Comparing lime sources in SA

LIME SOURCES

Given the issues with lime supply in recent years, we've had to look further a-field to find quality lime sources. It is important to weigh up the lime quality and with the cost of product and freight, to generate a fair comparison of each lime source in $ per ENV% - see explanation below.

Comparing apples with apples – ENV% (effective neutralising value)

The ENV% is a measure that accounts for the neutralizing power **and** particle size distribution of the lime. Lime sources with a higher percentage of coarser particles have a lower ENV% value and will take longer to change the soil pH. Sometimes the neutralizing value (NV%) will also be reported, but this only looks at the reactiveness of the lime, and doesn't account for lime particle size.

Choosing a lime source

- Higher quality lime sources (ENV greater than 80%) are preferred when tackling severe soil acidity problems, where soil pH is under 5.5 $CaCl_2$. These lime sources will neutralise the soil pH faster than lower ENV% products, and soil pH and crop growth will be noticeably improved within three years. Severe soil acidity problems may extend into the subsoil (10 – 20cm depth), and incorporation may be needed to remediate.
- Lower quality lime sources (ENV below 70%, coarse lime or dolomite), are best used for maintenance or 'top up' lime applications, where the soil pH is closer to neutral around pH 6 $CaCl_2$.
- Whilst the highest quality lime sources are preferred, it may be more economically viable to use a higher rate (over several years) of a lower quality local lime source for maintenance applications. Where soil acidity is severe (under pH 5.5 $CaCl_2$), and a sensitive crop like lentils are grown, then choosing a high-quality lime source is preferred given the yield (and weed control) responses to be gained, in a shorter time frame.

<u>Actions:</u>

- Request a lime quality report each season, as the lime quality changes each year based on quarried area.
- Or conduct your own lime quality test by send a sample to Eurofins APAL: https://www.apal.com.au/LimeDolomiteGypsum.aspx
- Adjust liming rates based on the ENV% of the lime being used, see the table below to account for both ENV% of the lime and soil texture influence:

Table 1: Lime rates* required to increase soil pH by 1 unit, based on soil texture and lime ENV%.

ENV%	Sand	Sandy loam	Loam	Heavy clay loam
50	4.0	6.0	7.0	8.0
60	3.3	5.0	5.8	6.7
70	2.9	4.3	5.0	5.7
80	2.5	3.8	4.4	5.0
85	2.4	3.5	4.1	4.7
90	2.2	3.3	3.9	4.4
95	2.1	3.2	3.7	4.2
100	2.0	3.0	3.5	4.0

* high rates of lime >4t/ha can cause nutritional deficiencies, herbicide interactions, and other issues (snails). Consult with an advisor to tailor rates.

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Lime source cost comparison

The below table can be used to compare lime sources. The comparison displays the approximate cost ($/ha) to increase soil pH by half a unit, assuming a loam soil type, across multiple locations and for multiple lime sources. Freight from the source has been taken into consideration, along with price of the lime, and a spreading cost of $10/T.

Points to note:

- Prices are an indication only, and are based on approximate freight costs, and cost per tonne of lime, which are both subject to change. Prices updated December 2024.
- The ENV% of a lime source can vary, based on quality of the lime pit, and the mining process. This will influence the rate required to increase soil pH.
- In years when lime supply is tight, the best option may be the only option available at the time! Especially where you need to make a start on tackling soil acidity... something is better than nothing!
- The cost of lime ($/ha) should be seen as a long-term capital investment to improve soil and crop growth, with the costs distributed across multiple seasons.

Table 2: Cost ($/ha) to increase soil pH by 0.5, assuming a loam soil type. Lime sources adjusted for ENV%, and additional freight and spreading required for lower ENV% lime. Spreading cost of $10/T used.

	Sealander Angaston	Barossa Quarries	Penrice Angaston	White Hut (Warooka)	Spalding	Kulpara Dolomite Lime	Robe Agricola
ENV %	49	68	80	92	64	74	80
Lime price $/T	$15	$33	$38.90	$25	$15	$28	$26
Balaklava	$172.29	$170.47	$157.81	$151.26	$136.50	$120.32	$197.33
Jamestown	$262.29	$235.32	$212.93	$211.98	$94.39	$184.55	$227.48
Bute	$245.29	$223.07	$202.52	$151.26	$138.03	$105.76	$214.68
Lameroo	$303.29	$264.87	$238.04	$295.60	$338.63	$300.43	$160.65
Loxton	$267.29	$238.93	$215.99	$287.08	$256.70	$278.58	$187.67
Bordertown	$373.29	$315.31	$280.92	$332.88	$392.22	$347.45	$123.40
Palmer	$141.29	$148.13	$138.82	$209.32	$213.83	$191.84	$163.49

Freight cost used: $0.28/km per tonne, and a lower rate of $0.13/km per tonne from Robe Agricola due to the discounted freight rates offered.