CHAPTER - I

RAISING OF NURSERY

A. Basics of Nursery

Location :- It is advisable to have a central nursery for better management and the nursery should be located as far as possible in a flat land, near water source. Try to locate the Nursery on the Northern, Western aspects of a Hill slope; try to avoid Southern Aspects on hill slope because of too much sunshine and heat. The nursery beds must not be allowed to become dry after the seeds are sown. The nursery beds should be well drained, and there should be no stagnancy of water.

Soil Working :- The nursery site should be clear felled of all vegetation, if the nursery is a new one. The jungle clearance may be done during winter to early Spring season preferably before weeds ripen their fruits so that weeds may be eliminated from the Nursery beds. It is desirable to plough or hoe the soil in the winter and allow it to weather for some time. The Nursery beds may be raised if the area is plain to ensure good drainage, in hill sides it may be a little sunken to conserve moisture though during very heavy rain there is possibility of it getting flooded if drainage is not made.

Nursery bed size :- The ploughed soil can be organized into beds of 1 metre wide, 15 cms high, 6- 10 metres long, or as long as the topography would allow. The soil in the nursery should be worked into a compact, smooth, and fine textured consistency. If the nursery is flatland, it should be separated by a pathway of 30 cms, so that the beds can be weeded by standing on the pathway.

Seed sowing :- The seeds may be sown evenly spread over the beds, and a thin layer of fine soil is spread evenly over the seeds. This type of sowing may be done very small sized seeds. For bigger sized seeds, a small straight furrows across the length of the bed may be made in the beds with a light dibble or a wooden stick and the seeds sown in the furrows and covered up with soil.

How deep must the seeds be sown? :- The Thumb Rule is to bury the seeds at the depth of the seeds' diameter.

Moisture/Temperature of the Beds :- Moisture and temperature of the soil in the Nursery beds are very important factors for germination of the seeds. To achieve this, the beds may be covered with transparent polythene sheets with its end weighed down by small stones or clods of soil. This will prevent moisture loss through evaporation and increase the temperature of the nursery beds. It is more practical to expose the beds to the Sun and water the beds to maintain the correct moisture level in the nursery beds.

Seed treatment :- Seed collected should always be from authentic sources and should be treated before sowing. Seed treatment is generally done by mixing with Bavistin or indofil M-45, 2-4 gm per kg of seed.

Time of Sowing :- Seed sowing should be done according to season of the species in concern..

Fertility of the Nursery :- For proper growth of the seedling, a fertile soil is desirable, but when soil in the nursery is more fertile than the plantation site, the plants do not grow very well initially in the first year of the plantation but how successfully the plants have grown in the first year determines the success and failure of the plantation. Therefore, raising of seedlings from normally fertile soil would be best suited in the field condition.

Weeding in the Nursery :- Nursery cannot be weeded when the tree seedlings have not yet established their root system properly. If weeding is done, at this time the seedling would be uprooted. This is the reason why at the time of preparing nursery, the plant debris should be burnt thoroughly before original weed plants are burnt. Nursery can be weeded only when the root system of the seedlings have established properly. Leaves of the mature seedlings individuals may be plucked off to distribute sunlight to other smaller seedlings, so that all seedlings attain equal size.

Quantity of seeds in a Nursery Bed :- Greater the number of seeds planted in a bed, smaller will be the size of the seedling at the time of planting. To get quality sized seedling (thumb size), the seed may be sown broadcast in the Nursery bed and when they are few leaves old, some may be pricked out so that the remaining may be spaced at about 3-4 cms apart. The pricked out seedling may be planted in polybag nursery.

Preparation on Seedling for Plantation in polythene bags :- The first thing to be done is to collect polythene bags from the market which are available in various sizes. The seedlings grown in poly bags will have to be transplanted at the end of the year, this would mean that a very big bag is not needed; only a 10 cms diameter would be sufficient for raising one-year old seedlings. To prepare bigger size seedlings, bigger polythene bags may be selected.

