



Rich Source of Plant Available Silicon
Improves Crop Yields
Improves Crop Quality
Approved input for Organic Agriculture



About Agrisilica



Agrisilica Fertiliser is composed of a unique natural form of silicon, sourced from the world's largest deposit of amorphous silica located in Queensland, Australia. The high concentration of soluble silicon (26% w/w), which is readily converted into Plant Available Silicon (PAS), makes Agrisilica Fertiliser unique.

Benefits of using Agrisilica

1. Improved yields. Trials have indicated improved crop yields on all crops tested.
2. Improved quality. Trials consistently confirm increased fruit size, improved shelf life and increased brix levels.
3. Improved pest and disease control.
4. Reduced use of NPK fertilisers. Many trials have indicated that a reduction in NPK fertilisers can be achieved due to the improved uptake of applied fertilisers. Please consult your agronomist or Agripower for information.



Choosing the correct Silicon fertiliser.

There are three aspects to consider when choosing a silicon fertiliser

1. Plant Available Silicon content: many fertilisers express silicon in terms of total elemental percentage and not what the plant can actually utilise. Agrisilica contains 26% soluble silicon.
2. Heavy metal content: slags have been used as a source of silicon. Many slags contain heavy metals and should not be used for crop production. Agrisilica contains no heavy metals of significance.
3. Cristobalite content: some silicon fertilisers may contain the carcinogen cristobalite. Agrisilica contains no cristobalite.



Agrisilica alleviates the detrimental effects of stresses through a range of mechanisms including ;

1. Physical deposition of silica in the leaf and root cell walls thereby:

- Protecting the plant from diseases, which would otherwise penetrate the cell wall e.g. fungal and mould diseases.
- Protecting the plant from the effects of sucking and chewing insects. e.g. aphids and thrips.
- Counteracting the effects of drought and high temperature by reducing water loss through transpiration.
- Increasing the rate of photosynthesis by enabling more erect leaves to capture more sunlight.

2. Improved uptake and utilisation of nutrients e.g. phosphorous, nitrogen and potassium.

3. Reduced uptake of sodium and heavy metals e.g. aluminium.

4. Stimulation of the plant immune system in response to diseases.



Picture 1: Agrisilica Brazil Trials in soy plants

Agrisilica is available in the following forms :



2-5 mm Granule: suitable for blending with NPK granular fertilisers. Suitable for spreading through all fertiliser spreaders



0-2 mm Granule: suitable for use in amenity turf e.g. golf greens



2-8 mm Chip: suitable for spreading through belt spreaders. Not suitable for blending. Also suitable for incorporation into potting media.



with Agrisilica / without Agrisilica

Picture 2: Agrisilica Australia Strawberry Trials.

Agrisilica Typical Analysis

Total Silicon	26%
Continuously Extractable Silicon (Si(OH) ₄)	0.1%
Cation Exchange Capacity	>30 meq/100 g
Calcium	1.4%
Magnesium	1.1%
Iron	1.3%
pH	8-9
Granules Size	0-2mm ; 2-5mm
Chip	2-8mm
Bulk Density	900 kg / m ³
Cristobalite	Nil



with Agrisilica / without Agrisilica

Picture 3: Agrisilica Morocco Raspberry Trials.

Note: The levels of heavy metal residues are well below the maximum acceptable. Agrisilica is certified by ACO Australia and listed by OMRI - USA and EcoCert - E.U. as an input into organic agriculture.

	IN SOIL	IN PLANT	
		PHYSIOLOGICAL	MECHANICAL
Increases resistance to pathogens and insects		✓	✓
Reduces Phosphorous deficiency	✓	✓	
Increases resistance to wind and rain			✓
Alleviates drought		✓	✓
Alleviates salt stress		✓	
Alleviates Fe toxicity	✓		
Improved intake of N,P,K and Ca		✓	
Reduces intake of nutrients when P and N are in excess		✓	
Alleviates Mn, Cd and As toxicity	✓	✓	
Alleviates Aluminium and Zinc toxicity	✓	✓	✓

Table 1 Known Benefits of Silicon in the Soil and Plant (adopted from F. Guntzer et al 2012)

Agrisilica : A Rich Source of Plant Available Silicon

Silicon is recognised as a bioactive beneficial plant nutrient that plays an important role in alleviating stress, resulting in improved crop performance.

Silicon is the second most abundant element on earth (after oxygen). In soils silicon exists primarily in the form of silica or silicate minerals e.g. quartz, feldspar, clay minerals. Silicon also exists in various amorphous silica forms e.g. phytoliths of plants.

