

University of Phoenix Material

Appendix A: Plant Nutrient Functions and Deficiency Symptoms

Complete the table by indicating the nutrient's role in plant functions and corresponding deficiency symptoms.

Element	Main Nutrient Functions	Description of Deficiency Symptoms
Macronutrients		
Nitrogen	Nitrogen is important for protein development, plant structure, photosynthesis, movement of nutrients, and 25% of the protein cell.	Slow growth, yellowing, general chlorosis of the leaves.
Phosphorus	An activator for a number of enzymes, most notably those involved in photosynthesis and respiration. Roots and protein synthesis are also affected by deficiency.	Deficiency symptoms first appear in older leaves, which characteristically develop mottling or discoloration followed by necrosis leading to the leaf margins. Stems are shortened and root growth and capability to root cutting become stunted.
Phosphorus	Phosphorus makes up an important part of photosynthesis and intermediary metabolism. Phosphorus is one of the nutrients that make up 10% of the total dry weight of the plant.	Leaves grow reddish in the lower leaves. Lower leaf become mottled and older leaves turn brown. In some cases the stem and young leaf growth are stunted, giving the leaves a dark greenish purple color.
Calcium	Calcium is important for cell structure, cell wall, and for a second messenger.	Young leaves are typically chlorotic and necrotic and in extreme cases, death of the terminal bud. Poor root growth, stem may be distorted and leaf "cupping" is the result.
Magnesium	Important regulator of several metabolic steps in the photosynthetic electron transport chain. It is also involved in adding the amino groups onto nucleic acid bases. Critical nutrient for ATP.	The first and most pronounced symptom is chlorosis due to a breakdown of chlorophyll in the lower leaves that has the reverse the vein.
Microelements		
Boron	It is a cofactor for several key enzymes and contributes to the structural integrity of the cell wall. Lack of boron at the microelement level for the cell wall. It is a cofactor for many other enzymes and contributes to the cell wall structure. Boron is critical to nucleic acid synthesis and elongation.	Stem and root growth are stunted and leaves are yellow and necrotic, giving the plant a "dwarfed" look. Stems are short and young leaves are often curled, followed by necrosis of the necrosis.