

Functions of Some Nutrients in Plants and Human Bodies

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Agriculture, which is the act of cultivating the land which includes the harvesting of crops and the rearing and management of livestock, tillage, husbandry, farming. In other words, it's the science which is involved in the production of food (through plant and animals) for humans' consumption and for production of useful materials for humans' use.

In view of this, it shows that there are some things called "nutrients" (which are classified into macro and micronutrients) which are required either by animals or plants. The question is, how do we get these nutrients? These nutrients are available in plants and animals we feed on, also there are available in atmosphere. Furthermore, little did we know that some of that some of these nutrients are capable of healing diseases in our system and to make us healthy for proper functioning.

Examples of the nutrients are, potassium, sodium, phosphorus, silicon, magnesium, calcium, nitrogen, oxygen, sulfur, etc.

Below are some of the nutrients and there functions.

Nutrients	Functions (In plants)
1. Phosphorus (P)	<p>I. It captures and converts the Sun's energy into useful plant compounds. Therefore, it aids photosynthesis.</p> <p>II. It is the component of RNA (ribonucleic acid), the compound that reads the DNA genetic code to build proteins and other compounds essential for plant structure, seed yield and genetic transfer.</p> <p>III. Phosphorus is essential for the general health and vigor of all plants.</p> <p>IV. Phosphorus helps with the growth of specific plant parts such as;</p> <ul style="list-style-type: none"> • Stimulated root development, • Increased stalk and stem strength, • Improved flower formation and seed production, • Improvement in crop quality, • Support development throughout entire life. <p>V. Phosphorus helps in plants' cell division and enlargement.</p>

<p>2. Potassium (K)</p>	<ul style="list-style-type: none"> I. In photosynthesis, potassium regulates the opening and closing of stomata and therefore regulates carbon dioxide (CO₂) uptake. II. It triggers the activation of enzymes and it is essential for the production of adenosine triphosphate (ATP, which is an important energy source for many chemical processes taking place in plant). III. Potassium plays a major role in the regulation of water (H₂O) in plants (i.e. osmoregulation). Both uptake of water through plant roots and its loss through the stomata are affected by potassium. IV. It also helps in the synthesis of protein and starch required by plants. V. Potassium helps to improve drought resistance in plants.
<p>3. Calcium (Ca)</p>	<ul style="list-style-type: none"> I. It helps in formation of cell walls and cell membranes. II. Calcium helps with the normal growth of root tips. III. It neutralizes organic acids in plants and the soil. IV. Availability of calcium avoids the death of growing points, premature shedding of blossoms and buds, tip burn, blossom end rot and bitter pit. V. It improves fruit quality, quantity and plant health.
<p>4. Sulfur (S)</p>	<ul style="list-style-type: none"> I. It helps in the formation of chlorophyll which permits photosynthesis. II. It helps in producing the building block of protein (such as; cysteine, cysteine and methionine). III. Sulfur synthesizes oil (that is why adequate sulfur is so crucial for oil seeds). IV. Sulfur activates enzymes which aid in biochemical reaction within the plant. V. It increases crop yield and improves produce quality.
<p>5. Nitrogen (N)</p>	<ul style="list-style-type: none"> I. It is a component of nucleic acid that forms DNA (a genetic material significant in the transfer of certain crop traits and characteristics that aid in plants' survival) II. Nitrogen enhances chlorophyll formation. III. It also enhances high rate of photosynthesis. IV. It exhibits vigorous plant growth and development. V. The wellness of plant parts (leaves, root, trunk, etc.) depends on nutrients like nitrogen.
<p>6. Silicon (Si)</p>	<ul style="list-style-type: none"> I. Silicon exerts beneficial effects on plant growth and production by alleviating both the biotic and abiotic stresses including pests, diseases, lodging, drought and nutrient imbalance. II. It aids transportation between cortical cells and the xylem. III. Silicon regulates potential genes involved in major physiological processes in plants to combat stress IV. It is important in plant defenses that operates in a direct manner against herbivores. V. It helps to decrease the plasma membrane permeability in leaf cells of plant which resulted in reducing the lipid peroxidation levels.

7. Oxygen (O)	<ul style="list-style-type: none"> I. It aids plants' growth. II. It allows transmission across the cell wall. III. It aids absorption of nutrients. IV. Oxygen is a product of metabolism which aids the well-being of the plant cells. V. Plant roots are kept wet with nutrient solution since plant roots are surrounded by air instead of water, therefore, oxygen level are extremely high.
8. Magnesium (Mg)	<ul style="list-style-type: none"> I. It stabilizes ribosome structure. II. It is an activator for numerous critical enzymes. III. Magnesium serves to link the ATP molecule to the active site of the enzyme. IV. It prevents chlorosis in plant (especially leaves). V. Magnesium also activates both ribulosebiphosphate carboxylase and phosphenoipyruvate carboxylase (two critical enzymes in photosynthetic carbon fixation).
9. Iron (Fe)	<ul style="list-style-type: none"> I. Iron is required for the synthesis of chlorophyll. II. It also prevents chlorosis in plants. III. Iron helps in electron transfer reactions in plant. IV. It helps in plant respiration. V. Iron helps in fixing nutrients like nitrogen.
10. Manganese (Mn)	<ul style="list-style-type: none"> I. It is required as a cofactor for a number of enzymes. II. It helps in the respiratory carbon cycle. III. It can substitute for magnesium in reactions involving, for example, ATP. IV. Manganese helps in photosynthetic oxygen evolution. V. Availability of manganese prevents discoloration, deformities in legumes' seeds and chlorosis.
Nutrients	Functions in human bodies
1. Phosphorus	<ul style="list-style-type: none"> I. The main function of Phosphorus in the body is the formation of bones and teeth. II. It also plays an important role in the usage of carbohydrates and fats in the body. III. The production of protein for growth, maintenance and repair of cells and tissues is through the presence of Phosphorus.
2. Potassium	<ul style="list-style-type: none"> I. Potassium in one's diet helps to reduce blood pressure, protect against stroke and prevent against kidney stones. II. It also helps to regulate muscle contractions and nerve signals.
3. Calcium	<ul style="list-style-type: none"> I. Calcium plays an essential role in building strong bones and teeth (just as phosphorus). II. It helps in blood clotting and fluid balance within the cells. III. Calcium helps to regulate the heartbeat.

4. Sulfur	<ul style="list-style-type: none">I. Sulfur is needed for the synthesis of certain key proteins such as glutathione which is used in protecting cells from being damaged.II. It helps to resist bacteria and protect the protoplasm of the cellIII. Sulfur helps in cleaning the blood.
5. Nitrogen	<ul style="list-style-type: none">IV. Nitrogen is used to make amino acids in our bodies which in turn make protein, nucleic acids which also form DNA and RNA.
6. Magnesium	<ul style="list-style-type: none">I. It's needed for the maintenance of normal nerve and muscle.II. It supports the healthy immune system and keeps the heartbeat steady.III. Magnesium helps bone to remain strong.
7. Sodium	<ul style="list-style-type: none">I. Sodium helps to maintain the balance of water around the cells.II. It also maintains stable blood pressure levels.

Table 1

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