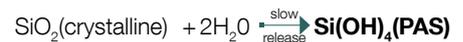
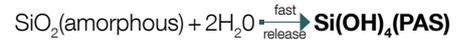
Despite the fact that most soils are rich in silica or silicates, Plant Available Silicon (Si(OH)_4) is often limiting. For plants to absorb silicon from soils it must first be converted into monosilicic acid (Si(OH)_4) or Plant Available Silicon. In the case of silicate minerals the weathering process and the conversion into Plant Available Silicon is extremely slow.

Crops are increasingly deficient in silicon in modern agricultural systems, where high production crops are grown and large quantities of silicon are being continually exported off the farm (Table 2).

To overcome silicon deficiency, silicon fertilisers should be used. Agrisilica Fertiliser is a unique naturally occurring mineral composed of 26% soluble silicon.

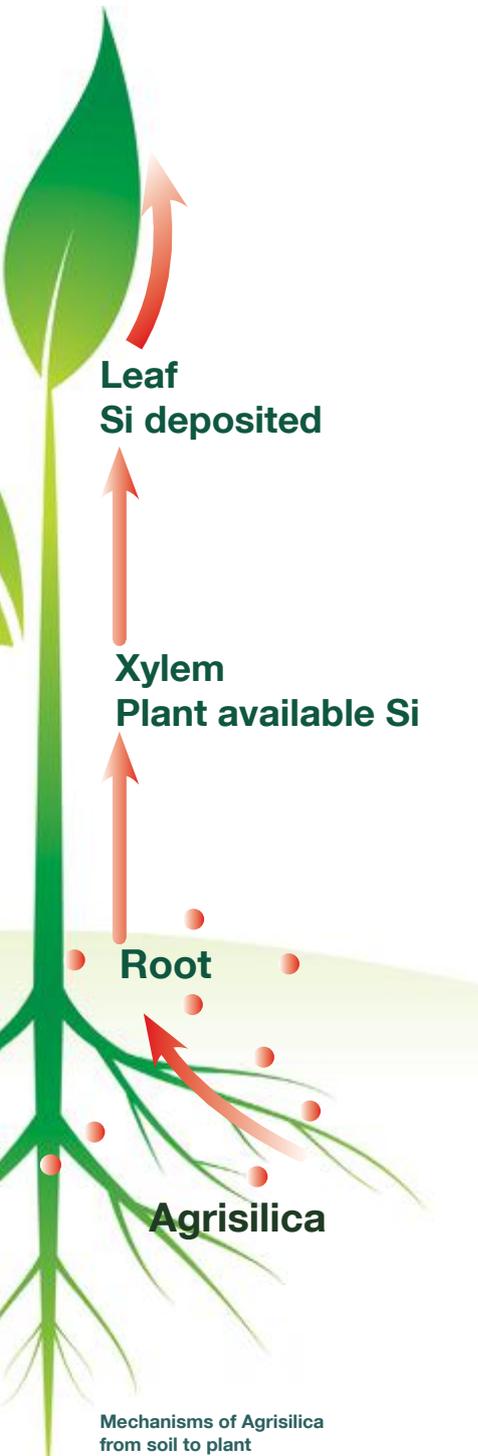
All of the soluble (amorphous) silica in Agrisilica can be quickly converted to Plant Available Silicon, making it an extremely effective silicon fertiliser.

Note that many silica fertilisers claiming to have high silica levels fail to mention that the silica is in the crystalline form and is not readily available to the plant:



Plant Available Silicon (Si(OH)_4) dissolved in the soil solution is taken up by plant roots either actively or passively. Once absorbed by the roots, silicon (as aqueous Si(OH)_4) is transported to the leaves and shoots via the xylem vessels. In the leaves and shoots silicon is transformed from the aqueous form to solid phytoliths and deposited in the cell walls of different tissues e.g. leaf epidermal cells.

Phytogenic silicon is immobile within the plant, strengthening the plant and acting as a physical barrier against insect and disease attack. In addition, plants still need a source of continuously available soluble silicon (e.g. Agrisilica) to induce defense responses.



Crop	Silicon removal when crop is harvested
Sugar Cane (100 t/ha)	500-700Kg/ha
Rice (5-10 t/ha)	230-470 Kg/ha
Cereals (5-10 t/ha)	100-300 Kg/ha
Potatoes (20 t/ha)	50-70 Kg/ha

Table 2 Silicon is removed in crops more than other macronutrients (Savant et al, 1997; Datnoff, 2005; Anderson, 1991)

Crop results achieved using Agrisilica

Agripower has conducted over 300 trials (scientific and commercial - independently monitored work) in over 35 different crop types aimed at proving the benefits of Agrisilica fertiliser.

Results have consistently shown yield increases and improved quality parameters in a wide range of crops. Trials have focused on the addition of Agrisilica to existing fertiliser practice and the quality, health, size and yield increases of the crops trialled and the benefits these provided to the grower.

