

PLANT NUTRIENTS

Of the more than 100 chemical elements known, only 16 have been shown to be essential to plant growth. Three of these, **Carbon, Hydrogen and Oxygen** are primarily taken from the air and water. The other 13 are normally absorbed from soil by plant roots. These 13 are divided into 3 groups: Primary, Secondary and Micro Nutrients.

Primary Nutrients

- Nitrogen (N)
- Phosphorus (P)
- Potassium (K)

Secondary Nutrients

- Magnesium (Mg)
- Calcium (Ca)
- Sulphur (S)

Micro Nutrients

- Iron (Fe)
- Zinc (Zn)
- Manganese (Mn)
- Copper (Cu)
- Boron (B)
- Molybdenum (Mo)
- Chlorine (CL)

Nitrogen (N)

- Nitrogen is an essential component of protein which is essential for root and shoot growth
- Required by grass plants in the largest amounts
- Responsible for turf colour
- Improves resistance to heat, cold, disease and drought tolerance

N Deficiency's

- causes grass plants to yellow and become stunted
- diseases (such as dollar spot and red thread) are more prevalent in N deficient turf
- weed infested thin weak turf

Phosphorous (P)

Phosphorus is a constituent of nucleoproteins which are necessary for cell division and the development of meristematic (new) tissue. Hence, phosphorous is an important nutrient for the establishment of new turf.

P Deficiencies

- Reduces grass plants ability to spread and retain moisture
- Grass plants can become narrower, turn purple and curl

Potassium (K)

Potassium is essential for over all plant health. It contributes to an increase in drought and disease tolerance and improves winter hardiness.

K Deficiency

- shallow root system
- soft drooping leaves with poor development of supportive tissue
- turf is susceptible to stress

Magnesium: there is an atom of magnesium in each molecule of chlorophyll. Chlorophyll gives the plant its green pigment. It is also the site of photosynthesis.

Sulfur: an important constituent of many amino acids. If sulfur is deficient, S containing amino acid production is slowed and plant growth is reduced.

Calcium: constituent of cell walls; required for meristem growth; neutralizing factor for potentially toxic substances within cells; influences uptake of other nutrients i.e. potassium

Micro Nutrients

Cu, Fe, Zn, Mn, CL, B and Mo are components of the plant's enzyme system, catalyze biological reactions and are required for the conversion of sugar to starches.

Iron - important for chlorophyll production

Manganese- part of chlorophyll

Boron, Copper, Zinc, chlorine and Molybdenum required in very low quantities.