During the dry season, dry soil may be prepared into fine textured consistency; this may be filled into the polybags and compacted by holding the fully filled bag and dropping it to the ground from 30 cm above the ground without letting the soil spill out. When the soil settles at a level less than the mouth of the bag, more soil may be added to make the soil almost filling the bag fully. It may be mixed with manure if the soil is not fertile. Normally, soil that has been lying fallow for several years need no chemical fertilizers. Organic manure can be used if required. Generally 1 part dry cow dung is mixed with 1 part sand or 2 parts of good loamy soil. Seed are sown directly into the bags during the sowing season i.e February-June. Azotobactor/Rhizobium 4-5gms/poly bag and neem cake 5 gms/poly bag will yield good results.

The sown poly bags should be preferably kept in shade and the soil not allowed to become dry. The seeds can be sown broadcast in a prepared nursery bed and watered regularly. Water should be sprayed in the beds preferably till root system of the seedlings are well developed. Beds should be moist rather than wet. If beds are kept constantly moist, it may not require sheds. The seeds are allowed to germinate and grow up to about 3 cms to 5 cms and then pricked out and planted in the poly bags and grown till it is fit for plantating in the field.

To prevent the rooting of seedlings through the poly bags into the soil, either permanent beds or spreading a poly sheet below the poly bags is preferred. This will reduce the weed growth also. Culling out is must in the nursery. Thin, dead and unhealthy seedling have to be culled out. Only plantable seedlings have to be transplanted in the nursery.

Pest and diseases in nursery

Many diseases attack plants in nursery and symptoms like root-wilting, withering of plants without any apparent damage of shoots or leaves, shoot-cut either near ground or up, cutting of leaves smoothly or irregularly and other symptoms are-pox like marks, large number of punctures, rasped and distorted leaves ,blotching of leaves etc.

Control measures-endosulphan(35 EC),0.1%, Malathion 0.1%

Symptoms-Decay of seedlings with blackening of collar portion.

Control-Bordeaux mixture 1% @ 560 lts/Ha of nursery soil.

Symptoms-Black spots and yellow patches on leaves. White growth around, black/brown spots on the underside of leaves.

Control-Bordeaux mixture 1% @ 560 lts/Ha of nursery soil.

Preparation of Bordeaux mixture 1%: Copper sulphate:2kg +Quicklime:2kg+ Sugar:60gm and all these are added to 225lt of water.

Two special contact poisons effective for all categories of insect pests.

1. **Crude oil emulsion :-**

   Add 1 lt. diesel and 350 gms of crude vegetable soap(sliced) to 3 ltrs of hot water and stir violently to make an emulsion with no free oil on the surface. Then add 12 lts of more water to it along with 25gm glue to make it adhesive.

2. **Nicotine solution :-**

   Dry tobacco leaves: 1.25kg

   Crude soap: 400gms

   Water: 100lts

   Boil tobacco with soap in 10 lts water, then add balance 90 lts water.

B. Poly Bag Nurseries of Misc Spp.

1st Year Creation & Maintenance

Sl. No	Particular of work and Item	Time of work	DL/1000
1	Collection cost of seed (expenditure is to be decided by the SDFO with the approval of	Seasonal	As per actual requirement
2	Cleaning of site, preparation of primary nursery beds (mother beds) of size 4.57 m x 1.12 m (15'x 4')including hoeing up to 30 cm depth, re-hoeing,breaking of clods, removal of roots and foreign materials, mixing sand and decomposed cow dung / compost including cost of cow dung / compost and preparation of beds and sowing of seeds and watering etc complete	seasonal	6
3	Collection of top soil, breaking of clods, removal of foreign materials, mixing of soil, sand and farm yard manure proper filling up to mixed soil (70 (Soil): 20 (sand): 10 (Manure) in poly bags including stacking of soil filled bags in row in secondary beds made with bamboo edging and cost of materials like bamboo, manure etc excluding cost of poly bags. Filling of soil should be made properly so that there is no scope of stagnation of water in the top i) 15cm x 23cm size ii) 20cm x30cm size iii) 23cm x 55 cm size Providing polythene sheet over the bed to control weeding	As and when required	 30 70 168
4	Pricking out of healthy seedling from mother bed and transplanting in the poly bag and watering etc to be completed including vacancy filling	As and when necessary	6
5	Providing fixing temporary overhead shed with thatch and with bamboo posts complete during dry season. (Special type of overhead shed with agro net etc. of permanent or semi permanent in nature will be done separately and rate will be decided by SDFO with the approval of DFO)	Oct	3 per 10 beds
6	Application of insecticides and fungicide including cost of chemicals etc.	As and when necessary	LS
7	4 (four) time weeding including cleaning of nursery area with gap filling and restocking of vacant of polybags and two time shifting of poly bags.	As and when necessary	8
8	Watering throughout the winter season /dry period as per necessity	Nov-Mar	6