CROP	COUNTRY	% YIELD INCREASE	PROFIT WITHOUT AGRISILICA A\$/ha*	PROFIT WITH AGRISILICA A\$/ha*	ADDITIONAL INCREASE A\$/ha*	CROP CYCLES per annum
Apples	Morocco	50	22,200	37,400	15,200	1
Bananas	Morocco	26	35,400	44,000	8,600	1
Bananas	India	20	13,700	16,000	2,300	1
Blueberries	Morocco	6	75,500	79,600	4,100	1
Cherries	Australia	20	32,300	49,680	17,300	1
Chilli	Australia	8	135,000	145,200	10,200	2-3
Citrus	Australia	9	112,300	132,300	20,000	1
Citrus	Morocco	23	26,000	29,800	3,800	1
Cucurbits	Morocco	46	33,800	48,700	14,900	2-3
Cotton	India	22	3,200	3,800	600	1
Grapes (Sultana)	Turkey	34	17,200	22,800	5,600	1
Hazelnuts	Turkey - Sakarya	47	40,000	58,000	18,000	1
Hazelnuts	Turkey - Ordu	70	30,000	64,000	34,000	1
Maize	India	13	1,600	2,100	500	2-3
Melons	Morocco	58	12,500	19,200	6,700	2-3
Nectarines	Morocco	41	11,000	14,800	3,800	1
Onions	India	9	6,100	6,470	370	2-3
Onions	Australia	63	16,200	18,400	2,200	2-3
Potatoes	India	10	7,700	8,400	700	2-3
Potatoes	Turkey	22	14,300	17,200	2,900	2
Raspberry	Morocco	23	70,000	86,000	16,000	1
Rice	India	34	2,200	2,750	550	2
Strawberry	Australia	34	100,000	135,000	35,000	1
Strawberry	Morocco	4	59,800	60,600	800	1
Sweet Potato	Australia	47	28,000	41,000	13,000	2-3
Sugar Beet	Morocco	62	2,800	5,000	2,200	1-2
Sugar Beet	Turkey	17	4,200	4,800	600	1-2
Sugar Cane	India	43	3,200	4,200	1,000	1
Tea	India	22	4,800	5,520	720	1
Tomatoes	India	20	21,000	25,000	4,000	2-3
Tomatoes**	Morocco	44	7,900	10,800	2,900	1-2
Wheat	Morocco	49	1,300	1,700	400	2

Table 3 Results achieved with the use of Agrisilica quick overview summary table

* Excludes the cost of crop chemicals, labour, irrigation, machinery and finance costs which are constant over all treatments. Includes the cost of Agrisilica Fertiliser.

** This trial was harvested for a period of 12 weeks. The crop is generally harvested over a period of 30-36 weeks.

Note: Agrisilica resulted in significant quality improvement. For example, improved size, increased brix, increased packout, etc.

Indicative Application Rates and Timing

Vegetables 250-500 kg/ha*. Apply as a band or broadcast and incorporate at or prior to seeding or transplanting. For potato crops it is advisable to consider reducing NPK fertiliser rates - please consult Agripower or your agronomist for further information.

Tree Crops (Mature, bearing) 300-600 kg/ha*. Apply as a band along the irrigation dripline or broadcast in the tree drip zone. Applications are best split into two equal applications, timed with the primary NPK application periods.

Tree Crops (Immature, non bearing) 200-400 kg/ha*. Apply as a band along the irrigation dripline or broadcast in the tree drip zone. Applications are best split into two equal applications, timed with the primary NPK application periods. At planting, apply 1 kg into the planting hole prior to planting.

Vines (Mature, bearing) 200-400 kg/ha*. Apply as a band along the irrigation dripline.

Vines (Immature, non bearing) 150-300 kg/ha*. Apply as a band along the irrigation dripline. At planting apply 250g into the planting hole prior to planting

Sugar Cane Apply 300-600 kg/ha*, Apply at planting or broadcast (ratoon crops).

Berries (Strawberry, Blueberry, Raspberry) 500-750 kg/ha*. At planting.

Field Crops (Cereals, Pulse Crops, Oilseeds, Cotton, Maize) 150-300 kg/ha*. At planting.

Turf 250-500 kg/ha*. Topdress as required. For fine turf use Agrisilica Turf Grade (0-2mm).

* Use higher application rates when soil fertility and silicon levels are low.



Agrisilica

GRANULE CHIP

IS AVAILABLE IN:

- 25 KG BAGS
- 50 KG BAGS
- BULK BAGS
- BULK



SIRA

CHIP

IS AVAILABLE IN:

- BULK BAGS
- BULK

Visit www.agripower.com.au to learn about our product range including SIRA, a high performance soil amendment product.

SIRA is an ideal companion product to Agrisilica fertilisers.



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in Organic Agriculture
conforming to (CE) regulation
n° 834/2007 and 889/2008



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