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Plant Growth Regulators: Meaning of Plant Growth Regulators: Phytohormones

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Meaning of Plant Growth Regulators

- Those chemical substances, which govern all the factors of development and growth within plants.
- Phytohormones and plant growth hormones are the other names for Plant Growth Regulators.
- Plants need light, water, oxygen, and nutrition to grow and develop.

Phytohormones

- These chemical messengers coordinate cellular activities.
- They control and modify the physiological processes such as the growth, development, and movement of plants.

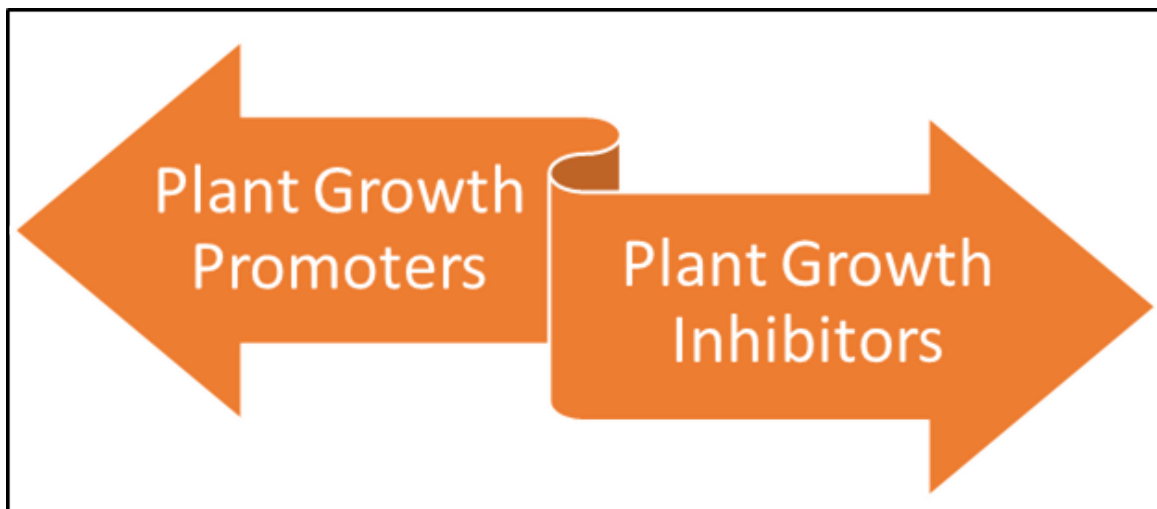
Characteristics of Plant Growth Regulators

- Ripening of fruits.
- Seed dormancy.
- Formation of leaves flowers and stems.
- Elongation and differentiation of cells.
- They can accelerate as well as retard the rate of growth in plants.

Types of Plant Hormones

- Auxin
- Gibberellins (GAs)
- Cytokinins
- Absciscic acid (ABA)
- Ethylene

Types of Plant Growth Regulators



Plant Growth Regulators

Auxins

- Charles Darwin discovered phytohormone as the first Auxin.
- Auxins play an important role in producing fruit without prior fertilization.
- They are also used by gardeners to keep lawns free from weeds.
- They are produced by the apex of root and shoot.
- They are also used in the process of plant propagation.

Gibberellins

- They are plant hormones that regulate various developmental processes.
- This includes stem elongation, germination, dormancy, flowering, flower development, and leaf and fruit senescence.
- They are one of the longest-known classes of plant hormone.
- They are involved in leaf expansion.
- They are acidic in nature.
- They are used in the brewing industry to accelerate the malting process.

Cytokinins

- They are a class of plant growth substances (phytohormones) .
- They promote cell division, or cytokinesis, in plant roots and shoots.
- They are involved primarily in cell growth and differentiation.
- They promote nutrient mobilization.
- They keep flowers fresh for a longer duration.

Plant Growth Inhibitors

Abscisic Acid

- It is a plant hormone.
- It functions in many plant developmental processes, including seed and bud dormancy.
- It is also involved in control of organ size and stomatal closure.
- It further inhibits plant metabolism and seed germination.
- It is also used as a spraying agent on trees.

Ethylene

- It is a hydrocarbon which has the formula C_2H_4 or $H_2C = CH_2$.
- In pure state, it is a colorless flammable gas with a faint “sweet and musky” odour.
- It is used as both plant growth promoters and plant growth regulators.
- It enhances respiration rate during ripening of fruits.