

BUD-XL

Micronutrients: 7 of them are “essential” for flowering plants: B, Cl, Cu, Fe, Mn, Mo, Zn
3 “beneficial”: Co, Ni, Si

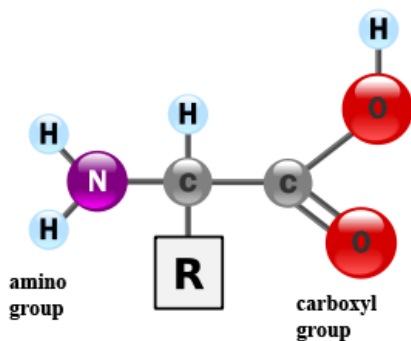
Boron, Chloride, and Copper are nutrients involved in late-flowering activity. Boron, in particular, is involved in carbohydrate transport.

Amino acids:

- There are 20 essential amino acids and many beneficial derivatives of these; amino acids are the building blocks of proteins and are utilized in root zones as chelating agents, improving the microflora of the medium and facilitating the assimilation of nutrients.

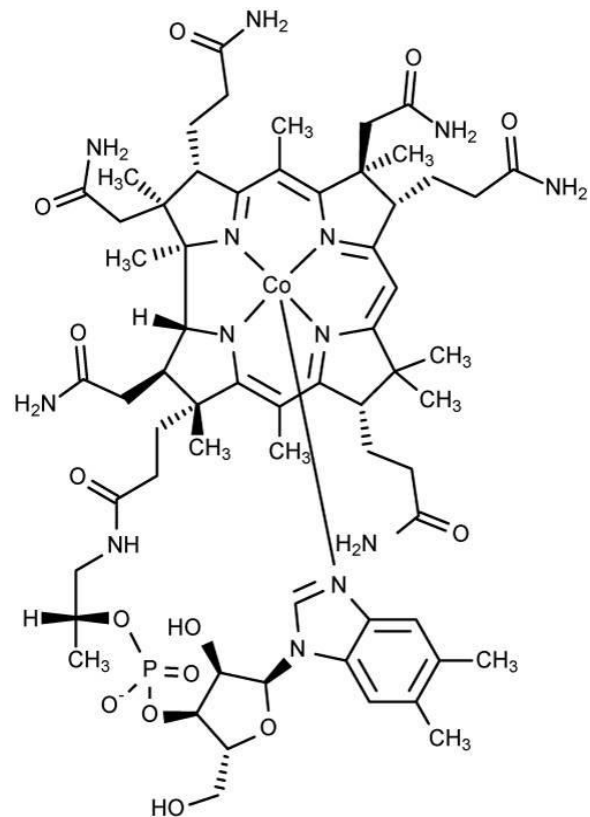
-Certain amino acids are directly related to stress physiology and help plants prevent and recover from symptoms of high-stress situations (such as extremely high levels of P and K)

-Amino acid derivatives include Tripeptide Glutamine

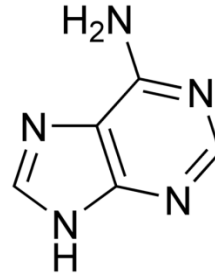


General structure of an α -amino acid

Biotin (Vitamin B12) - coenzyme required for activation of enzymatic processes; isomerases, methyltransferases, and dehalogenases are enzymes in which biotin acts as a coenzyme; also plays a role in energy production



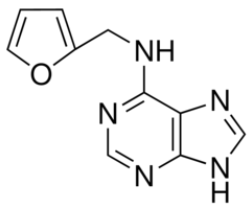
Adenine: Important nucleotide base that forms ATP (Adenosine Triphosphate), which is a key energy “currency” in plant cells; a component of NADH and FAD compounds used as cofactors in redox reactions, also a component of DNA, RNA, and some plant hormones; plays a role in protein synthesis.



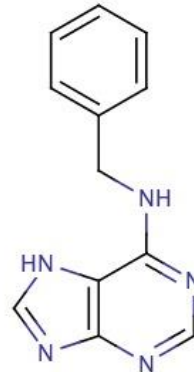
Cytokinins: Plant hormone class, most of which contain Adenine; promote cell division; synthesized in roots, shoots, and the cambium layer; transported in the xylem; initiates leaf senescence and bud growth. Cytokinins transfer nutrients and prevent protein degradation. They have been shown to increase yields as well as fight off pathogens.

There are 3 adenine-based cytokinins:

Kinetin:

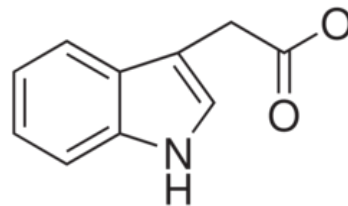


6-benzylaminopurine:



Auxin IAA: Indole-3-acetic acid – promotes cell elongation and cell division; a signal molecule in the development of buds and ovaries; works closely with cytokinins

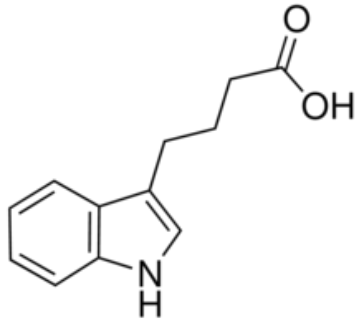
Potassium Sorbate E202: Inhibits molds



Guar Gum E412: Used as a stabilizer

Auxin IBA: Indole-3-butyric acid – used as a rooting hormone, increases root

regeneration and shoot growth; has been shown to induce fruit development

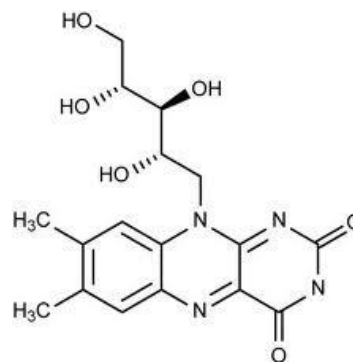


3-adenylic acid: a nucleotide that is reversibly convertible to ADP and ATP (energy source); notice the 'adenyl-' root word's similarity to adenine

3-adenylic acid = carbohydrate (sugar) + adenine + phosphate



Riboflavin: Vitamin B2 – breaks down biomolecules such as carbohydrates, fat, and proteins; the cofactors FAD and FMN are made up of riboflavin which carry charge in redox reactions. Riboflavin has also been shown to fight pathogens by reducing their activity and inducing disease resistance.



Thiamine – Vitamin B1 – a coenzyme in the breakdown, or catabolism, of carbohydrates and amino acids; also promotes root development and regeneration; also serves as a food source for microorganisms.

