

# Stand SKH™

soluble potassium silicate with humic acid



- Preventative fungicide activity on powdery mildew
- Amplifies plant defence response to fungal infection
- Strengthens and protects plants from the inside out
- Reduces incidence and severity of powdery mildew under low to heavy disease pressure

## Potassium Silicate on Powdery Mildew Trials

### 2004 TRIAL RESULTS

Potassium Silicate (1:200 dilution) at 769 ml/153 L

Treatment	Site 1		Site 2		Site 3	
	% Inc.	%Sev.	% Inc.	%Sev.	% Inc.	%Sev.
1 Potassium Silicate *	40.5 b	4.75 b	75.5 b	9.5 b	11.3 b	1.7 b
2 Potassium Silicate alternated with Abound then Rally	0.0 c	0.0 b	13.0 c	0.43 c	0.0 c	0.0 b
3 Potassium Silicate* alternated with Abound then Rally	1.0 c	0.01 b	12.5 c	0.32 c	0.0 c	0.0 b
4 Potassium Silicate* (1:133 dilution) alternated with Abound then Rally	20. c	0.0 b	15.0 c	0.52 c	0.0 c	0.0 b
5 Potassium Silicate* pre-bloom only then Abound alternated with Rally	0.5 c	0.005 b	16.0 c	0.45 c	0.0 c	0.0 b
6 Sulphur pre-bloom then Abound alternated with Rally	0.0 c	0.0 b	10.5 c	0.10 c	0.0 c	0.0 b
7 UTC	82.5 a	22.05 a	100.0 a	49.0 a	73.8 a	27.8 a

\* applied with surfactant No Foam A

### 2005 TRIAL RESULTS

Potassium Silicate (1:133 dilution) at 1,133 ml/153 L

Treatment	Site 1		Site 2			
	% Inc. Cluster	%Sev. Cluster	% Inc. Leaf	%Sev. Leaf	% Inc. Cluster	%Sev. Cluster
1 UTC	53 a	17.05 a	100 a	63.6 a	100 a	85.1 a
2 Potassium Silicate	30 b	5.6 ab	100 a	43.5 b	100 a	79.7 a
3 Potassium Silicate*	1 b	1.65 b	98 ab	30.3 bc	100 a	71.6 a
4 Kalgreen*	24 b	5.85 ab	95 ab	26.0 bcd	100 a	74.2 a
5 Potassium Silicate* mixed with Kalgreen	12 b	1.95 b	83 bc	11.6 cde	88 ab	25.2 b
6 Wettable Sulphur	9 b	1 b	75 c	3.9 e	75 b	7.9 b
7 Potassium Silicate* mixed with Wettable Sulphur	3 b	0.2 b	85 abc	9.8 cde	100 a	25.8 b
8 Potassium Silicate* alternated with Abound then Rally	0 b	0 b	75 c	8.1 de	88 ab	13.9 b

\* applied with surfactant No Foam A

Ref: PQ Corporation (Sil-matrix)



**fluence**  
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# Stand SKH™

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## A biopesticide with dual activity

- Stand SKH is a fungicide, insecticide, and miticide.
- For use on vegetables, fruits, nuts, vine crops, agronomic crops, ornamentals and turf
- Controls fungal diseases, spider mites, and suppresses whiteflies and other insects
- Can be applied to plant for best control as foliar spray or in a hydroponic solution
- Decreases climate stress on crops
- Decreases effects of metal element toxicities in soils
- Improves crop vigour and quality



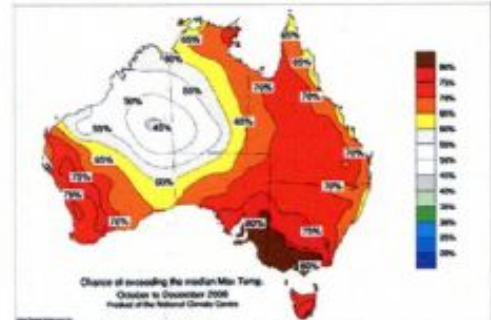
[www.fluence.com.au](http://www.fluence.com.au)

# liquid logics

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## Prepare for hotter than average summer

The Bureau of Meteorology is predicting a hotter than average summer this year. There is a moderate to strong shift in the odds towards above normal daytime temperatures for the October to December quarter all over the country. Together with the drought the chance for heat stress, wilting and decreased yield is high. It is possible to manage crops so that they will cope better with these extreme conditions.



Source: Bureau of Meteorology



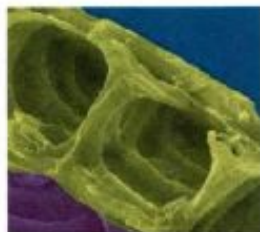
Products with stress relief and cell strengthening features like **Supa K 30** (NPK 0-0-30+ trace elements), **Stand SKH** (NPK 0-0-15 + 20% silica + 1% humic acid), **Supa Stand Phos** (natural root growth hormone+ amino acid) help plants to overcome heat effects. **Supa Humus** (0-0-2 + 12% humic acid) enhances the water retention properties of soil.



