



IFAD
INTERNATIONAL
FUND FOR
AGRICULTURAL
DEVELOPMENT



2020 - 21

GUIDELINES for Support for Existing Orchards.



Support to Existing Nurseries

IFAD – FOCUS – Mizoram

2020 - 21

GUIDELINES FOR SUPPORT FOR EXISTING ORCHARDS

Table of Contents:

Sl. No	INDEX	Page
Support to Private Nurseries		
1	INTRODUCTION	1
2	IMPLEMENTATION ARRANGEMENT	2
3	FUNDING	2
4	BENIFITS	3
Supply of Quality Planting Materials		
5	INTRODUCTION	4
6	OBJECTIVES	5
7	IMPLEMENTATION ARRANGEMENT	5
8	COST ESTIMATE	5
9	MODE OF FINANCING – FUND FLOW	7
10	PROCUREMENT METHOD	7
11	BENEFITS	7
12	MARKETING	7
13	FIG PROMOTION FOR ORCHARDS	8
14	TRAINING ON ORCHARD MANAGEMENT	8
	ANNEXURE I	
15	Cultivation of M.Orange	8
	ANNEXURE II	
16	Cultivation of Arecanut	9

SUPPORT TO PRIVATE NURSERIES

INTRODUCTION

There are many advantages for setting-up nurseries for Horticulture crops and Forest trees. It is an important infrastructure for raising and establishing sensitive, exotic and high value crops that have difficulty in establishing itself when directly sown. It is also an important source for seedlings and planting materials required in large quantities.

Nurseries are a crucial part of the project as it is highly dependent on supply of good planting materials in large quantities. As setting up of large nurseries is a tedious and difficult endeavor, the support for existing nurseries and providing training is an important undertaking for the project to improve supply of planting materials and to act as institutions for training and demonstrations.



Implementation Arrangement:

1. These nurseries should be legitimate nurseries and should be registered under a proper authority. If nurseries which are not yet registered have been selected and are found to be legitimate and to the likings of the project, these nurseries must get registration as early as possible or within one month of signing agreement with FOCUS.
2. An agreement must be made with selected nurseries and FOCUS representative to provide the project with required planting materials. Therefore, the agreement must contain two signatories viz, Nursery owner and FOCUS Representative (Preferably, DPM). Each of the existing nurseries identified for project support should produce a supporting letter from at least 4 existing orchard FIGs indicating their interest to buy seedlings from the identified nursery.
3. The agreement must contain all the requirements of the project, duration, methods of delivery and mode of payment. These nurseries must not be insolvent and be able to provide the requirements of the project.
4. The agreement must contain all the details such as duration of the agreement validity, cost of seedlings, transportation cost to the project sites, mode of payment and adjustment to mechanism for adjustment of project support by introducing a discount to cost of seedlings.
5. These nurseries should also be able to provide necessary sites for demonstration and training of staffs and farmers.
6. The identified nursery shall use the project support for purchase of quality seeds, quality planting materials and inputs required by the nursery. The nursery shall procure the seeds and planting materials from sources identified by the project in consultation with the Agriculture/Horticulture Department and Research Stations.
7. Each nursery should cover at least an area of 1 acre and should be able to produce at least 100,000 seedlings during planting season.

FUNDING PATTERN

- Funds shall be provided to selected nurseries after careful verification of their status and potential. PMU shall release funds for these nurseries to the DMU who are responsible for releasing funds and monitoring of the nurseries in their districts.
- The project shall provide funds for support to the nurseries as per norms.
- The Project will bear the cost for training and demonstration as per norms.
- Funds to the nurseries should be disbursed through a cheque and the nurseries should also provide acknowledgement of receipt.
- The project should utilize the resources provided by these nurseries to full potential both for the development and progress of the nurseries and the project



BENEFITS

- Nurseries shall be provided with additional funds and enabling them to increase potential and upgrade facilities for higher production capacity and better functioning and quality improvement.
- The Project will be provided with a reliable source of planting materials necessary for project implementation and the District/State shall also benefit with the establishment of reliable nurseries having quality production even after the completion of the project.
- Farmers and staffs will have a proper site for practical training and demonstration. Necessary technical information and assistance can be provided to the farmers resulting in better and more technical practices at farmers' field level.
- Support and training provided to existing nurseries (60 nos. as per project target) should result in ease of acquiring quality planting materials and technical knowledge for farmers in different districts. Farmers will have easy access to necessary requirements and aid for improved productivity resulting increase income.

