SP 224
Plant Pathology Department, Entomology and Nematology Department

Abiotic Problems in the Ornamental Plant Nursery Sheet 2

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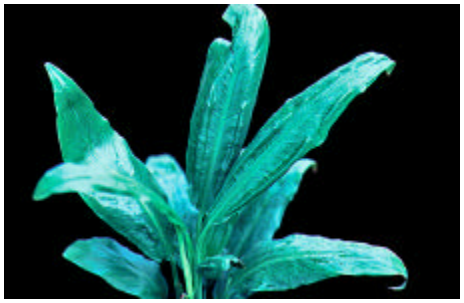
Alkaline-pH-induced minor element deficiency. Many minor element deficiencies may overlap causing abnormal, highly chlorotic new growth under conditions of alkaline media or water use. This pittosporum exhibits a complex of minor element deficiencies that generally slow growth and lighten plant color.

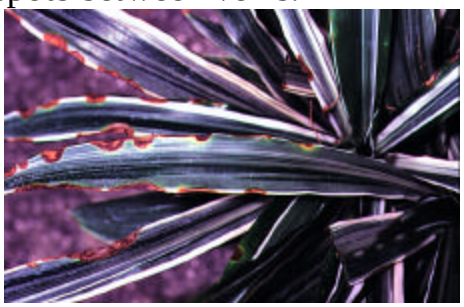
Iron deficiency. Growing media with an alkaline pH (>7.0) or production sites with alkaline irrigation water can result in iron deficiency symptoms as in this gerbera daisy. Existing iron will not be available to root hairs under high-pH regimes, resulting in chlorotic new growth with prominent green veins. Iron is fixed within leaves, so as a deficiency develops, new growth shows symptoms.



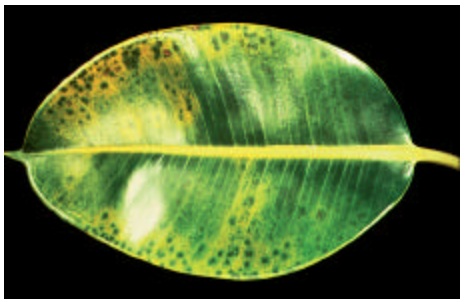
Iron deficiency. Similar nursery production or landscape situations with high pH result in unavailable elemental iron. New growth emerges with interveinal areas appearing chlorotic between darker green veins as on this hibiscus.

Boron deficiency. Lack of this minor element can produce new-growth distortions that include a downward curl of leaf margins and bent leaf tips as exhibited in this Chinese evergreen, *Spathiphyllum* sp.

Boron toxicity. Excessive use of fertilizer with minor elements and/or use of minor element sprays can cause a boron toxicity as in this rubber plant, *Ficus elastica* "Decora." This toxicity manifests as a marginal chlorosis with greyish, water-soaked spots between veins.



Magnesium deficiency. Magnesium shortage causes the partial reallocation of magnesium from old fronds to active growing areas in this Canary Island date palm. Lower, older fronds develop tip chlorosis on leaflets, starting at the frond tip and working back to the trunk.



Magnesium deficiency. When magnesium is limited, normal green pigment formation in leaves is interrupted. Magnesium deficiency in this jasmine caused internal reallocation of magnesium from older interveinal leaf areas to the site of new growth.

Manganese deficiency. Under alkaline growing conditions, palm roots cannot absorb adequate amounts of manganese, causing a disorder known as "frizzle top." Manganese is a fixed element in plant tissues. In this queen palm, *Arecastrum romanzoffianum*, the manganese deficiency is expressed as deformed necrotic new growth. If this condition goes uncorrected, palm death can occur.

Fluoride toxicity. Use of superphosphate or perlite amendments to containerized growth media can result in phytotoxic lever of fluoride ions. Marginal necrotic spots develop on affected plants, as in this *Calathea* sp.

Fluoride toxicity. Typical injurious levels of fluoride ion causes marginal necrotic lesions along the edges of leaves. The genus Dracaena is very sensitive to fluoride toxicity, as demonstrated by this Dracaena deremensis "Warneckii."

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