

Nursery Manual

Points to remember while establishing a Nursery:

1. Land Requirement

This is the most crucial aspect of a nursery which would require your extra attention. The land is the basic criteria that would decide the credibility and the quality of your nursery and the content that it grows. You need good fertile land, which suits the nursery. You can either rent the required agricultural land, or if you have enough space of your own, you can opt for the same. For land to be considered for a nursery there should be proper road accessibility, moisture, nutrients, cattle pressure, etc.

2. Fencing

Fencing is mainly done to protect plants from cattles and theft. For fencing, cement pole or wooden pole is required for support and barbed wire for proper fencing. 3-4 layers of barbed wire is must to protect from small livestock like goats and sheeps.

3. Irrigation

Water is one of the main criteria for growth and development of plants. Hence source of water is a must throughout the year. Most important part is to have your own water source than to rely on other sources. Best source of irrigation can be Rainwater harvesting pond, submersible pump if electricity is available else Solar pumps can work well.

4. Soil

Since soil is the medium to hold the plants and also a source of nutrition for the plants, hence availability of good quality soil is required for timely repacketing of plants.

5. Light

The preferred land must be open and get atleast 6-8 hours of bright sunlight. Shady lands must not be chosen; else plants may get diseased or unhealthy.

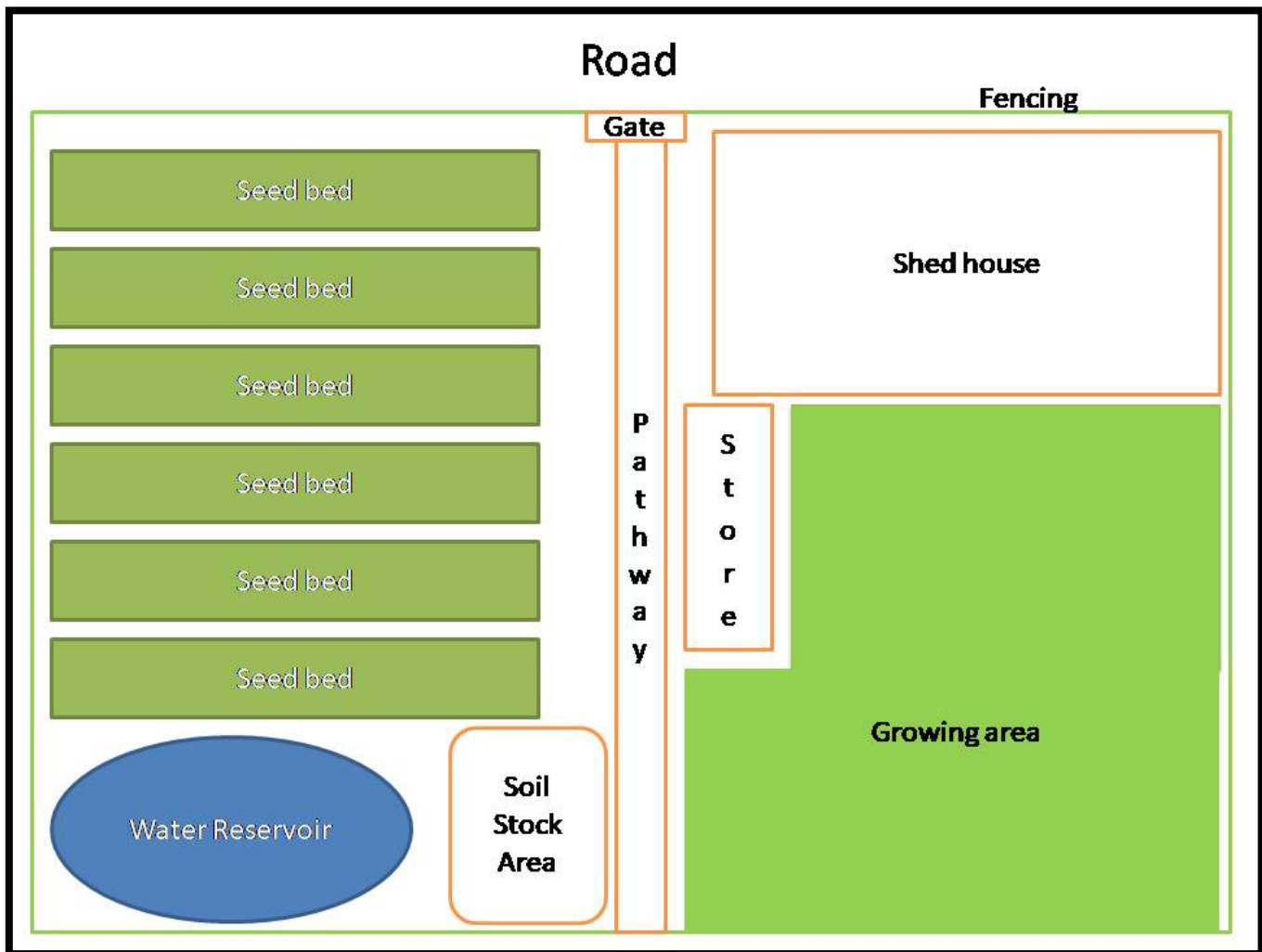
Steps for establishing a nursery:

