



Ka Synjuk Ki Hima Arliang Wah Umiam Mawphlang Welfare Society

TREE SEEDLING NURSERY FOR SHGs

Introduction

A home-based nursery is a way for saplings to be grown for 'assisted natural regeneration' (ANR) and enrichment planting from local seed. Through funds generated by the sale of carbon through the Khasi Hills REDD+ Project, a community run project uniting 10 indigenous Khasi communities into a federation or Synjuk. The nursery project will eventually be implemented by 52 women-run Self-help Groups (SHGs) who are part of the participating villages in the project. An important goal of the Synjuk is to restore 5,000 ha. of degraded, open forest land over the next ten years.

Initial training will be done for the participating villages by Mr. Welcome Synrem from Laitlyndop Village who was selected by the Synjuk as the lead trainer. Welcome learned nurserying from his uncle, Phrang Synrem, and grandfather who have guided him in tree seed collection, cutting from the forest, air layering, and methods to culture them in a small nursery by his home. Community Facilitator's (CFs) and volunteers will be trained first by Welcome. Then, they will train the women from the various SHGs.

All nursery practices are done in traditional ways without the use of chemical fertilizers or pesticides. According to Welcome, 90% of his saplings survive as he enlists community members to protect newly planted areas. Saplings are propagated from both seeds as well as cuttings. Welcome emphasizes that the timing of the culturing and planting is very important. Seeds are typically collected during the fall with planting done just before the onset of the rainy season in April and May. Seeds will be collected from trees close to the village. This seed will be sown in poly-pots and the saplings will grow from this and be cared for by the women. The cost of the poly-pots will be covered by the Synjuk (approximately 400 rupees per nursery of 300 saplings).

When the saplings are one year old they will be taken out of the poly-pots and planted for 1 year in a raised cultivated bed on land close to the nursery. The saplings will grow in the beds for between one and two more years. The SHGs will take care of them during this time.

When the saplings are between two and three years old, they will be transplanted from the beds and planted in the sites chosen for enrichment planting. The saplings will be cared for after they are planted to make sure that they grow to be healthy, strong trees with a good shape. Weeding and management of the ANR area will have to be done if the saplings are to survive and grow well.

Training

CFs will discuss with villages in their clusters about which families want to have a home-based nursery and distribution of livelihood profits that will go to the specific women who are managing the nursery. The women-run SHGs that are chosen to have a home-based nursery must:

- Have sufficient land on which to have a nursery for poly-pots for 1 year and a larger cultivated area for transplanting saplings to for up to 2 more years.
- Be interested in growing saplings in a home-based nursery,
- Have good leadership and have proven book-keeping skills,
- The SHG should have a bank account

CFs and volunteers will be trained in establishing a nursery and collecting seeds first then they will pass this training on to the SHGs.

CFs will monitor home-based nurseries and report on progress and any problems to the Synjuk head. Monitoring of nurseries must be done weekly so that problems can be rectified as soon as they arise. Reporting to the Synjuk must include photographs of the nurseries.

Training Timetable

When	Who	What	Why	Comments
September October November	CFs and women in SHGs	Decide which women will have a nursery in the SHG		Guidelines above,
October November	CFs and Women in SHGs	Training in setting out a nursery, Training in collecting tree seeds, Training in lifting wild-grown saplings and moving them to nurseries, Training in how to plant seeds,		Seeds should take 3 weeks to germinate, Only self-seeded saplings that are in a poor or crowded position that are unlikely to grow/survive will be lifted and moved to nurseries. Only those below 6 inches height and of the desired species should be moved.
November December and for 1 year after planting	CFs and women in SHGs	Training in how to care for saplings in nurseries	To teach the importance of weeding, watering protecting saplings from climate.	
April	CFs and	Training in		With rooting-

May	women in SHGs,	how to take fruit tree cuttings and plant these in pots,		hormone these should take 3 weeks to begin to grow.
From April, May onwards	CFs and women in SHGs,	Training in weeding and caring for the cuttings as they begin to grow,		

Instructions for Nursery Layout

For a home-based nursery women will need a piece of land approximately three metres long and one and a half metres wide.

The ground should be raised so that the pots do not sit in water. Rainwater must be allowed to drain away. The diagram below shows this layout.

The area surrounding the nursery must be clear of tall grasses, weeds of anything else that will obstruct light and air reaching the saplings.