COST ESTIMATES FOR SUPPORT TO EXISTING NURSERIES AND TRAINING

Particulars	Units	Cost/Unit (Rs)	Total (Rs)
Support for existing nurseries	60	80,000.00	48,00,000.00
Training	60	20,000.00	12,00,000.00
TOTAL			60,00,000.00

SUPPLY OF QUALITY PLANTING MATERIAL

INTRODUCTION

The project shall be supporting existing settled agriculture in uplands by providing them with quality planting material for horticulture crops. On the basis of orchards found in the four project districts and farmers preference, the major upland orchard crop is M. Orange and Arecanut is the major plantation crop and are most preferred by farmers. Also, other horticulture crops such as coffee, cocoa, pineapple, dragon fruit and even crops like beetle vine along with spices like black pepper and mizo chilli which can be mixed along with orchard crops can also be utilized to improve the farm productivity and income of the farmers in the short and medium term.

In addition, high value timber tree species, such as *Mesua ferra*, *Duabanga grandiflora* and / or *Duabang ameluccana*, and *Cedrela toona* may be introduced in the system if permitted by the farmers to add to the farmers' income in the long run. Project's marketing support interventions under value chain development will also support value addition and marketing of crops/commodities.

FIGs are to be formed by farmers having upland orchards which will function for their benefits and will be responsible for activities like selection of desired planting materials from source and its procurement. They will also be in charge of marketing of their produce and linking up with the marketing unit as well. These FIGs may be aided by DMUs and operate under the supervision of the DMUs if necessary. FIGs will undergo trainings for their proper function and role in the project conducted by project staffs.

The project will also be providing support and training to existing private nurseries for improvement in production quality and quantity and also to aid the project in supply and production of planting materials and also behave as an institution of training and demonstration for the project staffs and farmers.



Fig. Settled agriculture in previous jhum area

OBJECTIVES

The main objective for supporting existing orchards in upland is to improve the farm income in short as well as long term and to maximize utilization of lands for climate resilience. This objective will be achieved by:

1. Supply of quality planting materials to farmers which will improve quality and quantity of farmers' production.
2. Encourage farmers to undertake multiple cropping where short duration crops are planted with orchard/plantation crops to generate short- and long-term income and also incorporate high value timber trees and forest species to increase climate resilience and also act as/provide long a. term investments.
3. Providing technical knowledge and assistance for orchard management, cropping pattern (multiple cropping) and nursery management through trainings and demonstrations.
4. Formation of FIGs to oversee and plan for necessary activities.
5. Provision of support to existing nurseries which in turn will act as an institution for training and demonstration for the project and also be utilized for producing and supplying
6. Marketing of produce shall be managed by FIGs under which they may formulate business plans and strategies and may set up link with marketing unit and also seek aid from DMUs if necessary.

Implementation Arrangement:

1. Farmers from different villages within the project districts who practice upland orchard farming or other forms of settled farming of horticulture crops (fruits, nuts and spices) should be identified to form FIGs under the project. Farmers should participate willingly.
2. The FIG should open a bank account in any nationalized bank.
3. Each FIG is to be given a provision of Rs 30000; this should be utilized by the FIGs as revolving fund for their functioning. The project (VLWs) will assess the performance on the utilization of this amount and maintain a proper record of this.
4. FIGs should prepare a proper plan for planting and make a budget for procurement of seedlings with project support.
5. The project shall evaluate the plan release and after approval release funds for purchase of planting materials.
6. Funds released should be utilized by FIGs to procure seedlings, distribute to members and complete planting.

COST ESTIMATES

** As proposed in the aide memoire, a minimum of 100 seedlings per household is to be supplied, increase in unit cost from Rs. 1,500 to Rs 12,000 was proposed in the AWPB 2020-21 so as to facilitate for at least 100 seedlings of M.Orange which was approved. Hence, cost estimate has been revised.*

Cost Estimate for Arecanut per Household is as follows

Sl no	Items/Activity	Unit	Rate	Quantity	Amount (Rs)
1	2	3	4	5	6

A	Cost of crucial inputs				
	Cost of Polypotted Seedlings	Household	Rs 20/seedling (as per latest DPAB rate of Horticulture Department) Rate is F.O.R destination	500	10,000.00
	Sub-Total of A				10,000.00
B	Cost of Field Operations				
	Pit Digging (Beneficiary contribution)	Ha	Rs 30/pit	500	15,000.00
	Planting of seedlings (Beneficiary contribution)	Ha	Rs 10/seedling	500	5,000.00
	Plant Protection Measures		2,000	-	2,000.00
	Sub-Total of B				22,000.00
	Sub-Total of A + B				32,000.00

