

SARSi1

High analysis liquid potassium silicate



SUMMARY OF KEY BENEFITS

- Increases leaf chlorophyll content and plant metabolism
- Enhances plant anti-oxidant levels that assist with buffering against environmental stress
- Mitigates nutrient imbalances and toxicity in plants
- Reinforces canopy architecture leading to improved photosynthesis efficiencies and reduced sunburn and heat stress
- Toughens plant cell walls making it more difficult for invading pathogens to infect and reduces the palatability of the plant to insects.
- Thicker cell walls which reduces moisture loss and postharvest breakdown.

Typical Analysis w/v

Siliconmin. **23.8%**
Potassium.....min. **27.8%**

Common leafy ornamental plants that benefit from supplemental silicon applications (Uni. Florida, 2001)

Common Name	Scientific Name
A. Si Responsive Plants	
Si accumulation in tissue with increased dry weight	
Orchid	<i>Dendrobium nobile</i>
Silver Vase	<i>Aechmea fasciata</i>
Peace Lily	<i>Spa thipyllum</i>
Peacock Plant	<i>Calathe a makoyana</i>
Evergreen Giant	<i>Lirpe muscari</i>
Boston Fern	<i>Nephrolepsis exaltata</i>
Spider Plant	<i>Chlorophytum comosum</i>
Asparagus Fern	<i>Asparagus seteucus</i>
Flamingo Lily	<i>Anthurium scherzerianum</i>
Hostail	<i>Equisetum arvense</i>
Bamboo	<i>Bambusa glaucescens</i>
Century Plant	<i>Agave americana</i>
Parlor Palm	<i>Chamae dorea e legans</i>
Croton	<i>Codiaeum variegatum</i>
Kentia Palm	<i>Howea forsteriana</i>
Umbrella Tree	<i>Schefflera actinophylla</i>
Arrowhead Plant	<i>Syngonium podophyllum</i>
Si accumulation only	
Ti Plant	<i>Cordylin e terminalis</i>
Tree Ivy (Pia)	<i>Hedera helix</i>
Pink Splash	<i>Hypoestes phyllo stachya</i>
Ivy (large leaves)	<i>Hedera helix</i>
Purple Passion	<i>Gynura aurantiaca</i>
Weeping Fig	<i>Ficus benjamina</i>
Philodendron	<i>Philodendron scandens</i>
Red-hot Cat's Tail	<i>Acalypha pen dula</i>
Chinese Evergreen	<i>Aglaonema commutatum</i>
Umbrella Sedge	<i>Cyperus altermifolius</i>
Baby Rubber Plant	<i>Peperomia dusifolla</i>
Pothos	<i>Epipremnum a ureum</i>
Dumb Cane	<i>Dieffenbachia maculata</i>
Dragon Tree	<i>Dracaena a deremensis</i>
Dragon Tree	<i>Dracaena a marginata</i>

Do plants need Silicon?

Plants require a broad range of macro and micro nutrients for optimum growth and development. Among these macro nutrients Potassium ranks highly, however Silicon hardly ever gets a mention. Silicon is one of the most common elements on the planet so we assume plants will access it in sufficient quantities naturally without the need for supplement feeding. This might be true under normal conditions, however in high yielding plant species like rice, sugarcane, cereals, legumes, closely mown turf, vegetables, tree crops and some leafy ornamentals; Silicon is essential and may be in limiting levels under some growing conditions.

Why do plants need Silicon?

