



It Does a Plant Good:

The Importance of Calcium in Plant Growth

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Every plant needs calcium to grow. In plant growth, it plays a critical role in strengthening the plant's cell walls; healthy cell walls make it harder for pathogens to invade the plant. Calcium also contributes to the growth of stronger stems.

Without adequate amounts of calcium, plants can experience a variety of problems. Calcium deficiency can manifest itself as chlorosis, necrosis or abnormalities at the tips and margins of young leaves, as well as deformed bulbs and fruit. Once fixed, calcium becomes immobile and doesn't move throughout the plant. Older plant tissue is unable to give up its calcium supply to the youngest growth; therefore symptoms appear most often in the growing tips.

In growing media, calcium also contributes to the buffering capacity of the media. Having a high media pH doesn't necessarily mean that adequate calcium is present. Some crops that exhibit calcium deficiency include ornamental cabbage and kale, tomatoes and poinsettias.

Ornamental cabbage and kale

In cabbage and kale, calcium deficiency is related to poor transpiration under hot and humid summer conditions. Calcium may be present in the media but it doesn't translocate up from the roots, resulting in leaf edge burn. Foliar applications of 1.5 teaspoons per gallon of **15.5-0-0** or **15-0-15** sprayed with the surfactant **CapSil®** at ½ tsp. per gallon, greatly



Tip burn on ornamental kale

reduces damage from edge burn. Calcium sprays should be made once a week when conditions favor deficiency and continued until cooler and less humid weather sets in. Scheduling applications during morning or evening hours will help prevent phytotoxicity from the sprays.

Tomatoes

Blossom end rot of tomatoes is often mistaken for a disease, but calcium deficiency is a major contributor. Symptoms start as sunken, decaying areas at the blossom end of the fruit. It typically starts with the fruit furthest away from the stem. Plants are especially susceptible when exposed to sudden periods of drought and high soluble salts. The availability of calcium to the tomato fruit decreases as total salts in the media or hydroponic solution increases. Fluctuations in media moisture should also be avoided, especially during fruit development. Take steps to improve transpiration by lowering humidity and increasing air movement. Utilize weekly foliar sprays of calcium nitrate with CapSil. An additional option would be a spray of **calcium chloride dihydrate** along with CapSil.

Poinsettias

Poinsettias can also suffer from calcium deficiency throughout their crop cycle. Foliar symptoms first occur as puckered leaves, often with the tip of the leaf hooked down toward the ground. Symptoms on bracts, which vary by variety and



Calcium deficiency on poinsettia

environmental conditions, include small white, brown or black spots that can appear on bract edges or scattered across the bract between the veins. Some varieties may exhibit purple margins running down the sides of the bracts.

Any nutritional or environmental factors that inhibit the uptake of calcium into bract tissue increase the likelihood of edge burn. Bracts transpire less than leaves, making spray treatments of calcium directly to the bracts the most successful way of increasing tissue concentrations of calcium. To minimize the risk of bract edge burn, foliar sprays to a glisten of calcium chloride dihydrate plus CapSil can be applied when the first true bracts are present. Calcium chloride dihydrate is preferred for calcium sprays on poinsettias because it doesn't contain the nitrogen that would make the tissue soft and also lacks the dye that would stain the poinsettia bract. Sprays can be made weekly and continued until the crop is shipped out. Never spray this mixture when the plants are under water stress, or air temperatures are above 85° F.

With poinsettia bracts, it's sometimes difficult to discern where calcium problems stop and a disease begins. Calcium-deficient bracts often fall prey to *Botrytis*. However, bracts with adequate calcium can also develop *Botrytis* if the environmental conditions are ideal. When making calcium treatments in greenhouses with higher humidity, it's suggested that you also treat for *Botrytis*.

Other crops susceptible to calcium deficiencies include primula, lilies, zinnia and cyclamen. Products other than those mentioned here may also be legal, safe and effective. Always read and follow all label directions.

Featured Products

Product	Size	Item No.
15-0-15 Cal-Plus	25 lbs.	31-140100
Calcium nitrate 15.5-0-0	50 lbs.	67-8130
Calcium chloride dihydrate	25 lbs.	35317
CapSil	1 gal.	74-1541