

Essential Nutrients: What's Missing?

Where Are
Symptoms
Most Visible?

Top of Plant

Uniform Chlorosis

Distortion and necrosis of leaves, incomplete flower development, densely branched, short, thick roots

Ca or B

Interveinal Chlorosis

Leaves eventually turn yellow or even white

Fe

Fe, Mn,
Zn, Cu

Tan spotting on leaves in addition to chlorosis

Mn

Very new and recently mature leaves affected
Leaves roll and curl
Rapid necrosis of young, fully expanded leaves

Zn or Cu

Bottom of Plant

Uniform Chlorosis

Reddish pigmentation, stunting of growth

N or P

Distinct yellow and brown spotting with abrupt boundary between living and dead tissue

Cl

Interveinal Chlorosis

Reddish pigmentation and necrosis of older leaves

Mg

Chlorosis of Leaf Margins and Tips

Browning of leaf margins and spotting of leaves, followed by necrosis of older leaves

K

Key to the 12 Essential Nutrients

Macronutrients:

Nitrogen (N)
Phosphorous (P)
Potassium (K)

Secondary Macronutrients

Calcium (Ca)
Magnesium (Mg)
Sulphur (S)

Micronutrients

Iron (Fe)
Manganese (Mn)
Zinc (Zn)
Boron (B)

Copper (Cu)
Molybdenum (Mo)
Chlorine (Cl)

Cupping of leaves, browning of leaf tips and margins, fruit malformation

Ca

Rosetting (incomplete stem development), thickening and corking of leaves, dieback of tips causing excessive branching

B

Smaller, lighter colored flowers or absence of flowers, darker pigmentation of plant

Cu

Flowers normal color, shortened internodes cause rosetting, leaves may be abnormally small

Zn

Lower leaves die and may drop, earlier than normal flowering

N

Bloom time normal, but fewer, more spindly roots. Foliage may turn deeper green just before chlorosis is noticed.

P

Leaf Margin Only

Chlorosis and then necrosis of leaf margins

Mo

(most commonly seen on poinsettias)

Entire Plant

Uniform Chlorosis

Faded flower color
Reddish pigmentation on leaves and stems
Browning of leaf tips

S

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