



FERTILIZERS

*Quality Ingredients
Australian Made
Family Owned*

Nutrient Solutions

Post-Harvest Wine Grape Nutritional Guide

Not all nutrients are available to the vine for the first 30 days after bud burst; therefore, it relies heavily on carbohydrate reserves from the previous year.

SLTEC®'s range of post-harvest fluid fertilisers can assist in your vineyard post-harvest requirements.

sltec.com.au

Why Choose SLTEC® Fertilizers?

SLTEC® Fertilizers is a leading manufacturer of fluid fertilisers, based in Northern Victoria.

SLTEC's Commitment

Quality

SLTEC® Fertilizers is committed to supplying consistently high quality products.

Investment

SLTEC® Fertilizers will ensure that your fertiliser inputs maximise the return on your investment.

Service

SLTEC® Fertilizers will provide professional, logistical and agronomic support to ensure a sustainable relationship.

Read our quality assurance policy online at sltec.com.au/quality

Why use fluid fertiliser?

- Efficient and highly plant available
- Can deliver many nutrients with a single application
- Small and frequent applications reduce leaching and runoff
- Foliar and fertigation options allow flexible application timing unlike relying on broadcast application
- Consistency of product and uniform application across the soil
- Nutrients infiltrate to the root zone where maximum uptake is achieved
- Foliar application, particularly of trace elements, avoids tie-up in the soil
- Can be mixed with a range of farm chemicals
- Labour savings and improved workplace safety



Post-Harvest Wine Grape Information

Approximately 30% of the annual nitrogen and phosphorus, 20% of the calcium and magnesium and 15% of the potassium requirements come from stored reserves taken up after harvest.

Benefits of Post-Harvest Fertiliser Applications in Wine Grapes

Post-harvest fertiliser is vital in ensuring vines have adequate energy to facilitate healthy root, bud and stem growth in early spring.

Nutrients applied after harvesting are stored in perennial tissue as carbohydrate reserves in the form of starch and sugars and utilised in early growth periods during the absence of sufficient leaf area. A low carbohydrate reserve at the beginning of the season will significantly impact the tree's early growth and potential yield.

Carbohydrate storage requires photosynthesis. Therefore, post-harvest fertiliser applications should be applied as soon as possible while there is still an adequate number of healthy leaves.

Irrigation

Vines must receive adequate water post-harvest to maximise their carbohydrate storage and nutrient uptake for the following season.

Carefully manage remaining irrigations to maintain a functional canopy for three to four weeks after harvest.

Both topsoil and subsoil moisture must be maintained over the winter period as dormant plants still use water.

Remember to ensure soils don't become too dry as roots and soil biology will be negatively affected, leading to reduced nutrient uptake in spring. To improve soil biology and subsequent nutrient cycling over the dormant period, please consider QuadSHOT® - providing a valuable blend of microbial food sources and root zone stimulants.

Nutrient Information

Nitrogen (N)

Nitrogen applications post-harvest play a vital role in the available nitrogen for the coming season, safeguarding a strong and even bud burst and aiding in the early spring flush of growth.

Phosphorus (P)

Phosphorus is critical for root development and has a direct effect on yield and quality. Phosphorus increases the beneficial translocation of other nutrients, such as magnesium from the roots to the shoots.

Potassium (K)

Potassium is involved in the active translocation of sugars from the leaf to the fruit and plays an important role in fruit quality, size and yield. Potassium is also involved in the osmotic potential of cells and the turgor of the guard cells that open and close stomata. Good potassium levels in early spring can help to safeguard buds and new growth from frost damage.

Calcium (Ca)

Calcium is a critical component of cell walls, maintaining membrane structure and nutrient uptake. It has a significant role in fruit quality, colour and aroma.

Magnesium (Mg)

Magnesium is an essential component of chlorophyll and is needed for many processes, including the transfer of energy, protein synthesis and cell structure.

After harvest, vines accumulate a significant amount of magnesium, stored in the trunk's roots, shoots, and woody components. Magnesium accumulation continues until leaf fall, primarily in the roots and leaves.

The Process

Our approach to formulating an accurate program for post-harvest applications combines the examination of a number of data sources specific to wine grapes, with specific considerations that are unique to each growing situation.

Theoretical

1. Nutrient Uptake Curve & Data

This information allows us to understand the nutrient demands and the ratios of these nutrients at specific physiological stages of the plant's growth and recognise the nutrients it requires in the correct balance to maximise its potential at that growth stage.



