

## Different stages of making Compost



## NURSERY MANAGEMENT (Part-1)



## (PRODUCTION OF COMPOST & POTTING MEDIA )

Project Management Unit  
West Bengal Forest and Biodiversity Conservation Project





Eucalyptus Clone Nursery at Izzatganj



Amlagora Nursery



Arrah Nursery



Chalsa Nursery



Agro Net- Hizli Nursery

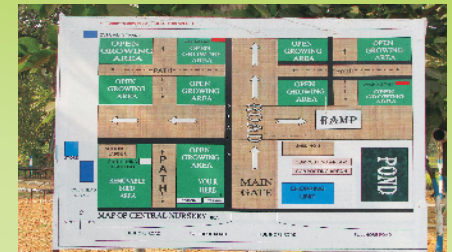


Fuljhore Nursery

## Layout and Nursery Infrastructure



Sign Board



Lay out of Nursery



Nursery Store Room



Direction of Nursery Lay out



Rest Shed of Labourer



Pump House



Disinfecting Chamber



M.S. Stand



## Root Trainer



The inner part of Root Trainer which trims and the growth of root.

Care must be taken that the containers will indeed be filled completely while neither compacting the substrate too much, nor packing them too loosely leaving large open air pockets.

2. The medium in properly filled containers should still feel springy to the touch. This should be checked after filling of root trainers.

### Precaution:-

While filling the root trainer, care should be taken so that the lower end of the root trainer does not block with stone, hard soil etc. It is not recommended.

### Introduction:-

Plantation creation programs, now-a-days, are largely dependent on seedlings raised in Central Nurseries where seedlings are better looked after and healthier than those raised in Field Nurseries.

Seedling quality is primarily controlled by collection of seeds from seed trees /seed stands and from clonal orchards maintained for a variety of clones for Eucalyptus hybrid. Use of compost and production of seedlings in root trainers (Hycopots) under removal agro-sheds have greatly improved the quality of seedling.

With this understanding, it has been decided that all the afforestation models in South West & North Bengal except Enrichment of Sal Degraded Forest (A4) will be provided with Quality Planting Materials (QPM).

Accordingly Hi-tech Central Nurseries have been raised in different DMUs. In this volume the various steps of making compost and potting media in the nurseries have been described.

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## HOW TO MAKE COMPOST

- A) There are two methods of making compost-Aerobic or “Hot” and Anaerobic or “Cold”. It is preferable to use the Aerobic or “Hot” composting since it is faster and economical.
- B) The aerobic process, usually called Berkeley Method of composting takes about 18-21 days or a few more days.
- A) Required Material:-
- i) Easily available vegetative material /Climber/ Weed etc.
  - ii) Chopped straw
  - iii) Chopped water Hyacinth
  - iv) Sawdust and chopped bark residue
  - v) Chopped foliage and branches
  - vi) Coir or jute dust

### Precaution & Remarks:-

#### **Precaution:-**

Dry the waterhyacinth before use as it contains profuse water.

#### **Remarks:-**

The material as described in item no. I, is abundantly available in nursery. We should use this material for compost making. Care should be taken to use green & soft material and avoid woody climber. Chopped straw can be mixed with green vegetative material.



**Motorised Mixer for mixing potting media.**

2. First, the used containers have to be sterilize dproperly. After washing, draining the dirty water and cleaning the tank, the washing tank should be refilled with a 10% household bleach solution - that is 1 part of bleach per 9 parts of water. Therefore clean all material to be sterilized thoroughly before putting it into the solution. Make a fresh solution each time you need it, and replace when dirty. The sterilized containers can then be stored in the “clean container storage” space close to the media mixing area and hygro-pits for immediate or later use.

### **Filling Root Trainer/ Hycopot**

1. Root trainers will be filled by hand with the prescribed media mixture prepared.



1. The ready compost can then be removed from the bed and stored in a safe place.



**Ideal compost looks brown like coarsely ground coffee**

### **Mixing components for preparing potting media and sterilisation of container:**

1. After drying and sieving the ingredients must be mixed in one of the ratio as described in para on " Production of Potting Media" above. Because large quantities have to be prepared to fill the containers, this can best be done with a manual/motorized cement mixer.

### **Production of Potting Media:-**

#### **Recommended components for potting media & their mixes**

1. 1 Part compost + 1 Part coarse sand
2. 1 Part compost + 1 Part burnt rice husk + 1 Part coarse sand
3. 1 Part cowdung manure + 1 Part burnt rice husk + 1 Part coarse sand

### **Precaution & Remarks:-**

- 1) Among the mixes 1, 2, 3, described above potting mixture in 1 is easy to make –we should go for it.
- 2) In case 2 & 3 the rice husk should be properly burnt before use
- 3) Collected sand should be sieved twice

Firstly, -For separating large particles, stones, roots etc. sand should be sieved through 2000 micron (2 mm) sieve. Those particles which do not pass through the 2000 micron sieve should be rejected.