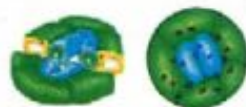
Cells with normal turgor



Cells of a wilted plant



Cell walls



Open and closed stomata

Potassium helps crops to tolerate stress because it regulates plant metabolism and promotes vigorous growth, this ensures a healthy and sturdy crop which is more resistant to different stresses and recovers more quickly from stresses. Potassium regulates plant transpiration by controlling the opening and closing of stomata, therefore maintaining turgor (the fluid content of cells), and reducing water loss or wilting protecting plants in drought and heat situations. The unique citrate form of Supa K 30 is an organic chelate which facilitates immediate uptake.

Silica also plays a role in evapotranspiration, decreasing the amount of transpiration and increasing oxygen flow under hot conditions, thus assisting the plant to better utilise available nutrients more productively to enhance yield. Importantly, silica deposits under the epidermal layers and into the cell walls and root tips creating stronger, more durable shoots, leaves and roots which are better able to resist drought and heat. An extra benefit of applying silica and potassium is increased disease and pest resistance.

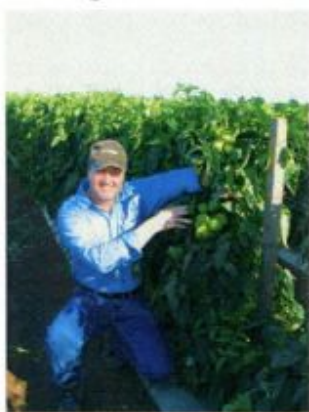
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Dr Chris Akem, senior plant pathologist of DPI&F, has compared environmentally friendly products against Powdery Mildew on **capsicums**. The trial showed that all trialed products, including Stand SKH were effective in combating Powdery Mildew, and had comparable effect to that of sulphur. Less defoliation was observed with Stand SKH than sulphur.

In New Zealand, Stand SKH was trialed against sulphur in a heavily Powdery Mildew infected **vineyard**. Stand SKH was applied at 1% every 10-14 days in a total of eight applications. Under this extremely high disease pressure where almost 60% of control bunches were infected, Stand SKH and sulphur were equally effective against the disease. The key advantage of Stand SKH applications is that there are no potential Hydrogen Sulphide residue issues in the ensuing wine.



Andrew Bauer, Crop Tech's senior agronomist in Bundaberg uses Stand SKH in several situations:

*"I undertake the SAP & Quick soil recommendations for the laboratory at Crop Tech in Bundaberg. I use Stand SKH on a number of crops, as I believe silicon greatly assists disease resistance in crops, including powdery mildew in **tomatoes** and **cucurbits**, like **rockmelons**. Another situation I use silicon for, is to reduce the effects of toxic iron and manganese levels."*

Andrew Bauer

Stand SKH is also a successful product overseas: in Kenya, Nyaribo Farm's senior agronomist, Solomon, ran a trial on runner **beans** with Stand SKH:

*"I undertook a trial to control Powdery Mildew using 300ml Stand SKH / 100L water. The treated area was clean of Powdery Mildew & I will now use Stand SKH over the whole farm."*



Erin, Agrichem's On Farm General Manager with Solomon

Trial data worldwide also shows that silica can increase crop yields and enhance shelf life. It also acts as a deterrent to some insect pests and enhances resistance to diseases. Stand SKH should be applied weekly as a foliar during high risk periods. At the first sign of any disease or insect, use the appropriate registered pesticide. Silica should be applied via fertigation for metal toxicities in the soil, sodium, nematodes and heat stress.

**Disclaimer: Stand SKH is not a registered pesticide and does not have any label claims.**



# fluid focus

product information

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Fluid Focus No. 0018

29 October 2007

## Silica – the nutrient that increases resistance

*Having trouble with biotic and abiotic stresses? Would you like to increase your plants resistance against common fungal diseases? Are you looking for an environmentally friendly way to fight against pests? Did you know that silica applications increase shelf life?*

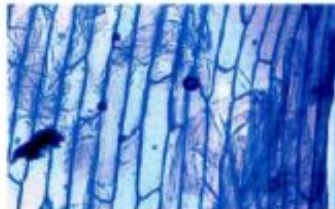


[www.plantpath.cornell.edu](http://www.plantpath.cornell.edu)



Stand SKH is a high concentration, clear brown liquid containing 20% silica, 15% potassium and 1% humic acid. The nutrients in Stand SKH are completely soluble and plant available. Humic acid is added to increase plant uptake of the nutrients.

Whilst Silica is the second most abundant element in the biosphere (28%), it generally has poor bio-availability. Whilst Silica is not considered to be an essential element for plants it does have several beneficial effects when applied in plant available form.



