

JOB ROLE – FLORICULTURIST (OPEN CULTIVATION)

Sector – Agriculture

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PPT's for Class XI



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UNIT 2: NURSERY MANAGEMENT

Session 1: Nursery and Its Importance

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Session Objectives

The student will be able to :

- Describe importance of nursery and its type
- Explain plant growth regulators (PGRs) and its application.

Introduction

A nursery is a place where rooting of planting materials or germination of seeds can be obtained in a better way, under favourable growing conditions. In a nursery, seeds germinate effectively and seedlings give better stand in field. The period required for germination and establishment of seedlings can be easily utilised in a nursery and skipped in the preparation of land or harvest of previous crop in the field.

Flowering crops are mostly raised by seeds, cuttings, layer and grafting. In vegetatively propagated crops, root stocks are raised by seeds, or cutting. All these require care and can be grown well in a nursery under supervision.

Importance of Nursery

- Wastage of small and expensive hybrid seeds is reduced considerably due to better care and management.
- Germination percentage can be improved by providing ideal condition in a comparatively smaller place.
- The management of seedlings can be done in a better way with minimum care, cost and maintenance as the nursery area is small.

Importance of Nursery

- By selecting vigorous and healthy seedlings in the nursery for transplanting, better and uniform crop growth can be obtained in the main field through better survival chances.
- Nurseries offer great opportunities of employment to semi-skilled, skilled and unskilled human resources.

Importance of Nursery

- The duration of the crop is reduced in the main field by at least a month due to the raising of seedlings, which saves land and labour of the main field and also gives enough time for harvesting of the previous crop.
- The control of insect pests, diseases and weed is easy in a nursery.

Types of Nursery

Nurseries are classified on the basis of duration, plant produce and structure used.

On the basis of duration

Temporary nursery: This type of nursery is established for an ongoing project of landscaping, forest, hilly regions or in natural garden in a particular season. It may also be called 'nursery on site'. Seedlings produced in a temporary nursery are according to target and utilised fully, and not for any type of sale.

Types of Nursery

On the basis of duration

Permanent nursery: It consists of a permanent infrastructure with availability of all required inputs. Permanent nursery may also be called 'commercial nursery', where quality planting material is produced for sale.

Permanent nursery comprises office, store, mother blocks, nursery beds, protected structures, irrigation source, electricity, transportation facilities, packing yard, manure, cattle and machinery shed. It has a record of sale and purchase, history and record of mother plants and record of produced planting material.

Types of Nursery

On the basis of types of plants produced

Ornamental nursery: Seedlings, root stock and scion material of ornamental plants is raised and conserved for further use. This nursery includes mother block of ornamentals, which serve for scion material in layer age, budding and grafting. Raised and flat beds of the nursery occupy seedlings of different annuals, perennials and root stocks of ornamentals.

Types of Nursery

On the basis of types of plants produced

Vegetable nursery: Planting materials, like seedlings of all vegetables, rooted cuttings (asparagus, sweet potato), seedlings raised from rhizomes (ginger) and tubers (potato), bulb (onion, garlic) for seed purposes are raised and conserved.

Fruit plant nursery: Seedlings and cuttings of root stocks, budded plants, grafts, layers and cuttings of fruit trees are raised and conserved for further use. This nursery has mother block of different fruit crops used as scion material.

Types of Nursery

On the basis of types of plants produced

Forestry nursery: Different species of trees and climbers planted in forests and used in social forestry are mostly propagated by seeds. Seedlings of big trees, like margosa, gulmohar, *amaltas*, tamarind, *aonla*, prososis, oak, eucalyptus, etc., are commonly found in a forest nursery.

On the basis of structure used in nursery

Open field nursery: These nurseries are established in open areas without any permanent structures. Usually raised, flat or sunken seed beds are prepared.

Types of Nursery

On the basis of structure used in nursery

Hi-tech nursery: Such a nursery established under protected structures, can be successfully raised.

Thatched-roof: This type of nursery is constructed over the nursery beds. This protects the seedlings from damage from extreme wind, rain, temperature or hot sun, etc. It is less costly but not very effective.

