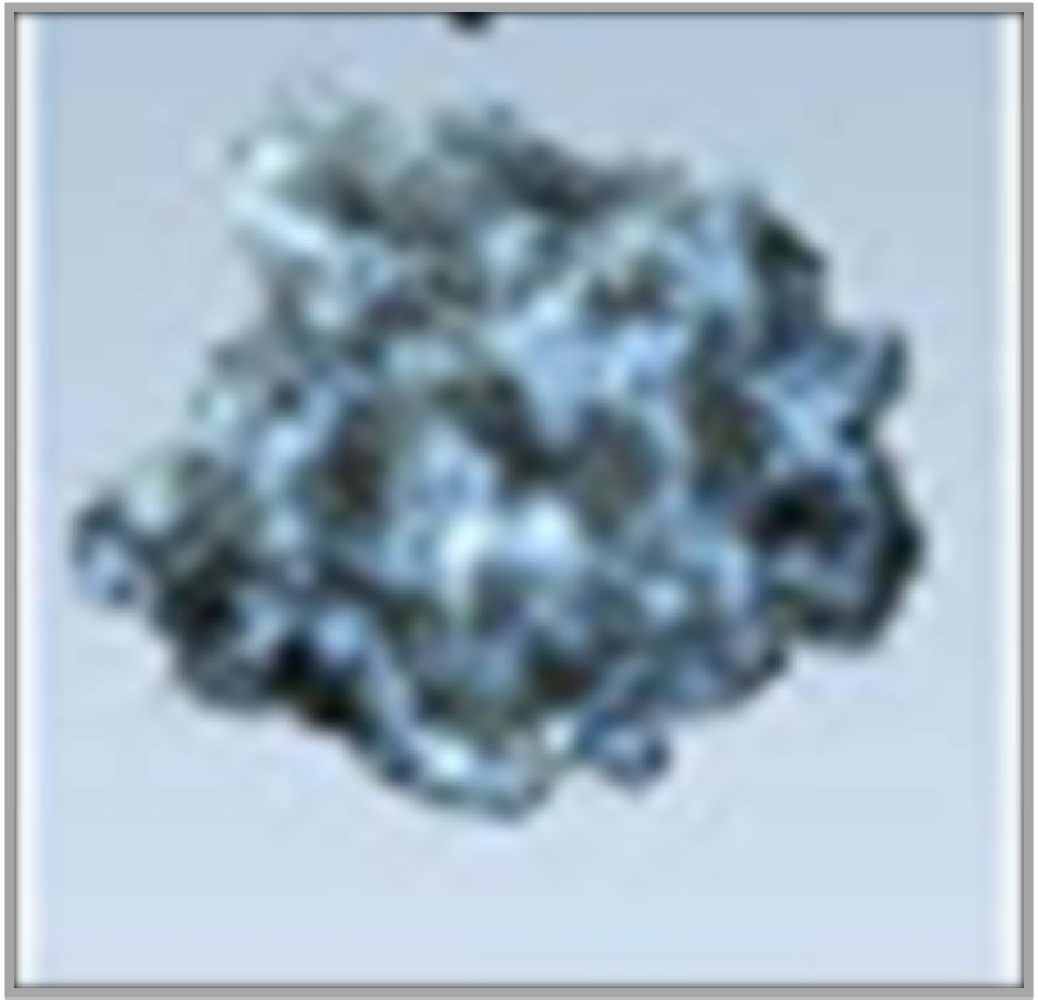
natural green®

– a different care for your plant

PHILOSOPHER STONE

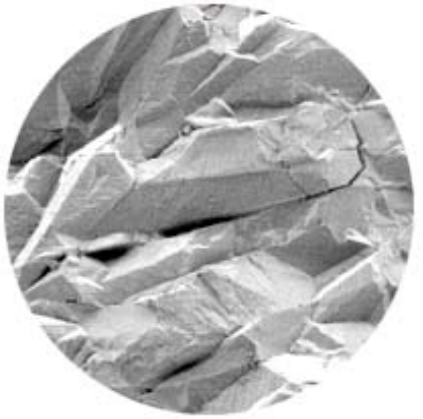


Content

- CALCITE (raw material)
- TMA process
- PARTICLES
- Biological benefits of Natural Green
- Improvement of photosynthesis
- Antioxidant potential
- Calcium reinforcement
- Water preservation
- Experimental results

