NUTRIENT DEFICIENCIES

NUTRIENT	SYMPTOMS OF DEFICIENCY	CAUSE/CONTROL
Boron	Growing tips are distorted or die; plant becomes stunted and brittle; roots turn grayish and may die, particularly the tips.	Lack of boron in soil or inability of plant to take up boron due to very alkaline conditions. Maintain proper soil moisture and avoid liming.
Calcium	Dead tips and margins on young leaves, hooked at the tip; root death	Sometimes caused by excessively high rates of magnesium or potassium. Add gypsum or fertilize with calcium nitrate.
Iron	Interveinal yellowing of young leaves; larger veins remain green.	Iron unavailable, usually due to high pH. Acidify the soil with sulfur or add chelated iron.
Magnesium	Lower (older) leaves become chlorotic or mottled; leaf margins curl up or down or develop a puckered effect; affected leaves may fall early.	Acid soils, heavy watering or rainfall or high potassium levels can cause this problem. Treat plants and/or soil with Epsom salts: 1 oz./10 sq. ft. or apply to foliage at 7 ½ oz. Epsom salts to 2 ¼ gal. water. Add a non-detergent dishwashing liquid to help solution stick.
Nitrogen	Pale green leaves, eventually turning yellow and falling in more extreme cases. Symptoms start with older leaves first. Growth is stunted and plant may become spindly.	Poor light, poor soils, restricted soils, such as a container. Apply a high nitrogen fertilizer, commercial or organic.
Phosphorus	Plant turns a dull, dark green with a bronze or purple tinge; lower leaves may turn yellow; leaves are small and stunted	Plants in heavy clay soil are more likely to be affected; apply bonemeal or superphosphate.
Potassium	Older leaves mottled, blotched, often with a yellow or brown margin; margin may curl downward; leaf and stem size is reduced.	Plants growing in soils with poor texture or high lime or peat content are most susceptible. Improve the soil texture and top-dress with a high potassium fertilizer.