Shade-net: Such a nursery is raised under shade-net houses to give different amount of shade based on the crop requirement, shade-nets of different colours and mesh size are used as covering material.

Types of Nursery

On the basis of structure used in nursery

Hi-tech nursery:

Poly-tunnel: The nursery is covered with plastic material to form a tunnel. It is a miniature structure, which produces greenhouse-like effect. The seedlings are protected from cold, wind, storm, rain and frost. Due to modified conditions, there is better germination and plant growth.

Greenhouse/polyhouse: It is a frame covered structure with polyfilm or shade-nets so that plants can be grown under partially or completely modified environment. Seedlings are raised inside the structure on raised beds, or in plug-tray, used for hardening of seedlings and tissue-cultured plants.

Plant Growth Regulators (PGRs)

It is a complex organic compound other than nutrients, which applied in minute quantities, is able to promote or inhibit growth.

Classes of Plant Growth Regulators

Some of the Plant Growth Regulators are as follows:

Auxins: It synthesised in the apical portion of stem and root in plant. Auxins control growth through cell enlargement and influence developmental responses, such as apical dominance. Indole acetic acid (IAA), Indole butyric acid (IBA), Naphthalene acetic acid (NAA), 2,4-Dichlorophenoxyacetic acid (2,4-D) are some examples of auxin.

Plant Growth Regulators (PGRs)

Cytokinins: It help in the transport of amino acids in plants. They promote cell division and senescence.

Gibberellins: They control cell division and elongation in plant shoots, for example, GA₃.

Ethylene: It is a gaseous hydrocarbon and known as a 'ripening hormone', for example, ethephon, ethrel.

Plant Growth Regulators (PGRs)

Abscisic acid: Generally, it is considered as a 'growth inhibitor' because of its effects on growth inhibition or senescence. It is also involved in metabolic activities of plant viz., abscission of leaf, response to environmental stress and fruit ripening.

Application of PGR

Growth regulators are applied in very low concentrations, i.e., in parts per million (ppm). (one milligram in one litre of water gives 1 ppm solution).

Formulation of PGR

Growth regulators may be applied in powder form or paste form or as spray solution.

Plant Growth Regulators Application in Flower Crops

S. No.	Name of PGR _s	Crop	Concentration (ppm)	Mode of action
1.	Auxins (IAA or NAA) IBA	<ul style="list-style-type: none"> • Dahlia • Orchids • Balsam 	<ul style="list-style-type: none"> • >100 • 500 • 5 	<ul style="list-style-type: none"> • Delays flowering • Promotes root growth • Increases shoot length
2.	Cytokinin	<ul style="list-style-type: none"> • Orchids 	<ul style="list-style-type: none"> • 500 	<ul style="list-style-type: none"> • Enhance shoot growth
3.	Etherel Ethephon	<ul style="list-style-type: none"> • Gladiolus • Carnation 	<ul style="list-style-type: none"> • 1000 • 600-800 	<ul style="list-style-type: none"> • Breaks corm dormancy • Promotes branching

Plant Growth Regulators Application in Flower Crops

S. No.	Name of PGR _s	Crop	Concentration (ppm)	Mode of action
4.	GA ₃	<ul style="list-style-type: none"> • Antirrhinum • Chrysanthemum • Dahlia • Gladiolus • Petunia • Rose • Tuberose 	<ul style="list-style-type: none"> • 25 • 100-400 • 100-150 • 100-200 • 500 • 100-400 • 100-200 	<ul style="list-style-type: none"> • Induces earlier flowering • Increases plant height, internodal length and flower stalk length • Induces flowering and weight • Improves corm yield • Improves germination percentage • Improves stem length and quality • Improves bulb yield
5.	TIBA	<ul style="list-style-type: none"> • Marigold 	<ul style="list-style-type: none"> • 5-25 	<ul style="list-style-type: none"> • Causes more branching

Summary

In this session you have learnt about the importance of nursery and its type, plant growth regulators (PGRs) and its application in flower crops.

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