Artal
SMART AGRICULTURE | since 1895

Technical information

DULZEE

Properties and benefits

GENERATION 4
LA CALIDAD DE LA EXPERIENCIA

The Product

DULZEE is a physiological inducer composed of polysaccharides, Calcium, Magnesium and trace elements, along with uronic acids.

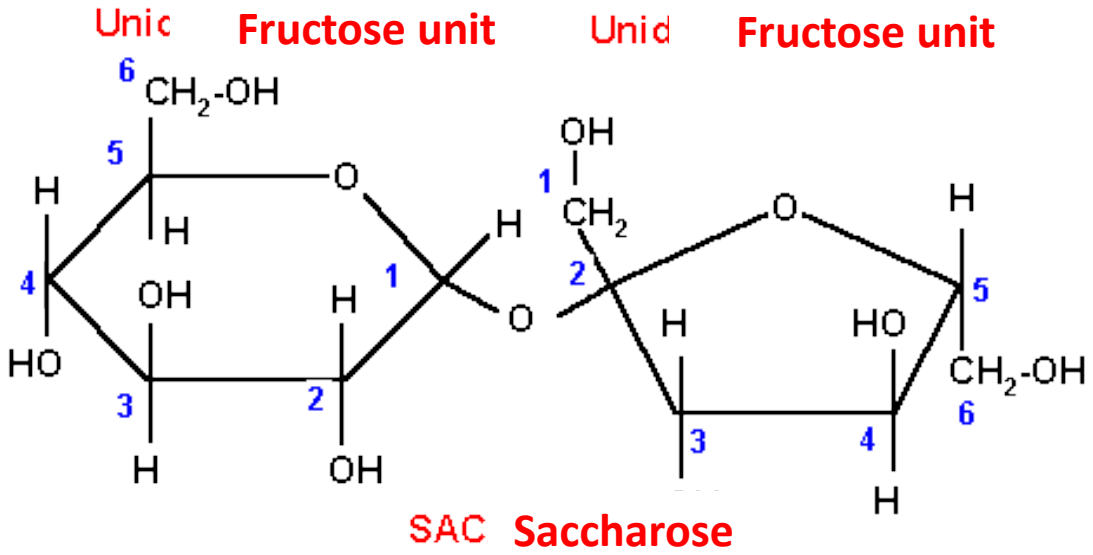
It acts as a crop stimulant, improving the consistency, color and uniformity of the fruit.

It contains elements aimed at stimulating the sugar content and fruit quality.

Polysaccharides

Polysaccharides are sugars naturally produced by the plants thanks to the photosynthesis.

They are organic matter that the plant uses as energy source to perform their physiological processes.



Sucrose structure, a type of polysaccharide.

Polysaccharides

The synthesis uses a lot of energy to be made, creating **energetic stress.**

Application of **DULZEE** polysaccharides will help fruit production with:

a) **More sugar** quantity in the fruits.

b) **More sugar** in the fruits in less time.

c) **Reduction** of the energetic stress.

d) **Complexing effect** on the nutrients.

Calcium

Calcium is a secondary macronutrient.

This is the element that affects fruit quality the most:

- Hardens cells wall
- Prevents ethylene synthesis
- Prevents hydric and thermic stress

- **Hardens cells wall**

  Calcium stabilizes pectate of the cell wall, hardening fruit skin, more resistant to pathogens and stress.

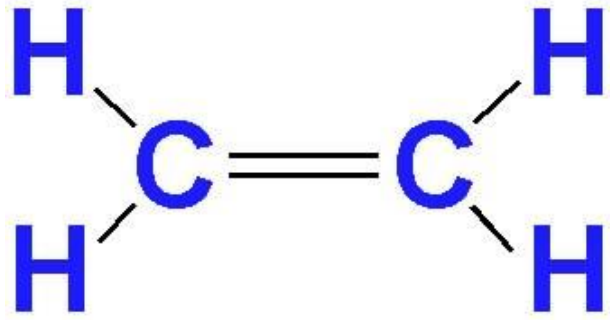
Calcium

- **Prevents ethylene synthesis**

Ethylene is the ripening hormone.

Ripening produces the physiological breakdown of the fruit, that is negative for fruit quality and appearance.

High Calcium levels prevent ethylene synthesis.



Calcium

- **Prevents hydric and thermic stress**

  Calcium participates in the induction of proteins against thermic shock and regulates stomata to prevent hydric stress. These processes are important to avoid drought and thermic damage to the fruit.

Boron

Boron is a micronutrient required for plant nutrition.

Correct Boron levels are important for a good nutritional state of the crops.

Boron deficiencies may cause abnormal fruit shapes and low sugar content.

Boron

Cell wall structure

Boron is involved in Calcium movement through the plant. With low levels of Boron, Calcium can't stabilize cell wall what may lead to abnormal fruit shapes.

Cell Division

Boron is key for cell division.

Low Boron quantity makes the fruits unable to grow.

Boron

Sugar transport

Sugar transport through the plant is conducted by boron.

It allows the plant to export sugars from leaves to fruits, being key in the sugar content of fruits.

Flowering and fruit formation

Boron deficiency causes abnormal pollen shapes, making hard for the flower to be fertilized, lowering the fruit production.

