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Poinsettia Fertilization:
Molybdenum Deficiency

Yellow or white marginal discoloration of the recently mature leaves denotes a molybdenum deficiency. Deficiencies typically appear during the last third of the production season.
Click to view YouTube summary: Poinsettia Molybdenum

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Molybdenum is the essential micro-element that is required in the smallest quantity for plant growth. Most plants require very little, but poinsettias are the exception as they prefer levels that would be considered toxic to many other plants.

Molybdenum deficiencies occasionally occur, and often times it goes misdiagnosed. This e-GRO Alert focuses on recognizing molybdenum deficiency and management practices.

Figure 1. The first symptoms of molybdenum deficiency appear as chlorosis (yellowing) along the margin of the recently mature leaves in the middle part of the plant.

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Symptoms

Molybdenum deficiency symptoms appear as chlorosis (yellowing) of the recently mature leaves (middle of the plant) (Fig. 1). As symptoms advance, the margins turn white. Rolling of the leaves and leaf edge burn (Figs. 2&3) also appear over time.

The leaf chlorosis of molybdenum deficiency resembles magnesium deficiency, except that the thin, marginal band of chlorosis is expressed from the leaf tip to the leaf base. Molybdenum deficiencies can cause distorted leaves due to the failure of the interveinal areas to expand normally. Molybdenum deficiencies typically occur during the last third of the crop cycle.

The thin band of marginal leaf necrosis and leaf curl offers the ability to differentiate a Mo deficiency based on visual symptoms. Molybdenum and iron deficiencies occur on the upper foliage, while magnesium deficiencies occur first on the lower foliage and later after the bracts form symptoms appear in the upper part of the plant. Tissue analysis is the primary test to determine Mo levels. SME substrate tests can be done to determine actual substrate Mo levels, but they only provide a general idea of Mo availability.

Management

What are the corrective procedures for Mo? If the levels are too low: (1) use a fertilizer containing Mo or (2) apply a corrective drench of sodium molybdate or ammonium molybdate at 77 ppm. (77 g sodium molybdate or 54 g ammonium molybdate per 100 gallons of water. Rinse foliage after the application to avoid possible leaf burn.)

The recommended optimal substrate Mo levels vary by lab with the target between 0.01 to 0.15 ppm. The target tissue level for Mo in poinsettias is between 0.01 to 0.5 ppm.

Summary

Poinsettias have a high demand for molybdenum. Make sure your fertilizer contains adequate Mo or provide supplemental applications to prevent deficiencies from occurring.

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Figure 2. As symptoms progress, the leaf margins turn white and the leaves may begin to roll.

Figure 3. Discolored leaves at the top of the plant.

Table 1. Corrective procedures for overcoming molybdenum deficiency of poinsettias.	
Correction Steps – take these steps when problems occur	**Notes**
As a precaution, provide supplemental applications of Mo on a continual basis. To mix a 0.1 ppm Mo constant feed; use 1 oz (28.4 g) ammonium molybdate [$(NH_4)_6Mo_7O_{24}\cdot 4H_2O$] or sodium molybdate [$Na_2MoO_4\cdot 2H_2O$] per 2 1/2 pints (40 fl. oz.) of water to create a stock solution. Add 1.5 fl. oz. of the stock solution per 10 gallons of water and apply through an 1:100 injector.	Poinsettias are heavy feeders of molybdenum. Many other floriculture crops do not require this level of molybdenum, so avoid providing supplemental applications to them.