

GENERAL KEY TO PLANT FOLIAGE NUTRIENT DEFICIENCY SYMPTOMS

Older or lower leaves of plant mostly affected; effects localized or generalized.

A. Effects mostly generalized over entire plant; more or less drying or firing of lower leaves; plant light or dark green.

Plant *light green*; lower leaves yellow, drying to light brown color, stalks short and slender if element is deficient in later stages of growth**NITROGEN**

Plant *dark green*, often developing red and purple colors; lower leaf sometimes yellow, drying to greenish brown or black color; stalks short and slender if element is deficient in later stages of growth.....**PHOSPHOROUS**

B. Effects mostly localized: mottling or chlorosis with or without spots of dead tissue on lower leaves; little or no drying up of lower leaves, leaf margins sometimes tucked, or cupped upward or downward.

Mottled or chlorotic leaves typically, may redden, sometimes with dead spots; tips and margins turned or cupped upward; stalks slender.....**MAGNESIUM**

Mottled or chlorotic leaves with small spots of dead tissue, usually at tips and between veins, more marked at margins of leaves; stalks slender.....**POTASSIUM**

Mottled or chlorotic leaves with dead spots generalized, rapidly enlarging, generally involving areas between veins and eventually involving secondary and even primary veins; leaves thick; stalks with shortened internodes.....**ZINC**

Newer to bud leaves affected; symptoms localized.

A. Terminal bud dies, following appearance of distortions at tips or bases of young leaves.

Young leaves of terminal bud at first typically hooked, finally dying back at tips and margins, so that later growth is characterized by cut-out appearance at these points; stalk finally dies at terminal bud**CALCIUM**

Young leaves of terminal bud become light green at bases (with final breakdown here); in later growth, leaves become twisted; stalk finally dies back at terminal bud:.....**BORON**

B. Terminal bud commonly remains alive; wilting or chlorosis of younger or bud leaves with or without spots of dead tissue; veins light or dark green.

Young leaves permanently wilted (wither-tip effect) without spotting or marked chlorosis; twig or stalk just below tip and seedhead often unable to stand erect in later stages of deficiency.....**COPPER**

Young leaves not wilted; chlorosis present with spots of dead tissue scattered over entire leaf; smallest veins tend to remain green, producing a checkered or reticulated effect.....**MANGANESE**

Young leaves not wilted; dead spots not commonly present; young leaves with veins and tissue between veins light green in color**SULFUR**

Young leaves not wilted; dead spots not commonly present; young leaves chlorotic; principal veins typically green; stalks short and slender.....**IRON**