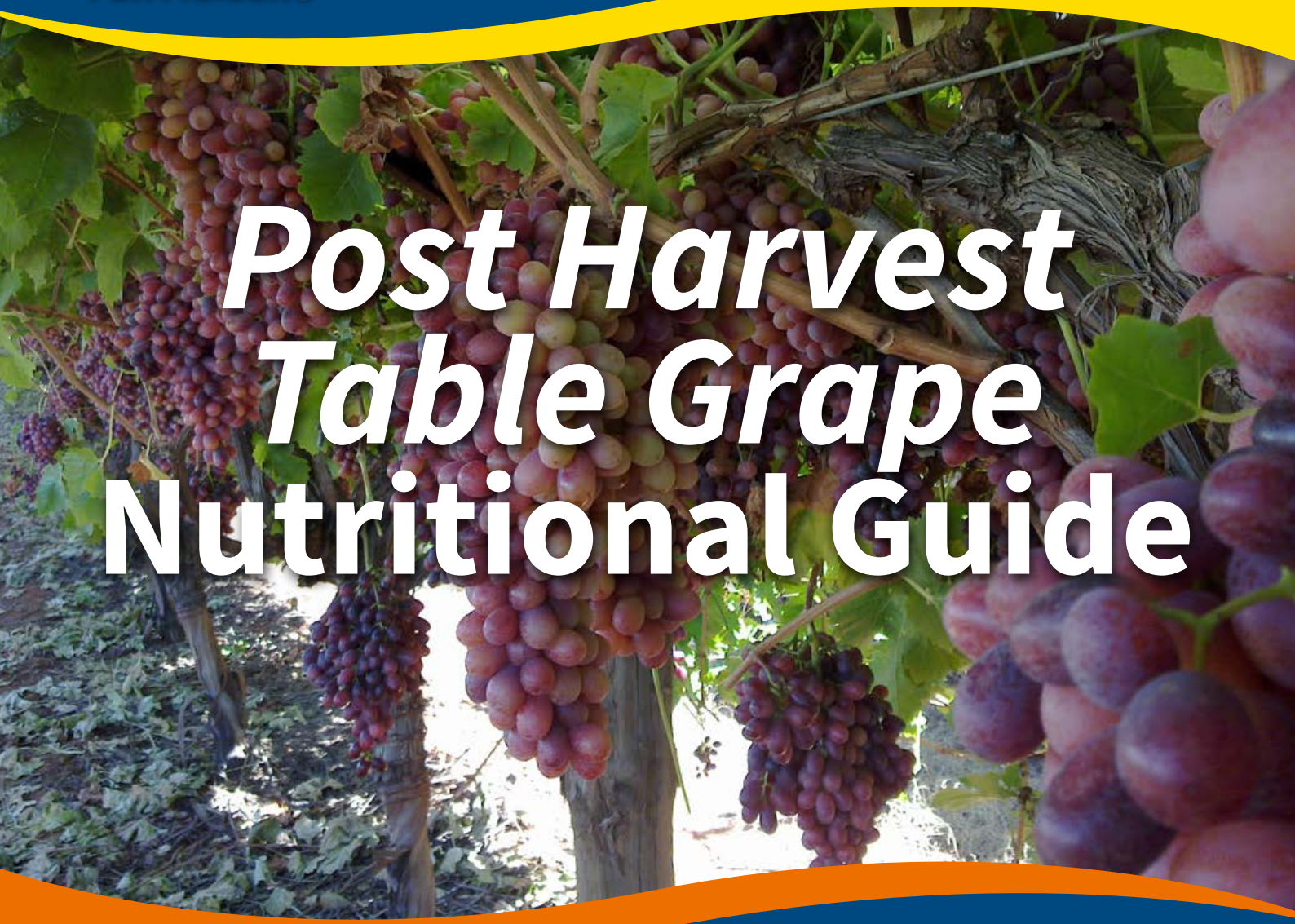
SLTEC®

FERTILIZERS

Quality Ingredients
Australian Made
Family Owned

Nutrient Solutions



Post Harvest Table 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 scientifically formulated post-harvest options can assist in maximising the efficiency and return of your post-harvest investment.

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.

