

Nutrients Needed by Plants – The Basics

There are **16 nutrients** that plants need the most – nine crucial macronutrients and seven micronutrients vital for growth in lower concentrations.

Macronutrients

Carbon (C)

Hydrogen (H)

Oxygen (O₂)

Nitrogen (N)

Phosphorus (P)

Potassium (K)

Calcium (Ca)

Magnesium (Mg)

Sulfur (S)

Plants must have **carbon**, **oxygen** and **hydrogen** to live and they get these primary elements from the air and water during the process of photosynthesis – carbon comes from the air and hydrogen and oxygen from water.

N-P-K

You've probably seen the N-P-K ratings on fertilizer bags. That figure represents the relative percentage of nitrogen (N), phosphorus (P) and potassium (K) in the package by weight. Those three nutrients are considered the most

important.

For example, a popular synthetic fertilizer containing urea, ammonium phosphate and potassium chloride has an N-P-K ratio of 15-30-15.

An organic fish meal fertilizer might test at 10-6-2. The nutrients in organic materials tend to be less potent and release much slower than their synthetic counterparts.

Primary Nutrients

Nitrogen stimulates green growth and is used more often on plants in spring or at the beginning of the growth cycle.

Phosphorus encourages healthy roots, and **potassium** promotes flowering and fruiting.

Secondary Nutrients

Calcium makes for strong plant cell walls among several other functions including the regulation of other nutrients.

Magnesium plays a multifaceted role as part of chlorophyll, plant enzyme processes and phosphorus utilization. **Sulfur** is essential to amino acid, chlorophyll and plant tissue formation. Its presence also impacts the availability of nitrogen.

Micronutrients

- Boron (B)
- Chlorine (Cl)
- Copper (Cu)
- Iron (Fe)
- Manganese (Mn)
- Zinc (Zn)
- Molybdenum (Mo)

Boron levels impact growth from initial cell construction to fruit development. **Chlorine** helps water move through cells. **Copper** makes it possible for roots and proteins to move

nutrients around efficiently. **Iron** is needed most when plants are young to produce chlorophyll.

Manganese affects how plants utilize energy, water and nutrients during photosynthesis, respiration and metabolism. **Zinc** regulates growth hormones. Without enough zinc, iron can become deficient. **Molybdenum** makes nitrogen more accessible and a shortage can hinder healthy growth of cauliflower and other brassicas.

If your soil has ample amounts of organic matter in it, then it should have most of the macro and micronutrients it needs to support healthy growth – as long as plant, soil, moisture and environmental conditions are favorable.