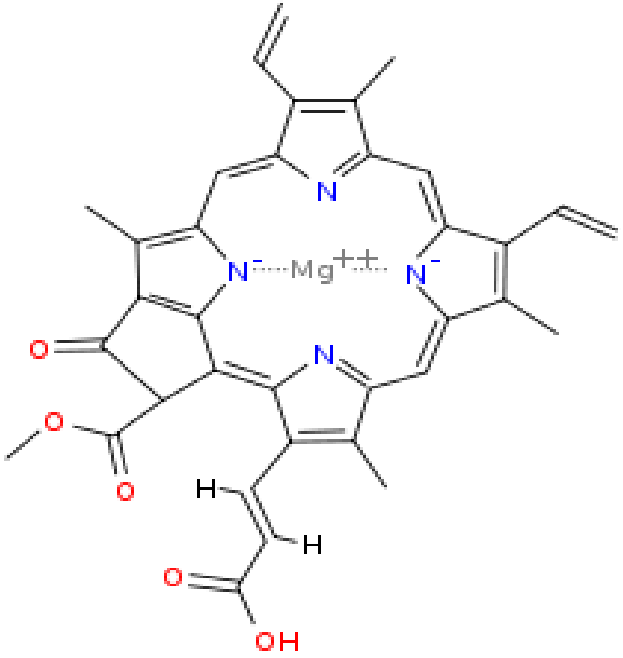
Molybdenum

Molybdenum is a minor trace element but important for the plants.

Its main function is to intervene in nitrogen metabolism in plants, allowing them to grow.

It also has a positive effect on the formation of pollen grains in bloom and flower opening, improving fruit formation.

Magnesium



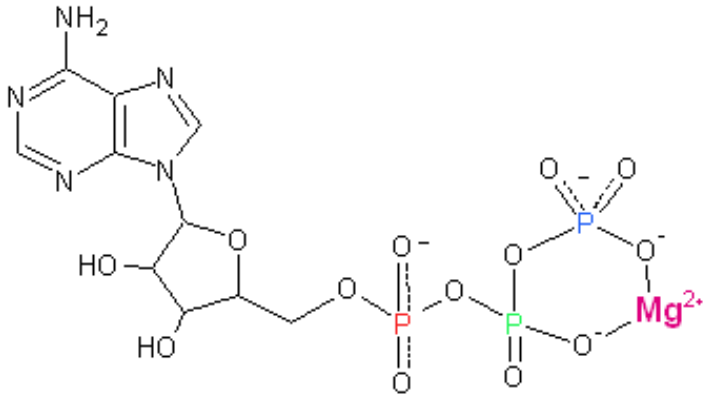
Magnesium is an essential trace element in plant functions. The processes in which it is involved are mostly key:

Photosynthesis

Magnesium is the central atom of the nitrogen ring of the chlorophyll, the molecule that enables photosynthesis.

Photosynthesis produces sugars of the plant, so this element is key for the amount of sugar in the fruit and for its quality.

Magnesium



ATP-Mg complex structure

General Metabolism

ATP binds to magnesium to function as metabolic energy. ATP is required for the synthesis and transport of sugars to the fruit.

Magnesium is in turn an enzyme activator and an inorganic constituent (cofactor) of many enzymes involved in the synthesis and transport of sugars.

Zinc

Zinc is an important mineral micronutrient for overall plant metabolism.

Its main role is to be part of enzymes as a **cofactor**, an inorganic part of the enzyme that is key to their metabolic function.

Many of the processes that lead to improve fruit quality (sugar content, improved consistency...) are mediated by Zinc dependent enzymes

DULZEE

Guaranteed concentrations

Summary

Element	Guaranteed concentrations
Polysaccharides	25,00% w/w = 35,37% w/v
Uronic acids	0,20% w/w = 0,28% w/v
Calcium (CaO)	12,00% w/w = 16,98% w/v
Magnesium (MgO)	2,00% w/w = 2,83% w/v
Molybdenum (Mo)	0,023% w/w = 0,03% w/v
Zinc (Zn)	0,05% w/w = 0,07% w/v
Boron (B)	0,14% w/w = 0,02% w/v

Density:	1,415 ± 0,02 * gr/cc
pH (20ºC):	6,5 ± 0,5 *

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Applications and dosage

Use and dose

CROP	DOSAGE		NUMBER OF APPLICATIONS /FREQUENCY
	Foliar Application	Root Application	
Fruit vegetables	200-300 cc/100	2 L/ha per application	2-3 applications every 10-15 days since blooming
Leaf vegetables	300-350 cc/100L	3 L/ha per application	2-3 applications every 10-15 days since blooming
Citrus and subtropical crops	300-400 cc/100L	4-5 L /ha per application	2-3 applications while ripening
Fruit trees, olive trees and vines	250-400 cc/100L	3-4 L/ha per application	2-3 applications while ripening

NOTE: Dose shall be stablished by qualified technical personnel in accordance to the needs of every crop and type of soil.

Benefits of Dulzee

- **Improves the quality** of the fruit by giving greater consistency and higher sugar content.
- **Advances the harvest date** by a greater availability of sugar to be exported to fruits in a shorter time
- **Reduces energy costs** that the plant has to invest in the synthesis of sugars, allowing this energy to be intended for other processes.
- **Improves the action of trace elements** because the sugar complexing capacity over them.