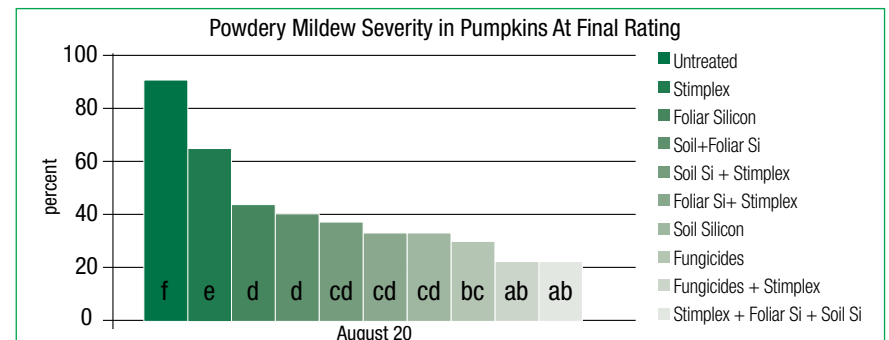
Continuous cropping of high silicon demanding crops and plants grown in pots, inert growing media and hydroponics will benefit from SARSi1 applications. Without Silicon these plants will suffer in a similar way to any plant lacking a major or micro-nutrient but the signs are not as obvious. Reduced photosynthesis, increased wilting and sunburn, increased insect and disease attack, low Brix, enhanced postharvest breakdown are all indicators of potential Silicon deficiency.

Silicon and nutrient toxicity

Silicon has been shown to be of benefit to plants where high levels of Manganese, Iron and Aluminum may be present in the soil. Silicon will mitigate the build-up of these elements in plant tissue preventing tissue damage. Silicon has also been proven to be of benefit when normal plant uptake of Silicon may be limited by abiotic stress like moisture stress.

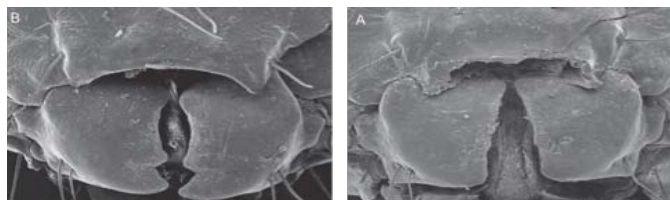
Plant pests and diseases

Silicon has been demonstrated to aid in the reduction of plant pests and diseases. Considerable scientific literature exists to demonstrate that foliar and soil applications of Potassium silicate can reduce both the incidence and severity of pathogens like Powdery mildew in a range of crops from cucurbits to grapevines. There also appears to be synergist effects obtained from the foliar application of biostimulants like seaweed extracts. The graph below demonstrates that foliar applications of Stimplex® Liquid seaweed with Potassium silicate improves the natural resistance of Pumpkin leaves to Powdery mildew.



Plant pests and diseases continued...

Insect are also affected by the presence of elevated Silicon on and in plant tissue. An example of this effect has been demonstrated through a range of trials carried out in sugarcane by Dr Olivia Reynolds. The trials demonstrated that when sugarcane borer fed on sugarcane stalks containing elevated levels of Silicon they experienced major wear on their chewing parts (mandibles). The wear was so severe that it caused weight loss, early moulting and higher rates of mortality of the larvae.

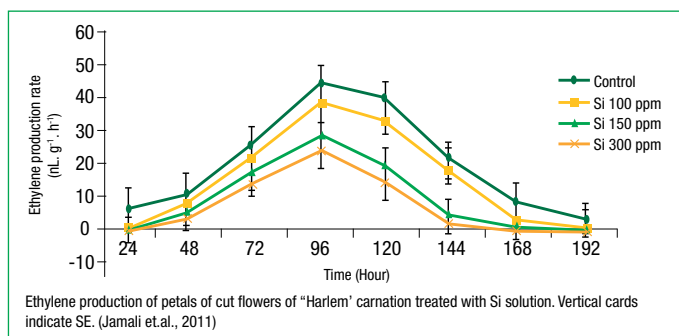


Normal sugarcane borer mandible wear (Olivia Reynolds et al., 2009)

Abnormal sugarcane borer mandible wear caused by elevated Si+ levels in the plant. (Olivia Reynolds et al., 2009)

Silicon and postharvest life of produce

Researchers have shown that Silicon can inhibit ethylene which reduces the speed of aging and death of harvested plant parts. Silicon treated plants have also been shown to maintain their chlorophyll (green) content over a longer period. The end result is produce with better shelf life and appearance.



