

Soil acidity meeting - Waite

Key findings soil acidity and liming projects KI

RURAL
SOLUTIONS SA
PIRSA

Lyn Dohle

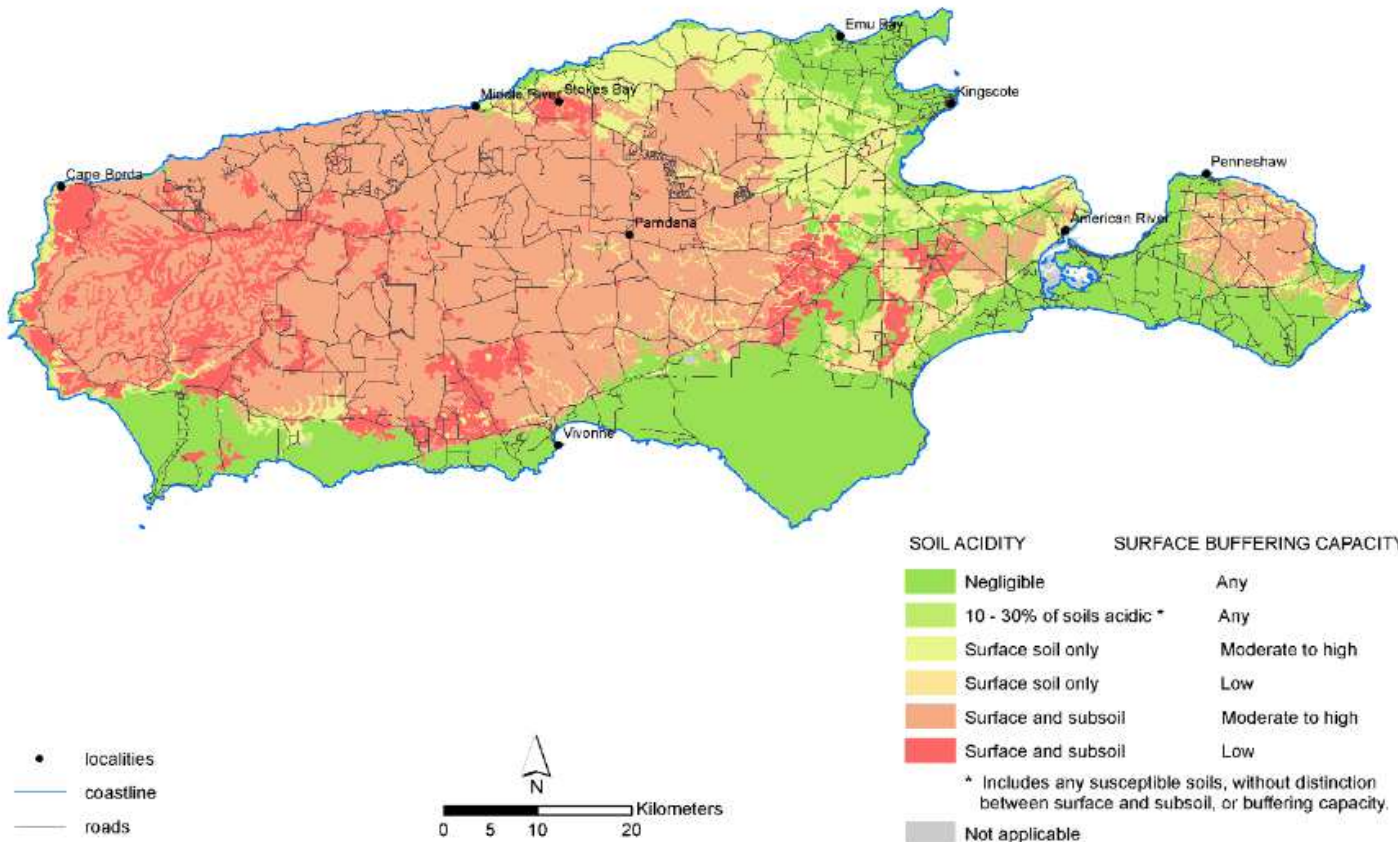
15/06/2015

PREMIUM
FOOD AND WINE FROM OUR
CLEAN
ENVIRONMENT

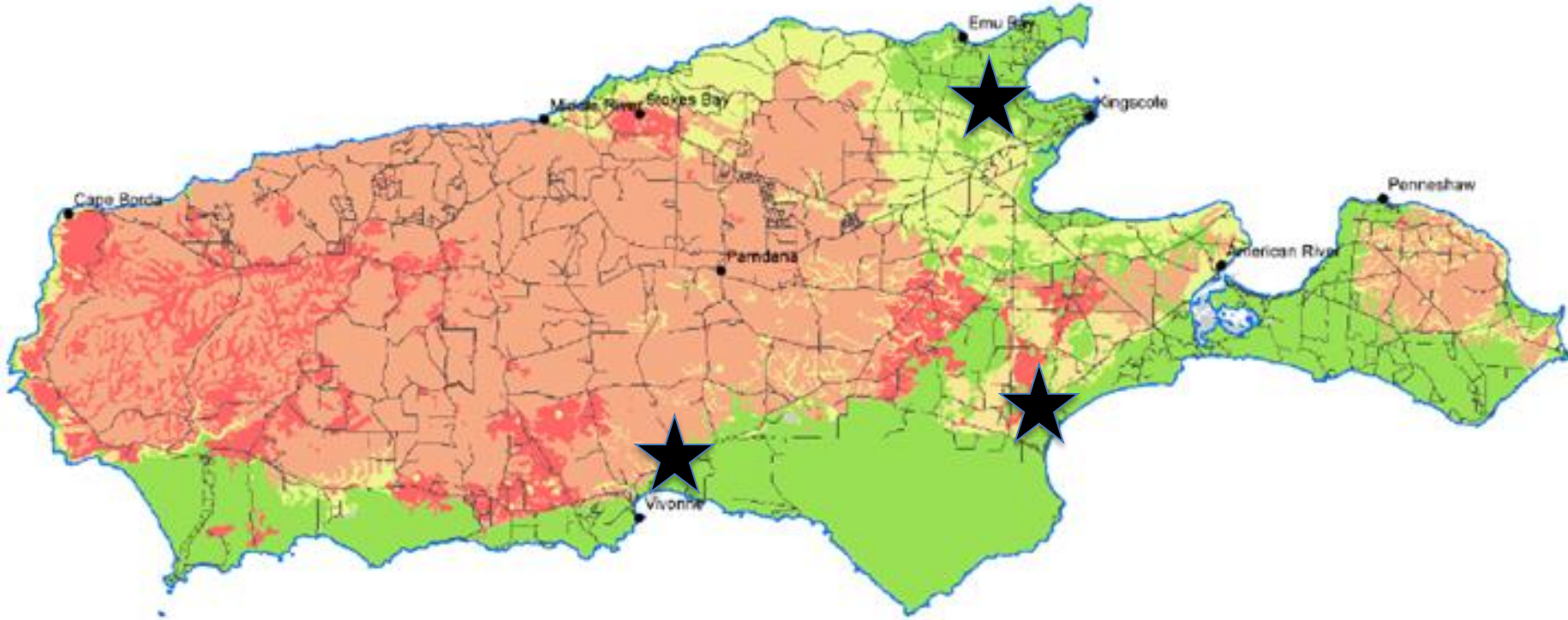