Understanding Liebig's Law of the Minimum, we can ensure we don't exclude any nutrient that can negatively affect our yield or quality parameters.

Wine Grape Macronutrient Uptake (g/plant/day)														
	Nitrogen			Phosphorus			Potassium			Calcium				
	Plant 10 days after emergence	per 100 g plant	% N:total uptake	Plant 10 days after emergence	per 100 g plant	% P:total uptake	Plant 10 days after emergence	per 100 g plant	% K:total uptake	Plant 10 days after emergence	per 100 g plant	% Ca:total uptake		
Post Harvest	23	15	1.80	2.80%	0.5	0.60	0.90%	11.0	1.32	2.00%	8.0	0.96	1.40%	
	24	17	1.70	2.87%	0.5	0.5	0.923%	10.8	1.224%	1.98	8.0	0.96	1.40%	
	25	19	1.50	2.47%	0.4	0.60	0.889%	10.5	1.260%	1.95	8.0	0.96	1.40%	
	26	21	1.30	2.14%	0.4	0.60	0.857%	10.2	1.224%	1.92	8.0	0.96	1.40%	
	27	23	1.20	2.00%	0.35	0.55	0.818%	9.75	1.170%	1.800%	5.0	0.5	1.070%	
	28	25	1.10	1.81%	0.3	0.5	0.750%	9.4	1.128%	1.760%	5.0	0.5	1.070%	
	29	27	1.00	1.69%	0.25	0.45	0.704%	9.0	1.080%	1.700%	5.0	0.5	1.070%	
	30	29	0.90	1.55%	0.2	0.4	0.667%	8.6	1.032%	1.640%	5.0	0.5	1.070%	
	31	31	0.80	1.45%	0.15	0.35	0.643%	8.2	0.984%	1.580%	5.0	0.5	1.070%	
	32	33	0.70	1.33%	0.1	0.3	0.619%	7.8	0.936%	1.520%	5.0	0.5	1.070%	
	33	35	0.60	1.20%	0.05	0.25	0.600%	7.4	0.888%	1.460%	5.0	0.5	1.070%	
	34	37	0.50	1.08%	0.05	0.2	0.595%	7.0	0.840%	1.400%	5.0	0.5	1.070%	
	35	39	0.40	1.00%	0.05	0.15	0.588%	6.6	0.792%	1.340%	5.0	0.5	1.070%	
	36	41	0.30	0.87%	0.05	0.1	0.581%	6.2	0.744%	1.280%	5.0	0.5	1.070%	
	N:total uptake			23.42%	P:total uptake			23.42%	K:total uptake			23.42%	Ca:total uptake	

Post-Harvest Product Options

Utilising the data examined in the post-harvest process, we can prescribe the appropriate product to ensure that your crop is receiving the exact nutrients it requires to achieve maximum health, and ultimately yield.

L of product to replace 1 ton of removed fruit	Post-harvest product options	N % w/v	P % w/v	K % w/v	Ca % w/v	Mg % w/v	SG (kg/L)
1.3	WG Recharge P & K		8.4	33.9			1.46
3.2	WG Recharge N P K	15.7	3.4	13.9			1.28
2.4	WG Recharge N & P	21.6	4.8				1.19
2.2	WG Recharge N & Ca	22.7			3.9		1.32
0.3	Nitro Mag	9.8				8.8	1.36
2.5	WG Recharge N, Ca & Mg	20.5			3.6	0.9	1.28
8.0	Vine Recharge	6.4	1.4	5.7	1.3	0.3	1.20

Vine Recharge™

Vine Recharge™ is a product formulated by SLTEC®'s research and development team specifically for wine grape post-harvest fertigation applications. Vine Recharge™ is a blend of all 5 essential nutrients in the ratios the vine requires; providing the convenience of applying all major nutrient requirements in one blend.

The following table displays the required application rate of Vine Recharge™ in relation to the amount of t/ha of crop removed; to ensure optimal nutrient levels at post-harvest.

t/ha	1	5	10	15	20
L/ha	8	40	80	120	160

Simply apply Vine Recharge™ at 8 L/ha for every 1 t/ha of crop that you have removed to supply the required nutrients.

