confidentiality agreement is only for the purpose of negotiation and evaluation of the proposed trial extractions involving of Super Critical Fluid extracts from Herbal materials. On reaching consensus of the proposed trail a definitive commercial agreement would be executed by and between parties.

NOW THEREFORE in consideration of the premises and mutual obligations hereinafter described, the receipt and sufficiency of which is hereby acknowledged, Himalaya and GTFPL hereby covenant and agree as follows:

1. **Recitals:** The recitals above shall form part of this Agreement
2. The term "**Confidential Information**" shall, without limitation, mean and include all technical and non-technical Confidential Information relating to the products, processes and the business, including without limitation any and all Confidential Information concerning:



(a) non-public information, trade secrets, technical/process/scientific information, study, drug, research, experimental work, clinical development plans, protocols, data, know-how, techniques, methodologies, formulae, drug delivery regimens, materials, processes, apparatus, concepts, specifications, compositions, equipment, engineering details, sketches, drawings, models, algorithms, software programs and source documents, design details, procurement, manufacturing, purchasing requirements, commercial and financial information, customer lists, business plans, forecasts, sales, merchandising, and marketing plans, pricing and pricing mechanisms, vendors, investors, employees, business and contractual relationships, information relating to the product or trial results or any other information including above mentioned Confidential Information relating to its affiliates, associates; Correspondence of any nature in any forms between the Parties. Confidential Information shall also include its Derivatives. Derivatives' which forms part of the Confidential Information shall mean:

- i. any copyrightable or copyrighted material, any translation, abridgement, revision, or other form in which an existing work may be recast, transformed, or adapted;
- ii. any patentable or patented material and any improvement thereon; and
- iii. any material which is protected by trade secret, any new material derived from such existing trade secret, including new material which may be protected by copyright, patent, and/or trade secret

Any Confidential Information disclosed by the Disclosing Party in written form shall be prominently marked "Confidential". Information other than written form shall be identified as confidential at the time of disclosure and summarized in writing, and prominently marked "Confidential" or similar legend within seven (7) days of initial disclosure.

The Disclosing Party shall disclose or deliver to the Recipient only such Information as the Disclosing Party, in its sole discretion, deems necessary or desirable for the purpose of the disclosure. The Recipient may in its sole discretion refuse to receive any Information offered to be disclosed or delivered by the Disclosing Party.

### 3. Disclosure and Use of Confidential Information.

3.1 The Confidential Information shall be used only during the Term and only for the Purpose aforementioned. Confidential Information shall not be used, in whole or in part, for any commercial purpose in any manner. The Recipient shall keep the Confidential Information as confidential and to employ the same degree of care as it would employ to protect its own confidential and proprietary information, which will in any case be no less than reasonable care and consistent with the obligations described hereunder. The Recipient shall limit disclosure and dissemination of Confidential Information of the Disclosing Party and shall not disclose it to any third party, except, where applicable, to only to those directors, officers, employees, agents and professional advisors who reasonably require access to Confidential Information to achieve the Purpose; provided that the Recipient first require each such person to agree, either as a condition of their service to Recipient or in order to obtain the Confidential Information of the Disclosing Party, to be bound by terms and conditions substantially similar to those terms and conditions applicable to the Recipient under this Agreement. Notwithstanding the same,





the Recipient will in all events continue to be liable as a principal party for any breach of this Agreement by its directors, employees, officers, agents and professional advisors.

- 3.2 The Recipient shall not make copies of any Confidential Information and any portion thereof disclosed, except to the extent for the Purpose of this agreement. Such copies shall be treated as Confidential Information under this Agreement;
- 3.3 To the extent that Recipient makes, whether solely or jointly with others, without the prior written authorization of Disclosing Party, any development or improvement to any Confidential Information or any intellectual property related thereto that results from Recipient's use, benefit, or access to any Confidential Information (collectively, "Unauthorized Developments"), Recipient shall assign and does hereby assign to Disclosing Party, for consideration herein acknowledged, all of Recipient's rights, title and interest in and to the Unauthorized Developments. The Unauthorized Developments shall be treated as Confidential Information under this Agreement. Recipient hereby appoints Disclosing Party as its attorney-in-fact for the limited purpose of executing all documents and performing all other acts necessary to give effect and legality to the provisions of this paragraph.
- 3.4 Recipient agrees and acknowledges that it shall not publish or disclose or otherwise to make public the Confidential Information including the report of the study at any symposia, national or regional professional meetings, and publish in journals, thesis or dissertations, or otherwise, methods and results of such project and in particular, posting the study results in on-line research publications or magazines or through any other medium which are available. Any unauthorized disclosure or publication shall be construed as breach of this agreement and Disclosing Party will be entitled to seek equitable relief in addition to all other remedies available at law or in equity for any breach of this Agreement.