Total cost to be borne by the Project = Rs 12,000 per household
Beneficiary contribution i.e Rs 20,000 per household

** Polypotted seedling are required for arecanut plantation as seeds require special care (soil, temperature, sunlight, etc.) for germination and is a tedious and time consuming process. Moreover, as germination % of seeds may differ, large variation may exist among plantation trees. Growing arecanut from seeds for farmers is not beneficial. Therefore, hardened seedlings of proper age from nurseries placed in polypot for easy transportation is the most beneficial and cost effective method for supply of arecanut.*

Cost Estimate for M. Orange per Household is as follows

Sl no	Items/Activity	Unit	Rate	Quantity	Amount (Rs)
1	2	3	4	5	6
A	Cost of crucial inputs				
	Cost of Polypotted Seedlings	Household	Rs 120/budded M.Orange (as per latest DPAB rate of Horticulture Department) Rate is F.O.R destination	100	12,000.00
	Sub-Total of A				12,000.00
B	Cost of Field Operations				
	Pit Digging (Beneficiary contribution)	Ha	Rs 30/pit	500	15,000.00

	Planting of seedlings (Beneficiary contribution)	Ha	Rs 10/seedling	500	5,000.00
	Plant Protection Measures (Beneficiary contribution)	-	1,500	-	1,500.00
Sub-Total of B					21,500.00
Sub-Total of A + B					33,500.00

Total cost to be borne by the Project = Rs 12,000 per household

Beneficiary contribution = Rs 21,500 per household

Planting materials are to be procured from existing nurseries supported by the project. These nurseries shall be in agreement with the project to supply FIGs with their requirement of planting materials.

MODE OF FINANCING – FUND FLOW

The FIGs shall prepare a requisition identifying the cost and sources from where seedlings shall be purchased.

The project, after evaluation shall release the required funds to the DMU and accordingly shall transfer the required amount to the respective FIGs.

PROCUREMENT METHOD

- All procurement shall be need based from the FIG, duly scrutinized by DMU and approved by PMU.
- All possible procurement at the community level shall be done by FIGs through Community procurement in consultation with Procurement Officer.
- The FIGs should follow the Community Procurement Guidelines of FOCUS and comply with authorized financial limit.
- Any difficulty in procurement shall be made know to the DMU for further instruction.

BENEFITS

- To develop a commercially & economically viable structure for supply, production and marketing of materials and products for orchard farmers.
- Increase farmers' income and provide a perpetual source of income through orchards.
- To promote locally produced agricultural/horticultural products.
- Social benefits and economic upliftment of rural livelihood.

MARKETING

FIGs are responsible for marketing of products and formulating business plans. FIGs are to arrange links with marketing unit set up under the project which will provide guidance. DMUs shall also aide FIGs where required. Establishment of proper marketing channel for FIGs is the expected result and benefit.

FIG PROMOTION FOR ORCHARDS

FIGs once formed will be registered under the project. After the setup and forming a basic structure with proper institutional arrangements, FIGs should open bank accounts where the project shall provide them with an operational and functional cost which will serve as a revolving fund for the FIG.

Expected number of FIGs according to number of villages in the project district area is 272. Each FIG shall be aided with a sum of Rs. 30,000. This should be utilized by each FIGs as a revolving fund for their proper functioning.

TRAINING ON ORCHARD MANAGEMENT

Trainings will be conducted by FOCUS to FIGs with upland orchards where orchard management techniques, technical aspects of orchard management, requirements of orchard and rejuvenation techniques in orchard is given to the farmers.

Each FIG is allotted 6 trainings @ Rs 2,000 per trainings. With 272 expected FIGs, the amount of trainings = $272 \times 6 = 1632$ trainings.

ANNEXURE I

Mandarin Orange (*Citrus reticulata* Blanco)

Rutaceae



Soil and climate

It is a subtropical crop growing at 500– 1500 m above MSL. A rainfall of about 150 cm to 250 cm is required. The winter should be mild and there should be no strong, hot winds during summer. Deep well drained loamy soils are best suited for cultivation. Soil pH should be between 5.5 and 6.5.

Season

The planting is done from November – December.

Planting material

Seedlings and budded plants are useful for planting. Budded plants are preferred for better fruits and plant health.