Guaranteed Analysis

Nitrogen (N)	6.5% w/v
N as nitrate	4.9% w/v
N as ammonium	1.6% w/v
Phosphorus (P)	1.4% w/v
Potassium (K)	5.8% w/v
Calcium (Ca)	1.3% w/v
Magnesium (Mg)	0.3% w/v
Specific Gravity	1.20 kg/L
pH	< 1.0

Crop Removal & Demand

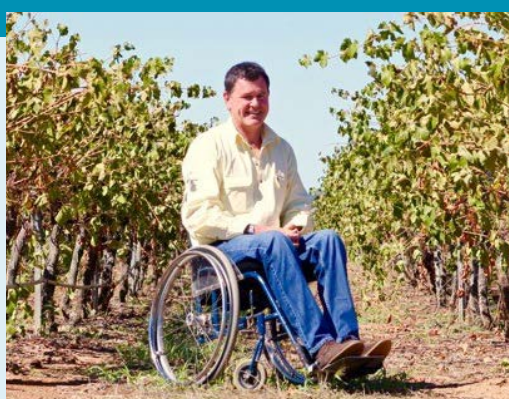
	Nutrient Removal kg / ton of Fruit	Tonnes of fruit removed per ha	Total Nutrients Removed kg/ha	Post-Harvest to Leaf Fall	
				% Crop Demand	kg/ha
Nitrogen	1.5	10	15	34%	5.1
Phosphorus	0.4	10	4	28%	1.1
Potassium	3.0	10	30	15%	4.5
Calcium	0.4	10	4	22%	0.9
Magnesium	0.1	10	1	22%	0.2

Vine Recharge™ in Action

Dick Bryksy at Kirribilly Viticulture

600 hectares - Clare Valley SA

"For the past seven years, we have been using Vine Recharge™ at post-harvest and have been very impressed with the even bud-burst across the vineyard and the early spring growth the following year. This has lead to more consistent yields across the vineyard while maintaining our quality. Our vine health right up to harvest has significantly improved across the 14 vineyards we manage. I have also seen a reduction in the speed that Eutypa moves in our mature vines, showing that well-balanced vine health can be part of the solution to reducing the ingress of some vine fungi."



Single Nutrient Fertigation & Foliar Product Options

Nitrogen: Nitro QUAD 20™

A high nitrogen source with all the benefits of 20% QuadSHOT® ensuring efficiency in your nitrogen application

Analysis (% w/v)			
N 34.1%, N as NO ₃ 8.6%, N as NH ₄ 8.5%, N as Urea 17.0%, P 0.3%, P as PO ₄ 0.3%, K 0.5%, Fe 0.006%, Fulvic Acid 0.005%, Fish Emulsion 1.5%, Humic Acid 1.3%, Kelp 1.5%, Molasses 1.5%			
SG (kg/L)	ph	Fertigation	Foliar (use 200 - 2,000 L/ha water)
1.297	4.0 - 6.0	10 - 80 L/ha	10 - 60 L/ha

Phosphorus: SS 11:16:0™

Blend of nitrogen and highly plant available phosphorus to assist in post-harvest root health

Analysis (% w/v)			
N 9.8%, N as NO ₃ 9.8%, Mg 8.8%			
SG (kg/L)	ph	Fertigation	Foliar (use 200 - 2,000 L/ha water)
1.297	6.0 - 7.0	20 - 100 L/ha	1 - 5 L/ha

Calcium: BiologiCAL® PLUS

Highly available, activated calcium with the added benefit of biostimulants

Analysis (% w/v)			
N 0.3%, N as NO ₃ 0.3%, P 0.1%, K 2.0%, S 1.8%, Ca 6.5%, B 0.1%, C 12.5% Fulvic Acid 0.009%, Fish Emulsion 0.3%, Humic Acid 0.2%, Kelp 0.3%, Molasses 41.8%			
SG (kg/L)	ph	Fertigation	Foliar (use 200 - 2,000 L/ha water)
1.281	8.0 - 10.0	20 - 60 L/ha	1 - 20 L/ha

Foliar: Cal Mag & Boron™

Highly plant available nitrate based nitrogen source with the addition of calcium, magnesium & boron

Analysis (% w/v)			
N 12.5%, N as NO ₃ 12.5%, Ca 12.5%, Mg 3.4%, B 0.2%			
SG (kg/L)	ph	Fertigation	Foliar (use 200 - 2,000 L/ha water)
1.483	2.0 - 2.5	10 - 100 L/ha	5 - 10 L/ha

Potassium: Nature's K™

Nature's K™ is derived from a highly controlled organic plant extraction process and as a result delivers a wide-range of amino acids and beneficial organisms.