#### 4. Exclusions from Nondisclosure and Non-use Obligations.

- 4.1 The obligations under clause 3 above with respect to the Confidential Information whether in whole or portion of that shall not apply to the extent that Recipient can validate that the Confidential Information received.
  - (a) was in the public domain at the time such portion was disclosed or communicated to the Recipient by the Disclosing Party;
  - (b) subsequently becomes available to the public through no fault or act of the Recipient,
  - (c) was rightfully in the Recipient's possession free of any obligation of confidence at or subsequent to the time such portion was communicated to the Recipient by the Disclosing Party,
  - (d) was developed by employees or agents of the Recipient independently of and without reference to any Confidential Information communicated to the Recipient by the Disclosing Party, or
  - (e) was received by the Recipient from a third party, who did not acquire it directly or indirectly from a source under any continuing obligation of confidence.





- 4.2 In the event the Recipient becomes legally compelled by government, administrative, or judicial process to disclose any of the Confidential Information, the Recipient will provide prompt prior written notice thereof to the Disclosing Party and the Recipient shall take all reasonable and lawful actions to obtain confidential treatment for such disclosure and seek a protective order or other appropriate remedy to minimize the extent of such disclosure.
5. **Ownership and Return of Confidential Information.** Nothing herein nor any disclosure of any Confidential Information shall operate to and/or be deemed to confer, by implication or otherwise, any right, title or interest in the Confidential Information unto the Recipient nor be effective to license the Confidential Information to the Recipient. The Recipient acknowledges that the Disclosing Party (or any third party entrusting its own confidential information to the Disclosing Party) claims ownership of the Confidential Information disclosed by the Disclosing Party and all intellectual property rights in, or arising from, such Confidential Information. This Agreement does not authorize either Party to use the other Party's Confidential Information for development, experimentation, optimization, patent applications or product registration. The Disclosing Party will be at any time entitled to ask the Recipient to return all Confidential Information disclosed and upon receipt of such request the Recipient shall and after such request, promptly destroy or deliver to the Disclosing Party, at the sole option of the Disclosing Party, (a) all materials furnished to the Recipient by the Disclosing Party, (b) tangible media incorporating Confidential Information, including any copies, notes, compilations that contains, embodies, or otherwise reflects Confidential Information, except that one (1) archive copy to be maintained confidential may be retained by the Recipient and (c) provide written certification of the Recipient's compliance with the obligations under this Section and thereafter all limited rights of disclosure and use of Confidential Information in terms hereof will also cease with immediate effect.
6. **Covenants of GTFPL :**
- 6.1 GTFPL agrees that all the rights in such Confidential Information(s) arising out of the evaluation under this agreement shall be vested with Himalaya. GTFPL further agrees that it shall not claim any right or authority over such Confidential Information(s).
- 6.2 GTFPL agrees it shall not disclose the Confidential Information(s) related to the evaluation particularly related to the ingredient/s or the outcome of the evaluation to any third party.
- 6.3 GTFPL agrees and acknowledges that all results post evaluation shall be the exclusive property of Himalaya. GTFPL further agrees that the Himalaya shall be the absolute owner/proprietor of such results. All rights including the IP Rights over such results shall vested with Himalaya all times
7. **Term, Termination and Survival of Obligations.** This Agreement shall be valid for a period of 1 (One) year commencing from the Effective Date unless terminated by either party by giving a prior notice of thirty (30) days, whichever is earlier ("Term"). Notwithstanding anything stated herein, the obligations of confidentiality, non-disclosure and non-use of Confidential Information cast on the Recipient shall survive for a period of five (5) years from the expiry of the Term or from the date of termination. Upon termination of the Agreement, Recipient shall return to the Disclosing Party (or to a person suggested Disclosing Party) all Confidential Information, Derivatives and their copies irrespective of storage or presentation medium,





including all electronic and hard copies thereof, and other material containing or disclosing any Confidential Information not later than 15 (fifteen) days from the date of such termination or destroy the same at the option of the Disclosing Party.

