

CORRECTING NUTRITIONAL DEFICIENCIES FOR GROWING ROSES AND PLANTS IN THE DESERT

SYMPTOMS	DEFICIENCY	CORRECTION
Foliage and veins pale green color, weak spindly stems and small flowers. Poor growth rate and vigor.	NITROGEN - necessary for plant cell growth and plant respiration.	Blood meal, Millorganite, cotton seed meal, chicken, cow, horse manures, ammonium sulfate,
Older leaves will drop without turning yellow. Leaves appear dull grey-green and may cup down.	PHOSPHATE – necessary for root & stem growth, color & substance in blooms.	Bone meal, triple and super phosphate, ammonium phosphate, monammonium phosphate, Millorganite
Older leaves turn yellow and then brown sometimes purple. New shoots will harden & be stunted and flower buds may become distorted.	POTASSIUM – necessary for formation of sugars & starches, root & stem system, color & substance in blooms	Compost. Potassium sulfate. Potassium phosphate. Green sand.
Center of leaves remain green. Edge of leaves turn brown, curl and dry up. Uneven growth. Appears at top of plant.	CALCIUM – necessary for cell wall growth & root development.	Gypsum, bone meal. Super phosphate.
Yellow or purple discoloration. Veins remain green. Normal growth. Leaves fall prematurely from bottom of plant upwards.	MAGNESIUM – necessary for green pigment for chlorophyll. Vital for photosynthetic process.	Fish meal, Epsom salts, magnesium limestone
Foliage pale in color. Veins are yellow. Appears at top of plant.	SULFUR – necessary for root development & protoplasm for growth.	Soil Sulfur, Dispersul, ammonium sulfate, potassium sulfate
Foliage pale green or yellow with dark green veins. Stems turn yellow. Appears at tip of new growth.	IRON – necessary catalyst in producing chlorophyll. Regulates respiration in plant cells.	Milorganite, Blood meal, iron sulfate, iron chelate (FE 138)
Crowding of leaves appears excessively healthy. New foliage malformed, mottled, may yellow. Found in new growth similar to low nitrogen levels. Bull nose Rose flowers	BORON – necessary for sugar & starch transfer from cell to cell, plant enzymes and hormones and essential for cell division.	Fish meal, calcium borate, sodium borate. Low rate, Borax 1Tbl. Per 1,000 sqft. <u>Too much Boron is toxic</u>
Similar to iron chlorosis in that there is interveinal chlorosis. The small veins remain green with a netted appearance. Pale spots on new foliage. Appears on older leaves and at top of plant.	MANGANESE – necessary for enzyme systems.	Manganese sulfate, Manganese EDTA
Chlorotic, small, thick leaves on short internode of stem. Failure of growing tips to develop.	ZINC, COPPER, MOLYBDENUM – necessary for enzymatic process, root metabolism and respiratory systems.	Millorganite, zinc sulfate, copper sulfate, sodium molybdate or good rose fertilizer. <u>Too much is toxic.</u>

Sources:
Marylou Coffman, Master Rosarian
Mike Jepsen, Master Rosarian
LeRoy Brady, Consulting Rosarian

GUIDE to SOLVING PLANT NUTRITION DEFICIENCIES

Foliage Symptoms	Problem/Nutrient Required
Small terminal/tip growth ceases	Zinc deficiency
Thin & brittle	Magnesium deficiency
Mottled, blotches or dead areas	Zinc deficiency
Curled upward	Iron or Magnesium deficiency; insects?
Curled downwards	Boron deficiency; insects?
Collapsed spots on young leaves	Zinc or Magnesium deficiency
Tips dead	Phosphorus deficiency; excess Chlorine?
Color loss at tips, striping between veins	Magnesium deficiency
Tips and margins dead	Caused by wind, frost, excess salts in soil or lack of water
Margin scorched effect	Potassium deficiency
Margin, yellowing, streaks or striping	Phosphorus deficiency; excess Boron
Margins, turn to brown (lower mature leaves)	Potassium deficiency
Scalloped appearance	Calcium deficiency
Veins, yellow with pale green between veins	Nitrogen deficiency
Veins, green with color loss between veins	Iron, Manganese, Magnesium, Molybdenum deficiencies
Brown spotting, grayish-brown to bronze	Magnesium deficiency
Mosaic pattern over entire leaf	Virus
Abnormal dark green foliage	Calcium deficiency
Purplish colored	Phosphorus deficiency
Blanched color	Copper deficiency
Yellow-green overall, uniform chlorosis	Nitrogen deficiency
STEMS	PROBLEMS
Hard & brittle	Sulfur deficiency
Weak necked	Calcium or Potassium deficiency
FLOWER BUDS	PROBLEMS
Dried out and dying	Calcium deficiency
Premature drop but stems stiff & erect	Zinc or Calcium deficiency
Reduced formation, necrotic at margins and tips, insect nitulid damage to buds.	Zinc deficiency
Light green color, bull nose buds.	Boron deficiency

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