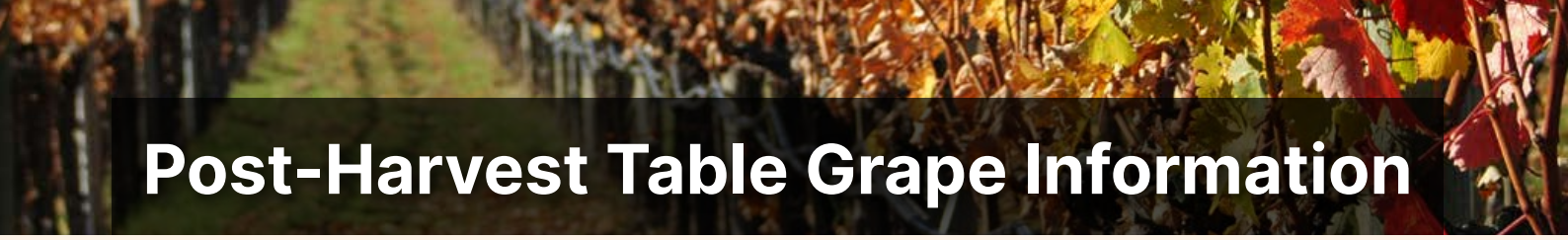
Service

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 Table Grape Information

Approximately 21% of the annual nitrogen, 15% of the phosphorus, 16% of the calcium, 31% of the magnesium and 15% of the potassium requirements come from stored reserves taken up after harvest.

Benefits of Post-Harvest Fertiliser Applications in Table 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

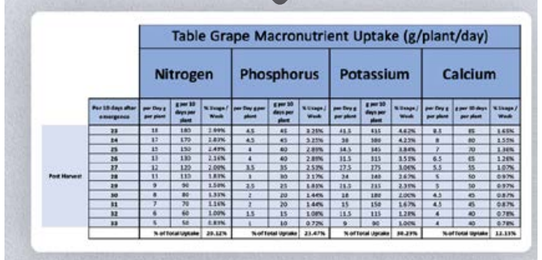
Our approach to formulating an accurate program for post-harvest applications combines the examination of a number of data sources specific to table grapes alongside specific considerations that are unique to each growing situation.

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.

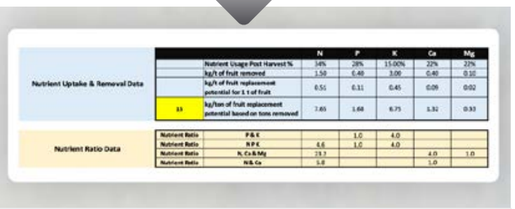


2. Post-Harvest Uptake Data

This takes all that we have learnt from the entire nutrient uptake curve of the season and applies it specifically post-harvest.

3. Crop Removal Rates

This information allows us to look at the target yield and the nutrients required to archive this yield.



4. Nutrient Ratio Options

This segment ensures we are providing the plant with the nutrients in the correct ratio to maximise the efficiency of our application and result.

5. Product Options

After considering the data, we have formulated a range of products in the correct ratios for post-harvest applications.

Customised

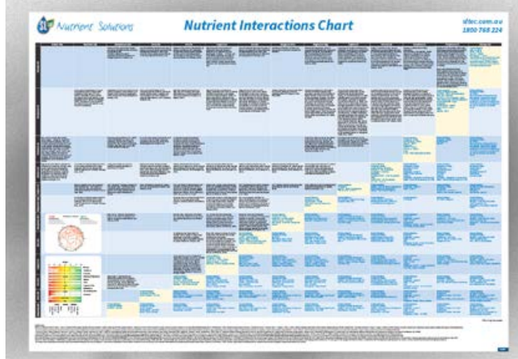
To the client's needs

6. Site Considerations

Gathering all previous historical data from the site is important to understand any long-term trends. We can learn a lot from history and save ourselves a lot of pain in the future.

Potential Site Considerations:

- Age of the vines
- Previous yields (quantity)
- Previous pack out (quality)
- Soil tests
- Tissue tests
- Irrigation practices
- Budget
- Soil pH – is there any amelioration to be done?



7. Nutrient to Nutrient Interactions

SLTEC® has invested vast resources into researching the interaction between nutrients in both the soil and plant.

8. Nutrient Role Information

SLTEC® has invested resources into understanding the role of nutrients in the soil and plant.

9. Application Considerations

It is critical to understand the client's ability to apply product options with the most efficient application method.

The Result

With all things considered, this process will ensure the grower maximises their post-harvest applications to ensure they maximise their following year's yield and product quality.

To undertake this process for your specific situation, please contact your SLTEC® representative

Post-Harvest Product Options

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

Litres / ton of fruit removed	Table Grape Recharge Options	N	P	K	Ca	Mg	SG (kg/L)
2.4	**TG Recharge P & K**		9.9	33.7			1.500
4.5	**TG Recharge N & P**	21.0	5.4				1.300
6.0	**TG Recharge N P K**	15.6	3.9	13.5			1.280
8.0	**TG Recharge N, Ca & Mg**	11.0			8.0	5.0	1.410
5.4	**TG Recharge N & Ca**	17.0			12.3		1.320

Table Grape Recharge™

Table Grape Recharge™ is a product formulated by SLTEC®'s research and development team specifically for table grape post-harvest fertigation applications. Table Grape 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.

