

Unit IV - Plant Growth

Lesson 4 - Nutrients

Without nutrients, plants would not grow. This lesson identifies the impact of macro- and micronutrients, oxygen, hydrogen, and carbon and addresses the consequences if a deficiency occurs. Factors that affect availability of nutrients into the plant are also outlined.

There is a distinction between “plant nutrition” and “plant fertilization.” Plant nutrition indicates specific chemical elements that are available (absorbed) in the plant. Plant fertilization is a procedure of adding more nutrients to supplement the growing medium.

Effect of Nutrients on Plant Growth

All plant growth and development depend upon proper nutrition. Each type of plant needs adequate levels of minerals to grow at optimum rate. Insufficient and excessive amounts of nutrients adversely affect plant growth. Greenhouse plants need more nutrients than other agricultural crops. They also require applications of fertilizers as nutritional supplements to promote plant growth. (Fertilizers are discussed in the next lesson.)

Essential Nutrients for Plant Growth

The minerals that soil needs are divided into two groups: macronutrients (major nutrients) and micronutrient (minor, or trace elements). These minerals are actually forms of soluble salt. Table 4.3 lists these nutrients.

Table 4.3 - Essential Soil Macronutrients and Micronutrients

Macronutrients	Micronutrients
<i>Primary</i>	Iron (Fe)
Nitrogen (N)	Manganese (Mn)
Phosphorous (P)	Boron (B))
Potassium (K)	Copper (Cu)
<i>Secondary</i>	Zinc (Zn)
Sulfur (S)	Molybdenum (Mo
Calcium (Ca)	Chlorine (Cl)
Magnesium (Mg)	Nickel (Ni)
	Sodium (Na)

A primary macronutrient, *nitrogen*, which is found in chlorophyll and enzymes, is essential to growth. It helps the plant resist disease and sustain environmental extremes, such as drought and freezing. Nitrogen is recycled within the plant. Plants absorb nitrogen as nitrate ions - its inorganic form. By becoming part of the plant's