2nd Year Maintenance

1	4(four) time weeding including cleaning of nursery area with gap filling and restocking of vacant of polybags and two time shifting of poly bags.	As and when necessary	3.5
2	Vacancy filling including cost of seeds		0.5
3	Watering as and when required for 4 months in dry season		2
4	Maintenance of over head shed and fencing		1

C. Teak Nursery

Sl. No	Particular of work and Item	Time of work	DL/1000
1	Collection cost of seeds (expenditure is to be decided by the SDFO with approval of DFO)	Dec to Feb	-
2	Clearing of jungle, cleaning of site, hoeing , re – hoeing upto 30 cm depth breaking of clods, removal of roots and foreign materials , providing decomposed cow dung / compost including cost of cow dung / compost and preparation of beds of size 4.57m X 1.12m (15 x 4)ft i) With bamboo edging ii) Without bamboo edging	Feb-Mar	 2 beds per DL 4 beds per DL
3	Treatment of Teak seeds by alternative soaking and drying method, sowing of treated seeds in nursery beds after proper soil working including carrying of seeds etc. up to nursery site complete	Apr-May	3 beds per DL
4	Application of insecticides and fungicide etc plant protection chemicals including cost of PPC	According to requirement	LS
5	Weeding including uprooting of unwanted weeds including cleaning of drains and walk trail minimum 4 (four) times	According to requirement	4 beds per DL each time
6	Providing bamboo fencing with the approval of DFO	According to requirement	

D. Gamar Nursery

Sl. No	Particular of work and Item	Time of work	DL/1000
1	Collection cost of seeds (expenditure is to be decided by the SDFO with approval of DFO)	April –May	
2	Clearing of jungle, cleaning of site, hoeing , re – hoeing upto 30 cm depth breaking of clods, removal of roots and foreign materials , providing decomposed cow dung / compost including cost of cow dung / compost and preparation of beds of size 4.57m X 1.12m (15 x 4)ft i) With bamboo edging ii) Without bamboo edging	Feb-Mar	 2 beds per DL 4 beds per DL
3	Sowing of seeds of Gamar in nursery beds after proper soil working including carrying of seeds etc. up to nursery site complete	Jun- Jul or as per seasonal availability	5 beds per DL
4	Application of insecticides and fungicide etc plant protection chemicals including cost of PPC	According to requirement	LS
5	Weeding including uprooting of unwanted weeds including cleaning of drains and walk trail minimum 4 (four) times	According to requirement	4 beds per DL each time

E. Bamboo Nursery

1. By Branch Cutting (Mother Bed)

Species: Bari, Barak, Mritinga, Pecha, Bom, Paura, Makal, Rupai, etc.

Specification of the Mother Bed: Mother bed to be made with brick platform provided with vertical edging with 3-rows of bricks without cement mortar, the beds to be filled with cleaning river sand, each bed will be 15ft X 4ft in size.

No. of branch cutting per bed-1000 nos.

Sl No.	Item details	Time of work	No. of Man days
1	Cleaning of site, dressing of the ground, spreading of 2-3 layers of sand (1-2 inches), on the dressed surface, laying of bricks for platform, (17'X 6'), vertical edging with 3 rows of bricks without cement mortar filling with white river sand cleaned properly	Feb-March	2.5
2	Collection of river sand including carrying to the nursery site, 58 cft. Per bed	Feb-March	-
3	Cost of 1st class Bricks for brick platform of size 17' X 6' (306 Nos.) and for vertical edging with 3 rows of bricks (152 nos.) total 458 Bricks per bed	Feb-March	-
4	Cost of 1000nos. Branch cutting per bed including the cost of bamboo	April-May	-
5	Planting of 1000 nos. Branch cutting per bed	April-May	-
6	Providing overhead shed by 50% Agroshed net. Cost of Agroshed Net-9.5 sqm.	April-May	-
7	Application of insecticides and fungicides including the cost of insecticides, fungicides and root hormones	As and when required	-
8	Watering as and when required per bed	As and when required	1
9	Weedings per bed	As and when required	0.5
10	Providing bamboo fencing including maintenance per bed	As and when necessary	1

