



## Plant Nutrition

- **Basic Plant Nutrition** Plants require nutrients to grow and develop--poor feeding and low nutrient levels will result in diminished growth and low food, flowering and fruit production. The nutrient value of the garden soil needs to be supplemented by making soil amendments in the form of adding fertilizers. In terms of nutrients, both synthetic and organic fertilizer comes in two major categories: macro elements and micro elements.

- **Macro Elements** Macro elements refer to the main elements that are required by the plant for its basic functioning. These main elements are:

- Oxygen and Hydrogen which can be found readily available in water.

- Nitrogen and Carbon which can be found in the air and in organic soil.

Carbon, Oxygen and Hydrogen are required by plants to build its basic cell structure. Fortunately these elements are the most commonly found elements and are required by all living creatures, therefore it is seldom that you need to provide additional carbon, oxygen or hydrogen.

- Potassium and Phosphorous

Potassium, Phosphorous and Nitrogen, on the other hand, are usually lacking and supplements of these need to be provided for the plants. These are thus the main ingredients in the most basic synthetic and organic fertilizer.

- Nitrogen (N)

The role of Nitrogen in plants cannot be emphasized enough; it is responsible for healthy green leaf growth which is the result of the formation of chlorophyll--the main unit for the production of carbohydrates, proteins and oxygen. Therefore, plants that exhibit a Nitrogen deficiency will show symptoms like stunted growth and pale green and yellow leaves.

- Phosphorous (P)

Phosphorous is responsible for cell development and good root growth. Plants that suffer from a phosphorous deficiency will have poor root development and show symptoms like stunted growth. Phosphorous deficiency is also manifested in the leaves that turn purplish in color when it is not the natural foliage or leaf color of that plant.

- Potassium (K)

Potassium is responsible for chlorophyll formation which plays an important part in the strength of cells and encourages flower and fruit formation. Plants that exhibit symptoms of Potassium deficiency will have like weak stems. Other symptoms of Potassium deficiency include older leaves that are floppy with yellow tips and brown margins.



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- **Secondary Macro Elements** There are also secondary macro nutrients such as Calcium, Magnesium and Sulfur.

### –Calcium (Ca)

Calcium is responsible for the construction of cell walls and promoting proper functioning of growing tissue. A Calcium deficiency in soil only occurs in extremely acid soil. This is why most plants struggle to grow in acid soil. Usually, treating and amending the soil pH level will alleviate the Calcium deficiency.

### –Magnesium (Mg)

Magnesium also occurs naturally in organic soil which usually makes adding any magnesium supplements to garden soil rather superfluous. Magnesium deficiency symptoms are manifested as the yellowing of older leaves. Magnesium is part of chlorophyll and thus plays a role in photosynthesis.

### –Sulfur (S)

Sulfur (S) or Flowers of Sulfur as it is known also occur naturally in organic soil. Most chemical and organic fertilizers also contain Sulfur which makes Sulfur deficiency very rare. If Sulfur deficiency does occur, it shows up in the form of stunted growth and yellow foliage, much the same as nitrogen deficiency. Sulfur forms part of plant protein and plays a role in the formation of chlorophyll.

- **Micro Elements** Micro elements are also known as trace elements and sometimes people even call them the “multi vitamins” for plants. The micro elements of plants are made up of Iron (Fe), Zinc (Zn), Manganese (Mn), Boron (B), Molybdenum (Mo) and Copper (Cu). It is seldom that a micro element deficiency occurs. Many plant food formulations contain these trace elements. However, if there is a deficiency it is normally manifested as discolored foliage, poor leaf maturation and poor fruiting.

- **Summary** To prevent all these deficiencies from ruining your garden experience and to ensure healthy growth and abundant flowering and fruiting you should make sure that your garden has all twelve of these elements available to them.