Calcite

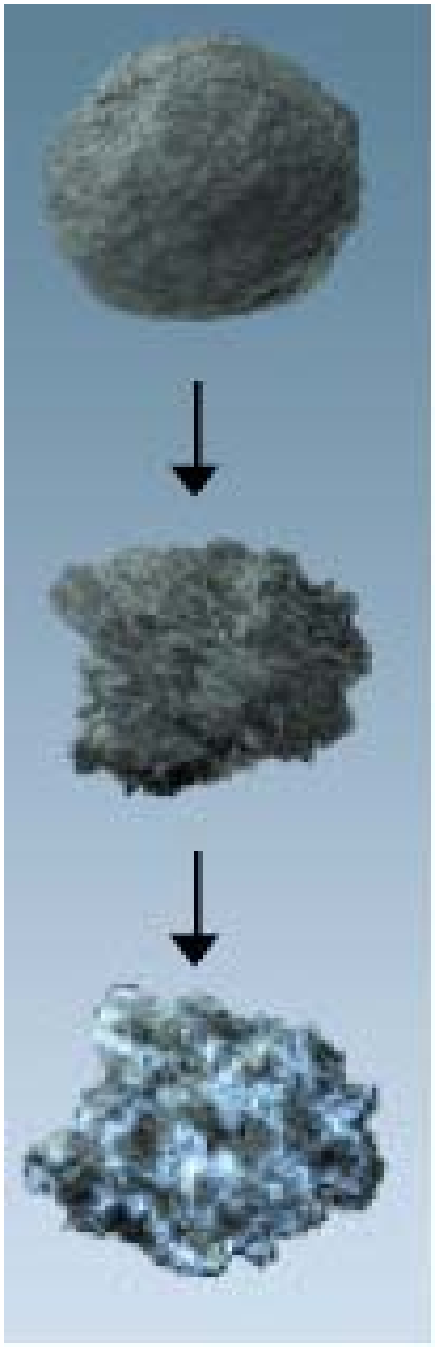
- **sedimentary rock which emerges from calcareous seaweed**
- **Main components:**
  - CaCO3 (carbonate calcium) : 82.3%
  - SiO2 (silicium dioxide) : 8.56%
  - MgO (magnesium oxide) : 3.02%
  - CaO (calcium oxide) : 41.7%
  - Iron: 8783 mg/kg
  - Mn (manganese) : 156 mg/kg
  - Selenium: 0.24 mg/kg
- **Carbonic solubility: 65**
- **Neutralizing value: 47**



TMA - Technology

Raw Calcite is processed using a special procedure called **tribomechanical activation** (**TMA**).

This process induces numerous Calcite particle collisions in an extremely dynamic environment (900 km/h radial speed), which consequently results in changing the physical properties of these particles (size and surface modification).



Particles

Due to a multiple high energy collisions in the activator, calcite particles increase their specific surface by 100 % and their porous volume is trippled.

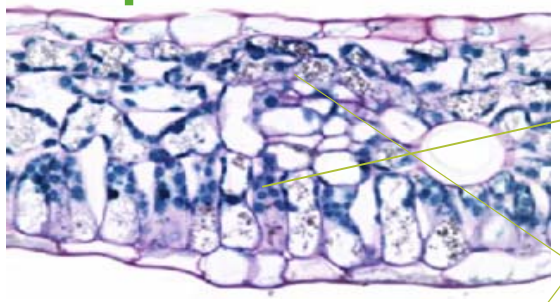
TMA device micronizes 10% of calcite particles below 1 micron in less than a second.

The calcium carbonate contained in natural green® will be dissociated at pH 5.8 (pH of the leaf) during the foliar application. The plant will be able to have a continuous contribution of calcium ions and carbonates ions.

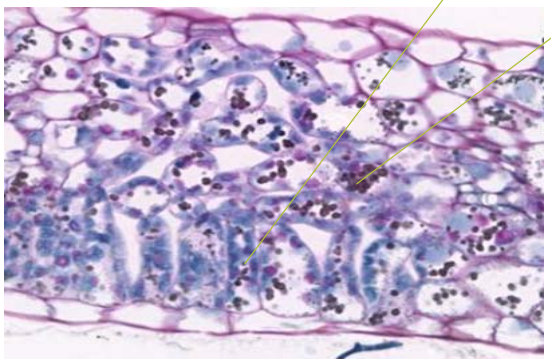
Biological Benefits of **natural green®**

