

Subj: {OHG} What is NPK?

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What is NPK?

How well soil supports plant life determines its fertility. Three basic nutrients are essential to plants: nitrogen, phosphorus and potassium.

(N) NITROGEN:

Nitrogen is essential for plant growth. Nitrogen is a part of every living cell. The two forms of nitrogen which plants take up are in the ammonia (NH_4) and nitrate (NO_3) ion forms. Most agronomic crops take up most of their Nitrogen in the nitrate ion form. Plants will utilize N in the (NH_4) ion form if present and available to the plant.

Nitrogen is the first major element responsible for the vegetative growth of plants above ground. With a good supply, plants grow sturdily and mature rapidly, with rich, dark green foliage. Too much nitrogen can cause plants to become leggy. Too little will stunt growth.

Key roles of NITROGEN (N):

Nitrogen is necessary for chlorophyll synthesis and as a part of the chlorophyll molecule is involved in photosynthesis.

Nitrogen is also a component of amino acids.

Nitrogen is needed for growth of plants

Lack of nitrogen and chlorophyll means that plants cannot utilize sunlight as an energy source to carry on essential functions such as nutrient uptake. Research has proven foliar or leaf applications of Nitrogen is one form of application that can supplement a plants nitrogen requirements during the growing cycle.

(P) PHOSPHORUS:

Phosphate is a very important plant nutrient (macro-nutrient) needed for the plant to complete its normal production cycle. The highest level of P in young plants is found in tissue at the growing stage. As plants mature most of the P moves into the flower and then to the seed or fruit.

The second major element in plant nutrition, phosphorus is essential for healthy growth, strong roots, fruit and flower development, and greater resistance to disease.

Key roles of PHOSPHORUS:

- needed for photosynthesis.
- needed for plant respiration.
- needed for energy storage and transfer.
- needed for cell division.
- needed for cell enlargement.
- several other plant processes.

(K) POTASSIUM:

An important function of Potassium is its influence in water use efficiency. It helps in the process of opening and closing of plant leaf pores, called the stomata. Potassium is found in cell walls which surround the stomata. Adequate amounts of Potassium can increase stress conditions on plants during drought conditions. Potassium is also responsible for supplying quality to crops.

Potassium (K) is a word derived from potash (chemical symbol K). In the past, this nutrient was applied to gardens in the form of wood ashes.

It helps plants to resist diseases, protects them from the cold and protects during dry weather by preventing excessive water loss.
(Wheat straw rots down into organic K).

Key roles of POTASSIUM(K):

Potassium is essential for protein synthesis.

Potassium is important in the breakdown of carbohydrates. (A process which provides energy for plants).

Potassium helps to control ionic balance.

Potassium is important in the translocation of heavy metals. IE Iron (Fe)

Potassium helps plants to overcome the effects of diseases.

Potassium is essential in the fruit formation stage.

Potassium helps improve shelf life.

Potassium is involved in the activation of more than 60 enzymes which regulate the rates of major plant growth reactions.

CATIONIC:

In this stage of the plants life from flowering to harvest, the plant is in the production mode and no longer actively growing. Higher PHOSPHORUS & POTASH is needed in this stage.

The availability of nutrients to your plants can heavily depend on acidity or alkalinity of the soil. This is measured in terms of pH. The scale ranges from 0.0 pH (most acidic) to pH 14 (most alkaline).

A pH of 7 is neither alkaline or acidic and is referred to as pH neutral. Most plants prefer a pH of 5.5 to 6.5. pH can be easily measured by using a pH kit. Once pH has been checked soils can be adjusted using lime (to raise pH) or sulphur (to lower pH). It can be very difficult to lower pH of soils with pH over 8.3.

One indicator of healthy soil is the number of earthworms it supports. When a lot of organic matter is present, earthworms abound. Healthy soil is bursting with microorganisms breaking down organic matter into a usable form by plants. (Nitrates). Only where you find earthworms will you find rich, healthy soil with high amounts of

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organic matter and vice versa. Earthworms simply cannot proliferate and flourish in areas where chemical fertilizers and pesticides are paramount. Earthworms, actually, act as a barometer for soil health.

Natural organic fertilizers provide nutrients and encourage microorganisms to thrive. The organic materials turn into humus as microorganisms in the soil break them down.

Synthetic fertilizers deplete organic matter in the soil, which leads to a more compacted soil. They also interrupt the ecology of the soil with the quick release of nutrients. Beneficial microorganisms are harmed, while harmful microorganisms are encouraged.

Farmers are seeing that long-term use of NPK fertilizers creates compacted lifeless soil and builds up salts to toxic levels.

Grow Organic.

Jon Wood-Founder of OHG, and an Organic Homestead Gardener.

References:

Personal knowledge of horticulture, agriculture, soil science, botany, and biology.

USDA

Advanced Master Gardeners Training

Owning and operating a working farm with truck crops.

And a few websites.