Guaranteed Analysis

Nitrogen (N)	4.9% w/v
N as nitrate	4.9% w/v
Phosphorus (P)	1.0% w/v
Potassium (K)	3.5% w/v
Calcium (Ca)	2.8% w/v
Magnesium (Mg)	1.5% w/v
Specific Gravity	1.218 kg/L
pH	< 1.0

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

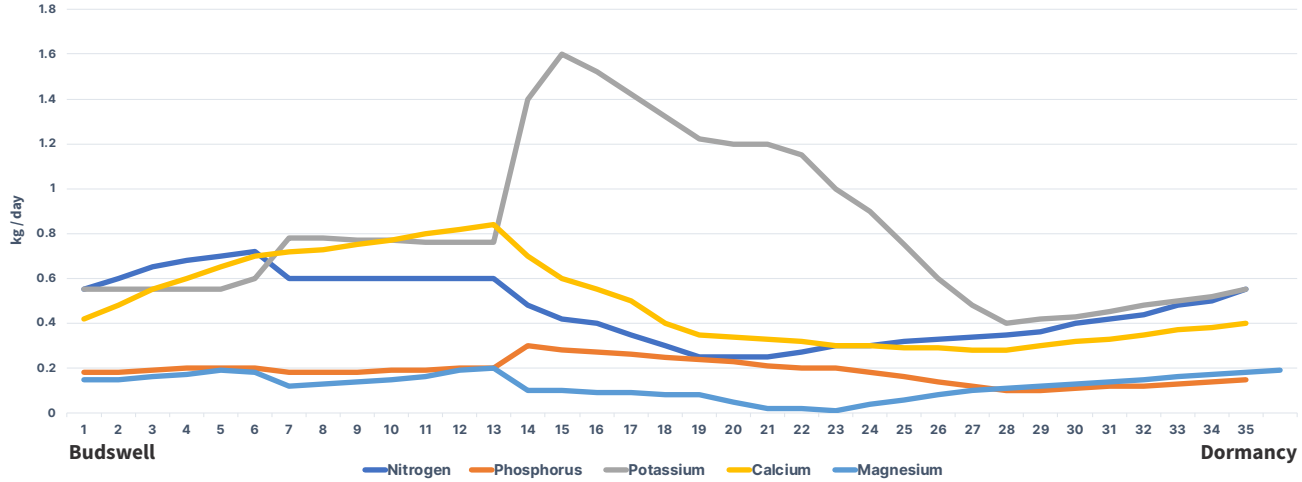
t/ha	1	20	25	30	35
L/ha	24	480	600	720	840

Simply apply Table Grape Recharge™ at 24 L/ha for every 1 t/ha of crop that you have removed to supply the required nutrients.

Crop Removal & Demand

	Nutrient removal kg/t of fruit	Approx. crop demand as a % at post-harvest	Post-harvest nutrient required (kg/t of fruit removed)
Nitrogen	4.3	21%	0.9
Phosphorus	1.6	15%	0.2
Potassium	6.0	14%	0.8
Calcium	4.2	16%	0.7
Magnesium	1.2	31%	0.4

Major Nutrient Uptake - Table Grape - 35 t/ha Yield



Reference: Yara / Kynoch – data is based on whole crop yield.

Single Nutrient Fertigation
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 organic compounds.

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

At Last! A Complete Fluid Nutrient Solution

FERTILIZERS

Baseline Plus™

Product Code: GG0009

Baseline Plus has a complete and balanced NPK analysis suitable for fertigation and foliar application across a wide range of crops. The analysis is perfect for plant establishment and maintained growth where a N : K ratio near 1 : 1 or a mid-season nutrient boost is required.

Benefits of Baseline Plus

- Chelated trace elements for rapid plant uptake and to drive the NPK metabolism.
- Contains SLTEC's QuadSHOT® - The ingredients stimulate soil biological activity; improving the cycling and availability of plant nutrients, plant uptake efficencies and soil fertility and health.
- Baseline Plus has a high analysis compared to other liquid products and provides economic and efficient supply of nutrients and the capacity to reduce rates compared to common prilled complete fertilizers on the market.
- Efficencies can be made with Baseline Plus in fertigation applications by placing the nutrients at the root mass where they will be taken up by the plant; reducing loss or waste of nutrients.