Note:

1) Bamboo nursery (mother bed) to be raised preferably where the facility for watering is available. Bricks and other materials may be dismantled and reused, whenever the nursery site is shifted to new location.
2) Cost of brick, sand and other materials may vary depending upon the market situation. Actual cost to be incurred as per the prevailing market price after ascertaining the rate by observing codal formalities.
3) For deviation of rates from the rate prescribed above, prior approval from District Forest officer in the supervisory post to be obtained.
4) SL no 2-7 to be approved by the DFO based on the proposal of the SDFO.

2. By Culm Cutting (Mother Bed)

Species: Paura, Bom, Dolu, Mritinga, Makal, Pecha, Rupai, Barak, Bari etc.

Specification of the Mother Bed: Mother bed to be made with brick platform provided with vertical edging with 3-rows of bricks without cement mortar, the beds to be filled with cleaned river sand, each bed will be 15ft X 4ft in size.

No. of culms cutting per bed-30 nos.

Sl No.	Item details	Time of work	No. of Man days
1	Cleaning of site, dressing of the ground, spreading of 2-3 layers of sand (1-2 inches), on the dressed surface, laying of Bricks for platform, (17'X 6'), vertical edging with 3 rows of bricks without cement mortar filling with white river sand cleaned properly	Feb-March	2.5
2	Collection of river sand including carrying to the nursery site, 58 cft. Per bed	Feb-March	-
3	Cost of 1st class Bricks for brick platform of size 17' X 6' (306 Nos.) and for vertical edging with 3 rows of bricks (152 nos.) total 458 Bricks per bed	Feb-March	-
4	Cost of 30 nos. singled out node cutting per bed including the cost of bamboo	April-May	-
5	Planting of single node cutting per bed	April-May	-
6	Providing overhead shed by 50% Agroshed net. Cost of Agroshed Net-9.5 sqm. Cost of Bamboo post including fitting & fixing, etc.	April-May	-
7	Application of insecticides and fungicides including the cost of insecticides, fungicides and root hormones.	As and when required	-
8	Watering as and when required per bed	As and when required	1
9	Weedings per bed	As and when required	0.5
10	Providing bamboo fencing including maintenance per bed	As and when required.	1

Note:

1) Bamboo nursery (mother bed) to be raised preferably where the facility for watering is available. Bricks and other materials may be dismantled and reused, whenever the nursery site is shifted to new location.
2) Cost of brick, sand and other materials may vary depending upon the market situation. Actual cost to be incurred as per the prevailing market price after ascertaining the rate by observing codal formalities.
3) For deviation of rates from the rate prescribed above, prior approval from District Forest officer in the supervisory post above to be obtained.
4) SL no 2-7 to be approved by the DFO based on the proposal of the SDFO.

3. By seed sowing (Mother Bed)

Species :- Paura, Bom, Dolu, Mritinga, Makal, Pecha, Rupai, Barak, Bari

Specification of the Mother Bed: Mother bed to be made with brick platform provided with vertical edging with 3 rows of bricks without cement mortar, the beds to be filled with cleaned river sand, each bed will be 15ft X 4ft in size.

Sl No.	Item details	Time of work	No. of Man days
1	Cleaning of site, dressing of the ground, spreading of 2-3 layers of sand (1-2 inches), on the dressed surface, laying of Bricks for platform, (17'X 6'), vertical edging with 3 rows of bricks without cement mortar filling with white river sand cleaned properly	Feb-March	2.5
2	Collection of river sand including carrying to the nursery site, 58 cft. Per bed	Feb-March	-
3	Cost of 1st class Bricks for brick platform of size 17' X 6' (306 Nos.) and for vertical edging with 3 rows of bricks (152 nos.) total 458 Bricks per bed	Feb-March	-
4	Cost of bamboo seeds (1 kg. per bed approx.)	April-May	-
5	Sowing of seeds	April-May	-
6	Providing overhead shed by 50% Agroshed net. Cost of Agroshed Net-9.5 sqm. Cost of Bamboo post including fitting & fixing, etc. complete	April-May	-
7	Application of insecticides and fungicides including the cost of insecticides and fungicides	As and when required	-
8	Watering as and when required per bed	As and when required	1
9	Weedings per bed	As and when required	0.5
10	Providing bamboo fencing including maintenance per bed	As and when required.	1

