

21. PRACTICAL APPLICATION OF PLANT GROWTH REGULATORS IN CROP PRODUCTIVITY

Commercial uses of growth regulators

1. *Rooting and plant propagation*

- a) Auxin compound like IBA NAA, 2,4-D, 2, 4,5-T
- b) IBA produces strong fibrous root system

2. *Germination and dormancy*

- a) Gibberellin is a potent germination promoter
- b) Abscissic acid – germination inhibitor (Anti – Gibberellin)
- c) Induce Dormancy - ABA
- d) Breaking of dormancy - Auxins and Gibberellin

3. *Fruit set and Development*

- a) Fruit setting → 2, 4, 5 – T
- b) Fruit size increment in grapes → Gibberellic acid
- c) Shelf life increment in fruits and flowers → Cytokinin
- d) Good fruit shape ----- Gibberellic acid + Cytokinin
- e) Parthenocarpic fruit – Gibberellins, IAA and PAA

4. *Sex expression*

Production of male flowers → Gibberellins (cucumber)

Production of female flowers → Auxins and Gibberellins
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Cucumber maize

5. *Abiscission*

Control of abscission → NAA and IAA
Induce Abscission → Ethrel

6. Morphogenesis

Auxin and Cytokinin

7. Weed control

2, 4-D and 2, 4, 5-T

8. Plant organ size

Increases plant height → GA

Shorten the plant height → TIBA

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Tri iodo benzoic acid

Increases Tillering → Cytokinin

Ex: BAP (Benzyl amino purine) and TIBA

9. Antitranspirants → ABA and PMA

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Phenyl mercury acetate

10. Papaya Later flow → Ethephon

11. Rubber latex flow → 2, 4 – D and 2, 4,5 – T

12. Fruit ripening → Ethrel

13. Sugarcane ripeners → Glyphosphate and CCC

Hormone	Major Functions	Where Produced
Auxin	Stimulates cell elongation; involved in phototropism, gravitropism, apical dominance, and vascular differentiation; stimulates ethylene synthesis and induces adventitious roots on cuttings	Meristems of apical buds, embryo of seed, young leaves
Cytokinin	Stimulates cell division, reverses apical dominance, involved in shoot growth, delays leaf senescence	Synthesized in roots and transported to other organs
Ethylene	Stimulates fruit ripening, leaf and flower senescence, and abscission	Tissues of ripening fruits, nodes of stems, senescent leaves and flowers
Absciscic Acid	Inhibits growth, stimulates stomatal closure, maintains dormancy	Leaves, stems, green fruit
Gibberellin	Stimulates shoot elongation, stimulates bolting and flowering in biennials, regulates production of hydrolytic enzymes in grains	Meristems of apical buds and roots, young leaves, embryo