



# PLANT GUARD<sup>®</sup>

*organic leaf & root protection*



**MONOSILICIC  
ACID ( $H_4SiO_4$ )**

- REDUCE FUNGAL DISEASE
- ENHANCE NUTRIENT UPTAKE
- INCREASE YIELD



As a bio stimulant, the wide-ranging effects of Monosilicic Acid on plant growth, soil fertility and postharvest characteristics of agricultural crops, **KNOWS NO EQUAL** (E. Bent 2014).



**MICROSOIL**  
liquid fertiliser

**Plant Guard** has been proven to increase crop yields in replicated trials by research and university organisations globally.



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Silicon (Si) is one of the most abundant elements in the earth's crust, however most sources of silicon are insoluble and not in a plant available form.

The only form of Si that is available to plant roots is Monosilicic Acid ( $\text{H}_4\text{SiO}_4$ ). Commercial Si fertilisers (potassium silicate etc) are mostly in the form of Polysilicic Acid that is slowly converted over weeks or months by soil microbes into Monosilicic Acid (MSA).

**Plant Guard has the highest tested level of Monosilicic Acid available for both root and foliar uptake by plants - 24% MSA.**

As the benefits of MSA become more widely studied and accepted the role for Plant Guard in Australian farming becomes more obvious.



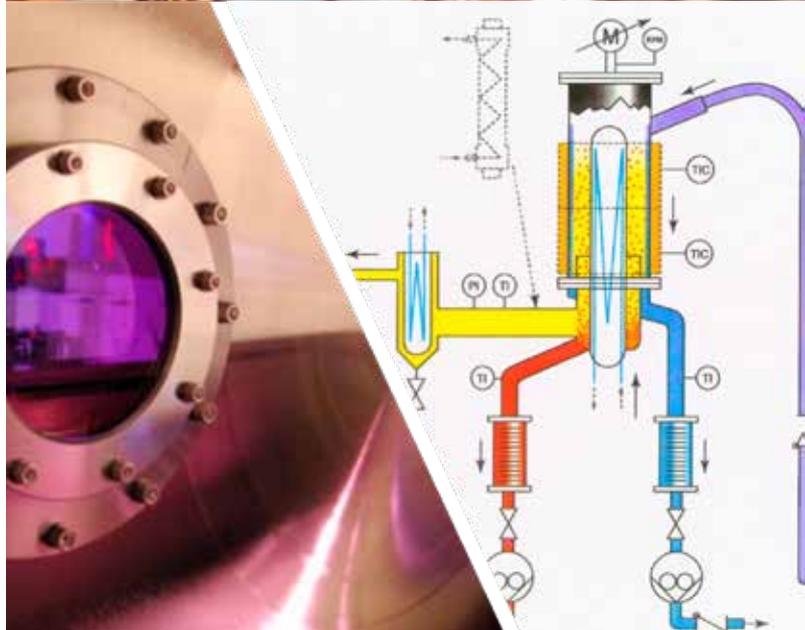
## Manufacturing

Terra Tech USA, makes this unique organic based Activated Monosilicic Acid complex containing 24% MSA, making it one of the highest concentrations available world wide.

Silicon rich raw minerals are pulverised into microparticles. Then proprietary processes of solubilisation, high vacuum, temperature and dynamic agitation take place to extract the Monosilicic Acid.



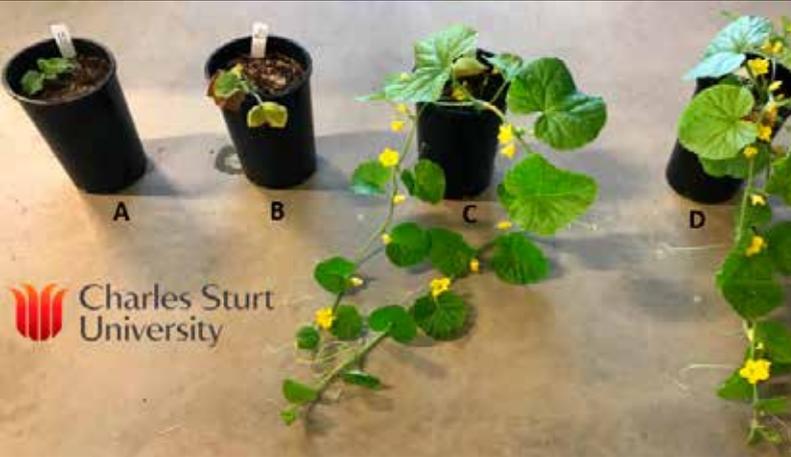
**PROVEN  
LIQUID  
FORMULATION**



# Beneficial Modes of Action.

An extensive amount of scientific trials has confirmed the benefits of Monosilicic Acid:

- Proven to help mitigate the effect of many soil and leaf fungal diseases
- Increased uptake of nutrient – P and Zn
- Reduced nutrient leaching – NPK
- Stronger plant leaves and root growth
- Reduced frost damage
- Enhanced pest and stress management
- Improved soil fertility and structure
- Increased plant photosynthesis
- Immobilises heavy metals such as Aluminium and reduces uptake of Sodium
- Enhances fruit quality and shelf life



## Trial Work

Trials conducted in laboratories and in the field have demonstrated the ability of Plant Guard to improve plant resistance to disease, increase yield and profits to growers.

