

JOB ROLE – GARDENER

Sector – Agriculture

(Qualification Pack Code: AGR/Q0801)

PPT's for Class XI

PSS Central Institute of Vocational Education

Shyamla Hills, Bhopal – 462 013, Madhya Pradesh, India



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UNIT 2: NURSERY MANAGEMENT

Session 3: Sowing of Seeds and Planting Material

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Session Objectives

The student will be able to :

- Describe method of seed sowing.
- Explain the application of manures and fertilisers.
- Demonstrate potting, de-potting and re-potting.
- Demonstrate care and maintenance of nursery plants.

Introduction

Seed sowing, application of manures and fertilisers, potting, depotting and repotting, care and maintenance of nursery plants are important activities for production of good quality planting material.

Method of Seed Sowing

Broadcasting:

After the preparation of a nursery, spread the seeds on nursery beds and cover them with finely sieved rotten FYM or compost.

Line sowing (shallow trenches on bed):

It is the best method of sowing seeds in a nursery. Sowing in lines improves germination and quality of seedlings. In this method, each seed gets independent space, and hence, grows healthy and vigorously. The diseased seedlings and weeds can be managed easily.

Method of Seed Sowing

Seed sowing in plug trays:

High value and hybrid seeds are preferred to be sown in plug trays (pro-trays) instead of open field nursery beds. Pro-trays are made of soft plastic having shallow plugs. These plugs are filled with planting medium. Coco peat is commonly used as a medium in pro-trays.



Precautions Taken During Seed Sowing and Planting

During seed sowing

- The seeds must be healthy and free from infection.
- The seeds must be sown at the right depth.

During planting time

- Healthy and uniform seedlings must be selected and planted late in the afternoon
- The seedlings must be treated with fungicides to avoid soil-borne infections.

Potting, De-potting and Re-potting

Potting:

It refers to the transferring of plants from seed bed or polyethelene bags to pots containing potting mixture.

Potting of plants involves various steps.

- (i) Selection of the pot
- (ii) Filling the pot with potting mixture
- (iii) Placing the plant
- (iv) Watering and staking the plant
- (v) Placement of the pot

Potting, De-potting and Re-potting

Pots:

Ornamental plants are grown in a variety of pots, depending on the choice and availability. Clay, cement, ceramic, plastic and other kinds of pots are used for growing house plants. However, clay pots are most popular, easily available, highly porous and cheaper. Selection of the appropriate size of pots is significant. The size of the plant and its growth habit are to be considered before selecting a pot. For specimen plant display, the pot size should be of at least 30 cm diameter.

Potting, De-potting and Re-potting

Potting mixture:

An effective potting mixture must be light in weight and have good water-holding capacity. It allows drainage and helps in supplying adequate nutrition to plants. It must be ensured that the mixture is free of insect pests and diseases. For ferns and bulbous plants, the medium needs to be highly porous, comprising coarse sand, light garden soil and leaf mould. Neem cake and bone meal may also be used in small quantities as nutrients.

Potting, De-potting and Re-potting

Potting procedure:

1. Filling of pot:

Selection of a pot is made according to the size and growing habit of a plant to be potted. Drainage hole at the base is made to ensure the drainage of excess water. The drainage hole is covered with pieces of earthen tile so that the rooting medium does not flow out with water. A thick layer of coarse sand is placed over it, and finally, the remaining pot is filled with the potting mixture. The pot must have 2.5 cm space from the rim for holding water.

Potting, De-potting and Re-potting

Potting procedure:

2. Planting:

A healthy rooted cutting or a plant with well-established root intake is carefully dug out from the nursery bed. It is, then, placed with the root ball of soil in the centre of the potting mixture. Fill the pot with the potting mixture all round the ball of soil. Press the mixture around the stem firmly and make it compact.



A potted plant

Potting, De-potting and Re-potting

Potting procedure:

2. Planting:

Potting of deciduous house plants is done in February–March, whereas evergreen plants in July–August.

Precautions

- Care must be taken that the root ball of plant is not pressed too hard as it will break and damage the roots.
- Water the plant gently with a sprinkler can, immediately after planting.
- Place the potted plant in a cool shady place for settlement.
- Stake the plant with a bamboo stick, if the stem is weak.

Potting, De-potting and Re-potting

De-potting procedure:

It is the removal of a plant from a pot for planting on ground soil, bed or in another pot.

- The pot must be watered before depotting.
- The pot is lifted by one hand, the palm of the other hand spread over the top of the soil holding the stem between the second and third finger, and the thumb along the side of the pot.
- The pot is then turned upside down.

Potting, De-potting and Re-potting

Depotting procedure:

- The whole earth ball, with intertwining roots of the plant, will come out as a single piece and kept outside carefully.
- Before transferring the plant in a new pot, the lower old and finer roots along with some old potting mixture are removed.



A Depotted plant

Potting, De-potting and Re-potting

Repotting: It is transferring or transplanting a plant from one pot to another.

