

Plant Nutrition for Greenhouse Crops
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Key to Identifying Nutrient Disorders of Greenhouse Crops
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The key to understanding nutrient deficiencies is to note where you find the symptoms.

1. Symptoms of mobile elements (nitrogen, phosphorus, potassium and magnesium – N,P, K, Mg) always show at the bottom of the plants.

Nitrogen and phosphorus deficiency show uniform chlorosis (yellowing). The distinguishing symptoms:

- Early flowering and or leaf abscission: nitrogen deficiency
- Deeper green foliage and or fewer roots: phosphorus deficiency

Magnesium deficiency shows interveinal chlorosis

Potassium deficiency shows marginal and necrosis (death of tissue) and necrotic spots on leaf blades

2. Symptoms of partially mobile elements (sulfur and molybdenum – S, Mo) show across the whole plant
 - Uniform chlorosis on entire plant, stunted plant and faded flowers: sulfur deficiency
 - Chlorotic band around leaf margins followed by necrosis: molybdenum deficiency
3. Symptoms of immobile elements: calcium, Iron, manganese, zinc, copper, boron – Ca, Fe, Mn, Zn, Cu, B always show at the top of the plant.
 - Chlorosis (Fe, Mn)
 - Interveinal chlorosis turning to yellow (Fe)
 - Interveinal chlorosis with tan flecks (Mn)
 - Youngest leaves affected with necrosis and distortion (Ca or B)
 - Abortion of growing tip, short internodes, thick leaves (B)
 - Distortion turning necrotic (Ca)
-Youngest and mature leaves affected by leaf curling and necrosis
 - Smaller lighter flowers (Cu)
 - Smaller leaves and short internodes (Zn)