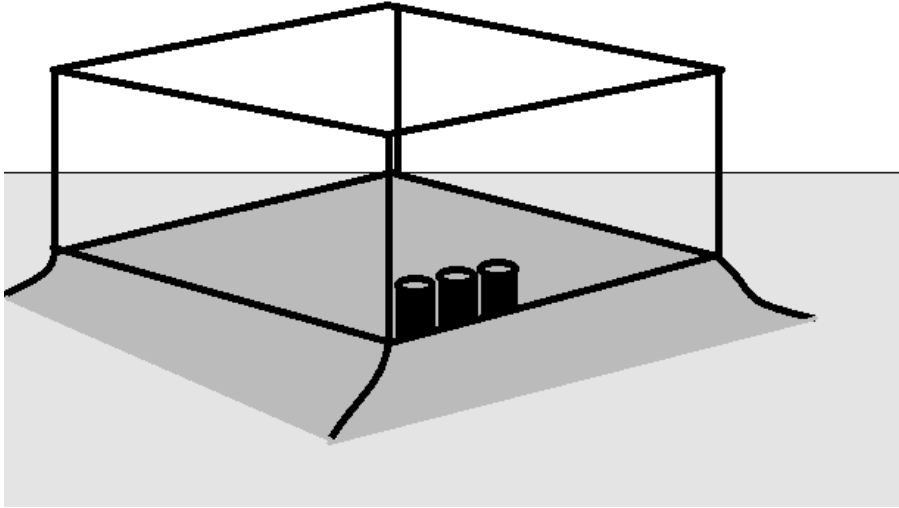
The saplings must be protected from grazing livestock or wildlife, or damage from dogs or children. This would be done best with a frame made of bamboo or wood with netting/chicken wire on the sides, as in the diagram below.

The top of the frame should be open to allow for weeding and caring for the saplings, but there should also be a roof that can be placed over the top of the frame to protect the saplings from bad weather such as heavy rain or snow. This can be taken off to allow light and air to reach the saplings when the weather is good and replaced when the weather is bad. It has been decided in the CF meeting on 23rd August 2013 that the roof will be thatched and will be sloping to protect the saplings from heavy rain and snow. This will also insulate the saplings from cold weather in the winter months.

The saplings should be arranged next to each other as in the diagram below. They should be arranged ten pots across by thirty pots in lengthways. This will mean that each nursery will grow 300 saplings.

Diagram of Home-based Nursery

The diagram below is to demonstrate how the bed is raised to allow water to drain away from the saplings. The saplings may die if they are left to sit in water for a long time and it is important that they are allowed to drain in this way.



Payment to SHGs

The following was decided and approved in a CF meeting on 23/08/13.

There will be 52 nurseries established in the project area; one nursery per SHG. Each CF will explain the concept of home-based nurseries to their respective SHGs. CFs will be responsible for monitoring and reporting on the progress of the nurseries. The cost of poly-pots will be covered by the Synjuk. This is estimated to be 400/- per nursery of 300 seedlings.

The materials required for each nursery will include wooden or bamboo poles to construct the frame. This will be 3 metres in length by 1 metre wide. Chicken-wire will be used on the sides and this will be 1 metre tall and 8 metres wide will be needed per nursery. Another option would be to use a traditional method of fencing and roofing by using natural resource such as bamboos and thatch roofing system. The roof will be made of thatch by the SHGs with a sloping design for rainwater runoff. The total cost of this is estimated to be 1100/- and this will be covered by the Synjuk. The payment will be given to each SHG to source the materials themselves. CFs will monitor the construction of these and report on progress with photos and other documentation.

Payment to the SHGs will be spread over the 2-year period. This will begin with 150/- to the SHG for establishing the raised bed. Each SHG will be given a maximum of 1000/- at the end of the first year (before Christmas). This will be a 1000/- maximum and will be based on the number of seedlings that have been properly cared for and have survived this first year. A percentage will be deducted corresponding to the number of lost seedlings.

At the end of the first year, the seedling will be taken out of poly-pots and moved to cultivated beds, and each SHG will be paid 200/- for doing this. In the second year, the SHGs will be paid Rs.150/- for weeding and the sum of Rs. 1000/- (maximum) will be paid before transplantation to a common plot and a percentage will be deducted corresponding to the number of saplings that have survived.

The table below lists these expected payments and total amount:

Activity	Who	When	Where	Why	Payment
Raised nurseries are constructed	Women in SHGs	Late September	20 SHGs (villages still to be chosen)	Nurseries for firewood tree saplings	150/- per SHG - 20 SHGs in total (still to be confirmed), 3000/- total
Poly-pots are provided to each SHG by Synjuk	Synjuk	Late September	20 SHGs	Synjuk will bare the cost of the poly-pots	400/- per SHG nursery - 20 nurseries total, 8000/- total
Nursery materials	SHGs	Late September	20 SHGs	The cost of materials for constructing each nursery will be given to SHGs by Synjuk	Chicken-wire, bamboo/wooden poles - 20 nurseries total, 1100/- per nursery, 22,000/- total (Paid before Christmas)
Payment for managing nurseries	SHGs	After 12 months of saplings growing in nurseries	20 SHGs	Payment to each SHG for managing nurseries for 12 months	1000/- per SHG, 20 SHGs - 20,000 total
Payment for preparing bed for saplings to be transferred from pots	SHGs	After 12 months	20 SHGs	Payment for preparing beds for saplings to be transferred from poly-pots	200/- per SHG, 20 SHGs - 4000/- total
Weeding and nurturing of saplings	SHGs	As required	20 SHGs	Payment for weeding and nurturing of saplings	150/- per SHG, 20 SHGs – 3000/- total
Payment for managing saplings in beds for 12 months	SHGs	After 12 months in beds (saplings are 2 years old)	20 SHGs	SHGs are paid for managing saplings for 12 more months in raised beds	1000/- to each SHG, 20 SHGs - 20,000 total (Paid before Christmas)
					Total - 80,000/-

