Recognizing Nutritional Disorders of Floriculture Crops

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Symptomology of Macros

Nitrogen Deficiency

- Initial: lower leaf yellowing, discoloration (purple, etc.), smaller plants
- Advanced: plant yellowing, lower leaf necrosis

Phosphorus Deficiency

- Initial: smaller plants, lower leaf purpling, darker leaves (hard to see without healthy plant comparison)
- Advanced: lower leaf necrosis, leaf drop

Potassium Deficiency

- Initial: necrotic spots on lower leaves, lack of stem elongation, upper leaves appear healthy
- Advanced: necrotic spots increase in size, failure to flower

Calcium Deficiency

- Initial: middle and upper leaf necrotic spots, reduced root growth
- Advanced: necrotic spots enlarge, entire plant collapse, failure to flower and stem topple

Magnesium Deficiency

- Initial: marginal or interveinal yellowing
- Advanced: leaf bleaching, flower color change, lower leaf necrosis and/or leaf drop

Sulfur Deficiency

- Initial: upper leaf yellowing, smaller plant size
- Advanced: entire plant yellowing, red discoloration, lower leaf necrosis

Symptomology of Micros

Boron Deficiency

- Initial: smaller plants, upper leaves distort and become thick and/or brittle
- Advanced: lower leaf yellowing, failure to flower

Boron Toxicity

- Initial: marginal browning on lower leaves
- Advanced: marginal browning on upper leaves, leaf distortion, lower leaf necrosis

Copper Deficiency

- Initial: leaf bleaching or spotting
- Advanced: spot sizes increase

Iron Deficiency

- Initial: interveinal chlorosis or yellowing on upper leaves
- Advanced: interveinal chlorosis or yellowing spreads to lower leaves

Manganese Deficiency

- Initial: yellowing (variable- marginal, whole plant, lower leaf)
- Advanced: yellowing intensifies, necrosis on upper leaves

Zinc Deficiency

- Initial: smaller plant size, some distortion of flowers
- Advanced: leaf necrosis, interruption of flowering

See my thesis for more information.
http://repository.lib.ncsu.edu/ir/bitstream/1840.16/6025/1/etd.pdf