

CHELAL[®] OMNICAL

SOLUTION OF CHELATED CALCIUM (Ca) for foliar applications

Guaranteed content expressed as percentage by mass:

Water-soluble calcium oxide (CaO): 8,1 % (= 100 g CaO/L)

of which 6,5 % calcium oxide (CaO) chelated by DTPA (= 80 g CaO/L)

pH range guaranteeing acceptable stability of the chelated fraction: between pH= 4 and pH= 10

Product low in chlorine.

To be used only where there is a recognised need. Do not exceed the appropriate dose rates.

Product in accordance with Spanish legislation (R. D. 506/2013) and EC-regulation 764/2008

Recommendations

Do not use on cherry trees.

Do not exceed the maximum concentration of 1 % (= 1 L CHELAL[®] OMNICAL in 100 L water).

Maximum concentration in greenhouse: 0,5 % (= 500 cc in 100 L water).

For foliar applications avoid high temperatures and bright sunshine.

Treat preferably during early morning or late evening.

Applications

Consult our crop-related programs.

Role of calcium

In general, calcium can be considered as an element assuring physiological and structural plant-stability. Calcium is essential for the stability and permeability of cell walls and –membranes. Ca-deficiency therefore completely disturbs cell-structure. Sap streams transporting nutrients and metabolites are out of control. Calcium also guarantees chromosome-stability and normal mitosis/meiosis.

Relative susceptibility to calcium deficiency

Papilionaceous plants, vegetables and fruit-trees have the highest calcium demand.

Lettuce, cucumber, bell pepper, eggplant, cabbage, celery and tomato are the most susceptible vegetables. As far as fruit-trees are concerned, apple-trees are undoubtedly the most susceptible to calcium deficiency, although cherry and pear also can suffer from this kind of problem.

Even among varieties, susceptibility to calcium-deficiency can vary considerably. Underneath, some apple-varieties are ranked according to susceptibility:

Very susceptible	Moderately susceptible	Less susceptible	Not susceptible
Braeburn	Arlet	Belchard	Idared
Blenheim Renette	Alkmene	Pinova	Red McIntosh
Cox's Orange Pippin	Delbard jubile	Golden Delicious	Spartan
Reine des renettes	Gala	Red Delicious	Redspur
James Grieve	Delbarestivale	Elstar	
Maigold	Roter Boskoop	Fuji	
	Starkrimson	Renette Canada	
	Jonagold	Granny Smith	
	Jonathan	Melrose	
	RubINETTE	Ontario	
		Tentation	
		Schweizer Orangen	
		Starking	
		Yellow Spur	

Symptoms of calcium-deficiency

Internal calcium transport within plants is almost inexistent, thus deficiency-symptoms first appear on those parts with the most extensive growth and meristem-activity (e.g. young fruits, leaves, flowers,...)

Deficiency-symptoms:

- young leaves stay small or are deformed: leaf-margins and top curl upwards.
- deformed stems.
- burning of youngest leaves.
- in case of temporarily deficiency during a period of extensive growth, stems become brittle and easily break.
- unevenly formed leaf-margin.
- uneven chlorosis from the leaf-margin on towards the leaf-centre, combined with necrosis (burning) of the leaf (« leaf tip-burn » : lettuce, cabbage,...).
- main veins become dark green or brown.
- curling leaves («crinkle leaf»).
- hart rot (celery)
- «bitter pit» (apple)
- rotting of upper parts of fruits: «blossom-end rot» in tomato, bell-pepper, cucumber, melon, egg-plant)

Causes of calcium-deficiency

Calcium-deficiency is scarcely caused by low Ca-levels in the soil. Such soils also have very low pH-values, causing other, more important problems, such as Al, Fe, Mn or Zn-toxicity.

Mostly, calcium-deficiency is caused by ineffective absorption and difficult internal transport.

Calcium-absorption is for 72 % passive, which means that the calcium is transported by the sap stream, caused by evaporation.

Main causes of calcium-deficiency are :

- in the leaf: low evaporation because of high relative air-humidity (insufficient aeration of the greenhouses, low nocturnal temperature)
- in the fruit: low relative humidity which causes the leaf to evaporate more than normal. Thus, the leaf attracts more Ca at the expense of the fruit.
- drought.
- low level of organic matter.
- antagonism between soil-cations: $\text{NH}_4^+ > \text{K}^+ > \text{Mg}^{2+} > \text{Na}^+$.
- insufficient aeration of the soil (O_2 -deficiency of the roots), limiting root-absorption.
- excessive growth.
- boron-deficiency, decreasing Ca-transport from root to aerial parts.
- low pH (low Ca-concentration in the soil)

Characteristics

CHELAL[®] OMNICAL contains calcium, chelated by DTPA. This guarantees an optimum plant-absorption and an excellent internal transport of the applied Ca towards all plant parts.

Miscibility

CHELAL[®] OMNICAL is miscible with most pesticides and herbicides. Avoid mixing with oil-based products. It is advisable to conduct a miscibility test before application. In case of doubt, consult our technical service.

Preparation of the solution

Sometimes a light sediment can appear on the bottom of the can. This sediment is soluble in water. Shake well before use. Pour CHELAL[®] OMNICAL into the sprayer tank while filling with water. Continue stirring until the solution is applied.

Precautions

- P102: Keep out of reach of children
- P270: Do not eat, drink or smoke when using this product
- P305+P352+P313: If in eyes: wash with plenty of water and get medical advice
- P303+P352: If on skin: wash with plenty of water
- P280: Wear protective gloves/ eye protection/ face protection
- P308+P314: Get medical advice if exposed or concerned or if you feel unwell (show the label where possible).
- Store the product at a temperature between 40°F and 90°F (= 5°C - 30°C).
- Handle this product respecting all the necessary and recommended precautions regarding the storage and manipulation of fertilisers.
Not classified as dangerous in accordance with EC-legislation.
- Do not use CHELAL[®] OMNICAL when even the slightest disequilibrium in the plant's nutritional status is suspected. CHELAL[®] OMNICAL can strengthen this disequilibrium and cause leaf drop. For Golden, a variety very sensitive to falling of the leaves caused by magnesium deficiency, we recommend analysing the leaves. If a magnesium deficiency is detected, the application of CHELAL[®] OMNICAL may aggravate the situation resulting in severe leaf drop.

Warranty

The liability of the manufacturer is limited to delivery of the product in its original container in conformity with the guaranteed analysis, as indicated on this label. The manufacturer is not responsible for inappropriate or inaccurate use of the product nor for damage caused by weather conditions, soil characteristics or special sensitivity of crops and varieties. In no case shall BMS Micro-Nutrients be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the buyer. BMS Micro-Nutrients makes no warranties of merchantability of fitness for a particular purpose nor any other express or implied warranty except as stated above.

Contact

BMS Micro-Nutrients N.V.
Rijksweg 32 - 2880 Bornem - Belgium
Tel.: + (32)(0)3/899.10.10
Fax: + (32)(0)3/899.40.45
E-mail: info@chelal.com