Note :-

1) Bamboo nursery (mother bed) to be raised preferably where the facility for watering is available. Bricks and other materials may be dismantled and reused, whenever the nursery site is shifted to new location.
2) Cost of brick, sand and other materials may vary depending upon the market situation. Actual cost to be incurred as per the prevailing market price after ascertaining the rate by observing codal formalities.
3) For deviation of rates from the rate prescribed above, prior approval from District Forest officer in the supervisory post to be obtained.
4) SL no 2-7 to be approved by the DFO based on the proposal of the SDFO.

4. Bamboo Seedlings (Macro proliferation) to be raised in polythene bags (Secondary Bed)

Species: Paura, Bom, Dolu, Mritinga, Makal, Pecha, Rupai, Barak, Bari, Kanak Kaich etc.

Specification : -

1) Size of nursery beds -15ft X 4ft (4.57m.X 1.12m)
2) Size of polythene bags - 20 cm X 30 cm
3) No. of Poly bags per bed - 330 nos.

Sl No.	Particulars of works in detail	No. of Man days
1	Collection of top forest soil, breaking of clods removal of foreign materials, mixing of farm yard manure including the cost of filling in polythene bags, stacking properly in secondary bed by providing bamboo etc complete for 330 nos. per bed.	7
2	Cost of poly bags including the cost of transportation, for 330 nos. per bed	-
3	Pricking out / culling of seedlings from Mother bed and transplanting in secondary bed etc complete, 330 nos. per bed.	1
4	Watering as and when required per bed	1
5	Providing of overhead shed by 50% Agroshed net. Cost of Agroshed Net-9.5 sqm per bed. Cost of Bamboo post including fitting & fixing, etc. complete.	-
6	Application of insecticides and fungicides including the cost of insecticides and fungicides for 330 nos. per bed	LS
7	Weedings per bed for 330 nos per weeding, for 3 weeding.	0.5 per weeding
8	Providing bamboo fencing including maintenance for 330 nos per bed	1

Note :-

1) Bamboo nursery (Secondary bed) to be raised preferably where the facility for watering is available.
2) Cost of polythene bags and other materials may vary depending upon the market situation. Actual cost to be incurred as per the prevailing market price after ascertaining the rate by observing codal formalities.
3) For deviation of rates from the rate prescribed above, prior approval from District Forest officer in the supervisory post to be obtained.
4) SL no 2,5 and 6 to be approved by the DFO based on the proposal of the SDFO.

F. Tall polybag nursery

Tall seedlings are to be raised depending upon the scheme, objectives and type of plantations. To have 5ft to 8ft high tall seedlings, two year old seedlings may preferably be used for plantations. In few fast growing species, even one and half year old seedlings may acquire 5ft to 8ft height.

Main benefits :-

The main benefits of planting tall seedlings are-

- Quick establishment and crown development
- Insurance against problems like grazing /browsing and weed infestations.
- Relatively more resistant to diseases and pests as well as more likely to withstand adverse climatic conditions.
- Reduction in plantation cost in terms of barbed wire fencing, watch and ward & yearly maintenance cost etc.
- Overall benefit and success rate are higher than current year seedlings
- Less number of seedlings are required to be planted and thus saving cost.
- A full grown plantation can be developed in a short time.

Target places:- Following are preferable target places

- Strip plantations along road side, Canal side, Railway side
- Avenue plantations
- Current year Forest plantations, Enrichment plantations and Block Plantations etc. where there are requirements of tall seedlings beyond grazable or browsable limit.

Species suitability :- Choice of species depends on the site condition/avenue needs/local demands/objective etc. Other places it depends on objectives.

Pot Size & Type :- The volume of the container dictates how large a plant can be grown in it at nursery. Optimum container size is related to the species, target plant size, growing density, length of the growing season, and growing medium used.