Analysis (% w/v)			
N 0.6%, N as NO ₃ 0.7%, P 1.8%, P as PO ₄ 1.5%, K 10.0%, S 2.6%, C 0.6%, Amino Acids 2.8%, Fulvic Acid 2.1%			
SG (kg/L)	ph	Fertigation	Foliar (use 200 - 2,000 L/ha water)
1.160	8.5 - 10.0	40 - 300 L/ha	5 - 10 L/ha

Foliar: Baseline Plus™

A blend of 15 essential nutrients and biostimulants

Analysis (% w/v)			
N 11.7%, N as urea 11.7%, P 4.9%, P as PO ₄ 4.9%, K 13.6 %, S 2.0%, C 0.3%, Mg 0.2%, Mn 0.01%, Zn 0.01%, Cu 0.005%, Mo 0.005%, B 0.02%, Fe 0.01%, Fulvic Acid 0.01%, Fish Emulsion 0.4%, Humic Acid 0.3%, Kelp 0.4%, Molasses 0.4%			
SG (kg/L)	ph	Fertigation	Foliar (use 200 - 2,000 L/ha water)
1.304	7.5 - 8.5	10 - 80 L/ha	2 - 15 L/ha

Magnesium: Nitro Mag™

8.8% magnesium nitrate solution

Analysis (% w/v)			
N 9.8%, N as NO ₃ 9.8%, Mg 8.8%			
SG (kg/L)	ph	Fertigation	Foliar (use 200 - 2,000 L/ha water)
1.360	2.0 - 4.0	12 - 25 L/ha	2 - 10 L/ha

**To assist in mineralisation, nutrient
and water availability as soil
temperatures drop post-harvest**

QuadSHOT®

Product Code: SG0039

QuadSHOT® contains a carefully selected range of organic additives and biological stimulants. These ingredients stimulate soil biological activity, thereby improving the cycling and availability of plant nutrients and soil fertility and health. Together with management practices that enhance organic matter and soil structure development, this product assists in mobilising available nutrients and improving plant uptake efficiencies.

Humic acid – increases the nutrient holding capacity of the soil

Kelp – enhances plant and root growth development

Fish Emulsion – stimulates nitrogen cycling

Molasses -promotes beneficial soil biology

Each of these stimulants are also available as individual products

Benefits of QuadSHOT®

- Improves saline and sodic soils
- Improves the moisture-holding capacity of soils
- Enhances nutrient cycling and availability
- QuadSHOT® can be used to soften a range of foliar fertilisers, allowing higher use rates without the potential for phytotoxic burn - e.g. Nitro QUAD 3™ and UAS QUAD 3™
- QuadSHOT® is designed to aid in the soils mineralisation and nutrient availability. It also increases the plant's uptake efficiency of essential minerals.
- Improves overall soil health and vitality.



Guaranteed Analysis (w/v)

Fish Emulsion	8.0%
Kelp	8.0%
Molasses	8.0%
Humic Acid	6.6%
Fulvic Acid	0.3%
Nitrogen (N)	0.3%
Phosphorus (P)	0.1%
Potassium (K)	3.4%
Sulphur (S)	0.2%
Carbon (C)	5.2%
Calcium (Ca)	0.2%
Iron (Fe)	0.006%
Specific Gravity	1.154 kg/L
pH	10.0 - 11.0

Typical Application Rates

Foliar

1 to 5 L/ha
Broadacre use at least 100 L/ha water
Horticulture use 200 to 2,000 L/ha water

Fertigation

20 to 60 L/ha through sprinkler, traveller or drip systems

Pop-Up, At Planting, Directed Soil Spray

Banded with Seed: 4 to 7 L/ha

Banded to the Side: 5 to 15 L/ha
with 10 to 100 L/ha of water

20 - 60 L/ha as a directed soil spray,
prior to planting or banded under canopy,
with 200 - 800 L/ha water

Dipping Rates

Tree Age	Young	Established
Fertigation	40 L/ha	80 L/ha
Pre-Plant Dip	10 - 30 L/ha (per 100 L Water)	



pH, Soil Acidity, Lime & Gypsum

Applying lime to a soil reduces its acidity by raising the pH. It also supplies calcium. Increasing soil acidity affects plant nutrient availability, reduces the activity of beneficial bacteria that decompose organic matter and heavy metals such as aluminium and iron become more soluble, tying up phosphorus into forms unavailable to plants, and may build up to toxic levels.