8. **Indemnity:** The Parties acknowledge and agree that the restrictions contained in this Agreement are necessary for the protection of their business and property, and consider them to be reasonable for such purpose. The Recipient agrees to indemnify and hold the Disclosing Party harmless from any liabilities, damages, costs, claims, demands, prosecutions, proceedings and expenses (including reasonable attorney's fees) resulting from, relating to, or arising out of the misuse or alleged misuse of any Confidential Information provided or made available or falling accessible to Recipient by virtue of this Agreement or arising out of the breach, default or non-performance of this Agreement or by any act or omission of the persons engaged by the Recipient.
- a) **Governing Law and Dispute Resolution.** This Agreement shall be governed by and construed in accordance with the laws of India and the courts at Bengaluru shall have exclusive jurisdiction. Any disputes arising out or in connection with this Agreement shall be amicably resolved, failing which the disputes shall be settled by arbitration in accordance with the provisions of the Arbitration and Conciliation Act, 1996 by a sole arbitrator mutually agreed upon between the parties in writing. In case the Parties are unable to decide an arbitrator, either Party can approach the Courts having jurisdiction to appoint an Arbitrator. The seat of arbitration shall be Bengaluru, India and the language of arbitration shall be English. The award passed by the arbitrator shall be binding on the Parties and can be enforced as per the law.
9. **Injunctive Relief.** The Recipient agrees that any threatened or actual breach of the terms of this Agreement by the Recipient will cause irreparable loss to the Disclosing Party and the said loss cannot be compensated by monetary compensation and, in addition to all other rights and remedies that the Disclosing Party may have under law and equity, the Disclosing Party will have the right to seek and obtain appropriate injunctive relief from courts of competent jurisdiction.
10. **Miscellaneous.**
  - a) Neither party shall assign any of its rights and/or obligations under this Agreement without the prior written consent of the other Party;
  - b) It is understood that the Confidential Information is given on a non-exclusive basis and that the Disclosing Party remains free to disclose the Confidential Information to any other party;
  - c) No amendments or modifications to this Agreement shall be valid unless agreed to in writing by both parties to this Agreement;
  - d) The failure, with or without intent, of either Party to insist upon the strict and/or literal performance by the other party of any term hereof, shall not be treated as, or be deemed to constitute, a modification of any the terms hereof, nor shall such failure or election be



deemed to constitute a waiver of right of either party, at any time whatsoever thereafter, to insist upon performance of that particular or any other obligation by the other Party;

- e) If any of the terms hereof shall be determined to be invalid or unenforceable, the validity and effect of the other terms and conditions shall not be affected thereby;
- f) All Confidential Information is provided "AS IS" and without any warranty, express, implied or otherwise, regarding such Confidential Information's accuracy or performance. Each Party represents and warrants that it is not under any obligation to any third party that is inconsistent or in conflict with its obligations under this Agreement. The Disclosing Party, in relation to the Confidential Information, makes no warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose. In no event shall the Disclosing Party be liable for any indirect, special, incidental, consequential or exemplary damages (including but not limited to lost profits, lost goodwill) even if the Disclosing Party was aware of such possibility;
- g) Nothing in this Agreement shall be or be construed as being an agreement between the Parties to enter into any arrangement or further agreement relating to the subject matter of this Agreement.
- h) The Parties warrant that the signatory signing the attached Agreement on their respective behalf is duly authorised to do so and irrevocably binds the respective Parties to the Agreement.
- i) This Agreement shall not be construed to constitute, create, give effect to or otherwise imply any joint venture, partnership or any formal business relationship between the Parties.
- j) This Agreement constitutes the entire agreement between the Parties and supersedes all previous understandings, agreements, communications and representations, whether written or oral, concerning the subject matter hereof.

IN WITNESS WHEREOF, this Agreement has been executed by duly authorised representatives of the Parties in two original counterparts.

