**Function of Nutrients Within The Plant**  
  
  
**Boron**  
Boron is essential to actively growing tissue in the new growth necessary for pollen viability and good seed set. Boron deficiencies reduce the uptake of calcium and inhibit the plants ability to use it.  
  
**Calcium**  
Calcium is a secondary nutrient found in greatest amount in the cell walls. It is used in cell division and influences nitrogen metabolism. It is essential for the long life of fruit in store, and responsible for neutralising acids produced in the plant and those taken up by the soil.  
  
Deficiencies are caused by:  
• High nitrogen. High sodium • Poorly aerated soils • Low calcium • Poor drainage • Exposed subsoils • Low pH • Cold wet soils • Light and sandy soils.  
  
**Copper**  
Copper is a major part of a necessary photosynthesis enzyme. It is very important during the plant's reproductive stage. It helps the plant to use the proteins made, seems necessary as a virus control, and stops injured fruit trees from gumming. Deficiencies cause plants to become low in Vitamin C and unable to produce seeds.  
  
Deficiencies are caused by:  
• High nitrogen • High iron • Low organic matter • High Phosphorus • Low zinc • High organic matter • High manganese • High pH • Heavy rainfall • Light and sandy soil.  
 **Iron**  
Iron promotes the formation of chlorophyll and also carries oxygen in the sap. It requires high quantities of potassium to do its job.  
  
Deficiencies are caused by:  
High nitrogen • High copper • iron, copper, manganese • High phosphorus • High zinc • Low organic matter • Low potassium • High pH • Poorly aerated soils High calcium • High bicarbonates • Heavy rainfall • High manganese • Cold, wet soils.  
  
**Magnesium**  
Magnesium is a secondary nutrient and is a part of chlorophyll. It participates actively in the work of enzymes and assists with translocation of phosphorus. It is necessary for germination as it releases food to enable the root to emerge. It forms fats and oils.  
  
Deficiencies are caused by:  
• High nitrogen • Low pH • Cold, wet soils • High phosphorus • High pH • Poorly aerated soils • High potassium • High sodium • Exposed subsoils • High calcium • Poor drainage • Light and sandy soils.  
  
**Manganese**  
Manganese is a part of important enzymes involved in respiration and protein synthesis, and makes the plant far more efficient in making food in cloudy weather.  
  
Deficiencies are caused by:  
High iron • High sodium • Cold, wet soils High copper • High organic matter • Heavy manuring • High zinc • Poor drainage • Heavy rainfall • Low pH • Drought • Light and sandy soils • High pH.  
  
**Molybdenum**  
Molybdenum is essential for nitrogen fixation by nodule bacteria in legumes. It is essential for nitrogen reductase performance, and affects plant maturity. It increases the number of seeds in pea and bean crops and necessary for the manufacture of Vitamin C.  
  
Deficiencies are caused by:  
• High Manganese • Low pH • High copper • High sulphur.  
  
**Sulphur**  
Sulphur is a secondary nutrient necessary for the formation of several amino acids which are used to form protein. It also influences sugar metabolism. It increases root growth and is essential for the manufacture of the vitamins. It makes many other nutrients readily assimilated. An excess can cause the plant to age before its time. Sulphur is a constituent of many flavour and odour compounds in plants.  
  
Deficiencies are caused by:  
• High nitrogen • Low organic matter • Light and sandy soils • exposed subsoils.  
  
**Zinc**  
Zinc is important as a catalyst for plant growth regulators and the use of other nutrients. It affects plant maturity. It combines with vitamin B taken up from the soil to form an essential high-grade protein that is vital to our health. It also transforms carbohydrate sugars in the plant.  
  
Deficiencies are caused by:  
• High phosphorus • High organic matter • High magnesium • Exposed subsoils • High pH • Light and sandy soils  
  
**Potassium**  
Potassium is essential for photosynthesis, helps plants use nitrogen, improves the colour and flavour of fruit and vegetables, improves the keeping quality of fruit in storage, gives winter hardness to legumes and other crops, makes healthy pollen; and is therefore vital to fruit trees. It plays a major role in protecting plants from disease by promoting the development of thick outer walls in the outer cells of plants.  
  
**Phosphorus**  
Phosphorus goes to make, cellulose, the fibrous part of cell walls. It is important for root crops as it stimulates root growth. It is important in cold, wet soils, and in districts where the growing season is short, as it hastens maturity. It stimulates blooming, aids in fruit and seed formation and is needed for seeds to ripen. It also counteracts the effects of nitrogen overdose. A deficiency results in poor pollination.  
  
**Nitrogen**  
Nitrogen is needed by all cells. It is essential for reproduction and growth and increases the yields and quality of leaf vegetables, fruits and seeds. It forms proteins, makes flowers and is necessary for the growth of pollen tubes. Too much nitrogen causes problems by causing deficiencies in other elements. Strong chemical fertilizers can be too concentrated and swamp the plant roots with soluble nitrogen. This is forced into the plant and stops other substances being taken up, leading to various deficiencies e. g. Vitamin C declines considerably with the excess nitrogen fed to the plant.