



Role of Plant Nutrients

Understanding fertilizer begins with understanding the roles that plant nutrients play in a plant's growth and development.

Here is a list of primary and secondary nutrients required by most plants. Amounts of these nutrients required differ from plant to plant with Nitrogen, Phosphorus and Potassium being those required in the largest amount.

PRIMARY NUTRIENTS

Nitrogen (N)

Is essential constituent of chlorophyll, hormones, amino acids, and important proteins, including enzymes and vitamins.

1. Produces lush green growth
2. Increases protein content and plant vigor
3. Helps assimilate Phosphorus, Potash, and other plant foods.

Phosphorus (P)

Is found in nucleoproteins and in lipoids, or phosphatized fats, and is essential to carbohydrate transformations and respiration; involved in high energy bonding.

1. Stimulates early stem and foliage growth and hardy root formation
2. Hastens maturity
3. Promotes colorful flowers, healthy fruit and seen formation.

Potassium (K)

Is not directly incorporated into organic compounds produced by plant but is a catalyst in converting starch to sugar; essential to photosynthesis and cambial activity.

1. Gives strength and stability to the plant
2. Helps plants resist disease and regulates plant metabolism
3. Helps plants resist cold and other adverse conditions

SECONDARY NUTRIENTS

Boron (B)

Increases mobility of sugars and calcium and is important in cell division and protein synthesis; essential to pollination and effects flower formation, fruit set and seen production.

Calcium (Ca)

Often the limiting factor in cell wall formation and is therefore indirectly involved with cell division.

Copper (Cu)

Catalyzes certain reactions in respiration and is a constituent of some enzymes; only Molybdenum is required in smaller amounts.

Iron (Fe)

Essential to production of chlorophyll although not a constituent of it; carries electrons in certain functions and is a constituent of certain enzymes and other proteins; not readily mobile within the plant.

Magnesium (Mg)

The metallic constituent of chlorophyll; catalyzes certain reactions and is readily mobile within plants.

Manganese (Mg)

Is required in respiratory reactions and in the production of the vitamins riboflavin and ascorbic acid; essential to the reduction of carbon dioxide in photosynthesis.

Molybdenum (Mb)

Required in the smallest amounts of the essential nutrients (less than .05 ppm); important in protein synthesis and is a constituent of certain enzymes; involved nitrogen fixation as in the nodules on the roots of legumes.

Sulfur (S)

Constituent of amino acids and proteins; also functions in the formation of chlorophyll.

Zinc (Zn)

Required in the production of growth-regulating substances (hormones) and is a catalyst in other reactions; important in the formation of chlorophyll and in photosynthesis.

Chlorine (Cl)

Essential for the photosynthetic reactions in which water is split and oxygen is released, but the mechanism is not understood. Artificial deficiencies are laboratory induced and symptoms include leaves wilting, becoming chlorotic, and frequently turn bronze; roots are stunted.

Sodium (Na)

May be essential for some blue-green algae.

Silicon (Si)

Certainly essential for diatoms (unicellular marine algae) and may be required by some grasses (at least it is very abundant in grasses).

Cobalt (Co)

Required by some blue-green algae, at least those capable of atmospheric nitrogen fixation.

The chart below exhibits the relationship of soil acidity, measured by pH points and several plant nutrient elements. You will see that there is an optimum range of pH points for each nutrient. A soil pH above or below this range can tie up certain nutrient elements making them unavailable for your plants to absorb.

A pH test will tell you if you could be having certain nutrient problems. Our home grown Heirloom Garden Texas Certified Nursery Professionals can guide you to the correct fertilizers for your situation.

