

Liquid lime versus dry lime: the final update

Background

Many farmers on Kangaroo Island apply lime to their paddocks to maintain or increase their soil pH. A new product on the market is liquid lime which is being advertised as being faster and more effective than bulk lime. We have put it to the test!

Due to the smaller micron size of partials, liquid lime should react more quickly within the soil profile than dry bulk lime.

Dry lime particles can be up to 1000 microns in size and liquid lime can be around 5 microns. Increases in pH after dry lime applications can take up to twelve months, whereas liquid lime has been advertised as showing results in as little as four weeks.

What was done

In July 2008 a trial plot was established on the Buck property at Gosse to compare the effect of liquid lime and dry lime applications on the pH (Figure 1).

FIGURE 1
Trial plot layout

Liquid lime @ 113 L/ha	Buffer zone	Little Sahara Limesand @ 3.5 t/ha
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The liquid lime was diluted 4 parts water to 1 part liquid lime and was applied by a small spray unit @113 L/ha. The lime sand was applied with a Marshall super spreader the same afternoon at a rate of 3.5 t/ha.

The liquid lime was 48% calcium (Ca) with an effective neutralising value (ENV) of 1.15, whilst local lime sand was 25% Ca and 0.8 ENV. To equate the two products: liquid lime @113

L/ha was approximately 0.195 t/ha of lime with an ENV of 1.0 whilst the lime sand @ 3.5 t/ha was approximately equivalent to 2.8 t/ha of the hypothetical lime with 1.0 ENV.

Soil samples were initially taken at 1, 6 and 18 months post application and have since been taken yearly to monitor changes in pH.

Results

Overall the effect of the liquid lime at 113 L/ha was less than that of 3.5 t/ha lime sand. Whilst the liquid lime was applied at the recommended rate, the ENV calculations indicated that the lime sand was applied at about 14 times more neutralising value than the liquid lime. This probably explains why the liquid lime didn't have a huge effect!

There was an immediate response to lime application in the 0-5 cm layer, the effect of liquid lime being less than that of lime sand (see Figure 2).

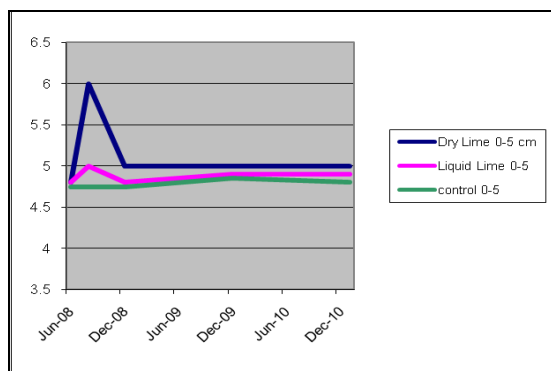
At the 5-10 cm depth, there was no sign of a pH response to liquid lime, but there was a slight response to lime sand. At the 10-15 cm depth, there appeared to be a response to liquid lime. There also appeared to be a smaller initial response to lime sand. However, this persisted for longer than the liquid lime and increased over time

At depths greater than 15 cm there was a smaller early response to the liquid lime and lime sand (see Figure 3). Both sources of lime appeared to be moving down through the soil profile and increasing pH at depth some two and half years later. The lime sand appeared to be slightly more effective than the liquid lime.

Care does need to be taken in the interpretation of data from an un-replicated demonstration site. Whilst the liquid lime was applied according

to manufacturer's specifications it was applied as a less equivalent rate to the lime sand.

FIGURE 2
Liquid lime and dry lime soil ph at 0-5 cm over time



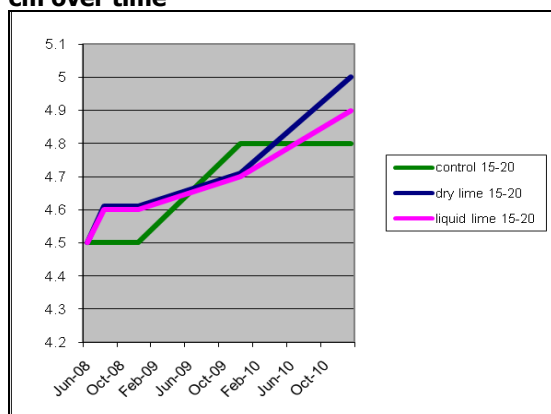
Take home messages

- The effect of the liquid lime was less than the 3.5 t/ha lime sand when applied at 113 L/ha
- In this case the manufacturer's recommendations were possibly insufficient to guarantee a result.

For further information contact

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FIGURE 3
Liquid lime and dry lime soil ph at 15-20 cm over time



Funding/Sponsors

- Ultimate Fertilizers
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