

THE 5 PRIMARY PHYTO-HORMONES

There are 5 main Hormones in any plant. 3 of them are growth hormones (**Cytokinin, Auxin & Gibberellic Acid**) and 2 are stress hormones (**Ethylene & Abscisic Acid**).

Cytokinin :

- Is the dispatcher hormone, that signals the hormone events controlling cell division and differentiation.
- It is primarily produced in the root tip meristematic tissue.
- It acts to reduce senescence (aging) of the plant.
- The ratio of auxin to cytokinin determines the type of growth. More auxin = root growth, more cytokinin = more shoot growth

Auxin:

- Activates and directs new cell division and food movement in a plant.
- Primarily produced in the new apical meristem tissue in the leaves.
- As Auxin in the upper part of the plant increases and moves downward, it causes bud dormancy in both veg. and reproductive buds.
- As the plant reaches its most vigorous veg. growth stage the high levels of auxin transported to the roots tends to inhibit cell division in the roots causing loss of root vigor which causes senescence to start.

Gibberellic Acid:

- Plants produce GA to encourage cells to size and elongate.
- GA increases the sink (power) of the cell to attract sugar and food.
- GA is normally stored in the nodes of a plant where it increases cell sizing & the reproductive viability of the buds that occur from the nodes
- It works opposite to ethylene and ABA; it reduces ripening and tends to keep plant tissue more youthful and vigorous as well as promotes germination of the seed.

Ethylene :

Normal Ethylene

- Controls movement of auxin from various cells within the plant.
- Signals reproductive maturity and initiates flowering and fruiting
- Increases as the plant ages to initiate the ripening process.
- Encourages an increase in ABA to drive plant tissue (seed, fruit, & storage tissue) into dormancy, which results in better storage shelf life of the harvested plants.

Stress Ethylene

- Produced under stressed conditions as a signal for plants to synthesize protective proteins to help overcome moderate stress.
- In excess will cause premature ripening and death.

Abscisic Acid:

- Is responsible for cell maturity and the termination of cell growth
- Made primarily in the roots and moves rapidly up to the shoots under any kind of stress
- Promotes ripening & seed dormancy
- Helps prevent sprouting in the head of the plant, or in swath