Soil should always be sampled before establishing a new planting. If lime and/or gypsum are required, incorporate it during soil preparation. It is often useful to dig a pit and to sample the subsoil to understand any potential limitations to tree growth further down the profile.

A soil sample every 3 years taken from the same locations within a block is recommended to monitor nutrient levels and to check that the pH remains satisfactory. This allows time for program changes to take effect. If lime is required apply in the Autumn.

The preferred pH before establishing a new vineyard is generally 5.5 to 6.8 depending on the soil type. Sandy or lighter soils tend to require pH toward the higher end. As a rule of thumb - apply lime to established vineyards when the pH falls below 5.5.

Use dolomitic lime (high in magnesium) on soils that are low in magnesium.

Gypsum is usually recommended on sodic and magnesic soils when pH is high and exchangeable calcium is low. High magnesium soils are often massive and hard setting (when exchangeable magnesium is greater than 15%). High sodium soils tend to be dispersive when wet and form a crust when dry (when exchangeable Sodium is greater than 5%).

Desirable Soil Exchangeable Cation Balance

Element	Balance (%)
Calcium	60 - 70
Magnesium	12 - 15
Potassium	3 - 5
ESP	< 5
Hydrogen	< 20
Ca : Mg ratio	2 - 4

Typical Cation Exchange Values for Various Soil Textures

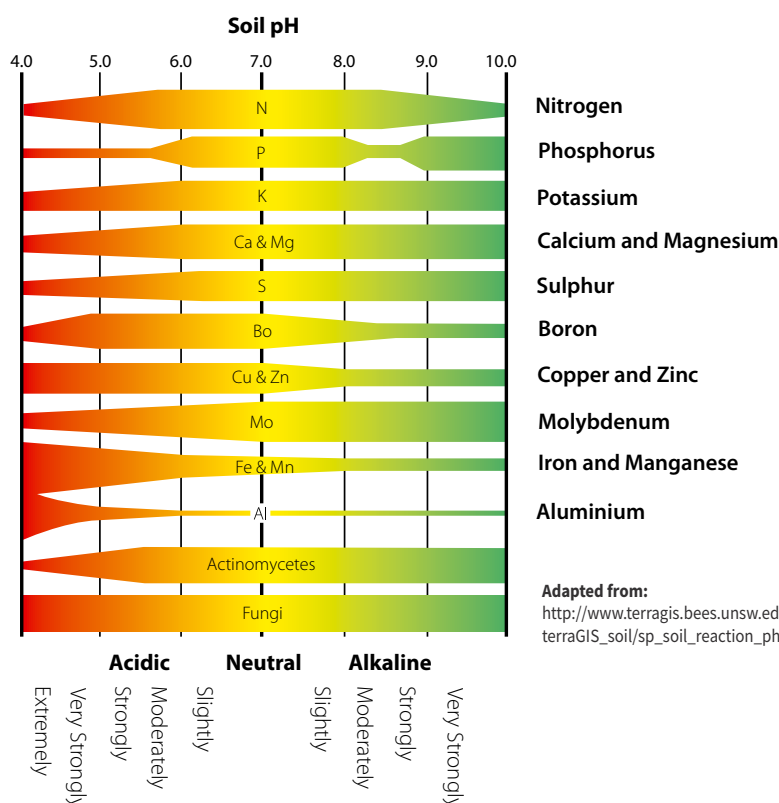
(preferred level >10 meq/100g)

Texture	Typical CEC
Sand	< 5 meq / 100g
Sandy Loam	5 - 10 meq / 100g
Clay Loam	10 - 25 meq / 100g
Light Clay	25 - 30 meq / 100g
Medium Clay	30 - 35 meq / 100g
Heavy Clay	> 35 meq / 100g

(Based on clay content only - eg: a high organic matter clay may have a CEC over 50 meq/100g)

Recommended Soil pH Level for Vineyards

Optimum pH Range	
Upper	6.8 to 7.5
Optimum	6.0 to 6.5
Lower	5.5 to 5.8



AquaLIME 38™ (Flowable Lime)

Product Code: SG0037

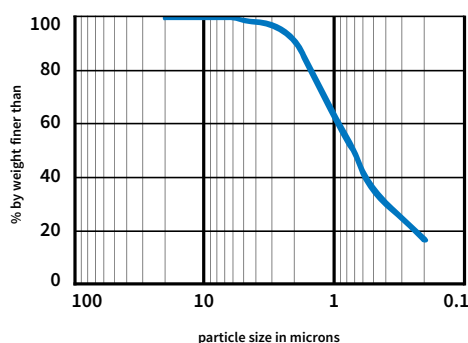


AquaLIME 38™ is an extremely effective tool at post-harvest to amend any acidification of the soil around the drip tape which can occur with fertigation.