1. **Cleaning:** The land must be cleaned of weeds with the help of JCB and also must be checked for any phyto-infection causing agents.
2. **Leveling:** The land must be leveled properly so that there is no water logging area in it.
3. **Fencing:** The land must be fenced to protect from cattles.
4. **Electricity connection:** It is required since electricity is required for both irrigation as well as for guarding during the night.

5. **Submersible boring:** The land should be dug for water source and submersible pump should be fixed.
6. **Pipeline:** For proper irrigation to every corner of the nursery land, proper pipe line is to be made.

Components of a nursery:

1. **Store:** A store is to be made where all the equipments and apparatus are to be stored.
2. **Seed beds:** A seed bed is a raised bed prepared for seed germination.
3. **Shed house:** Shed house is constructed to provide shed to the new transplanted plants.
4. **Growing area:** It is the open area, where the small plants are groomed to grow.
5. **Soil stock area:** It is an area where soil will be stacked for further use.
6. **Water reservoir:** It will be an area where water will be held for repeated use in nursery, this can be either by rain water harvesting or by submersible.



What plants to choose for ecosystem regeneration ?

For ecosystem regeneration, there are some components that govern the species selection procedure:

- **Local vegetation study:** This gives a clear idea of the plants that are growing locally in the area and not the planted exotic ones.

- **Soil properties like structure, texture, pH, EC, water holding capacity:** It determines almost everything of the species selection. Since, soil is the only source of water, nutrient and anchorage to the plants, hence the species selection mostly depends upon this.
- **Microclimate:** Different microclimate supports different species hence data on climatic condition like mean annual temperature, rainfall, is required.
- **Source of water:** Water is a very important component for species selection.
- **Fauna study:** Flowers and fruits are very important source of food for wild animals and birds. Hence, local fauna study helps to determine species selection for ecosystem regeneration.
- **Agricultural pattern:** Local agricultural pattern gives a good idea about water availability and soil type of the area.
- **Historical data from Forest Department:** Ancient distribution of local species of the area helps to determine the species that were predominant in the area before say 30 years or more.
- **Economical value of the species:** In a participatory approach with the local villagers, the species selected must have some economical value that can uplift the local villagers.
- **Phenology of the species:** In a participatory agroforestry model, phenology of the tree selected must be studied to determine the species. This is done to know the timing of leaf fall and flowering so that it doesn't coincide with the cropping time.
- **Water requirement of the species:** Species should be segregated as per water requirement and planted according to the water availability of the area.
- **Nutrient requirement of the species:** The species that are to be selected must not have too much nutrient requirement.
- **Allelopathic effect:** The trees must not have any ill effects on other associate species else that won't work well in Ecosystem restoration.

Our selected species for the project are:

Sl. No.	Plant
1	<i>Senna siamea</i>
2	<i>Leucaena leucocephala</i>
3	<i>Acacia nilotica</i>
4	<i>Alstonia scholaris</i>
5	<i>Cassia fistula</i>
6	<i>Pongamia pinnata</i>
7	<i>Aegle marmelos</i>
8	<i>Annona squamosa</i>
9	<i>Bombax ceiba</i>

10	<i>Tamarindus indica</i>
11	<i>Casuarina equisetifolia</i>
12	<i>Shorea robusta (local collection)</i>
13	<i>Guava</i>
14	<i>Sygium cumini</i>
15	<i>Melia dubia</i>
16	<i>Dillenia indica</i>
17	<i>Acacia auriculiformis</i>
18	<i>Cassia glauca</i>
19	<i>Lagerstromia speciosa</i>
20	<i>Dalbergia sissoo</i>
21	<i>Mimosops elengi</i>
22	<i>Azadirachta indica</i>
23	<i>Anthocephalus cadamba</i>
24	<i>Terminalia chebula</i>
25	<i>Terminalia bellirica</i>
26	<i>Butea monosperma</i>
27	<i>Saraca indica</i>
28	<i>Emblica officinalis</i>
29	<i>Withania somnifera</i>
30	<i>Terminalia arjuna</i>
31	<i>Mesua ferrea</i>
32	<i>Sesbania grandiflora</i>
33	<i>Samanea saman</i>
34	<i>Albizia lebbeck</i>
35	<i>Bauhinia acuminata (White)</i>
36	<i>Bauhinia purpurea (Purple)</i>
37	<i>Delonix regia</i>