

Historic and Recent Lime Trial Information in SA

RURAL
SOLUTIONS SA
PIRSA



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SOIL ACIDITY AND MANAGEMENT – SUMMARY OF RESPONSES IN CROPPING/LIVESTOCK TO LIME

- Large responses in cropping - up to 40% in some trials
- Particularly in sensitive species such as canola, barley and intolerant varieties of wheat
- Good responses in livestock - up to 30% increases in livestock



Mt Lofty Ranges - PIRSA and CSIRO

| Sites | Soil | pH _{Ca} | Al – Ca Cl ₂ |
|--------------|-----------------|------------------|-------------------------|
| Birdwood | FSL/ brown clay | 4.3 | 2.8 |
| Flaxley | SL/ orange Clay | 4.2 | 4.7 |
| Inman Valley | Thick LS/ C | 4.2 | 1.5 |
| Parawa | SCL/orange C | 4.6 | 4.1 |

Birdwood site on Jim Rathjen's.

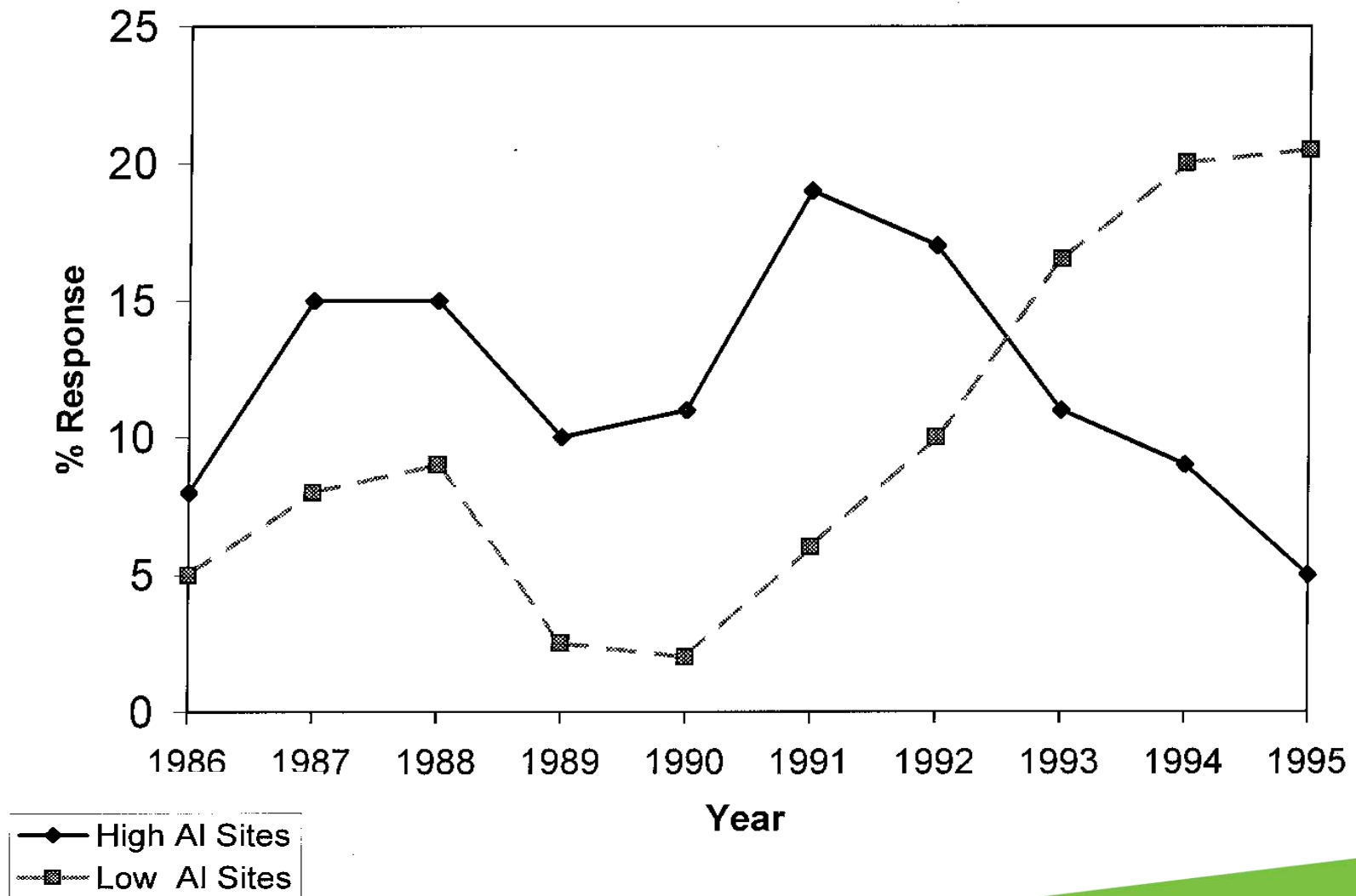
Visual responses were still evident in 2001 on both Birdwood and Inman Valley sites on high lime plots (15 years after)

Responses mostly using clover/ ryegrass pastures which are considered tolerant of acid soils.

