

Foliar Calcium Option

CellCAL PlusTM

Product Code: SNPK0074

CellCAL PLUS has been formulated with the support of industry leaders to improve calcium uptake the skin quality in both Apples and Cherries. The three nutrients in CellCAL PLUS (calcium, copper & boron) work in a symbiotic relationship assisting in the overall health and strength of the cell walls within the fruit which in turn produces greater fruit firmness and skin strength.

In particular both boron and copper are important during rapid fruit growth in cherries to assist in calcium uptake into cell walls and to reduce the occurrence of splitting.

Guaranteed Analysis

Calcium (Ca):	5.9%
Copper (Cu):	0.25%
Boron (B):	0.1%
Specific Gravity:	1.13 - 1.14 kg/L
pH Range:	6.0 - 7.0

Typical Application Rates

Rates in Apples

Recent research suggests that as much of 90% of the uptake of calcium is accumulated from 6 weeks after full bloom.

SLTEC[®] recommends 6 applications at 10 L/ha every week for six weeks.

Fertigation Calcium Option

BiologiCAL[®] PLUS

Product Code: SG0017

BiologiCAL[®] PLUS has been specifically formulated to provide a highly available and activated calcium source that is complimented with potassium and QuadSHOT[®] biological stimulant.

Benefits of BiologiCAL[®] PLUS

- Provides plant available calcium without extra nitrogen
- Improves cell wall strength, plant durability and stress tolerance.
- Improves soil structure and friability
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- Improving moisture penetration/infiltration
- A unique form of activated calcium that stimulates plant uptake
- Built in soil and plant stimulants to enhance soil fertility and plant health
- Assists in reduction of soil nematodes that inhibit root growth and plant productivity.
- Improves plant resistance to disease and overall resilience
- Improving moisture penetration/infiltration

Guaranteed Analysis

Calcium (Ca)	6.3%
Nitrogen (N)	0.3%
Phosphorus (P)	0.1%
Potassium (K)	2.0%
Sulphur (S)	1.8%
Molasses	41.9%
Carbon (C)	20.0%
Fish Emulsion	0.3%
Kelp	0.3%
Humic Acid	0.2%
Specific Gravity	1.27 to 1.30 kg/L
pH Range	8.0 to 10.0

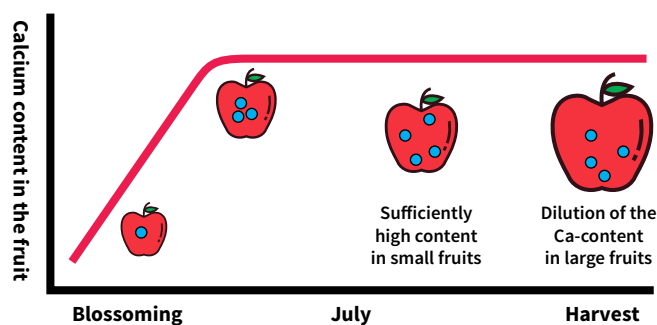
Calcium's Role in Apples – Avoiding Bitter Pit

Calcium is a vital element for fruit quality and to prevent disorders during storage. Also, calcium in the soil has different ways of influencing the absorption of other nutrients. This article outlines the backgrounds of the various processes by which calcium plays a role.

Calcium (lime) has various functions in the soil. Firstly, in the form of calcium hydroxide (slaked lime, CaOH_2) or calcium bicarbonate, it neutralises the acids in the soil (H^+). In this way, calcium regulates the pH of the soil and has a major influence on nutrient availability. Calcium also prevents heavy metals leaching to the subsoil layer and into groundwater.

Calcium also encourages biological activity in the soil. The majority of soil organisms thrive best under slightly acidic soil conditions. Also, calcium creates calcium bridges between the soil colloids, which is beneficial to the crumbliness of the soil, improving the structure, the pore volume and permeability of the soil. Depletion of calcium is caused by acidification of the soil, leaching and uptake into the fruit.

Calcium uptake takes place passively in the form of Ca^{2+} ions via the root tips. The uptake of Calcium depends on the root growth, soil temperature, soil moisture content and soil texture. Some 80 to 90% of the amount of calcium required in that year is taken by the tree from the soil, and only 10 to 20% originates from the reserves in the wood. The calcium content in the leaves rises continually until the end of October. The fruits, on the other hand, are primarily supplied with calcium during the cell division phase, in other words during the first six weeks after blossoming. During the cell expansion phase the calcium concentration in the fruit is diluted as a result of fruit and shoot growth (see figure 1). Calcium uptake is stimulated by a moist soil and by sufficiently high transpiration and is negatively influenced by dry, cold soil.



Bitter pit is caused, in brief, by the following;

- With optimal calcium supplies, the protopectin (strands of pectin plus calcium) create calcium bridges which impart stability to the middle lamella.
- With low supplies of calcium, or displacement of Ca^{2+} by Mg^{2+} or K^+ the mutual links between the cells are destabilised. The place of calcium is occupied by magnesium. As magnesium and potassium, contrary to calcium, lack the ability to bind cells, the cell structures collapse and turn brown. Magnesium binds to the sulphates and epsom salt is formed (magnesium sulphate). This gives the flesh a bitter flavour where the patches are visible (bitter pit). Risk of disorders A serious threat of disorders caused by calcium deficiency is present in;
 - Orchards with too low calcium availability in the soil (low pH, little free calcium);
 - Trees with rosette leaves damaged by frost or night frost or rosette leaves with poor nutrient level ('Ca-pump');
 - Sensitive varieties (for example Kanzi, Braeburn, Cox's, Boskoop, Elise and Junami >75 mm);
 - Apples harvested too early (bitter pit) or too late (brownish flesh, gloeosporium);
 - Fruits too large for the variety concerned;
 - Newly planted trees with strong growth and trees with low production (unfavourable calcium distribution);
 - Trees with a too high nitrogen, potassium or magnesium content. Relevant in the first place are low calcium, potassium, nitrogen and magnesium contents in the flesh. The mutual ratios in particular –especially the K/Ca and N/Ca ratio –are important indicators of the potential risk of physiological disorders in the fruits. A few of these also partially occur while the fruit is still on the tree (bitter pit, lenticel blotch), others only after a period of storage (brown flesh, scald, storage pit, gloeosporium).

BiologiCAL® PLUS applied just before full bloom and including full bloom will give the best results 2 x 50 L/ha fertigated or applied up the weedstrip.



FERTILIZERS

Contact us for more information

1800 768 224 | sltec.com.au | enquiries@sltec.com.au