



CROP RESEARCH & DEVELOPMENT UNIT

Research, Development and Innovation Center

Central Farm, Coyo District

Email: nccard@agriculture.gov.bz Tel: (501) 804 4948



A guide to symptoms of plant Nutrient Deficiencies

Macro Nutrients	Deficiency Symptom	Fertilizer Sources
Nitrogen (N)	General yellowing of older leaves (bottom of plant). The rest of the plant is often light green.	Anything with the words “ammonium, nitrate or urea”, also manures.
Phosphorous (P)	Leaf tips look burnt, followed by older leaves turning a dark green or reddish purple color.	Anything with the words “phosphates or “bone.”
Potassium (K)	Older leaves may wilt, look scorched. Interveneal chlorosis begins at the base, scorching inward from leaf margins.	Anything with the words “potassium or pot-ash”
Calcium (Ca)	New leaves (top of plant) are distorted or irregularly shaped. Causes blossom end rot.	Anything with the word “calcium” or gypsum.
Magnesium (Mg)	Older leaves turn yellow at the edge leaving a green arrowhead shape in the center of the leaf.	Anything with the word “magnesium or Epsom salts.” (magnesium sulphate)
Sulphur (S)	Younger leaves turn yellow first, sometimes followed by older leaves.	Anything with the word “sulphate.”

Micro Nutrients	Deficiency Symptom	Fertilizer Sources
Boron (B)	Terminal buds die	Anything with the words “borax or borate”
Copper (Cu)	Leaves are dark green, plant is stunted	Anything with the words “copper.”
Iron (Fe)	Yellowing occurs between the veins of young leaves	Anything with the words “iron chelate”
Manganese (Mn)	Yellowing occurs between veins of young leaves. Reduction of size of plant parts. Dead spots or patches.	Anything with the words “Manganese.”
Molybdenum (Mo)	General yellowing of older leaves (bottom of plant). The rest of the plant is often light green.	Anything with the words “molybdate”
Zinc (Zn)	Terminal leaves may be rosette & yellowing occurs between the veins of the new leaves.	Anything with the words “zinc.”



Chlorosis in Tomato Leaves

www.uwex.edu



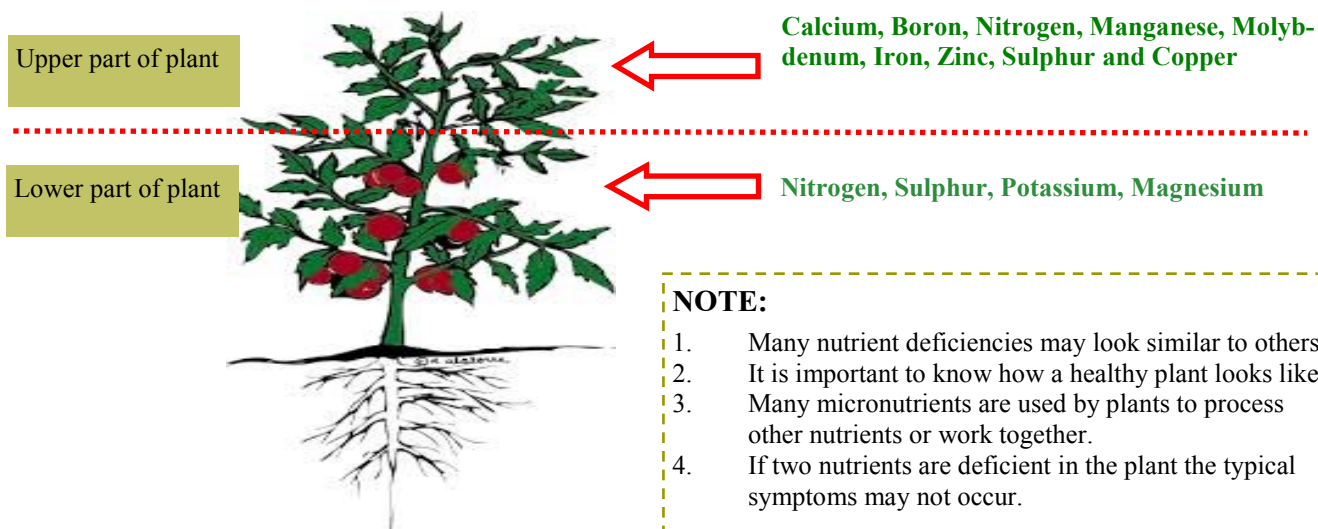
Scorched Tomato leaves

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Interveinal Chlorosis in Tomato leaves. (TGH Central Farm)

Where to identify Macro and Micro Nutrient Deficiencies in Plants.



NOTE:

1. Many nutrient deficiencies may look similar to others.
2. It is important to know how a healthy plant looks like.
3. Many micronutrients are used by plants to process other nutrients or work together.
4. If two nutrients are deficient in the plant the typical symptoms may not occur.

Essential Plant Nutrients

Supplied from air and water	Supplied from soil and fertilizer sources	
	Macronutrients	Micronutrients
Carbon (C)	Nitrogen (N)	Zinc (Zn)
Hydrogen (H)	Phosphorous (P)	Copper (Cu)
Oxygen (O)	Potassium (K)	Iron (Fe)
	Sulphur (S)	Manganese (Mn)
	Calcium (Ca)	Boron (B)
	Magnesium (Mg)	Chlorine (Cl)
		Molybdenum (Mo)
		Cobalt (Co)

References: University of Arizona

Oscar Abel Salazar
Extension Officer I,
Research Technician
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At a Glance

- Know the characteristics of the plant when healthy to identify symptoms of distress
- Identify where symptoms are appearing (new leaves, old leaves, edge of leaf, veins etc.)
- Identify pattern of symptoms
- Compare symptoms to chart
- Follow directions on label of product for applying fertilizer if warranted.

Proper nutrition is important for plant growth and production. The use of soil tests can help to know the nutrients that are available in the soil and to develop a better fertilization program to achieve the best yields. The profit of farmers depends on the yield per acre or area to keep production costs low. Efficient application of fertilizers is important to achieve profitable yields.