Distribution of soils prone to acidity in the Kangaroo Island NRM Region

KI NRM Region : susceptibility to soil acidity



Lime sand deposits



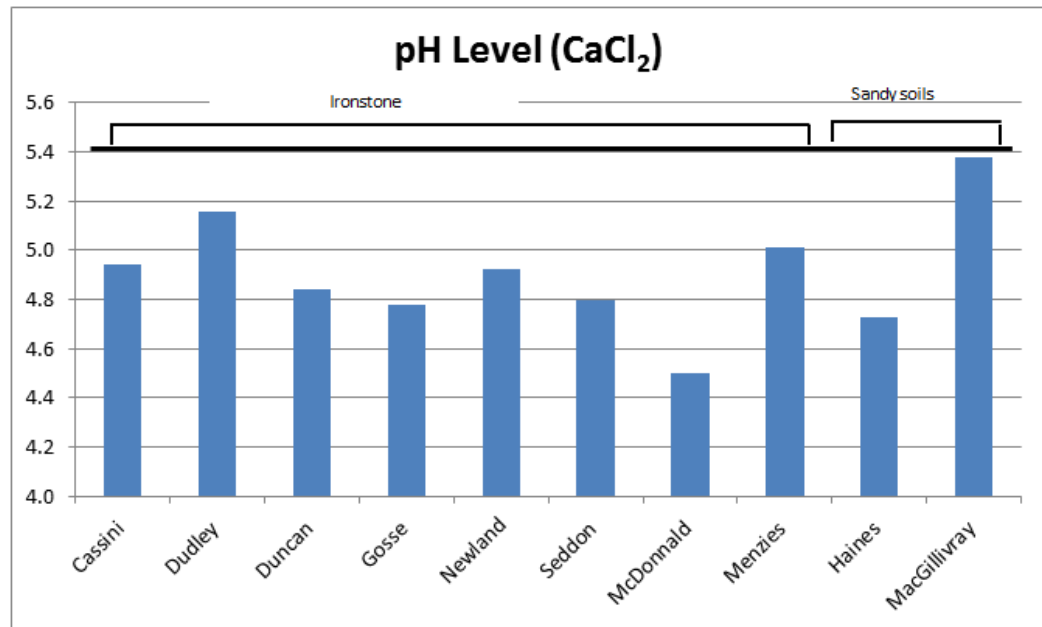


Government of South Australia
Primary Industries and Regions SA

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

FIGURE 1: Average soil $\text{pH}_{(\text{CaCl}_2)}$ results for each hundred during the 2013 - 2014 season. The black line indicates the target $\text{pH}_{(\text{CaCl}_2)}$ level of 5.5.



Funders:

- C40C Community Landcare Grant
- State NRM Community Grant
- DEWNR (RLF role)