- IMPROVEMENT OF PHOTOSYNTHESIS
- ANTIOXIDANT POTENTIAL
- CALCIUM REINFORCEMENT
- WATER PRESERVATION
- INCREASE OF FRUIT PRESERVING

Improvement of photosynthesis



Control vine leaf (X40)



Treated vine leaf with

natural green (X40)

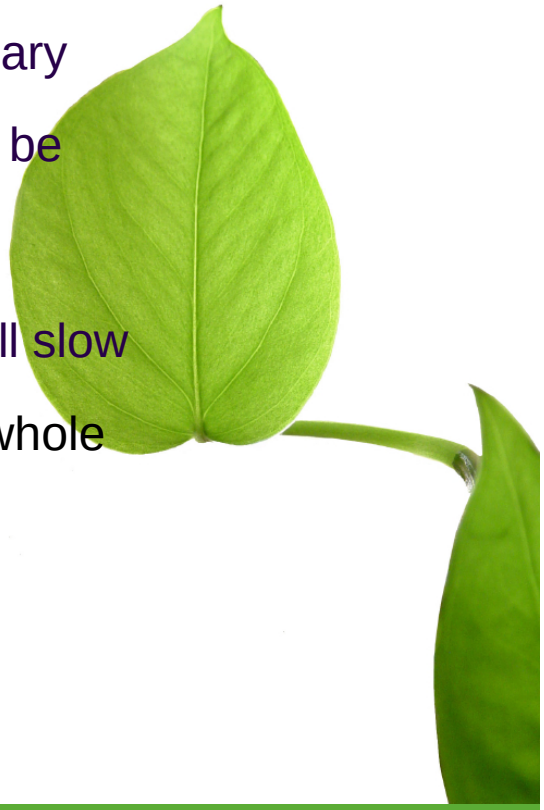
Chloroplasts: chloroplasts are better formed and bigger in the treated leaves; it shows a better function of the photosynthesis.

Polyphenols: A higher export of polyphenols to the berries seems to be confirmed by the maturity controls.

Proteins: Treated leaves have more proteins in their structure, which indicates a more important metabolic activity, confirmed by the chloroplast structure. Metabolism is more active in the treated part; the presence of many cellular nucleuses indicates a high protein synthesis activity.

Antioxidant potential of natural green®

- Reduced senescence signs in plants treated with natural green®
- Increase of plant activity by enhancement of primary and secondary metabolism could activate senescence effect on plant, which will be faster.
- Thanks to anti-oxidant potential of natural green® senescence will slow down and plant activity will be better and maintained during the whole crop period.