AquaLIME 38™ is a highly flowable calcium carbonate suspension designed to deliver high purity, micronised particles to the soil to raise pH and improve soil structure. Through foliar application, it provides an extremely efficient source of calcium to crops.

AquaLIME 38™ is an extremely concentrated and reactive form of calcium carbonate (or “lime”). The product’s extreme fineness delivers an impressive surface area of 13 m²/g, significantly enhancing its reactivity within the soil compared to all other forms of calcium carbonate.

Particle Size Distribution



AquaLIME 38™ has a superior neutralising value (NV) of 99 (pure calcium carbonate at NV 100 is the benchmark) compared to other fluid lime sources on the Australian market. However, this is only part of the story - because of the fineness of AquaLIME 38, its effective neutralising value is considered to be 99 because every particle is 100% reactive in the soil.

Why Use AquaLIME 38™?

- Highly uniform - extremely fine particle size (1 micron)
- Highly reactive - high purity calcium carbonate
- Neutralising Value of 99
- Flowable for easy pumping
- Can be applied to soil as a broadcast or banded application or via irrigation systems
- Can be applied to crops as a foliar calcium treatment

Chemical Analysis;

Calcium (Ca):	38% w/v
Carbonate (CO ₃):	57.7% w/v
Carbon (C):	11.6 % w/v
pH:	9 - 10
Specific Gravity:	1.60 kg/L
Neutralising Value:	99

Application Rates (Soil)

Soil Type / Textural Class	L per ha AquaLIME 38™ (per 0.1 pH improvement)
Sands / Loamy Sands	30 - 40
Sandy / Silty Loams	50 - 70
Sandy Clay Loams	70 - 85
Light to Medium Clays	85 - 90
Heavy Clays	90 +

Nutrient Efficiency versus Soil pH

Element	pH 4.5	pH 5.0	pH 5.5	pH 6.0	pH 6.5
Nitrogen (N)	30%	43%	77%	89%	100%
Phosphorus (P)	23%	31%	48%	52%	100%
Potassium (K)	33%	52%	77%	100%	100%

**Activated calcium designed
to displace sodium and
magnesium in difficult soils**



BiologiCAL[®] PLUS

Product Code: SG0017

Plants require calcium in relatively large amounts for many functions including cell division & strength, root system and leaf development. Calcium is also an essential element required for healthy soils, influencing both the physical, chemical and biological aspects.

Benefits of BiologiCAL[®] PLUS

- Aids in maintaining a high pH to control clubroot
- Improves nitrogen efficiency; compatible with a wide range of nitrogen-based products.
- Helps to displace sodium and magnesium in difficult soils
- Improves soil structure and friability
- Improving moisture penetration/infiltration
- A unique form of activated calcium that stimulates plant uptake
- Built-in soil and plant stimulants to enhance soil fertility and plant health
- Assists in the reduction of soil nematodes that inhibit root growth and plant productivity
- Provides plant available calcium without extra nitrogen
- Improves plant resistance to disease and overall resilience
- Improves cell wall strength, plant durability and stress tolerance

Guaranteed Analysis (w/v)

Calcium (Ca)	6.5%
Nitrogen (N)	0.3%
Phosphorus (P)	0.1%
Potassium (K)	2.0%
Sulphur (S)	1.8%
Molasses	41.8%
Carbon (C)	12.5%
Boron (B)	0.1%
Fulvic Acid	0.009%
Fish Emulsion	0.3%
Kelp	0.3%
Humic Acid	0.2%
Specific Gravity	1.281 kg/L
pH	8.0 - 10.0*
*pH can vary	

BiologiCAL[®] PLUS TE

All the benefits of BiologiCAL[®] PLUS with an additional 5 trace elements; Zn 0.6%, Mn 0.3%, Cu 0.15%, Mo 0.005% & B 0.05%





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Organisation

FERTCARE®

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