**The Himalaya Drug Company**



Name: Dr. Rangesh Paramesh  
Title: Chief Scientific Officer  
Date:



**Gram Tarang Foods Private Limited**



Name: Mr. Shashikant Tewary  
Title: Managing Director  
Date:



# **REPORT ON AGRICULTURAL EXPERIENTIAL LEARNING PROGRAMME (AELP)**

**IN**

## **HORTICULTURE NURSERY & HIMALAYAN PROJECT**

**By**

Soumya Ranjan Sahoo (170804130233)  
Suchismita Das (170804130254)  
Alisha Pattnayak (170804130063)  
K.Rakesh Reddy (170804130361)  
S sai Sruti (170804130289)  
Podili Lakshmi anju (150804130059)

**Submitted in Partial Fulfillment of the Requirements for the Award of the  
Degree of Bachelor of Science (Agriculture)**

**Unit In-Charge Name: Dr. Nilanjana Datta, Ms Basabdatta Sahu**

**Assistant Professor, Department of Horticulture.**



**Centurion**  
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Alluri Nagar, R. Sitapur, Uppalada, Paralakhemundi, Gajapati, Odisha-761221  
[www.cutm.ac.in](http://www.cutm.ac.in)



## **CERTIFICATE**

This is to certify that

Mr. Soumya Ranjan Sahoo with the registration number 170804130233 , Ms Suchismita Das with the registration number 170804130254, Ms Alisha Pattnayak with the registration number 170804130063, Mr. K.Rakesh Reddy with the registration number 170804130361, Ms Sai Sruti with the registration number 170804130289, Ms Podili Lakshmi Anju with the registration number 150804130059 students of B.Sc. (Agriculture) have completed the Agricultural Experiential Learning Programme in Horticulture Nursery & Himalayan Project.

**AELP Unit In-Charge/ AELP Coordinator**

**Date:**



**M.S. Swaminathan School of Agriculture  
Centurion University of Technology and Management**

## EXECUTIVE SUMMARY

Himalayan Drug Company is directly coordinated with the college in the form of himalayan project for standardization and large scale cultivation by growing different medicinal plants i.e *Eclipta alba*, *Phyllanthus maderaspatensis*, *Aerva lanata*, *Coleus aromaticus* and *Abelmoschus aromaticus* for commercialization. This project includes the introduction and domestication of some important medicinal crops namely, *Abelmoschus* sp., *Aerva lanata*, *Argyrea nervosa*. The methods propagation is different for different crops varying with the specific medicinal crop. In the Horticulture Nursery Raising of seedlings in different flower and ornamental plants, practice on propagation technique like grafting, budding, layering etc.



## **Group Members**

1. SOUMYA RANJAN SAHOO (170804130233)
2. SUCHISMITA DAS (170804130254)
3. ALISHA PATTNAYAK (170804130063)
4. K.RAKESH REDDY(170804130361)
5. S SAI SRUTI (170804130289)
6. PODILI LAKSHMI ANJU ( 150804130059)

## **ACKNOWLEDGEMENT**

I would like to express my sincere gratitude to my guide Dr. Nilanjana Datta, Ms Basabdatta Sahu, Assistant Professor, Department of Horticulture M. S. Swaminathan School of Agriculture, CUTM, for their support and guidance throughout the AELP Programme. I am extremely grateful for giving us wonderful opportunity to gain practical knowledge and nuances of agriculture.

I would like to thank my team members for facilitating a group learning environment in the field.

I am thankful to the faculty members of M. S. Swaminathan School of Agriculture for clarifying doubts and asking searching questions that are of practical significance in the field.



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# 1. INTRODUCTION

Agricultural Education is the teaching of agriculture, natural resources and land management. At higher levels, Agricultural education is primarily undertaken to prepare students for employment in the agricultural sector. The World Bank (1975) stated that there was little emphasis on curricula on preparing the agricultural graduates for better career in agriculture or agribusiness outside government jobs. Therefore, the agenda for the 21<sup>st</sup> century in agricultural education should be drawn on the basis of the challenges it has to meet in the near future. AELP programme provides significant hands on experience in acquiring knowledge and skill.

## 1.1 BACKGROUND

The Horticulture nursery was established in 2017 at Centurion University, Paralakhemundi with the purpose of production and maintenance of horticultural crops seedlings. It expands in an area of 1000 m<sup>2</sup>. It comprises of a modified polyhouse (105 m<sup>2</sup>) having both polythene and shade net as cladding materials with fogger and sprinkler irrigation system to supply suitable climatic condition for raising of seedlings. Side by side one shade net house and open field for hardening off of raised seedling from polyhouse. The nursery has the capacity produce 10000 seedling per 3 months. It also consists of mother block for different ornamental plants from which new seedlings are produced by adopting different asexual propagation techniques. Lack of skilled nursery man is the major constraint of this nursery for its future expansion, growth and maintenance.

