K.SIOFF®

Liquid Potassium Silicate

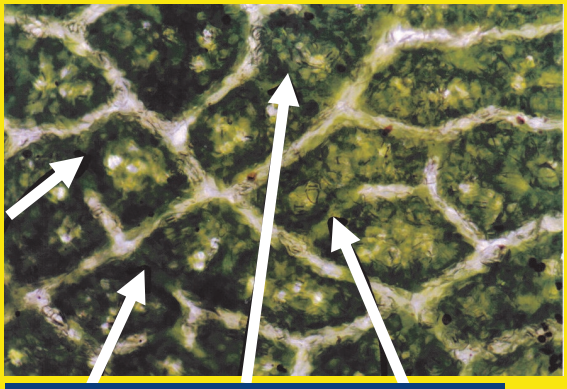
Potassium foliar feed and natural fungal retarder

$25\%K_2O : 50\%SiO_2 : 3\%H_4SiO_4$

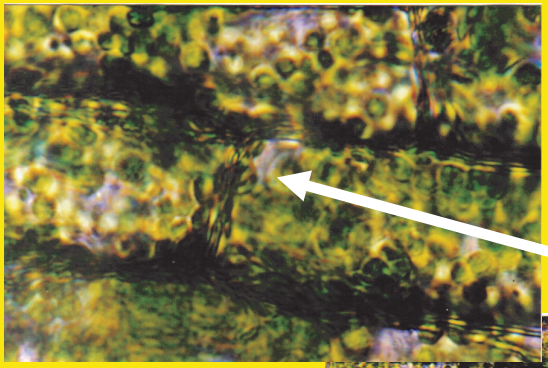
K.SIOFF® is a formulated soluble silicon to provide increased plant health, growth and protection from natural stresses. By applying K.SIOFF® at the critical time will improve plant cell strength for self protection from fungal diseases, build a natural immunity, increase brix and pH levels in plant leaves, increase plant sucrose levels and increase flowering and fruiting in vegetables and trees.

Soluble silicon is a natural plant protector and this mineral can be lacking in light soils and also in high rainfall areas and irrigation regions where leaching occurs. K.SIOFF® is formulated with a combination of natural silitic acids and synthetic silicon that delivers much needed protection to growing plants and also provides stronger cell structure for maximum nutrient uptake.

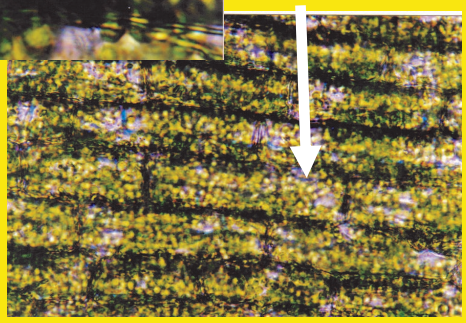
- **STRENGTHENS PLANT CELL STRUCTURE**
- **INCREASES PLANT HEALTH**
- **REDUCES NATURAL STRESSES**
- **INCREASES QUALITY OF FLOWERING & FRUITING**
- **SOURCE OF QUICK POTASSIUM**

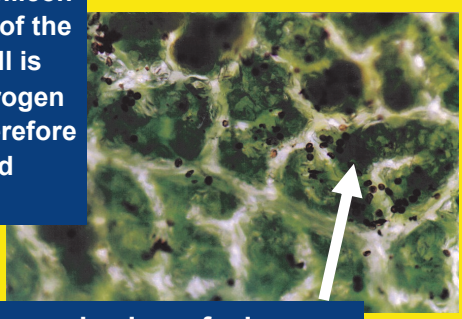


Arrows are pointing to broken silicon walls as sucrose is leaking out of the unprotected leaf cell. The cell is imploding due to too much nitrogen and no cell development, so therefore the plant is being destroyed and is unhealthy



Microscopic view of a healthy barley leaf showing silicon walls and sucrose balls contained inside





Microscopic view of a legume (peanut) leaf with rust damage

ORGRO NATURAL PRODUCTS

K.SIOFF®

Liquid Potassium Silicate

Black spot on citrus

K.SIOFF® was applied once at 3 litres per hectare

6 weeks later no black spot and heavy fruiting

The benefits of silicates in plant nutrition and plant protection

- promotes plant growth
- increases sugar (glucose) production
- reduction in lodging and senescence
- increased resistance to wilt
- increased root development and health
- increased tolerance to environmental stresses (frosts, cold, heat, drought, salinity, toxicants)
- increased resistance to pests and pathogenic fungi (powdery mildew, fusarium, rusts, smuts etc.).

Plant deficiency symptoms

- sluggish growth
- pest infestation
- poor root growth
- drooping leaves
- fungi formation
- low glucose levels

THESE DEFICIENCIES CAN BE CAUSED BY POOR NUTRIENT UPTAKE, SOIL IMBALANCE OR HIGH MOISTURE LEVELS

Crops sensitive to silicon deficiency

- tubers (potatoes, onions, etc)
- rice
- sugar cane
- cereal crops
- vegetables (cucumbers, tomatoes, etc.)
- grasses (Poaceae)
- flowers
- strawberries
- various herbs

Silicon's role in disease management in dryland farming and horticulture

SILICON (Si) is one of the most abundant elements on the surface of the earth, but its essentiality in plant growth has not been clearly established. While its physiological and nutritional role in plants appears limited, there is accumulating evidence that increased Si absorption offers protection against fungal diseases.

