

# Don't Forget Mo, But Avoid Curly With Poinsettias

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Every year a few plants are submitted to the Plant Disease and Insect Clinic with nutrient deficiency problems. The three that seem to be the most problematic are Molybdenum (Mo), Calcium (Ca), and Magnesium (Mg). A review of the common symptoms, prevention steps, and corrective procedures are covered below.

**Molybdenum Deficiency** symptoms appear as chlorosis (yellowing) of the young mature leaves (leaves halfway up the stem), necrosis of the leaf margins, which then leads to an upward rolling of the leaves (resembling a half-moon pattern with some crinkling) (Fig. 1). Symptoms can spread up and down the plant. Poinsettias are the primary greenhouse

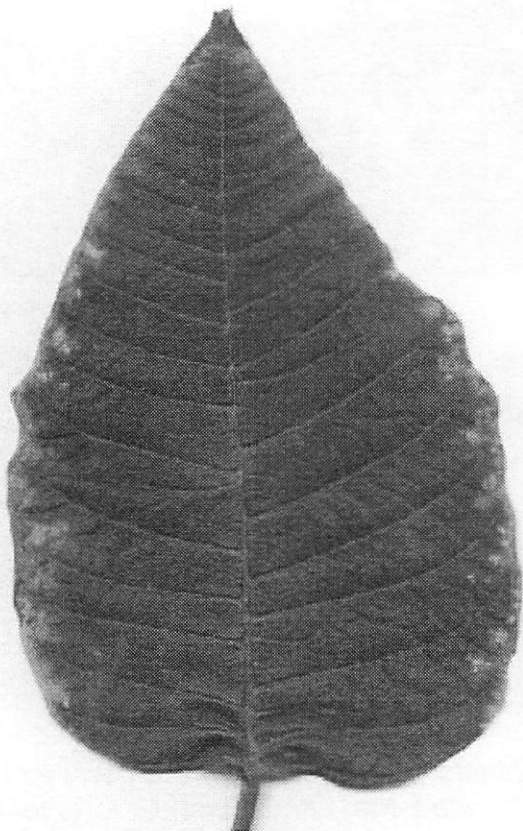


Figure 1. Marginal leaf chlorosis and necrosis which is typical of Mo deficiency.

crop affected by Mo deficiency. The leaf chlorosis of Mo deficiency can resemble late-season Mg deficiency.

Continuously apply 0.1 ppm Mo using sodium molybdate or 1 ppm as a corrective measure. To supply 0.1 ppm Mo, make a stock solution by mixing 1 ounce (28.4 grams) or sodium molybdate in 40 fluid ounces (1.2 liters) of water. For applying it to the crop, add 0.15 fluid ounces (4.5 ml) of the stock solution per 100 gallons of water

Curly leaves can occur with **calcium deficiency** (Fig. 2). Calcium deficiency can occur in poinsettias for many reasons other than simply a shortage of Ca. During periods of overcast weather and high humidity the plant's ability to uptake calcium is inhibited. Therefore Ca deficiency can occur in rapidly expanding poinsettia leaves or bracts. In North Carolina, Ca deficiency frequently occurs during the fall hurricane season.

Symptoms appear at the top of the plant. Young leaves may develop variable patterns of chlorosis and distortion such as dwarfing, strap-like shape, or marginal leaf burn. Leaf edges may become necrotic. Bracts also can develop a marginal necrosis. Sunny weather, avoiding water-logged substrates, low humidity, and applying calcium chloride or calcium nitrate foliar sprays will help prevent the problem. Additional details about rates and precautions are listed in an excellent Ecke publication, Foliar Feeding of Calcium ([www.ecke.com/html/tibs/tib\\_foliar\\_feeding.html](http://www.ecke.com/html/tibs/tib_foliar_feeding.html)). Calcium should also be supplied in your fertilization program. Remember that 20-10-20 does not contain Ca or Mg. Apply Ca via calcium nitrate at the rate of 50 ppm Ca should be sufficient.

**Magnesium Deficiency.** Lower leaves develop interveinal chlorosis (Fig. 3). Under advanced conditions, the leaf margins turn necrotic. On younger plants symptoms appear on the lower leaves. On ▶

▶ flowering poinsettias, symptoms tend to develop on the top half of the plant.

If your fertilizer does not contain adequate Mg, an option is magnesium sulfate (epsom salts) applications. Apply at the rate of 1 to 2 pounds per 100 gallons of water each month. Do not mix with other fertilizers to avoid possible precipitations with calcium and phosphate. This rate of epsom salts also supplies adequate levels of sulfur.

