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Poinsettia Fertilization: Magnesium Deficiency

Interveinal chlorosis of the older leaves denotes a magnesium deficiency. The location of late season deficiencies often confuse growers because they occur just under the bracts.

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Poinsettias have a relatively high requirement for magnesium. Many areas such as the Midwest and Great Plains have naturally occurring magnesium in their irrigation water. So the development of magnesium deficiency is uncommon.

For other areas without magnesium supplied in their irrigation water, they need to add supplemental magnesium to avoid deficiencies. This e-GRO Alert focuses on identification of magnesium deficiency symptoms and management practices.



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Figure 1. Symptoms of magnesium deficiency first appear on the lower leaves as an interveinal chlorosis (yellowing between the veins).

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Symptoms

The initial symptom of magnesium deficiency symptoms is the development of interveinal chlorosis (yellowing between the veins) of the lower leaves (Fig. 1). As symptoms progress, most of the leaf will become yellow (Fig. 2). If the deficiency is not corrected, then necrotic leaf spotting will occur (Fig. 3).

Magnesium deficiency symptoms can be tricky to identify. On younger plants the symptoms will appear on the lower, older leaves. This is in contrast to iron deficiency symptoms which occur on the upper, youngest leaves. To confuse the issue further, if magnesium deficiencies develop late in the production cycle, then the symptoms will appear on the leaves just below the bracts (Fig. 4). Submitting substrate and tissue samples to a commercial lab will be required to confirm the lack of magnesium or if the substrate pH is too high.

Management

To overcome deficiencies, a drench application of

magnesium sulfate ($MgSO_4$) at 2 pounds per 100 gallons of water can be used.

To be proactive in avoid problems, a monthly drench application of magnesium sulfate at 1 pound per 100 gallons of water is recommended. Another alternative is a constant liquid feed of 4 to 6 ounces per 100 gallons of water. Make sure to adjust the rate as needed according to the level of magnesium that you have in your irrigation water. For substrate samples, a target level of 30 to 75 ppm Mg is adequate.

Note that 20-10-20 does not contain sufficient levels of magnesium for poinsettia growth. Supplemental applications of magnesium are required in most cases to provide adequate levels.

Also be aware that the ratio of Potassium to Calcium to Magnesium should be maintained at 4:2:1. If the level of one of those elements is too great, it can have an antagonistic effect on the other two elements. To avoid problems, fertilizing poinsettias with a 4:2:1

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Figure 2. As symptoms progress, most of the interveinal area turns yellow.



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Figure 3. Yellow areas develop necrotic spots over time.



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Figure 4. If magnesium deficiency occurs after the bracts form, then the symptoms of interveinal chlorosis can appear on the green leaves just below the bracts. This can be confused with iron deficiency symptoms, so test the substrate and tissue to confirm your diagnosis.

ratio such as 200 ppm potassium, 100 ppm calcium and 50 ppm magnesium to avoid problems.

Summary

Poinsettias have a relatively high demand for magnesium. Symptoms of interveinal chlorosis on the

lower leaves will appear if levels are too low. Make sure you supply adequate levels of magnesium to prevent deficiencies.

Table 1. Corrective procedures for overcoming magnesium deficiency of poinsettias.	
Correction Steps – take these steps when problems occur	Notes
<p>a. Determine if the problem is a lack of Mg being supplied or a problem with the root system.</p> <p>b. Determine via substrate, fertilizer solution and tissue analysis if there is a problem of insufficient Mg being supplied.</p> <p>c. Provide 1 or 2 corrective application(s) of water soluble magnesium sulfate (1 to 2 pounds per 100 gallons of water [119 to 238 grams per 100 liters of water]).</p> <p>d. After making the corrective application(s), retest the substrate to determine if the plant is now receiving sufficient Mg levels.</p>	<p>MISDIAGNOSED OR CONFUSED WITH:</p> <p>a. Potassium deficiency. (Conduct leaf tissue analysis to determine levels.)</p> <p>b. Heavy potassium or calcium applications can induce magnesium deficiencies (Conduct leaf tissue analysis to determine levels.)</p> <p>c. Insufficient magnesium being supplied to the plant. Lime rather than dolomitic limestone was used to adjust the pH.</p> <p>d. Excessive leaching of the dolomitic limestone from the soil can lead to magnesium deficiencies over time.</p> <p>e. High levels of sodium in the irrigation water can inhibit magnesium uptake by the plant.</p>