The Himalaya drug company is an Indian company established by M.MANAL in 1930 and based in Bangalore, India. It produces health care products under the name HIMALAYA HERBAL HEALTH CARE whose products include ayurvedic ingredients. It is spread across locations in India, the United States, the Middle East, Asia, and Europe while its products are sold in 92 countries across the world. The company has more than 290 researchers' that utilize ayurvedic herbs and minerals. The company was founded to commercialize the roots and herbs products being used in natural form earlier. Himalayan Drug Company is creating awareness and knowledge among the students by dealing with agricultural universities through growing of medicinal plants under different conditions *i.e.* polyhouse, shade nets and different climatic conditions.

## 1.2 OBJECTIVES

**The main objectives of Agricultural Experiential Learning Programme (AELP) are:-**

- Introduction of some under-exploited medicinal crops.
- Domestication of introduced medicinal crops.
- Standardized the cultivation practice of those crops in CUTM, Paralakhemundi, Odisha.

- Large scale commercial cultivation.
- Raising of seedlings in different flower and ornamental plants.
- Hands on practice on propagation technique like grafting, budding, layering etc.
- To study and evaluate the economics.

### **1.3 SCOPE**

Due to its medicinal properties, it is seen in a sophisticated way and its market is also very demanding. Several technologies are currently available for commercial utilization by small and medium enterprises and the international market is ready to accept quality herbal products from India. Similarly consumers are preferring cosmetics with aromatic products from plants resulting in higher demand for the raw material. Our mission is to make a positive difference to the communities in which we operate. Himalaya's commitment to the community is part of our core values. We believe that every human being has a fundamental right to a good quality of life. This involves access to health, education, a clean environment and freedom from poverty. Through our several community initiatives, which include programs aimed at ensuring better health, education, sustainable development and economic empowerment, we do our best to bring happiness to the lives of people who are marginalized and poor.

### **1.4 LIMITATIONS**

- The crops like *Eclipta alba*, *Phyllanthus maderaspatensis*, *Aerva lanata* are lost due to unfavourable climatic conditions.
- Due to high price of the product it may be unaffordable for people of rural areas to pay for the product.
- It is an Ayurvedic product and there are so many international companies present in the market, so it is threat for the company.
- Company has to face a lot and lots of competition from the competitors already present in the market.
- As the company is entering into new market and launching a new product so there are always chances of failure of the product.

### **1.5 CHAPTER PLAN**

#### **CULTIVATION PRACTICES**

##### **LAND PREPARATION:**

- General ploughing and harrowing. So as to remove the unwanted plants and to make the soil suitable for germination.



- For Kasturi bhendi plot size is 7\*6 sq.meter with a irrigation channel of 1 metre between the plots.
- For Pasanabheda plot size is 7\*4 sq.meter with a irrigation channel of 0.5 meter between the plots.
- For *Argyreia nervosa* we have prepared 1200 polybags.

### **SOWING:**

- For Kasturi Bhendi, Sowing of seed at a spacing of 60X45cm in an area of 400m<sup>2</sup>
- For Pasanabheda ,Seeds are broadcasted in well prepared land.

### **MAINTENANCE:**

**IRRIGATION:** Regular irrigation on non- rain days and also when the top soil got dried out.

**WEEDING:** General regular hand weeding.

**FERTILIZER:** Top dressing with N: P: K @ 1.4:0.20:4 kg per sq mt for *Aerva lanata*

### **HARVESTING:**

- For expecting the first harvest on 60 days and subsequent harvest on every 45 days.
- Kasturi bhendi is harvested when pods turn dark brown to black colour.

# POST HARVESTING PRACTICES

## Washing of the harvested produce:

After harvesting, the aerial part can be washed and sun dried or in drying yards. Drying should be done only on tarpaulin or plastic sheets or mats. If it is dried on soil, it will be contaminated with soil or sand and increase heavy metals limit. Aerial part should be dried for at least one month under sun drying or 45 days under shade drying to enhance the quality and to avoid storage problem.

- **Ensuring proper drying:**

Proper drying can be ensured by complete removal of the moisture from the aerial part (8 to 10% moisture level) under sundried or shade dried for one month. Proper drying can be ensured by crushing the material within palms. It will become powdery and fragile. Stem pieces will break with click sound and not elastic.

- **Packing & Labelling :**

The harvested herbal substances should be packed in woven sacs or gunny bags, fertilizers bag should not be used.

The harvested herbal raw substances should be transported in clean and dry conditions. They may be placed in clean baskets, dry sacs, trailers, hoppers or other well aerated containers and carried to a central point for transport to the processing facility.