Spacing

Planting is done at a spacing of 4 x 5 m in pits of 60 x 60 x 60 cm size. Planting is done during May–June at the commencement of monsoon and during September– October.

Manures and Fertilizers

Apply twice in a year during June and October

Growth regulators

To increase the retention of fruits, spray 2, 4 - D at 20 ppm or NAA 30 ppm at flowering and again at Marble stages.

After-cultivation

Remove water shoots, rootstock sprouts, dead and diseased shoots. Remove laterals of the main stem up to 45 cm from ground level. Basins should be provided for each tree with gradient slope.

Harvest

The budded plants starts bearing from 3 – 5 years after planting, while in case of seedlings, it takes about 5-7 years.

ANNEXURE II**Arecanut (*Areca catechu* L.)****Palmae**

Fig. Arecanut plantation in hills

Soil and climate

Arecanut is capable of growing in a variety of soils. It thrives best in well drained soils. Adequate protection from exposure to sun is essential to avoid sun-scorch. Quick growing shade trees have to be planted well in advance of planting seedlings. Banana is a suitable crop for shading. It is sensitive to moisture deficit and should be grown where adequate water facilities are available.

It grows in a wide range of temperature ranging from minimum of 14°C to a maximum of 40°C. Altitude below 1000 m Msl. is ideal and rainfall from 750 – 4500 mm.

Season

June – December is found to be the optimum.

Raising of seedlings

Arecanut is propagated only by seeds. There are four steps in selection and raising of arecanut seedlings viz., selection of mother palms, selection of seed nuts, germination and raising the seedlings and selection of seedlings.

Selection of mother palm – The criteria for the selection of mother palm are; early bearing, regular bearing habit, large number of leaves on the crown, shorter internodes and high fruit set.

Selection of seed nut – Fully ripened nuts having weight of above 35 g should be selected. The nuts selected should float vertically with calyx-end pointing upwards when allowed to float on water. These nuts produce the seedlings of greater vigour.

Primary and secondary nurseries – For obtaining good germination, the seed nuts should be sown as whole fruits. The nuts should be sown immediately after the harvest in soil or sand and watered daily to get early and good germination. The nuts should be sown at 15 cm distance in vertical position with calyx end just covered. The beds may be mulched lightly using areca leaf or paddy straw. After six months in primary nursery, the seedlings are to be transplanted to secondary nursery beds of 150 cm width, 15 cm height and convenient length. A spacing of 30 cm between the seedlings is considered to be optimum for a growth period of one year in the nursery. Polythene bags (25x15cm, 150 gauge) filled with potting mixture (top soil: FYM: sand = 7:3:2) can also be used to raise secondary nursery. Sprouts of 3 months old should be used. The secondary nursery should be given a basal dose of adequate decomposed farm yard manure. Areca sprouts and seedlings are very delicate and do not withstand exposure to direct sunlight. Hence, proper shade should be provided to the nursery. The nursery should be watered regularly in the summer and proper drainage should be provided in rainy season. The nursery should be kept clean by periodical weeding.

Selection of seedlings—Twelve to eighteen-month-old seedlings is to be selected and transplanted in the main field. Seedlings with maximum number of leaves (five or above), minimum height and maximum girth are to be selected for planting. The selected seedlings should be removed with a ball of earth adhering to the roots for planting.

Planting

Dwarf and compact seedlings with more number of leaves should be selected. Seedlings of 1 - 2 years age

are planted in pits of about 90 cm x 90 cm x 90 cm at a spacing of 2.75 m either way and covered with soil to the collar level and pressed around. Provide shade during summer months. Growing Banana or other crops in advance may also provide shade.

Manuring

Apply to each bearing palm (5 years and above) 10 - 15 kg of FYM or green leaf. 100:40:140 g of NPK/ tree/ year. To palms less than five years old, half of the above dose is recommended. Manures are applied during January - February after the basin of 0.75-1.00 m radius around the tree to a depth of 20 - 30 cm.

After-cultivation

Weeding is done twice or thrice a year by spade digging. Wherever the land is sloppy, terracing is advised to prevent soil erosion.

Intercropping

Intercropping with Cocoa, black pepper, coffee, vanilla, cinnamon, clove and citrus is possible.



Fig. Intercropping with coffee and banana

Harvest

The bearing starts after 5 years of planting. Nuts are harvested when they are three quarters ripe. The number of harvests will vary from three to five in one year depending upon the season and place of cultivation