Also available with phosphonic acid – Baseline Phos Plus™
Baseline Plus™ with the additional benefits of phosphonic acid. The addition of phosphonic acid gives 125g of phosphonic acid per 1 L or 1.25 kg per 10 L application.

Guaranteed Analysis (w/v)

Nitrogen (N)	11.7%
N as urea	11.7%
Phosphorus (P)	4.7%
Potassium (K)	13.7%
Sulphur (S)	2.0%
Carbon (C)	0.3%
Magnesium (Mg)	0.2%
Manganese (Mn)	0.006%
Zinc (Zn)	0.01%
Copper (Cu)	0.005%
Molybdenum (Mo)	0.005%
Boron (B)	0.02%
Iron (Fe)	0.01%
Fulvic Acid	0.01%
Humic Acid	0.3%
Fish Emulsion	0.4%
Kelp	0.4%
Molasses	0.4%
Specific Gravity	1.304 kg/L
pH	7.5 - 8.5
Chelation Mechanism	EDTA

Typical Application Rates

Foliar:
2 to 15 L/ha
Horticulture use 200 to 2,000 L/ha water
Broadacre use at least 100 L/ha water

Fertigation:
10 to 80 L/ha

Certified Allowed Input
ACO CERT. NO. 11936

SL TEC FERTILIZERS

Four Key Plant & Soil Microbial Stimulants
Now Organically Certified

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, tieing up phosphorus into forms unavailable to plants, and may build up to toxic levels.

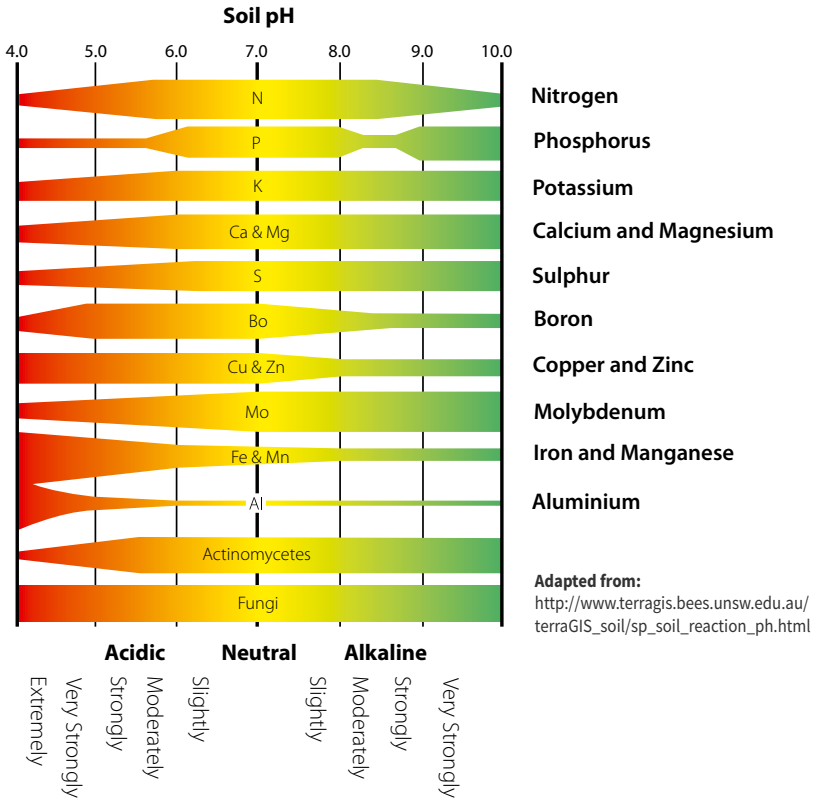
Soil should always be sampled before establishing a new planting. If lime and/or gypsum are required, incorporate it during soil preparation. It is often useful to dig a pit and to sample the subsoil to understand any potential limitations to tree growth further down the profile.

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%).



Adapted from:
http://www.terragis.bees.unsw.edu.au/terraGIS_soil/sp_soil_reaction_ph.html

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)

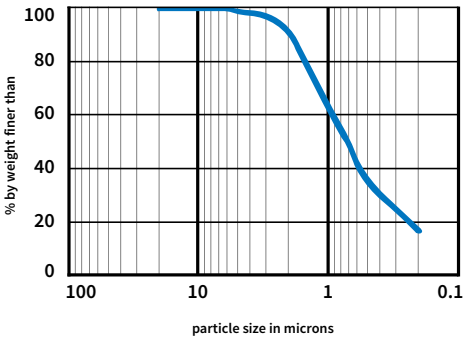
Product Code: SG0037

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 m^2/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%

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