Cell walls

[www.faculty.clintoncc.suny.edu](http://www.faculty.clintoncc.suny.edu)

Silica polymerizes into glass-like platelets in the plant cell walls below the cuticle and is also deposited in epidermal cells, especially around trichomes and guard cells. Traditionally this feature of silica was thought to have an effect in increasing plant's resistance against pests because it acts as a physical barrier.

Research shows that Silicon treatment of cucumbers induced defense reactions in the plant, including the production of fungitoxic flavonoids. These metabolites apparently have a toxic effect on the pathogen (Fawe at al.). Similar results were discovered on Arabidopsis; one of the model organisms used for studying plant biology (Ghanmi at al.).

There are several fungal diseases suppressed by silica treatments, in crops ranging from tomatoes to avocados. Increased resistance against different fungal diseases has been proven in trials in Australia and all over the world by Agrichem and other organizations.

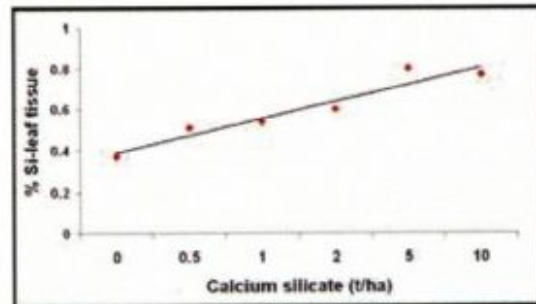
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Stronger xylem results in more rigid and turgid leaves, which therefore have better light interception. Stronger leaves in general, have better physical qualities. Rigid, erect leaves are easier to cut and result in cleaner and more uniform blade length cut. Therefore with applications of silica on greens, stimp (ball roll) speed can be increased.

Researchers at the University of Florida found that amending soil with calcium silicate resulted in a significant increase in silicon accumulated in the leaves of Bermuda grass. As part of the research they also tested whether Silicon was effective in suppressing leaf spot development on Bermuda grass.



Untreated



Treated

The final % leaf spot severity caused by *Bipolaris cynodontis* 5 days after inoculation was reduced by 38.9% compared to untreated controls. This result suggests that incorporation of silica to the spraying program, together with fungicides, assists the control of diseases in turf. Researchers worldwide are trying to establish the relationship between silica content of the leaves and disease resistance. Silica has an effect on several diseases and grass species (see table below).

Diseases	Species
Gray leaf spot	St. Augustine grass, Perennial ryegrass
Leaf spot	Bermuda grass
Leaf blight	Zoysiagrass
Root rot	Creeping bentgrass
Brown patch	Creeping bentgrass
Dollar spot	Creeping bentgrass
Powdery mildew	Kentucky bluegrass

For further information on silica contact your area manager or our agronomy team.



# fluid focus

product information

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Fluid focus No. 20

February 13, 2007

## Silica on turf

*Having trouble with biotic and abiotic stresses? Would you like your turf to recover faster after cutting? Would you like to increase turf resistance against common fungal diseases and insect pests? Did you know that silica applications decrease the effect of wear and tear?*

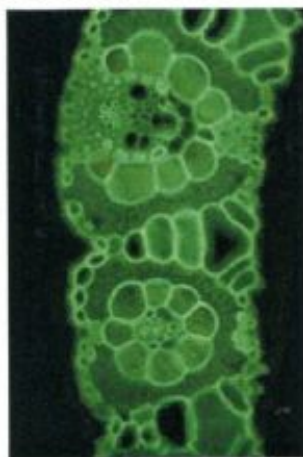


Wear on turf

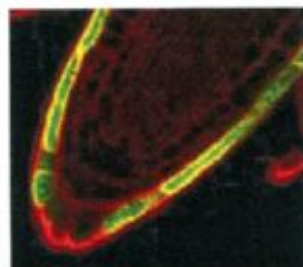


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### How silica works on turf?



Transverse cut of grass plant



Root epidermis with silica layer

Silica is not generally considered an essential nutrient, even though it is the second most abundant element in the biosphere. Research has shown that members of the gramineae family (grasses) benefit from the application of silica in a number of ways. These include the ability to withstand both abiotic and biotic stresses, increased stimp speed, faster recovery from wear, tear and cutting, increased pest and disease resistance, heavy metals and correcting elemental imbalances. Silica polymerizes in glass like platelets in the cell walls, between and also below the cuticle. It is also deposited in the epidermal cells and endodermis of the roots forming a physical barrier against fungal or nematode attack. Silica helps plants tolerate drought and heat stress as a result of the formation of a second layer below the epidermis, therefore reducing transpiration. Silica is also laid down in the air- canal cells, increasing the passage of oxygen and helping the xylem resist compression caused by extreme transpiration in heat or drought situations.



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