e-GRO Nutritional Monitoring

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Nutritional Monitoring Series: Element Edition

Sulfur (S)

Function: Essential for production of proteins, constituent of amino acids and hormones, promotes activity and develop of enzymes and vitamins, helps in chlorophyll formation, and improves root growth and seed production.

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Figure 1. Sulfur deficiency of poinsettias initially occurs in the middle section of the plant and then will progress towards the growing point. Photo by: Brian Whipker.

Sulfur

Elemental Parameters

Partially Mobile Element:
Deficiency symptoms initially appear in the mid-section of the plant and then progress upward towards the growing point.

Function:
Multiple functions

Target Fertilizer Range:
25 to 64 ppm S

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Figure 2. Complete chlorosis of the middle and upper foliage is an indication of a sulfur deficiency. Photo by: Brian Whipker.

Deficiency: Initially developing as a uniform, light yellowish-green chlorosis of the mid-level and younger leaves (Figs. 1-3). A corrective fertilization with S will return the chlorotic tissue to the normal green color within 1 to 2 weeks.

Excess: Can reduce uptake of boron (B), iron (Fe), or molybdenum (Mo).

Misdiagnosis With:

a. Nitrogen deficiency. Although the overall chlorosis symptoms are similar, N deficiency occurs on the oldest leaves while S deficiency first appears in the middle section of the plant and then progresses upward towards the growing point. Conduct leaf tissue analysis to determine levels.

Confirm your actual S levels by conducting a routine root substrate (medium) test and/or a plant tissue analysis.

Monitoring and Management Strategy for Sulfur

Fertilization Rate: 25 to 64 ppm. The amount of S contained in a fertilizer may not be listed on the fertilizer label.

Ratio: For many crops the recommended N : S ratio is 10 : 1 to 15 : 1.

Tissue Normal S range of 0.1 to 0.3%. Sulfur levels below 0.05% are considered deficient. Sulfur concentrations of up to 1.0% commonly occur with greenhouse grown species.

Options:
Preplant: Incorporation of magnesium sulfate [Epsom salts; ($MgSO_4 \cdot 7H_2O$)].

Irrigation Water: Sulfur in irrigation water (test water to determine available levels). Supplement with additional S in your fertilization program.

Figure 3. Advanced symptoms of a sulfur deficiency in snapdragons with the upper portion of the plant a pale yellow. Photo by: Brian Whipker.

Continual Fertilization:

Use a fertilizer that provides S. Monthly magnesium sulfate (Epsom salts) applications at the rate of 1 pound per 100 gallons of water. Do not mix with other fertilizers.

Cal-Mag fertilizers such as 13-2-13 or 15-5-15 do not provide S. If using a Cal-Mag fertilizer, alternate monthly with supplemental magnesium sulfate (Epsom salts) applications at the rate of 1 pound per 100 gallons of water.

Corrective Fertilization:

1. Magnesium sulfate (Epsom salts) application at the rate of 2 pounds per 100 gallons of water. Do not mix with other fertilizers. A corrective fertilization of S will return the chlorotic tissue to the normal green color within 1 to 2 weeks. Do not over apply.

e-GRO Alert

www.e-gro.org

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