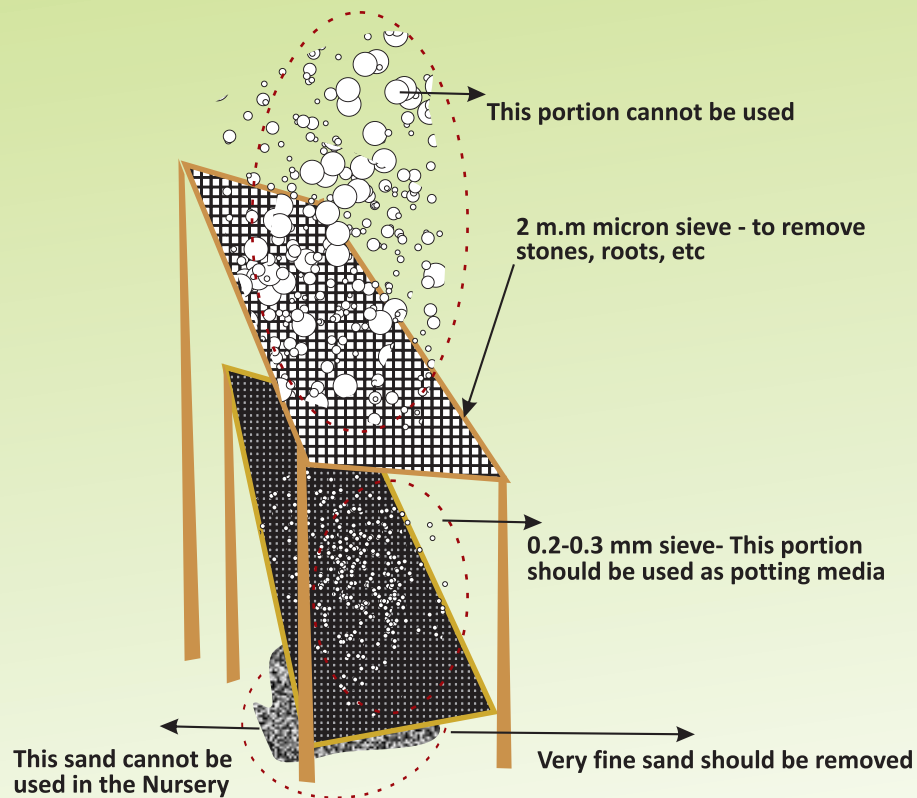
Secondly, the sieved sand should be sieved once again with 200-300 micron (0.2-0.3 mm) sieve. The fine sand, smaller particles etc. which will be sieved out through this sieve can not be used in potting mixture and should be rejected.

### **Precaution:-**

- a) Only the coarse sand which will remain above the second sieve should be used as potting mixture.
- b) Big size container should be used for mixing potting mixture for maintaining proper ratio of mixture.
- c) Fine sand especially sand mixed with dust, mica, lime (specially in North Bengal river) must not be used.
- d) Soil should not be used in compost making.



## Process of sieving sand twice



The optimum temperature is 55-65 degrees Celsius. At temperatures over 65 degrees Celsius a white “mould” spreads through the compost, which is actually “fire blight”, an anaerobic bacteria. Temperature peaks at 6-8 days and gradually cools down by day 18.

2. Keep on turning the heaps on day 5, 8, 12, 14 and 16.
3. If the compost pile starts coming down in size quickly, there is too much nitrogen in the compost.
4. To heat up the compost faster, add handful of chicken manure per pitchfork of compost or Urea at the rate of 10.0 g per m<sup>3</sup> of heap size when turning speeds it up.
5. If it gets too hot and smelly and goes down in size, it has too much nitrogen, need to slow it down, throw in a handful of saw dust per pitchfork of compost when turning. Using the Berkley method, methane is released from the compost.

### **Day 18**

1. The compost will be ready for use when it looks brown – it should have the consistency of coarsely ground coffee.
2. Place two handful of the material into a plastic bag and leave the bag sealed for 24 hours in a dark place. If there is no odour on opening the bag or heat is noticeable, the compost is ready.



### Day 3 and 4

1. The compost heap should be sufficiently hot within two days.
2. To examine this-put your arm inside the heap upto the elbow and feel the warmth inside. The temperature may be measured. If the temperature is about 65 degree or the felt heat is unbearable-turn the heap.
3. Keep 5 Mt X 2 Mt spot reserved adjacent to heap.
4. Turn the compost –upper layer to lower layer and lower layer to upper layer and outside to inside and inside to outside. Belcha should be used for turning.
5. The moisture content of the heap should be properly maintained. Take one handful compost and put pressure on in manually- if it releases one drop of water or almost drips a drop- it is OK.

### Precaution:-

The temperature of the heap is very important- it generates due to chemical reaction of Aerobic bacteria- If the temperature crosses over 65 degree – the aerobic bacteria will not survive and the composting will not be complete.

### How to do it step by step Day 5,8,12,14& 16

1. The temperature of the heap increases very high during these days.  
To understand it easily, put your arm inside the heap upto the elbow and feel the warmth inside. If it is unbearable then the temperature have risen adequately.

### Basic “step by step” recommendations for preparation of compost Day-1

1. Firstly, all the raw materials i.e. straw, green vegetative ingredient etc should be properly chopped with one/two bladed manual chopper machine for making fairly small size.



Hand operated Chopper

2. For making compost heap, the shredded ingredients i.e. green and brown should be kept at 30 C.M. alternate layers. The size of heap should be 1 mt.X 1 mt. X1 mt.After completion of one layer add organic manure or old compost by thinly sprinkling over it.



3. Wet the layer by spraying water and stamp down if the layer is loose. If the first layer is of green ingredients, the next layer will be of brown ingredients. Keep adding layer by layer, sprinkling activator, stamping down and wetting till the height of the heap becomes 1 mtr.
4. Spread a heavy gauge black plastic tarp and weigh down at the corners with stones tied to sturdy ropes for protection from heavy rain and storm.
1. Keep the heap as such for 2 days.



**Brown Material**



**Soft Green Material**



**Alternate heaping of Green and brown layer**



**Sprinkling over compost heap**

### **Precaution:-**

1. Do not use excess water
2. Heap should not be built within pit or inside closed chamber having pipes with holes.