Repotting is done with the following objectives:

- Changing the existing small old pot or exhausted potting mixture to a new one.
- For healthier growth of house plants, repotting and transplanting of established plants is done once in a year.
- Repotting facilitates pruning of overgrown roots, which in turn ensures better survival of the plant.
- Bigger size of the pot provides a larger space for root development.

Potting, De-potting and Re-potting

Repotting procedure:

Depending upon the plant type, repotting is done in February–March or just before the onset of monsoon. Cut the decayed, dead, dried or twisted roots neatly with sharp secateurs. The excess and old soil is gently removed from all round. The pot is filled with fresh potting mixture, and then, watering is done. Place the plant in a new pot at the same depth in the soil at which it was in the old pot.



Plant ready for repotting

Application of Manures and Fertilisers

Types and methods of manure application

Bulky manures- FYM or other bulky manures must be broadcast over the entire area and mixed well with the soil by harrowing.

Concentrated manures - Oil cakes, fish manure and blood meal are known as concentrated organic manures.

Application of Manures and Fertilisers

Fertiliser application- organic manures are applied at the time of preparing the land while, fertilisers applied just before or soon after planting.

Application of solid fertilisers

A. Broadcasting

1. **Basal application:** Depending on the crop, broadcasting of fertiliser is carried out prior to sowing or planting just before the last ploughing incorporated in the field.
2. **Top dressing:** When fertilisers are broadcast in the standing crop, it is known as 'top dressing'.

Application of Manures and Fertilisers

Application of solid fertilisers

B. Placement: Place the fertiliser in prepared soil before sowing, irrespective of the position of the seeds. There are three types of fertiliser placement.

- a) **Plough furrow or single band placement-** Fertilisers in narrow bands beneath and by the side of crop row or furrow is called 'band placement' of fertilisers.
- b) **Deep placement-** In this method the nitrogenous and phosphatic fertilisers are applied in dry land agriculture.
- c) **Ring placement-** Fertiliser applied at some depth around the plant circle. This method mostly practiced in orchard crops

Application of Manures and Fertilisers

Application of liquid fertilisers

1. Foliar application- This method can be used with fertiliser nutrients readily soluble in water. It is also used when there is a soil fixation problem. Nutrient concentration of 1–2% can be applied without injury to foliage.

2. Fertigation- This refers to the application of fertilisers through irrigation water. Nitrogen is the principle nutrient commonly used.

Care and Management of Nursery Plants

Handling of Plants:

Nursery plants need care and maintenance when raised from root stock or by tissue culture technique to ensure their growth and development.

The following activities have been executed for the production of good quality planting material.

- 1. Shading:** To protect the young plant in the nursery from intense heat and heavy rains, shade-nets or polythene nets are used.

Care and Management of Nursery Plants

2. Thining: Unhealthy, weak, diseased and damaged plants are pulled out to allow healthy plants to grow.

3. Watering: The nursery bed must be irrigated with the help of a water can. After the plants are well-established, watering should be done as per the requirement of the plants.

Care and Management of Nursery Plants

4. Weeding: Weeds compete for nutrients and soil water, which results in poor quality seedling growth. Hand weeding or hand hoeing is the most common practice to remove weeds on emergence. Pre-emergence herbicides can also be sprayed on the nursery beds as basal dressing soon after seed sowing to control weeds.

5. Hardening of plants in nursery: Hardening of seedlings is withholding of water to nursery beds for few days before removing them for transplanting to prepare them for withstanding transplanting shock.

Care and Management of Nursery Plants

- 6. Staking** - Staking is a practice to support the plants growing straight and saving them from bending or lodging.
- 7. De-shooting** - Removal of all side shoots (offshoots, offsets or keikis) emerging from the base of the plant. This operation is done at a time when the plants are not too tall.
- 8. Disbudding** - Removal of floral buds when a large flower on a plant is desired as in chrysanthemum and dahlia.
- 9. Pruning** - Planned removal of twigs, branches, shoots, limbs or roots is termed as pruning.
- 10. Pinching** - Removal of growing tips of vegetative buds to promote bushy growth for more lateral formation and precocious flowering

Care and Management of Nursery Plants

Common insect pests and diseases in a nursery

Diseases and pests	Characteristics and symptoms	Control
Damping-off	Rotting of seedlings at collar portion and collapse at later stage	Soil sterilisation with formalin 2%, Copper oxychloride 2g/l drench
Leaf spot	Small to big black or brown-coloured spots on leaves	Spraying of mancozeb 3g/l
Leaf minor	Leaf mining insect that produces serpentine (snake-like) white shining lines on leaves	<i>Triazophos</i> 0.25 ml/l
Aphids	Small green, brown or black sap sucking insects, which secrete honey dew that attracts ants and sooty mould	<i>Dimethoate</i> 2 ml/l, Neem oil 2–4 ml/l
Thrips	Tiny black or yellow-coloured sap sucking insects, which infest young portions of plants and flowers	<i>Dimethoate</i> 2 ml/l Neem oil 2–4 ml/l

Summary

In this session you have learnt about the method of seed sowing, application of manures and fertilisers, potting, depotting and repotting, care and maintenance of nursery plants.

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