REFERENCE R.R. BELANGER University Laval, Quebec Canada.

PHYSIOLOGICAL ROLE: Effects on growth: There now appears to be good evidence for promoting effects of Si on the growth of monocotyledonous plants. Much of this information has been carefully reviewed by Epstien. A direct role for Si in the growth of horticultural crops is much less clearly established, even though it has been demonstrated that dicots as diverse as cucumbers, *citrus* spp, black raspberry (*Rubus occidenials*), and strawberry (*fragaria* spp) accumulate Si in root tissues. Silicon is well known to affect plant mineral nutrition, and at least in some cases, may promote plant growth through this interaction.

PROPHYLACTIC ROLE: History: Whether or not we acknowledge the prophylactic properties of Si in plants, it is interesting to look back into history and find that our ancestors may well have relied on Si, unknowingly, to protect their crops against fungal attacks. While one may argue that ancient concoctions related to alchemy than science, our present knowledge of such concoctions reveals that they contain some of the same active ingredients currently used in plant protection. For instance, it has been known for centuries that extracts of horsetail (*Equisetum arvense* L) when applied as a drench or as a spray, protect against diseases such as damping off and powdery mildew. Interestingly horsetail is a plant with one of the highest silicon contents in its tissues (over 15% dry weight). When ground in water the liquid extracts contain sodium silicate. Many recipes can be found in books dealing with organic and/ or biological agriculture.

CURRENT SITUATION: In Europe, potassium silicate or (metasilicate) is available commercially and is marketed for the greenhouse industry, the extent of the market appears to be large enough to justify competition among several companies. All products contain soluble silicon in the form of potassium silicate and in drums of 185 litres (300kgs).

Companies claim that potassium silicate attribute the effects to the presence of silicon in the apoplast of leaf cells, which makes the leaves harder and more erect, creating a physical barrier to pathogens and enhancing light interception.

There are many more claims of nutrient improvement in many countries around the world and on all different types of plants ranging from cereals, rice, sugar cane and fruit trees. The role of this forgotten nutrient will take years to unfold as research goes on, and it seems Australia has been the last to pick up on this valuable research. The data expressed here are extracts from research papers on soluble silicon by:

Richard R Belanger, Patricia A. Bowen, David L. Ehret and James G. Menzies.

Pacific Agricultural Research Centre, Agricultural and Agri food Canada.

The products that are currently on the market in Australia are designed to promote plant protection and nutrient uptake these products are available in liquid form and also in colloidal form for maximum plant availability.

K-SIOFF® is Australian Certified Organic since 2007

ALLOWED INPUT 11108AI
BFA REGISTERED PRODUCT

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How to use and handle K.SIOFF®

K.SIOFF® can be used in both dryland farming and horticulture. It can be used as a potassium liquid nutrient feed and a fungal protector designed for maximum absorption through the leaf and root cells. **K.SIOFF®** can also be used as a sodium or chloride blocking agent.

Typical Analysis

K.SIOFF® is a formulation of (potassium metasilicate) and colloidal mineral powders containing monosilitic and silitic acids. **25% Potassium (K_2O): 50% Soluble Silicon (SiO_2): 3% Monosilitic acid (H_4SiO_4).**

CROP	TIMING	APPLICATION RATE	APPLICATION METHOD
Cereals, sorghum, corn, sugar cane	From plant establishment to flowering	2 L/ha at 3 leaf stage 2 L/ha before flowering	Boom spray irrigation or aerial spraying
Cotton, canola, pulses, sunflowers	From plant establishment to flowering	2-3L/ha at establishment 2-3L/ha before flowering	Boom spray irrigation or aerial spraying
Legumes (clovers, lucerne, peanuts, lupins etc.)	21 days before cutting, feeding, flowering or seed set	1-2L/ha	Boom spray irrigation or aerial spraying
Potatoes (tubers), vegetables	3 weeks after plant emergence & prior to flowering	2-3L/ha	Trickle feed systems, boom spray irrigation or aerial spraying
Vines	On leaf establishment and every 21 days until flowering	1L/ha	Trickle feed systems, mist spraying
Trees (nut & fruit), citrus	From dormancy to bud burst—approx 28 days apart	3L/ha	Trickle feed systems, mist spraying
Mixed pastures	21 days before cutting, feeding, flowering or seed set	1-2L/ha	Boom spray irrigation or aerial spraying
Commercial Hydroponics	Every fertigation	0.75L—1L per 10,000L water	Trickle feed systems

Directions of Use and Storage

- Agitate contents before use
- **K.SIOFF®** should be mixed in water before any other chemical is introduced to the mix when spraying. Therefore jar test all added materials for compatibility before tank mixing
- Fill tank to a minimum of two thirds with water
- Commence agitation system
- Add **K.SIOFF®**
- Fill remainder of tank
- Use within 48 hours
- Flush water tanks after use to avoid coagulation
- Store all containers out of sunlight and below 30°C
- Shelf life: 12 months (sealed).

Safety Directions

Please refer to product label for full safety directions as this product is considered to be harmful by ingestion, and a severe irritant—particularly eyes. Use good industrial hygiene by wearing protective gloves, mask, rubber boots and overalls.

For further information please contact your local distributor or visit www.orgronaturalproducts.com.au

ORGRO NATURAL PRODUCTS

BUILDING A SUSTAINABLE GROWING SYSTEM

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