

Resistant plants with silicon

effects visible in practice

Silicon (Si or SiO₂). A widely-discussed element that increasing numbers of growers are using to help strengthen their crops and boost resistance. Knowledge about the impact of this micro-nutrient on crops is continuing to grow. Si is one of the basic components of sandy and clay soil, but it rarely occurs in a form that can be readily taken up by plants - even though plants clearly benefit from Si.

How silicon operates in plants

Recent articles in Dutch media mainly focused on the technical side of Si. Useful information which reaches more and more growers. It enhances our knowledge about the role of Si in the plant.

Theory confirmed in practice

PlantoSys has gained practical experience using our silicon fertiliser SilicaPower in trials run at various growers. These concrete practical results can now be linked to the results already obtained from laboratory studies.

Plant sap measurement and dry matter analyses of crops including greenhouse crops and seed potatoes have resulted in greater insight and more conclusive data. On the one hand, the results confirm existing presumptions concerning higher plant resistance and growth, and on the other the practical trials deliver information that is immediately applicable and provides tangible results, namely higher yields:

- more intense flower colour
- longer shelf life
- firmer skin in seed potatoes

Demonstrable results in greenhouse horticulture and seed potatoes

Our analyses have been based on our silicon fertiliser and until now have mainly focused on greenhouse horticulture and seed potatoes. Trials run with tomatoes, lettuce, cabbage, Chrysanthemums, Kalanchoe (see also [experiences of Jan van Luijk](#)), Platycodon, Phalaenopsis, Gerbera, cut hydrangea, roses and pot anthurium have consistently shown similar results. Si has been shown to actually strengthen the cell walls and epidermis and boost plant resistance. The results are visibly more attractive plants, higher productivity and higher quality crops.

A selection of some of the effects of SilicaPower (Si) in:

- **Phalaenopsis** (various propagators and growers): harder, firmer skin, less transport damage
- **Gerbera**: stronger leaves
- **cut hydrangea**: higher resistance
- **cabbage propagation**: darker leaves, more roots, higher dry matter content, heavier roots, less powdery mildew, better (trace) element uptake
- **seed potatoes**: firmer skin, so fewer wounds occur at lifting and grading.

Concrete results achieved by silicon* summarised:

- more intense flower colour: continues through to full bloom
- thicker, harder leaves and better leaf arrangement
- stronger cell walls
- better root penetration
- higher chlorophyll production → more photosynthesis
- production increases
- plant resistance increases
- transpiration decreases, less drought stress
- redistribution of Ca and Mn, reducing the risk of nutrient toxicity
- larger quantity of the CO₂ fixation enzyme Rubisco

** These results were obtained by, and supplemented with, the additional benefits of using SilicaPower.*

Silicon fertiliser from PlantoSys: SilicaPower

PlantoSys uses silicon in a number of products. Our pure silicon fertiliser is called SilicaPower.

It has also been added to ArgicinPlus and Nutricin, as it enhances the effect of colloidal silver in this product by a factor of four.

Contact us for advice

We have obtained a lot of practical experience using our silicon fertiliser SilicaPower in greenhouse horticulture and with seed potatoes. It is very important to adapt treatment to suit your specific situation. Please contact us if you have any questions or for personalised advice.

Or **print out** this information about the concrete results with our silicon fertiliser.

On the next page you will find practical information about the *application* of specifically **SilicaPower**.

Product information

SilicaPower

SilicaPower is a biostimulant. Silicon (orthosilic acid) strengthens the cell wall and the epidermis of the leaf. In addition, Si provides a better distribution of Ca and Mn throughout the plant and helps reduce drought stress.

With 3% orthosilicic acid, the high concentration of Si in SilicaPower is easily taken up by the plant, as shown in the table below.

<i>Cut hydrangea</i>	Aug. 29th	Sept. 22nd	increase in %
'Ruby Red'	18.6	21.5	15.6%
'Snowball'	9.7	19.5	101.0%
'Verena'	11.3	17.6	55.8%

amount of Si measured in ppm

Plant sap measurement from three cut hydrangea cultivars showed a clear increase in Si.

Dosage

- **Spraying:** 100 ml SilicaPower/100 litres water with a minimum of 500 ml/ha or
- **Add to the A fertiliser feeder or separate fertiliser injector:** 350 ml SilicaPower/ha/week.

Spraying interval

Spray once every 7 days or a few times every 5 days to reduce drought stress during dry periods.



Advantages SilicaPower

- more intense flower colour: continues through to full bloom
- thicker, harder leaves and better leaf arrangement
- stronger cell walls
- better root penetration
- higher chlorophyll production, leading to more photosynthesis
- plant resistance increases
- transpiration decreases, less drought stress
- redistribution of Ca and Mn, reducing the risk of nutrient toxicity
- larger quantity of the CO₂ fixation enzyme Rubisco
- easily absorbable form of Si:
SiO₂ itself cannot be taken up by plants, however the orthosilicic acid, (H₄SiO₄) in SilicaPower can.
- easy to use, via the fertiliser feeder or as a foliar spray
- liquid, dissolves easily in the fertiliser feeder



- less Si needed for the same results
- pH neutral: no acidification required afterwards
- 100% systemic:
the solution sprayed onto the leaf is distributed to the roots immediately
- no residues, no growth inhibition, no re-entry term, no safety term

In other words: increase production and the quality of your crops.

Reap these benefits by adding the element Si, combined with the specific advantages of using SilicaPower.

Tips

- Use silicon to strengthen cell walls and harden the leaf surface.
- **SilicaPower** is available in 1 litre bottles and 10 litre cans.
- Various articles about SilicaPower show the great advantages of SilicaPower, which now allows us to provide full biological support for crops in greenhouses.

Contact us for advice

We now have a lot of practical experience with the application of our SilicaPower silicon fertiliser in both greenhouse horticulture and seed potatoes. It remains important to tailor the treatment to your specific situation. Please feel free to contact us if you have any questions or for tailor-made advice.

Or **print** this information on the concrete results with our silicon fertiliser.

This information is also available (including hyperlinks) on our website:

<https://www.plantosys.com/en/products/silicapower> and www.plantosys.com/en/resistant-plants-silicon

The link to the pdf, with information from both pages combined, can be found at the bottom of both pages.