Trial Work

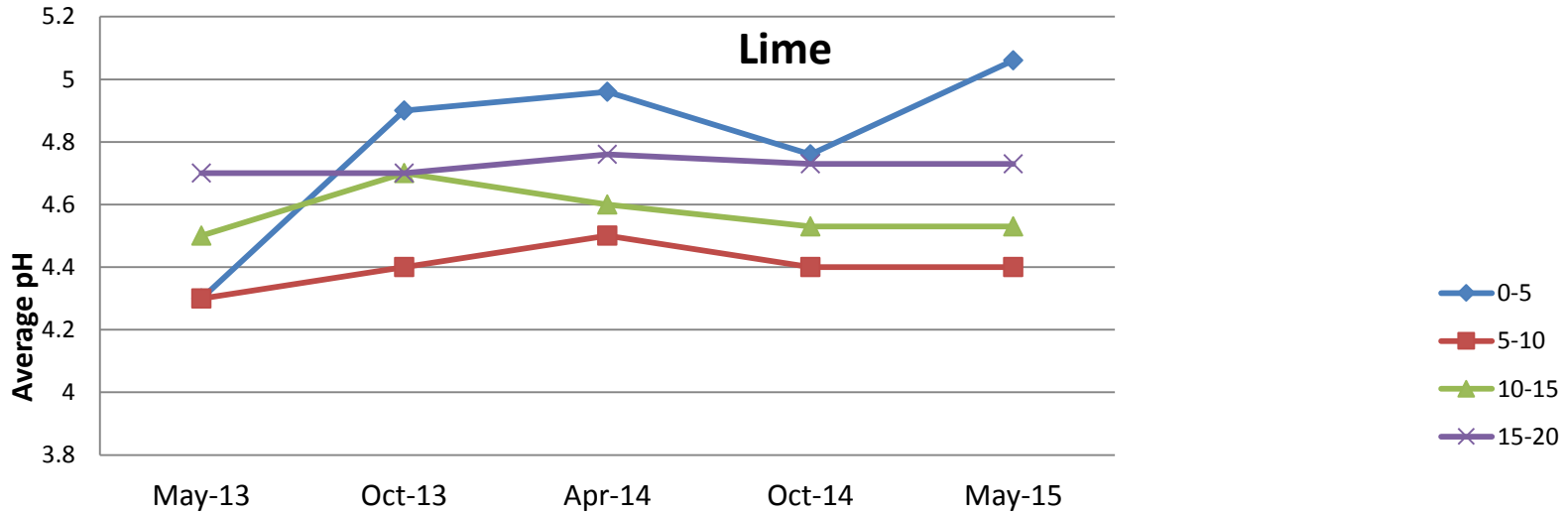
30 odd years of trial work

- 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 of 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



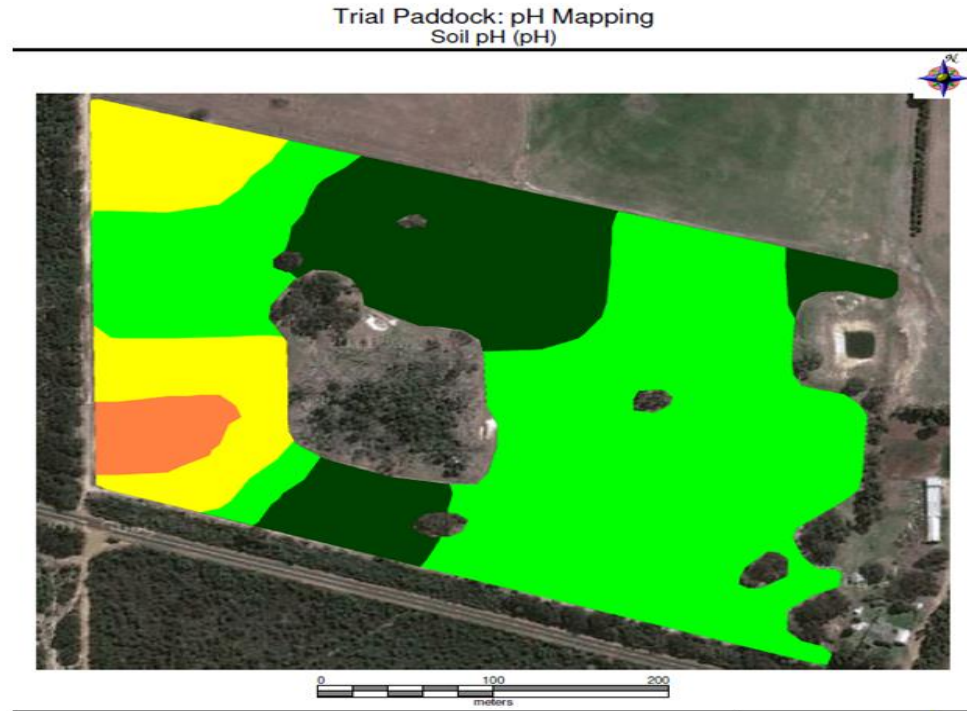
Funders:
C4OC Community Landcare Grant



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)



Client: Dohle, Lyn
Farm: R&A Morris
Paddock: Trial Paddock
Name: trial paddock ph mapping 1h
Type: pH Mapping
Date: 14/10/2013
Min: 5.4 pH
Max: 7.0 pH

■ Above 6.9 pH	0.00 ha
■ 6.5 - 6.9 pH	2.72 ha
■ 6.0 - 6.4 pH	6.85 ha
■ 5.5 - 5.9 pH	1.67 ha
■ 5.4 - 5.4 pH	0.42 ha

precision
agriculture.com.au



Government of South Australia
Primary Industries and Regions SA

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)