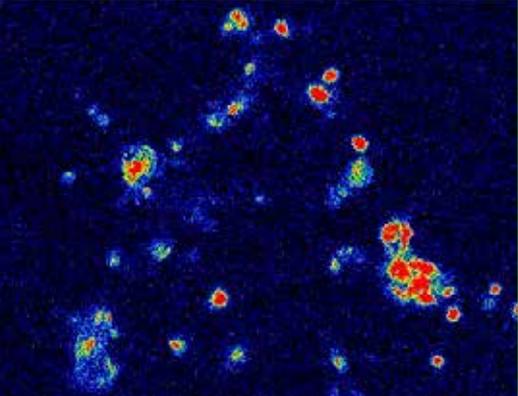
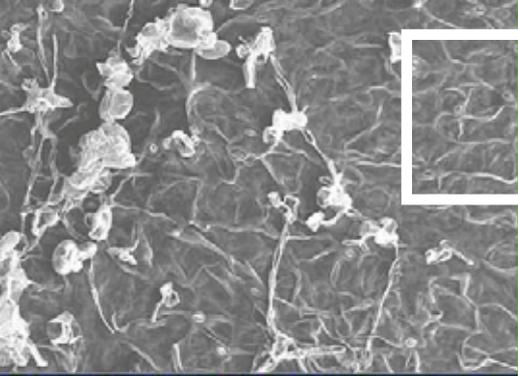
**PLANT GUARD**  
has been tested and commercially  
applied globally

**IMPROVE  
GERMINATION AND FLOWERING.  
GREATER  
DISEASE RESISTANCE.  
INCREASE  
PROFIT.**

**Monosilicic acid delivers greater nutrient uptake  
and increased resistance to pests & diseases.**

(Mitani, Matichenkov et al 2005.)





# Improved Plant Defence.

*Monosilicic Acid has been scientifically proven to activate and sustain plant defence mechanisms against both Biotic and Abiotic stress.*

However, our soils are deficient in MSA so adding Plant Guard to crops can deliver multiple benefits as stated above.

MSA is now seen as an integral tool in proactive pest management. It delivers protective cell wall strength while also fuelling a robust defence system within the plant. However, MSA is immobile once incorporated into a cell wall so foliar spraying

Plant Guard at the first sign of disease can offer numerous benefits to the plant. MSA has proven to help prevent and deter:

- Fungal spore penetration into cells
- Herbivory insect attack
- Effects of frost
- Impact of drought
- Salinity and heavy metal issues

**Pictured above:** Accumulation of MSA in plant cells is coincident with *E. Cichoracearum* (powdery mildew) on leaf (Faucheux et al 2005)

## Plant Guard Application Rates

Crop	Application Type	Number of Applications	L/HA	Application Timing
Tree Crops	Fertigation	4 - 6	1 - 2	4 - 10 week intervals in the growing season. Note: If low pH and heavy metals are an issue, use 2L/HA initially.
Tree Crops	Foliar	1	2	At flowering to help set the crop. Note: Dilute 1:100 for Fungal Disease Suppression
Horticulture Row Crops	Fertigation	2 - 3	1	At planting, flowering and again during the growing period.
Cotton, Corn	Liquid Inject and Foliar	2	1	At planting for strong germination and at flowering to help set the crop.
Viticulture	Foliar	2	1 - 2	At flowering and again prior to verasion. Note: Dilute at 1:100 for Fungal Disease Suppression.

**Application Notes:** Fungal disease suppression can be achieved when Plant Guard is applied at a dilution rate of 1:100 or less.

**Ingredients:** 24% (+/-2%) Monosilicic Acid. pH: 12.5



## About Microsoil Australia.



### Contact

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Significant investment into Research & Development over the last 10 years has seen Microsoil develop, manufacture and supply an extensive range of high quality products for agricultural production. The range of independently tested, innovative products includes:

- Liquid fertilisers
- Plant stress relief products
- Plant and soil stimulants
- Colour enhancement (red skin fruit)
- Crop protection products