- Harvested aerial parts material to be washed in potable water and dried on tarpaulin sheets. Training will be provided to all concern peoples by THDC.
- During the period of drying, we have to remove the unwanted materials from the dried material.
- When the drying is about to complete, we have to take the dry weight nearly 2 to 3 times to know whether the drying is completed or not.
- After the completion of drying, we have to pack that material in polythene covers and kept in store room.

## 2. BUSINESS PLAN DEVELOPMENT

### 2.1 PRODUCT IDENTIFICATION:

- For Himalayan project purpose, we have taken the medicinal plants namely *Abelmoschus sp.*, *Aerva lanata*, *Argyreia nervosa*.

- PRODUCT NAME :** [*Aerva lanata*]  
**Common name:** Pashanabheda  
**Scientific name:** *Aerva lanata*  
**Family name:** Amaranthaceae  
**Chemical present:** It contains  $\beta$ -Sitosterol,  $\alpha$ -amyrin, botulin, D-glucoside, glycosides  
**Beneficial plant parts:** seeds, stems, roots, leave  
**Sowing type:** Broadcasting method  
**Propagation:** Through seeds
- PRODUCT NAME:** [*Coleus aromaticus*]  
**Common name:** Indian borage  
**Scientific name:** *Coleus aromaticus*  
**Family name:** Lamiaceae  
**Chemical present:** It contains chlorogenic acid, caffeic acid, coumaric acid and polyphenolic compounds with strong antioxidant property.  
**Beneficial plant parts:** Seeds, stems, roots, leaves  
**Sowing type:** Line sowing  
**Propagation:** Through cuttings
- PRODUCT NAME:** [*Abelmoschus aromaticus*]  
**Common name:** Kasturi bhendi  
**Scientific name:** *Abelmoschus aromaticus*  
**Family:** Malvaceae  
**Chemical present:** Rich in [E,E]-farnesyl acetate[58%], ambrettolide and its homologues[15.8%]  
**Beneficial plant parts:** flowers, seeds, leaves  
**Sowing type:** Line sowing  
**Propagation :** Through seeds
- PRODUCT NAME:** [*Argyreia nervosa*]  
**Common name:** Elephant creeper  
**Scientific name:** *Argyreia nervosa*  
**Family:** Convolvulaceae  
**Chemical present:** ergot alkaloids  
**Beneficial plant parts:** Roots, Leaves.  
**Sowing type:** sown in polybag  
**Propagation :** Through seeds



- **PRODUCT NAME:** [*Moringa oleifera*]  
**Common name:** Drumstick  
**Scientific name:** *Moringa oleifera*  
**Family name:** Moringaceae  
**Chemical present:** octadecenoic acid, ascorbic acid.  
**Beneficial plant parts:** All parts  
**Sowing type:** Sown in Polybags.  
**Propagation:** Through seeds.

## 2.2 ANALYSIS OF PRODUCT AND PROCESS TECHNOLOGY

- **Nursery raising for plantation [Seedling tray method]**
  1. Stem cuttings specification
  2. IBA Treatment
  3. Seedlings trays specification and soil mixture
  4. Seedlings trays specification and soil mixture.
- **Stem cuttings specification:**
  1. Should be of matured apical cuttings.
  2. Not less than 10 cm long.
  3. With two nodes other than the apical bud with leaves. Stem cuttings without leaves are slower in regeneration than the cuttings with leaves.
  4. There is no particular season for raising nursery.
- **IBA Treatment:**
  1. IBA @ 250 ppm facilitates 93% successful rooting. Take 250 gm IBA Powder and make it as paste by adding some water to it.
  2. Stem cuttings with slant or oblique cuttings dipped in IBA paste before plantation in seedling trays.
- **Seedling trays**
  1. Seedling trays which is 3 inch height and 1.5 inch wide

2. Potting mixture: plain coco peat itself is sufficient however cocopeat: garden soil: FYM in the ratio of = 2:1:1 can also be used.
  3. Seedlings can be kept under tree are in shade net house.
- **Care of Nursery**
    1. Regular watering based on requirement.
    2. Have to protect from snails and small animals like rats and rabbits.
    3. 40 to 45 days old seedlings which are around 20 to 30 cm height suitable for transplanting.
  - **Transplanting**
    1. Seedlings can be raised in nurseries 35 to 40 days old seedlings can be transplanted with a recommended spacing of 45 cm between the rows and 30 cm between the plants

