

## CROP PROTECTION

# Grosil

Concentrated plant available silica

- Improves plant strength
- Decreases climatic stress
- Improves photosynthesis
- Helps plants deal with salinity, Al & Mn toxicity
- improves disease resistance

Grosil is a highly soluble source of potassium and silicon; it is used primarily as a source of plant available silicon, with the advantage of low application rates.

When applied to the foliage Grosil strengthens the plant by forming a two part silicon matrix that acts as a physical barrier. Firstly, it is absorbed into the leaf cuticle where it strengthens the plant structure and secondly, as it dries on the leaf, it forms a layer of silicon crystals on the leaf surface.

For use as foliar spray and via irrigation in horticultural and broad-acre.

### Silicon in plants

Silicon exists in all plants and plant tissue content has been measured at between 0.1 to 10 %. Silicon enters plants via the leaf and/or root systems and accumulates around the epidermis of roots and shoots. It forms a silica matrix causing a thickening of the epidermal layers resulting in stronger plants more able to reduce lodging and an increased ability to handle stress conditions.

The function of Silicon is to protect the plant from various biotic and abiotic stresses. The effect of Si on plant growth becomes obvious under stress conditions but usually not under non-stressed conditions. (Epstein 1994).

*How potassium silicates increase resistance to stress:*

- *the mechanical barrier provided by silica deposition in the cell wall makes it difficult for pathogens to penetrate.*
- *Biochemical responses in the plant's stress signaling system are induced by Si. These vary depending on the particular stress eg can produce phenolics and phytoalexins in response to fungal attack and can enhance activity of chitinases, peroxidases and polyphenoloxidases in response to pythium.*

- *Si reduced cuticular transpirational water loss by depositing Si beneath the cuticle.*
- *Si decreases uptake of toxic minerals due to deposits of Si in the root.*
- *Si enhances stem strength, making it easier to hold more weight. As the plant builds itself up with Potassium Silicate, the plant is able to balance nutrient uptake and increase chlorophyll and RUBP carboxylase in leaves.*

### Potassium in plants

Potassium is essential for translocation of sugars and starch formation; it is also required for leaf stomata opening/closing, strengthens plants and improves plant resistance to drought and disease.

Application of Grosil, potassium silicate improves leaf erectness, reduces susceptibility to lodging in grasses, and also improves photosynthesis efficiency.

### Crops that have demonstrated beneficial response to soluble silicate application include :

- Vegetables - Capsicum, tomatoes, green beans, lettuce, corn, cucumber, melon, pumpkin, zucchini
- Fruit - Citrus, strawberries, grapes, apples
- Broad-acre - Rice, wheat, oats, barley, millet, cotton, sugar cane, soybeans, sorghum, maize
- Ornamentals - Turf grass, roses, palm, umbrella tree, dandelion and other ornamental plants.



Larger & healthier leaves and stronger growth after 2 sprays 14 days apart of Grosil 1% + Vitazyme 1%

# GROSIL

## TYPICAL ANALYSIS:

Silicate - 262g/L  
Potassium - 143g/L  
pH - 13.3 - 13.7  
SG - 1.31-1.35

## PACK SIZES:

20L, 200L, 1,000L

## STORAGE:

Store in original container away from direct sunlight.

Crystallisation may occur below 5°C.

## DIRECTIONS FOR USE:

Grosil improves leaf erectness, reduces susceptibility to lodging in grasses, and improves photosynthesis.

Crops that have demonstrated beneficial response to soluble silicate include fruit, vegetables, vines, nuts, broad-acre crops.

Optimum results are obtained when Grosil is applied in a regularly scheduled spray program, using a sufficient volume of water to insure complete coverage of all stems and foliage.

Suitable for a wide range of crops via irrigation, soil drench and foliar spray.

OFS recommends the use of a non-ionic surfactant & Humus 26.

Mixing - Add Grosil to spray tank (3/4 full) whilst under agitation.

Mix thoroughly before adding other products.

Crop	Foliar Rate	Via Irrigation	Comments
Vegetables, Leafy Greens, Strawberries, Melons	2-4L/ha; 400mL/100L water	5-10L/ha	Apply every 1-3 weeks
Fruit & Nut Trees, Vines	2-4L/ha; 400mL/100L water	5-10L/ha	Apply every 2-4 weeks; particularly during vegetative growth and disease events; For fruit strength apply every 3-4 weeks from flowering.
Broad-acre – Cereals, Sugar Cane	2-4L/ha; 400mL/100L water	5-10L/ha	Apply 2-3 times during vegetative stages.
Ornamentals	2-4L/ha; 400mL/100L water	5-10L/ha	Apply every 2-4 weeks
Hydroponic		400mL/1,000L	Replace at each water change

## PRECAUTIONS:

To avoid damage to crops:

- Physically compatible with a wide range of commonly used products. Always mix a small quantity (jar test) and check for physical compatibility before combining with other ingredients.
- When applying for the first time, or in combination with other products, a small test area should be sprayed and observed prior to the total spray.
- Avoid contact with glass. Remove promptly from glass surfaces.
- Do not spray during flowering.
- Not compatible with acidic inputs.
- Do not apply sprays less than 7 days apart.
- Do not apply more than 80L/ha/season.
- Application should be avoided when crop is under stress (from any cause) or when there are extreme weather conditions such as temperatures over 28°C, high humidity, frost or rain.

## CLEAN UP PROCEDURE

Use all mixture in irrigation and spray tanks, purge tanks and lines with clean water; flush irrigation lines. Do not return mix to original drums.

## WARNING

Strongly alkaline.  
Causes serious eye irritation.  
Causes skin irritation.

## SAFETY DIRECTIONS

DO NOT SWALLOW.  
Avoid contact with eyes.  
Avoid contact with skin.  
Wash contaminated skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Take off contaminated clothing and wash before reuse.  
The spray from this product may act as an irritant. Avoid inhalation.

## FIRST AID

IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: get medical advice/attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing until advised by Poisons Information to stop, or for at least 15 minutes. If eye irritation persists: Get medical advice/attention.

If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

If swallowed, do NOT induce vomiting. Immediately rinse mouth with water. Repeat until product is thoroughly removed. Give water to drink. If vomiting occurs give water to drink to further dilute the product. For advice, contact the Poisons Information Centre 13 11 26 or your local doctor.

POISON - NOT TO BE TAKEN OR TO BE USED AS A FOOD CONTAINER.