Height and diameter of the Container :- Height is important because it determines the proportion of freely draining growing medium within the container. When water applied to a container filled with growing medium, gravity percolates it downward until it reaches the bottom and runs out of the drain holes in the bottom of the container. Broad-leaved trees, shrubs and herbaceous plants need a larger container diameter so that irrigation water applied from above can penetrate the dense foliage and reach the medium. Diameter also affects growing density in the nursery. Collar girth is directly related to container diameter.

Plant Density :- The distance between plants in nursery is another important factor to consider. Spacing affects the amount of light, water, and nutrients that are available to individual plants. In general, plants grown at closer spacing grow taller and have smaller stem diameters than those grown further apart. Plant leaf size greatly affects growing density. Broad-leaved species should be grown only at fairly low densities, whereas smaller leaved and needle leaved species can be grown at higher densities. Container spacing will affect height, stem straightness, stem diameter and bushiness. Container spacing also affects nursery cultural practices, especially irrigation.

Root Pruning :- Spiraling and other types of root deformation have been one of the biggest challenges for container growers, and nursery customers have concerns about potential problems with root-binding after out-planting . Research shows that root coiled seedlings are more likely to perform poorly after out-planting.

Potting Media :- Selecting a good growing medium is fundamental to good nursery management and is the foundation of a healthy root system. Growing media for use in container nurseries is available in two basic forms: soil based and organic based. Compared with soil based media that has field soil as a major component, organic based media (a base of organic materials that may be compost, peat, coconut coir, or other organic materials, mixed with inorganic ingredients) promotes better root development. A favourable growing medium consists of two or more ingredients. Growers must be familiar with the positive and negative characteristics of the various ingredients and how they will affect plant growth when creating a suitable growing medium.

Functions of Growing Media :-

A growing medium serves four functions :-

(i) **Physical Support :-** The growing medium must be porous yet provide physical support. Young plants are fragile and must remain upright so that they can photosynthesize and grow. With larger nursery stock in individual containers, a growing medium must be heavy enough to hold the plant upright against the wind.

(ii) **Aeration :-** Plant roots need a steady supply of oxygen to convert the photosynthetic from the leaves into energy so that the roots can grow and take up water and mineral nutrients. The by-product of this respiration is carbon dioxide that must be dispersed into the atmosphere to prevent the build up of toxic concentrations within the root zone. Because nursery plants grow rapidly, they need a medium with good porosity.

(iii) **Water Supply :-** Nursery plants use a tremendous amount of water for growth and development and this water supply must be provided by the growing medium. Growing media are formulated so that they can hold water in the small pores (micro pores) between their particles. Many growing media contain a high percentage of organic matter such as peat moss and compost because these materials have internal spaces that can hold water like a sponge. Therefore, growing media must have adequate porosity to absorb and store the large amounts of water needed by the growing plant.

(iv) **Supply of Mineral Nutrients :-** Most of the essential mineral nutrients that nursery plants need for rapid growth must be obtained through the roots from

the growing medium. Most mineral nutrients are electrically charged ions. Positively charged ions (cations) include ammonium nitrogen, potassium, Calcium), and magnesium.

The different potting may be used in forest nursery like :-

- Loamy Soil:Sand:FYM: Vermi-compost
- Loamy Soil:Sand:Bio-fertilizers
- Loamy Soil:Sand:FYM:Vermi-compost:Bio fertilizers
- Loamy Soil:Sand:FYM:Vermi Compost: Oil Cakes: Bio-fertilizers
- Loamy Soil:Sand:FYM:Compost: Bio-fertilizers
- Loamy Soil:Sand:FYM:Oil Cakes
- Loamy Soil:Sand:FYM:Oil Cakes : Bio-fertilizers
- Loamy Soil:Sand:FYM: Leaf Mould: Oil Cakes
- Burnt Rice Husk : Sand: Cow Dung (1:1:1)

Schedule For Raising the tall polybag seedlings

Estimate for preparatory works for raising nursery for 1000 nos. of Tall Saplings (Y1 + Y2 + Y3)

Period of Nursery (5 inch x 10 inch) for 6.5 months (12 inch x 14 inch) for 1 year (18 inch x 18 inch) for 10.5 months to 11.5 months