## **2.3 ORGANISATIONAL ANALYSIS**

**OWNER**

**D.N. Rao**



**DEAN ADMINISTRATION**

**Dr S.P. Nanda**



**AELP Coordinator**

**Mr. Chandrasekhar Sahoo**



**FACULTY IN-CHARGE**

**Dr. Nilanjana Datta, Ms Basabdatta Sahu**



**STUDENTS**

**Soumya Ranjan Sahoo**

**Suchismita Das**

**Alisha Pattnayak**

**K.Rakesh Reddy**

**S Sai Sruti**

**Podili Lakshmi Anju**



## 2.4 PROJECT PLANNING AND SCHEDULE

### ACTIVITY LIST

#### LAND PREPARATION AT MAHENDRA TANAYA PLOT



#### LAYOUT OF MAHINDRA TANYA PLOT

In Mahindra Tanya total 12 plots are there, each plot having 7\*6 sq.m area with a irrigation channel of 1 meter between them. Each plot is planted with Kasturi Bhendi crop. Total area of Mahindra Tanya plot is 400 sq.metre.



## SEED SOWING AT MAHINDRA TANAYA PLOT



we did line sowing with a spacing of 60\*45 cm , after that covered the seeds with soil and irrigated the plot.





**Irrigating Mahindra Tanaya Plot with rosecane regularly.**



**WEEDING IN MAHINDRA TANAYA PLOT**





### **LAND PREPARATION AT DEMONSTRATION FARM**

In Demonstration farm total 14 beds we have prepared, each plot is having 7\*4 square meter area.



### **Extracting water from the soaked seeds**





**Drying the seeds and mixing it with sand**



**Seed sowing at demonstration farm**



**Regular irrigation in Demonstration Farm**





**Present condition of Demonstration Farm with pasanabheda Plant**



**Present condition of Mahindra Tanaya Plot with Kasturi Bhendi Plant**





**Polybag preparation for sowing of seeds of medicinal plant**



**Prepared Rhoeco Plants for fishery Unit**





**Horticulture Nursery Cleaning**



**Irrigating the plants in the Nursery**



**Polyhouse cleaning**





**Sowing Elephant creeper seeds and Drumstick seeds In Polybags.**



**Gifted Snake plant to Horticultural Faculties.**







**Adding Vermicompost before transplanting tomato seedlings.**



**Transplanting tomato seedlings**







**Preparing cuttings of different ornamental plants**





**Filling the empty pots with plants**



**Periwinkle Transplantation inside the Polyhouse**





**Prepared coleus cuttings and planted it in polybags.**



**Replacing the damaged Hanging Pots**

## Different types Graftings practiced by us







**Drying of Medicinal Plants**

## **2.5 Risk Mitigation plan**

Due to unfavorable weather conditions, the crops like *Eclipta alba*, *Abelmoschus aromaticus*, *Aerva lanata* growth can be lost. Due to the unavailability of suitable climatic conditions for better growth of i.e *Eclipt alba* , *Abelmoschus aromaticus*, *Aerva lanata* crops are suspected to be unsuccessful. Weeding is a prominent problem at mahindra tanaya plot. Based on this, we have to mitigate the risk by time to time weeding manually with the labors for the better growth.

## **3. PROJECT IMPLEMENTATION**

### **3.1. Resource acquisition and allocation**

For the purpose of Himalayan project resources are very much important. In case of weeding only manual weeding is compulsory so as to ensure better quality of medicine being prepared. So the purpose of manual weeding, workers are necessary which were provided by the respective assistant allocated for each unit under the guidance of respective guide. For the better fertility of soil, we have to give FYM, nitrogen, phosphorous and potassium in their respective ratios which were being provided by the college management by being contact with respective guide. Himlayan Drug Company is directly providing seeds. For the purpose of irrigation, sprinklers are being set up. After the material is ready for harvesting, workers and tarpaulin sheets [for keeping that material for drying] were being provided by respective assistant. For the workers, college management is giving Rs/-270 - 300/- day for their work. When the material is ready for packing, the packing materials i.e. Gunny bags were provided by assistant allocated for the unit.

