Soil acidity meeting - Waite

Key findings soil acidity and liming projects KI

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Distribution of soils prone to acidity in the Kangaroo Island NRM Region

KI NRM Region: susceptibility to soil acidity

SOIL ACIDITY
- Negligible
- 10 - 30% of soils acidic
- Surface soil only
- Surface and subsoil

SURFACE BUFFERING CAPACITY
- Any
- Moderate to high
- Low

* Includes any susceptible soils, without distinction between surface and subsoil, or buffering capacity.

Not applicable
Lime sand deposits
Soil Testing

- ‘farmer friendly’ soil testing service run through PIRSA for KI Farmers
- 1:1 tech support and interpretation of results to farmers
- monitoring of long term trends

Funders:

- C4OC Community Landcare Grant
- State NRM Community Grant
- DEWNR (RLF role)
Trial Work

30 odd years of trial work

- Increase in dry matter production 700kg per 1 t/ha lime
- Lime increases availability of phosphorus and moly and decreases iron and aluminum
- Lime sand moves through the profile 2-3 cm/yr
- Broadcasts lime takes 5 yrs longer to get to below 10cm cf incorporated lime
- Need 5t/ha to get lift to 20cm (potential Mn issues)
- 6t/ha increased pH by 0.5 unit at 35 - 45 cm depth
- Lime effect lasts 12 – 15 years
- Lime can occasionally burn off freshly germinating pasture
Trial Work

More recent work - Rate of pH change

Funders:
C4OC Community Landcare Grant
Trial Work

Variable rate demo:
• Mapping soil pH through Precision Ag
• $52/ha to lime (lime + freight + spreading + mapping cost)
• 11 ha paddock. Lime total paddock $506 cf lime to mapped pH $125
• Cost saving $34.68/ha (by matching lime application to pH)
Monitoring

Benchmark sites:
• 7 sites monitored every 10 (or so) years since 1985 (pH to depth, key nutrients 0-10cm)
• Un-limed sites show decreasing pH especially at depth
• Limed sites initial pH rise (measured by farmers) then a decr

NRM work:
• Re-monitoring 50 paddocks limed through the KI NRM B on-ground works program
• Application 2.5 - 3t/ha lime sand increased pH by 0.45 units
• Many limed paddocks still at critical values – new recommendation re-test all limed paddocks 2 - 3 years post application of lime

Funders:
• DAFF National Landcare program
• C4OC Community Landcare Grant
Communications

Survey:
• 120 KI farmers
• 82% used lime, average application 2.4t/ha
• 64% undertook soil testing
• 82% sought information from PIRSA/RSSA or local agronomists
• Major barrier – cost and time constraints

Funders:
• C4OC Community Landcare Grant
What have we learnt

• Soil testing helps farmers to know/understand their soil pH, but it needs to be farmer friendly

• Having access to a large data base of soil test data is very handy 😊

• Lime changes the top 0 – 5 cm within 6 months

• Broadcast lime takes up to four years to increase soil pH in the 0 – 10 cm layer

• Sub soil acidity (often combined with Al toxicity) a major constraint to productivity and still no real practical solution…yet

• Variable rate – will pay for itself in areas of high soil variability

• 2.5t/ha will give an increase in pH of 0.4 to 0.5 unit

• Limed paddocks may still be below critical values
Lime sand sales

KI ('000 t)

[Graph showing the Lime sand sales from 1999 to 2014, with fluctuations in the sales data.]

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