Chapter 12

MINERAL NUTRITION

Role of macro and micronutrients:

Sulphur:

Absorbed as sulphate ions SO_4^{2-} present in two amino acids cysteine and methionine main constituent of several co-enzymes, vitamins (Thiamine biotin co-enzyme A) and ferredoxin.

Iron:

Obtain in the form of ferric ion (Fe^{3+}) requires in large amount when compare to other micronutrients. It is constituents of electron carriers, like ferredoxin and cytochrome. It is reversibly oxidized from Fe^{2+} to Fe^{3+}. It activates catalase enzymes, it is important for chlorophyll synthesis.

Manganese:

Absorbed as Mn^{2+}.It activates many enzymes in photosynthesis, respiration and nitrogen – metabolism. It is also involved in splitting of water and liberation of O_2 during photosynthesis.

Zinc:

Absorbed as Zn^{2+} activates many enzymes mainly carboxylases. It is important for synthesis of Auxin.

Copper:

Absorbed as cupric ions Cu^{2+} important for overall metabolism involved in redox reactions. It is reversibly oxidised from Cu^{+} to Cu^{2+}.

Boron:

Absorbed as BO_3^{3-} or $B_4O_7^{2-}$. It is important for uptake and utilization of Ca^{+2}, important for membrane function, pole germination, cell differentiation and carbohydrate translocation.

Molybdenum:

Absorbed as molybtate $\left[MoO_2^{2+}\right]$, component of several enzymes like nitrogenase and nitrate reductase.

Chlorine:

Absorbed as chloride anion (Cl^-) along with Na^+ and K^+ helps in determining solute concentration and anion cation balance important for photolysis of H_2O and liberation of O_2 during photosynthesis.