### **3.2 Organizational structure and design**

**OWNER**

**D.N. Rao**



**DEAN ADMINISTRATION**

**Dr S.P. Nanda**



## **AELP Coordinator**

**Mr. Chandrasekhar Sahoo**



## **FACULTY IN-CHARGE**

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### **3.3. Construction and commissioning**

Himalayan Drug Company being linked up with agricultural colleges started a project name **HIMALAYAN MEDICINAL PLANT's TRIAL** for the purpose of growing medicinal plants which were being monitored by respective dean. For the other related resources such as fertilizers, seeds, IBA Himalayan Drug Company is directly providing the useful resources to the respective dean. With the help of respective guide allocated for Himalayan project, college management is monitoring the students to gain knowledge and work experience over this project. For the irrigation purpose, sprinklers, for the weeding purpose, workers, For drying purpose tarpaulins, for packing purpose, gunny bags were being provided by the respective assistant. After the drying, we take the dry weight of the material and we will inform to the respective guide. After, the completion of drying, we have to pack that entire material for sending them to the Himalayan drug company. Accordingly, they will grade the material based on the quality.



### **3.4 MONITORING AND CONTROL**

For better output, Monitoring and controlling is much more important. For example, during the weeding we have to guide the workers not to remove the main plants because the weeds are similar to the main plants during the germination. Respective guide allocated for the unit monitors and guide the student explaining the day to day activities about the project. For irrigation purpose, weeding purpose. For harvesting purpose labours are being provided by respective assistant who is being monitored by the respective guide and dean.

## **4. PROJECT OPERATION**

### **4.1 SUPPLY OF INPUT:**

- For Himalayan project, we are getting inputs like seeds, IBA Powder [for root initiation] after getting seeds, we have to soak them in a water for whole night before the day of sowing.
- For weeding purpose, irrigation purpose, harvesting purpose, Drying purpose and other labour related works, the college management will provide labour through being contact with respective guide.
- For irrigation purpose, college management will provide water through DRIP and SPRINKLER irrigation.
- For drying purpose, they will provide Tarpaulin sheets for better carrying and quality purpose.
- For packaging purpose, Gunny bags are provided for better storage.

### **4.2 OPERATION AND MAINTENANCE :**

- For better operation, labour requirement is much more important.
- For better quality product, pesticides and Herbicides are competed avoided.
- Manual weeding is compulsory for getting better quality output.
- While during harvesting, we have to guide the labour as not to do complete cutting from the bottom, always keep 10 to 15 cm left over from the bottom.
- After harvesting, washing is important to remove the dust particles so as to ensure good quality.
- After washing, we have to take the fresh weight of the harvested material and keep those materials on tarpaulin sheets for better aeration.
- For drying purpose, we have to keep that material under sunlight by spreading over in tarpaulin sheets.
- For getting good quality product, we have to grown the medicinal plants under shade nets and polyhouse by maintaining specific conditions.

### **4.3 PACKAGING AND STORAGE**

- After the completion of drying the harvested material, we have to pack those materials into gunny bags for better storage.
- When we completed the packaging of dried material, then it can be stored in store room itself.

### **4.4 TOTAL QUALITY MANAGEMENT**

- For getting good quality of product, we have to avoid the usage of pesticides, herbicides.
- Regular weeding is required for attaining good product.
- Time to time, removal of unwanted materials from the harvested material.
- Irrigation should be done during non-rainy days.
- Washing of harvested material should be compulsory.

### **4.5 HUMAN RESOURCE MANAGEMENT**

- For getting better output, human and the resource management is necessary.
- We have to manage the labours according to their respective worksites for irrigation, weeding, harvesting.
- Resources should be made available to respective fields in correct time so as to ensure quality and quantity of output produced.

### **4.6 INNOVATION AND TECHNOLOGY MANAGEMENT**

- Innovation [implementing new ideas] which is high essential in bringing high yield and better output quality has to be managed correctly. For example, we have grown the coleus cuttings between the coconut palm interfaces by raising the bed so as to control weeding, water logging conditions by keeping the shade nets overs the prepared beds so as to ensure moisture content. Growing of coleus in polyhouse will provide the suitable temperature conditions to grow. Like this better innovation and technology management leads better output.

## **5. Business Plan of the Horticulture Unit:**

- Fixed capital: Rs. 200000/-
- Working capital: Rs. 10000 per months

- Output: 10000 seedlings/ 3 months (cost of seedling varies according to plant types, market price, demand etc.)
- Income (expected): Rs. 20000/months

**Challenging Task:**

Preparation of T-budding in Rose and its commercialization

**5. CONCLUDING REMARKS:**

**Reference**

<https://www.ncbi.nlm.nih.gov>