Liquid Silicon is a beneficial plant nutrient, found in virtually all soils but not – until now – in hydroponic nutrient solutions. Silicon will strengthen the plant walls producing stronger healthier plants with massive root systems and increased resistance to pests and disease. Silicon is very basic, it has a high pH, and can therefore be used effectively to raise the pH of hydroponic nutrient solutions.

Liquid Silicon

- Improves uptake of nutrients and transport through the plant.
- Strengthens cell walls, helping plants to resist attacks from fungi and mites.
- Increases chlorophyll production leading to darker green leaves and improved light collection.
- Increases uptake of available CO₂ and utilises the enhanced metabolic processes to deliver higher yields.
- Adds crucial extra potassium for enhanced flowering.

Liquid Silicon is highly beneficial to plants in the range of 20–50 ppm in the nutrient solution. It is not included, at these levels, in nutrient concentrates. It needs to be added as a separate component by the grower. Liquid Silicon can be added to nutrient tanks every time a fresh batch is made up. Liquid Silicon has an important role in the uptake and vascular transport of mineral nutrients, and can greatly improve the mechanical strength of the plant and its resistance to fungal diseases.

The addition of Liquid Silicon to nutrient solutions can greatly reduce the incidence and severity of fungal diseases including Botrytis (bud rot) and powdery mildew.

Recent research has demonstrated that raising the silicon concentration in hydroponic solutions produced thicker, whiter, healthier root systems and increased yields.

Silicon has also been shown to result in higher concentrations of chlorophyll per unit area of leaf tissue. This means that a plant is able to tolerate both lower and higher light levels by using more of the available light.

Liquid Silicon helps to regulate the metabolism of carbon dioxide and enables the plant to make much more efficient use of available levels of CO₂.
Liquid Silicon FAQ

If silicon is so important, how come we have managed without it for so long in hydroponic solutions?

Silicon is not an essential element, like calcium for instance. Plants will grow quite well without it. However it is categorised as a beneficial element, which means it brings significant benefits to any type of plant in any stage of growth. Until as recently as the late nineties this was not really recognised but new research has underlined the value of silicon to plants and has changed our ideas about how much plants actually need.

So what are the benefits?

Most importantly, silicon is incorporated directly into the cell wall, interacting with cellulose, to greatly add strength to the architecture of the plant. This process begins as soon as silicon is added and continues throughout the life of the plant. Stems become thicker and leaves take on a darker green colour, improving their light collecting potential and thus boosting photosynthesis. Every process in the plant is enhanced by this – which means stronger more vigorous growth, better resistance to pests and disease and – at the end of the cycle – heavier harvests.

How can silicon enhance resistance to pests and disease?

Interestingly the recent research into silicon was actually initiated in an attempt to discover why plants in hydroponic systems seemed more prone to various diseases, and even to attack by sap sucking pests, like mites and aphids, than plants in soil. The answer seems to include the fact that silicon is, usually, missing from hydroponic nutrients but present in almost all soils. The current theory is that it is the sheer mechanical strength of the cell wall that resists intrusion from pests and pathogenic organisms. It has become very common for commercial growers to use silicon against mildew mold and mites.

If silicon is so useful, why not just add it to the nutrient products – like IONIC – when you manufacture them?

Unfortunately silicon is extremely basic (alkaline) and cannot be mixed with nutrient concentrates without causing reactions and precipitation. It can be added to diluted nutrient solutions without reacting but it will, of course, raise the pH. There is an advantage to the grower in keeping it separate because it allows better control of the amount added – which can be varied, according to crop and season.

I have seen other silicon products that claim to have little effect on pH – how can that be?

This is deceptive marketing. Silicon, in the form that can be dissolved in water, is extremely basic and will, inevitably, raise the pH. There are products that make claims not to do so but this is because they are extremely weak. On a like for like basis – at the same concentration – all the silicon products would have approximately the same effect on pH.

So what about those pH issues?

Well silicon is basic and it will have an effect on the pH. The more you add the higher it will go and there is no avoiding this. However there is a well-established procedure for dealing with this – see instructions. It does add a bit of time to the daily or weekly procedure but there is no doubt that the extra effort will pay off. It is a good idea to change the tank a little more frequently when using silicon.

“I nearly gave up growing cucurbits altogether because of the ravages of powdery mildew. I choose not to use fungicides on our food crops and so the mildew was nearly uncontrollable once it got started. As a preventive measure Growth Technology Liquid Silicon had a near miraculous effect on the problem, and used from the start of the growing season on cucurbits almost completely cleared the problem. Result – a greenhouse full of healthy courgettes and cucumbers.”

Nick Clooney
The Hydroponicum, Achiltibuie, Ullapool, Scotland