Calcium reinforcement

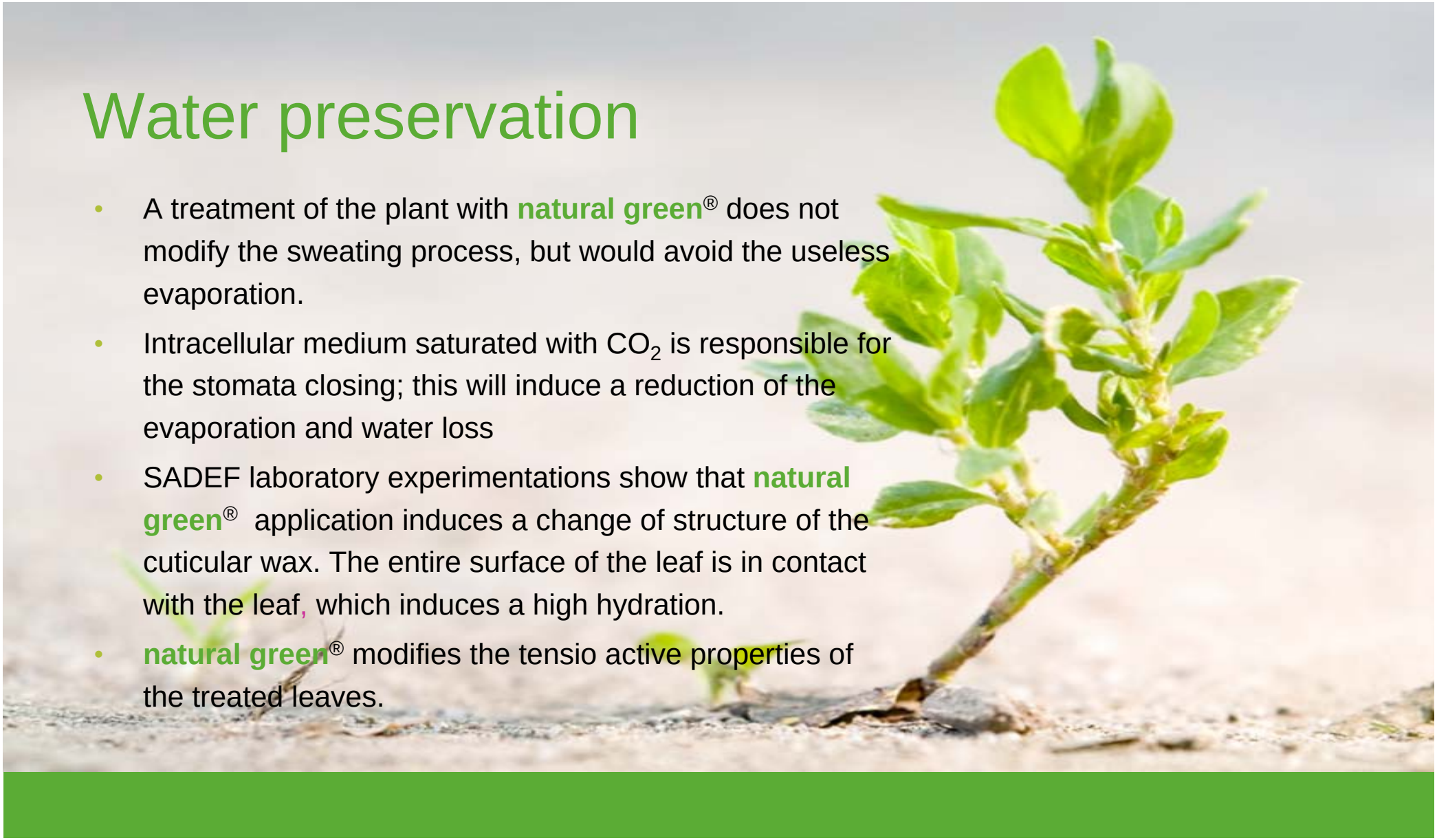
natural green® releases Ca as the carbonate calcium dissociation so the plant will be continuously supplied, which could help to:

- preservation of the structural and functional integrity of the membrane
- stabilisation of the cellular wall
- transport and control of the ionic exchanges.

A calcium contribution to the plant thanks to a foliar pulverisation can overcome the frequent Ca deficiency

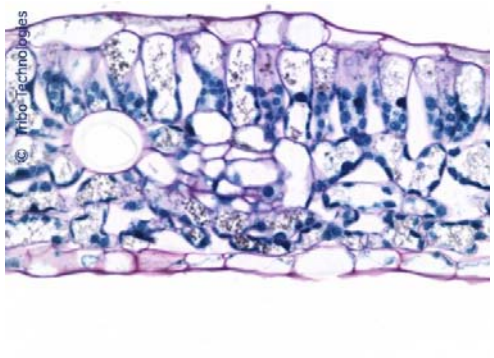
Water preservation

- A treatment of the plant with **natural green®** does not modify the sweating process, but would avoid the useless evaporation.
- Intracellular medium saturated with CO_2 is responsible for the stomata closing; this will induce a reduction of the evaporation and water loss
- SADEF laboratory experimentations show that **natural green®** application induces a change of structure of the cuticular wax. The entire surface of the leaf is in contact with the leaf, which induces a high hydration.
- **natural green®** modifies the tensio active properties of the treated leaves.

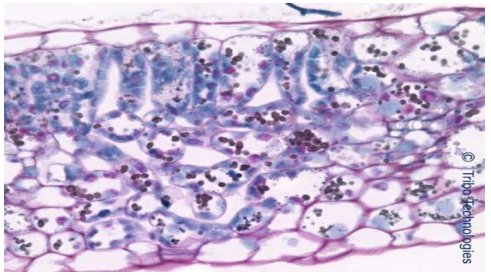


Picture :
CIRAD

Wax



Control vine leaf
(cross section, x20)



Treated vine leaf
(cross section, x20)

Increase of fruit preserving

- **natural green**® treatment allows to increase fruits preserving; no treated strawberries will be in decomposition state faster than the treated strawberries
- Such effect was noticed on other fruits as well

- Increase in total yield from 5-25%
- Preservation of water
- Increase of sugar content
- Increase of dry matter content
- Increase of polyphenols
- Protection from tip burns
- Increase of qualitative fruit characteristics

Field experience

natural green®

nature helps nature