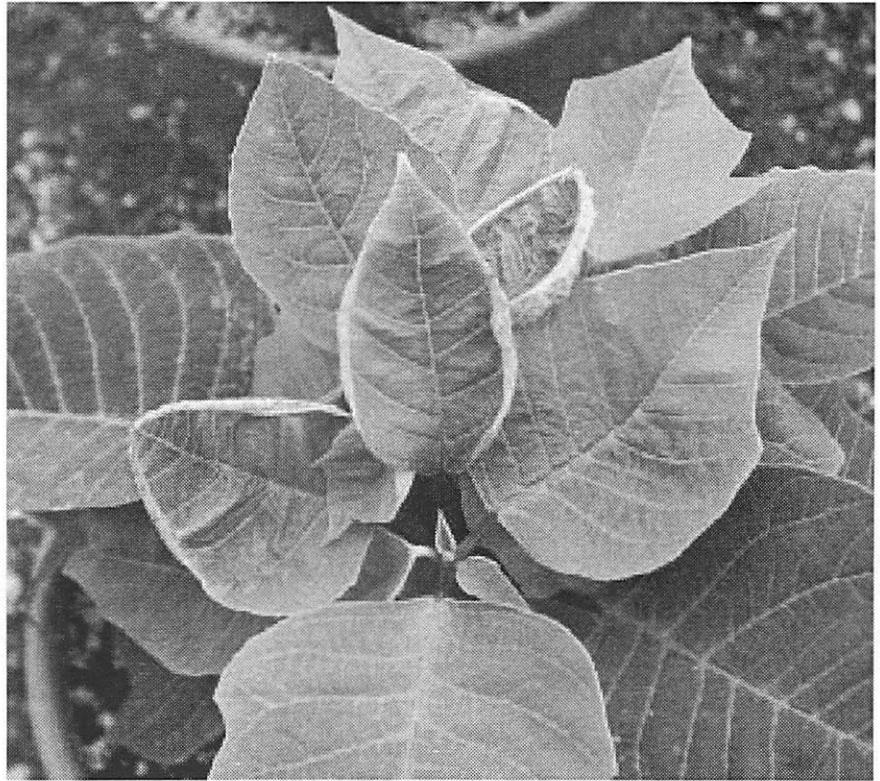


Figure 2. Leaf curl occurred after a period of overcast weather and high humidity which inhibited the plant's ability to uptake calcium.

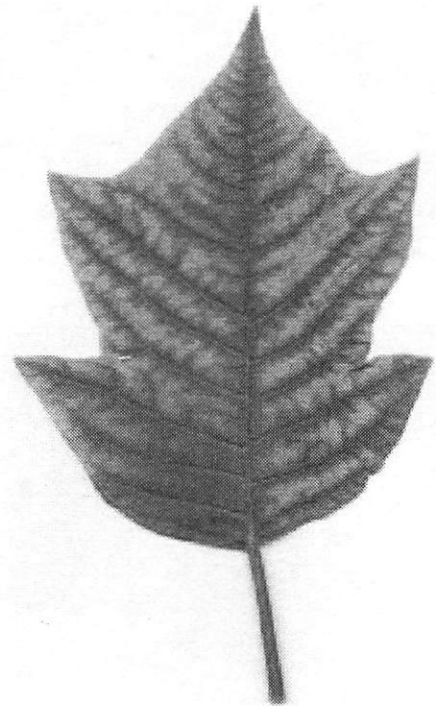
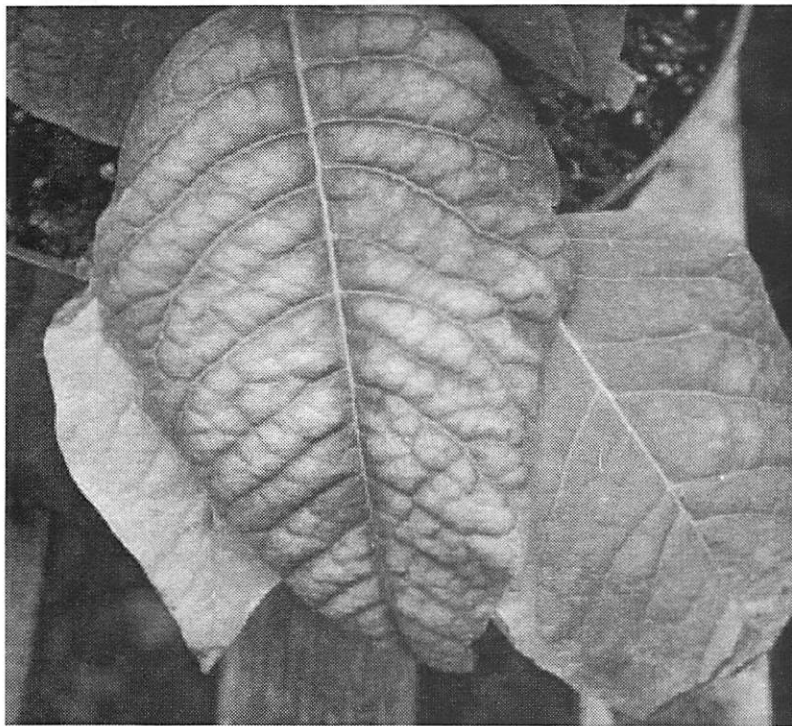


Figure 3. Lower leaves develop interveinal chlorosis with Mg deficiency.