Is SARSil compatible with other agricultural products?

Potassium silicate is highly alkaline so it is important to check compatibility with fertilisers and pesticides that may react negatively in a high pH spray solution. Below is a list of jar/tank mix compatibilities. Any product label that carries a warning statement about mixing with alkaline substances or to buffer pH 5-6 are most at risk. Check product labels for mixing and compatibility statements and make pH adjustments with citric acid or phosphoric acid where appropriate.

Compatibility of SARSil with some common agricultural products

Active	Tradename	Tank Compatibility
Fungicides		
Potassium bicarbonate	Eco-carb®	✓
Wettable sulphur/Lime sulphur	many brands	✓
Triflumizole/Imidazole	Wettable granule	✓
Tebuconazole	Wettable powder	✓
Azoxystrobin	Flowable	✓
Kresoxim-methyl	Stroby® WG	✓
Boscalid+pyraclostrobin	Nufarm Pristine®	✓
Trifloxystrobin	Flint® WG	✓
Fenarimol	Rubigan® EC	✓
Cyprodinil		✓
Potassium salts of fatty acids	Eco-protector®	✓
Bacillus subtilis	Serenade®	✓
Myclobutanil	Systhane® WP	✓
Insecticides		
Potassium salts of fatty acids	Natra-soap®	✓
Azadirachtin/Neem Oil	AzaMax®	x
Botanical oil/Canola oil	Eco-oil®	✓
Petroleum oils	many brands	✓

Directions for Use

DO NOT apply foliar sprays to open blooms of Geranium, Marigold, Pansies and Petunias.

DO NOT apply sprays less than 7 days apart and more than 8 L/ha/spray

DO NOT apply more than 40 L/ha/season

SITUATION	RATE	COMMENTS
Annuals: Vegetables, Cut flowers, Nursery, Strawberries, Sugarcane, Wheat	1-2 L/ha or 200-400 ml/100 L	Foliar: Apply in a minimum of 600 L water. Apply every 10-15 days from first visible leaf onwards. For best results apply first sprays before leaf hardening of crop. Apply to sugarcane during the lead-up to the dryer months. For best results always apply with Acadian seaweed extract or Stimplex Liquid seaweed concentrate.
Perennials: Tree crops, Vines, Bananas, Turf	1-2 L/ha or 200-400 ml/100 L	Foliar: Apply in a minimum of 600 L water. Apply during leaf flush and after fruit set and every 10-14 days during disease events. For best results always apply with Ecocarb for Powdery mildew control and Acadian seaweed extract or Stimplex Liquid seaweed concentrate for management of other soil and leaf borne diseases.
Soil & Drip or Hydroponic Nutrient solution	200 mL/1000 L	6 - 8 times per crop cycle. Maximum of 8 L/ha. The addition of Acadian seaweed extract is recommended for root development and Silicon uptake.

COMPATIBILITY: Liquid potassium silicate is highly alkaline so it is important to check compatibility with fertilisers and pesticides that may react negatively in a high pH spray solution. Any product label that carries a warning statement about mixing with alkaline substances or to buffer pH 5-6 are most at risk. Check product labels for mixing and compatibility statements and make pH adjustments with citric acid or phosphoric acid where appropriate.

MIXING: Three quarter fill spray tank and add SARSil first while agitating - mix thoroughly before adding any other product.

SAFETY DIRECTIONS: SARSil is highly alkaline and should be treated like any other caustic substance. KEEP OUT OF REACH OF CHILDREN. SARSil will cause irritation to eyes and skin. When handling appropriate eye and skin protection should be worn including safety glasses and impervious gloves.

FIRST AID: If swallowed seek advice from Poisons Information Centre 131 126 or your local doctor. DO NOT INDUCE VOMITING. If contact with eyes, rinse immediately with plenty of water and seek medical advice.