

JOB ROLE – GARDENER

Sector – Agriculture

(Qualification Pack Code: AGR/Q0801)

PPT's for Class XI



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UNIT 2: NURSERY MANAGEMENT

Session 2: Growing Media

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Session Objectives

The student will be able to :

- Describe growing media and its types.
- Explain plant bio-regulators and its application.

Introduction

The material in which plants grow in a pot is known as potting material and is commonly called the 'growing medium' or 'potting medium'. The selection of the type of potting material is important as the growth of plants completely depends on it.

The main function of the growing medium is to supply nutrients, air and water to the roots of the growing plants. It supports the plant physically and holds it in an upright position and allows growth against the gravitational force.

Types of Growing Media

Different types of growing media are used for the propagation of plants.

Garden soil: Light and sandy soils are ideal growing media, while silty or clayey soils are not preferred due to poor aeration and stickiness.



Types of Growing Media

Sand: Large particle size makes this medium more porous, aerated and well-drained. The water-holding capacity of this medium decreases with an increase in the size of particle. The usual size of sand is 0.05–2.0 mm



Types of Growing Media

Compost: It is decomposed organic matter used with soil. Dropped leaves, twigs, grass clippings, cattle feed waste, and farm animal excreta are some of the common ingredients that are used for the preparation of compost.

Sphagnum moss: It has excellent water-holding capacity and can hold water many times its weight. It is commonly used as rooting medium in air layering.



Types of Growing Media

Peat: Peat consists of residues from a marsh swamp. It comprises some organic nitrogen. It helps in fast vegetative growth.



Coir peat: It is obtained from coir fibre dust. It is acidic in nature and has a pH of about 5.0.



Types of Growing Media

Vermiculite: It is chemically hydrated magnesium aluminium iron silicate. It is porous and light in weight. It has a good water-holding capacity.



Perlite: It is a natural mineral of volcanic origin, which is light weight. The pH is usually neutral to slightly alkaline.



Types of Growing Media

Saw dust:

These are the by-products of saw mills. It is easily available and cheap. It is poor in nutrient content but can be used after the addition of nitrogen.



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.

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)	<ul style="list-style-type: none"> • Dahlia • Orchids 	<ul style="list-style-type: none"> • 100- 200 • 90-100 	<ul style="list-style-type: none"> • Delays flowering • Promotes root growth
	IBA	<ul style="list-style-type: none"> • Bougainvillea 	<ul style="list-style-type: none"> • 1000-3000 	<ul style="list-style-type: none"> • Increases shoot length • Induces rooting
2.	Etherel	<ul style="list-style-type: none"> • Gladiolus 	<ul style="list-style-type: none"> • 500-1000 	<ul style="list-style-type: none"> • Breaks corm dormancy
	Ethephon	<ul style="list-style-type: none"> • Carnation 	<ul style="list-style-type: none"> • 600-800 	<ul style="list-style-type: none"> • Promotes branching

Plant Growth Regulators Application in Flower Crops

S. No.	Name of PGR _s	Crop	Concentration (ppm)	Effect on plants
3.	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
4.	Benzyladenine	<ul style="list-style-type: none"> • Chrysanthemum 	<ul style="list-style-type: none"> • 600-1000 	<ul style="list-style-type: none"> • Breaks apical dominance
5.	B-Nine	<ul style="list-style-type: none"> • Geranium 	<ul style="list-style-type: none"> • 1000-2000 	<ul style="list-style-type: none"> • Increases adventitious roots
6.	MH	<ul style="list-style-type: none"> • Bougainvillea 	<ul style="list-style-type: none"> • 1000-2000 	<ul style="list-style-type: none"> • Encourages compact bushy growth
7.	Cycocel	<ul style="list-style-type: none"> • Marigold • Carnation 	<ul style="list-style-type: none"> • 3000 • 100 	<ul style="list-style-type: none"> • Causes more branching • Induces flowering

Summary

In this session you have learnt about the growing media and its types, and Plant bio-regulator and its application in flower crops.

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