Sl. No.	Name of Work (Stage :-i)-Y1	Quantity	Unit
1	**Poly Bag Size - 5 inch x 10 inch**		
	Clearing of site, preparation of primary nursery beds (mother beds) of size 4.57 m x 1.12 m (15' x 4') including hoeing upto 30 cm depth, re-hoeing, breaking of clods, removal of roots and foreign materials, mixing sand and decomposed cow dung / compost including cost of cow dung / compost and preparation of beds and sowing of cuttings / seeds and watering etc. complete	1.5	DLs
2	Collection of top soil, proper filling up of mixed soil [70 (Soil) : 20 (Sand) : 10 (Manure)] in poly bags including stacking of soil filled bags in rows in secondary beds made with bamboo edging and cost of materials like bamboo, manure etc. excluding cost of poly bags. Filling of soil should be made properly so there is no scope of stagnation of water in the top.	30	DLs
3	Pricking out of seedlings from mother bed and transplanting in poly bag and watering etc. complete including vacancy filling	4	DLs
4	Providing of overhead shed by 50% Agroshed net including fitting fixing etc.	1.5	DLs
5	Application of insecticides and fungicide including cost of chemicals	LS	Bed
6	Shifting the container plants, weeding, grading and replacement of casualities on the bag-shifting to done on 1st April, 1st June, 1st July - 3 times.	7	DSL
7	Watering throughout the winter season / dry period.		
	a) Twice Daily - Feb to May - 120 day.	4	DLs
	b) Once daily - Aug to Jan - 184 days.	5	DLs
8	Cost of Poly Bag of size 5 inch x 10 inch (To be approved by DFO).	1000	Nos.
9	Collection cost of seed (To be approved by DFO).	1000	Nos.

Sl. No.	Name of Work (Stage :-ii)-Y2	Qunatity	Unit
	Cost of Poly Bag of size 12 inch x 14 inch (To be approved by DFO)	LS	-
1	Collection of top soil, breaking of clods, removal of foreign materials, mixing of soil, sand & farm yard manures, proper filling up of mixed soil [70 (Soil) : 20 (Sand) : 10 (Manure)] in poly bags including stacking of soil filled bags in rows in secondary beds made with bamboo edging and cost of materials like bamboo, manure etc. excluding cost of poly bags. Filling of soil should be made properly so there is no scope of stagnation of water in the top.	70	DLs
2	Labour Cost for transplanting of seedlings from 5 inch x 10 inch Poly Bag to 12 inch x 14 inch Poly Bag	10	DLs
3	Pruning side branches once in 3 months - 4 times	4	DLs
4	Shifting the container plants, weeding, grading and replacement of casualities on the bag-shifting to done on 1st Nov., 1st Jan., 1st Mar., 1st May, 1st July - 5 times	24	DLs
5	Watering throughout the winter season / dry period		
	a) Once Daily - August to January - 184 day	5	DLs
	b) Twice daily - February to May - 120 days	4	DLs

Sl. No.	Name of Work (Stage :-iii)-Y3	Qunatity	Unit
	Cost of Poly Bag of size 18 inch x 18 inch (To be approved by DFO)	LS	-
1	Collection of top soil, breaking of clods, removal of foreign materials, mixing of soil, sand & farm yard manures, proper filling up of mixed soil [70 (Soil) : 20 (Sand) : 10 (Manure)] in poly bags including stacking of soil filled bags in rows in secondary beds made with bamboo edging and cost of materials like bamboo, manure etc. excluding cost of poly bags. Filling of soil should be made properly so there is no scope of stagnation of water in the top.	124	DLs
2	Labour Cost for transplanting of seedlings from 12 inch x 14 inch Poly Bag to 18 inch x 18 inch Poly Bag.	44	DLs
3	Pruning side branches once in 3 months - 3 times.	6	DLs
4	Shifting the container plants, weeding, grading and replacement of casualities on the bag-shifting to done on 1st Nov., 1st Jan., 1st Mar., 1st May - 4 times.	104	DLs
5	Watering throughout the winter season / dry period.		
	a) Once Daily - August to January - 184 days.	5	DLs
	b) Twice daily - February to May - 120 days.	4	DLs