

## CALCIUM DEFICIENCY IN POINSETTIA PRODUCTION

Here are a few indicators of Ca deficiency to look out for, reasons why Ca deficiency might be popping up in your poinsettia crop, and strategies to help overcome this unsightly mineral nutrient deficiency.



### What Causes Calcium Deficiency?

Some varieties are affected by Ca deficiency more severely and by different causes than others due to differences in physiology (genetics are funny that way...), so early symptoms will likely pop up on one or two varieties first. On a basic level, however, two things cause Ca deficiency in plants:

1. Not enough Ca is being supplied to or taken up by the crop.
2. There is insufficient movement of Ca in your plants.

In cases where supply or uptake is the limiting factor, too-low overall fertilizer rates, use of a fertilizer with too little Ca during fall and winter months or an imbalanced Ca to magnesium (Mg) ratio (FYI—the ideal range is 3:1 to 5:1 Ca-to-Mg), often due to poor or changing water quality that has gone unmanaged.

Calcium only moves via bulk flow of water through plants. When environmental factors like sudden drops in air temperature, high relative humidity and lower light levels limit uptake of water and transpiration, the flow of Ca slows or stops in the plant.

### How Do You Combat Ca Deficiency?

Close management of your fertilizer program is the first line of defense against supply/uptake-related Ca deficiency. To prevent or correct this group of causal agents, be sure to:

- Pick a fertilizer suited for the crop, your growing environment, and the time of year. Some growers use all-purpose fertilizers or ones formulated with higher amounts of ammoniacal

nitrogen (such as 20-10-20) to push early growth on poinsettias. However, unless additional Ca is added to your feed later on or you alternate with 15-0-15 (calcium nitrate), many all-purpose feeds will not provide enough Ca to your crop. Use a Cal-Mag type feed (17-5-17 or 15-5-15), a “cool-weather” feed or fertilizers formulated for poinsettias (like Jack’s Poinsettia LX 20-5-19) to stay ahead of your crop’s Ca needs.

- Properly mix your fertilizer to avoid accidental underfeeding and always double-check your fertilizer injector’s calibration each time you mix up a new batch of feed. Remember that poinsettias are generally high feeders so periodical feeding at about 300 ppm N or constant feed at 150 to 200 ppm is a good target for when plants are actively growing.
- Get periodical irrigation water tests done if your water quality changes significantly throughout the year (especially if you use surface water). If your alkalinity is high, the chances that your Ca:Mg ratio may become unbalanced if you pick the wrong fertilizer increases. Having a recent water quality report will help inform decisions on fertilizer selection or if you need to acidify your water before injecting fertilizer.

If lack of Ca movement in your plants is the most likely cause of deficiency symptoms, do what you can to modify the growing environment to increase water uptake and movement.

- When temperatures begin to drop, transpiration will reduce relative humidity levels in the greenhouse will increase. Be sure not to run your greenhouse air temperature too cool and dehumidify during the day when possible while your plants are actively growing.
- Adjust your greenhouse venting setpoints to avoid “crashing” too much cool air down on your crop and causing transpiration to grind to a halt. When the seasons start to turn—like now, between October and November—be sure to restrict how wide your vents can open when outdoor air temperatures are in the 50’s F or below.
- Increase air flow in your greenhouse, especially if venting/dehumidifying isn’t possible due to too-cold outdoor air temperatures. Add HAF fans if you have too few or make sure they are running more frequently. This can help drive transpiration and Ca movement, even under adverse conditions.

If changing fertilizer and doing your best to manage the greenhouse environment still isn’t enough to prevent Ca deficiency, periodical foliar calcium chloride (CaCl) sprays may be your best option. Apply CaCl sprays at 200 to 400 ppm to “glisten” (not runoff) and be sure to mix in a wetting agent to ensure the solutions spreads out across the leaf surface.

Adding a wetting agent to the solution will enhance the rate of absorption and reduce the chances of phytotoxicity occurring. Weekly or bi-weekly sprays are appropriate, depending on the severity and frequency of the issue, but the goal should be to apply CaCl as few times as possible. Be sure to only use technical- or reagent-grade CaCl, as impurities lowergrade CaCl can cause unrecoverable damage to your crops.