Tree Species

After the home-based nursery training held at Pomsanngut village and Mawjriong village in December 15/11/2013 and 14/11/2013 respectively, the following species of trees was selected on a trial basis. The project will be implemented by project SHGs, Farmer's Clubs and interested individuals.

The Khasi people are by tradition closely linked with nature. They are lovers of nature and the mother earth. Some of the species, especially those that are fruit bearing, are forbidden to cut while others are restricted to cut except for some noble purpose or for construction of houses and community needs. These species of trees are acclimatized to the climate of the region and they grow better even without much care and attention.

It was also decided at the meetings that after two years when these saplings will be taken to the forest area under ANR for nourishment planting, and also to some allotted area for the community to test-proof the fruit trees like the Cherry. The plantation will involve all the members from the village on a particular day where the villagers will dig specific holes and bring along with them manure to put in the hole on voluntary service and plant the trees in the presence of the Synjuk representatives including the CFs. The aim to involve is to make them feel and have more sense of ownership on what they have planted. In the coming year if the nursery is successful, the SHGs will be able to do it by themselves and can sell saplings to the government and various agencies where demand exceeds supply.

1. Dieng Sning / DiengSohot (Castonopsisindica)

- By Tradition these species are highly valued by the Khasi people and it is restricted to cut without a good purpose. This species is related with Rituals and traditions so they are not used in a discriminated way.
- It is one of the fast growing species with lots moisture in it.
- It is used as timber for house construction
- It also provides plenty of seeds which can be easily multiplied.
- Its nuts are edible and it is commercially sold in the market

2. Dieng Ngan (SchiimaKhasiana)

- This species is best used for furniture and as timber for house building.
- Its quality is best next to Sal tree.
- In addition to this its leaves and bark has medicinal values.
- In the case of the people of Mawphlang, they do not use this tree for fuel wood because it once saved the life of two children during the night, when they lost their parents.

3. Dieng Doh (Ex-buclandiapupulnea)

- Regarding this species, traditionally it was planted, nurtured and multiplied by the ancestors of Mawphlang. For this reason, rampant felling is restricted and it is cut only for special purposes or ceremonial use.
- Good timber for house construction.
- High retention of moisture.

4. Dieng Liengiong (*Alnusnepaulensis*)

- This is a fast-growing specie which can be pruned at least every 7 years. The branches can be used for charcoal and fuel wood. This tree species was introduced to Meghalaya some thirty years ago. It is good for planting in the Bun cultivation area.
- This people of Khonoma Village in Nagaland provided this information.

5. Dieng Sai (*Quercus Fenestrata*)

- This is one of the fastest growing species, best used for firewood.
- This tree is exceptionally resilient for surviving a forest fire. After one year they will regenerate.
- The nuts are best fruits for rodents.

6. Dieng Sohpie (*Myricaesculenta*)

- This is fruit tree has good commercial value in the region.
- The fruit is bought and sold in the market during its season and it can be used for making pickles and juices as well.
- Traditionally, it is forbidden to cut or destroy fruits trees without a good reason and it is highly valued by the people.
- This specie is rarely found in other part of India other than in Khasi Hills.

7. Dieng Sohiong (*Prunusnepaulensis*)

- This specie is famous for its cherries which are highly valued by the people.
- The cherry is commercially sold in the market and it is also used for making pickles, juices etc.
- The Mawphlang Distillery (1840-1940) was famous for the processing of Sohiong cherry.

Conclusion

Planting tree plantations of different species benefits the environment and the community in many ways. Trees can be grown to assist natural regeneration (ANR), thus increasing the amount of forested land. Because the project area is calculated for the purposes of carbon sequestration, increasing forested land will increase the amount of trees that are calculated in a carbon sale thus generating livelihood opportunities, forest products, and enhancing ecological services. Reforesting the watershed will slow surface runoff during heavy rainfalls, recharge the aquifers, extending the duration and enhancing stream-flow volumes. The community tree nursery program is a direct result of the capacity of the Synjuk (Federation) of indigenous Khasi to generate funds from their conservation activities.



Mr. Welcome Synrem from Laitlyndop Village with 600 tree seedlings he is raising for transplanting along local streams and meadows.

Tree saplings growing in poly pots.