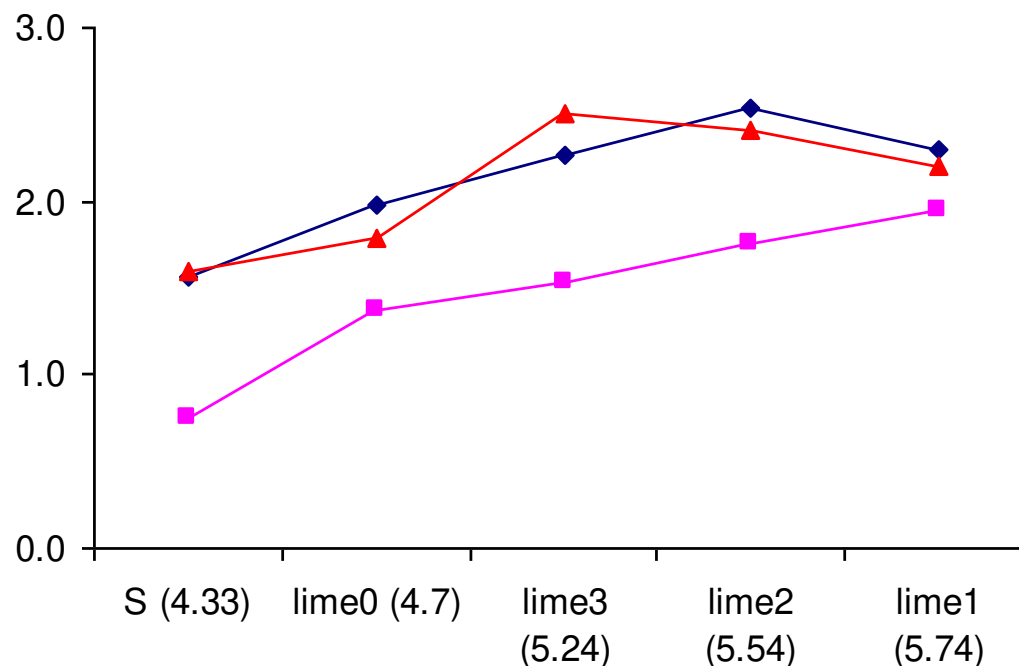
Inman Valley site took 5 years to respond but still evident in 2001, others responded relatively quickly, some Mn issues at Parawa but went away over time.



SOIL ACIDITY AND MANAGEMENT – EARLY SEASON PASTURE RESPONSES MLR



SOIL ACIDITY AND MANAGEMENT – CROP RESPONSES, Lower North, SA, Farhoodi



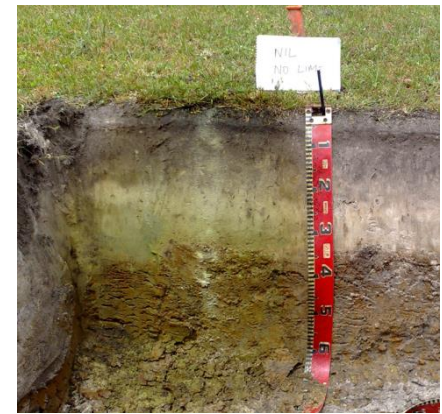
- Yield Wheat (red), Barley (blue), Faba beans (pink)- mean of 2 sites 2000-02,
- 4 t/ha lime 20-40% increases , barley most responsive, original pH 4.7



Fleurieu Trials

Two sites established in 2009

- Sand over clays- glacial valleys
- Intensive dairy- Mulhern- 4.3/4.5/4.7/4.4
- Extensive grazing- Whites- 4.3/4.4/5.2/4.4



Treatments – 6 reps a plus!

Soil modification treatments

Control

Spader only

Delve only

Delve and spaded.

Lime treatments

No Lime

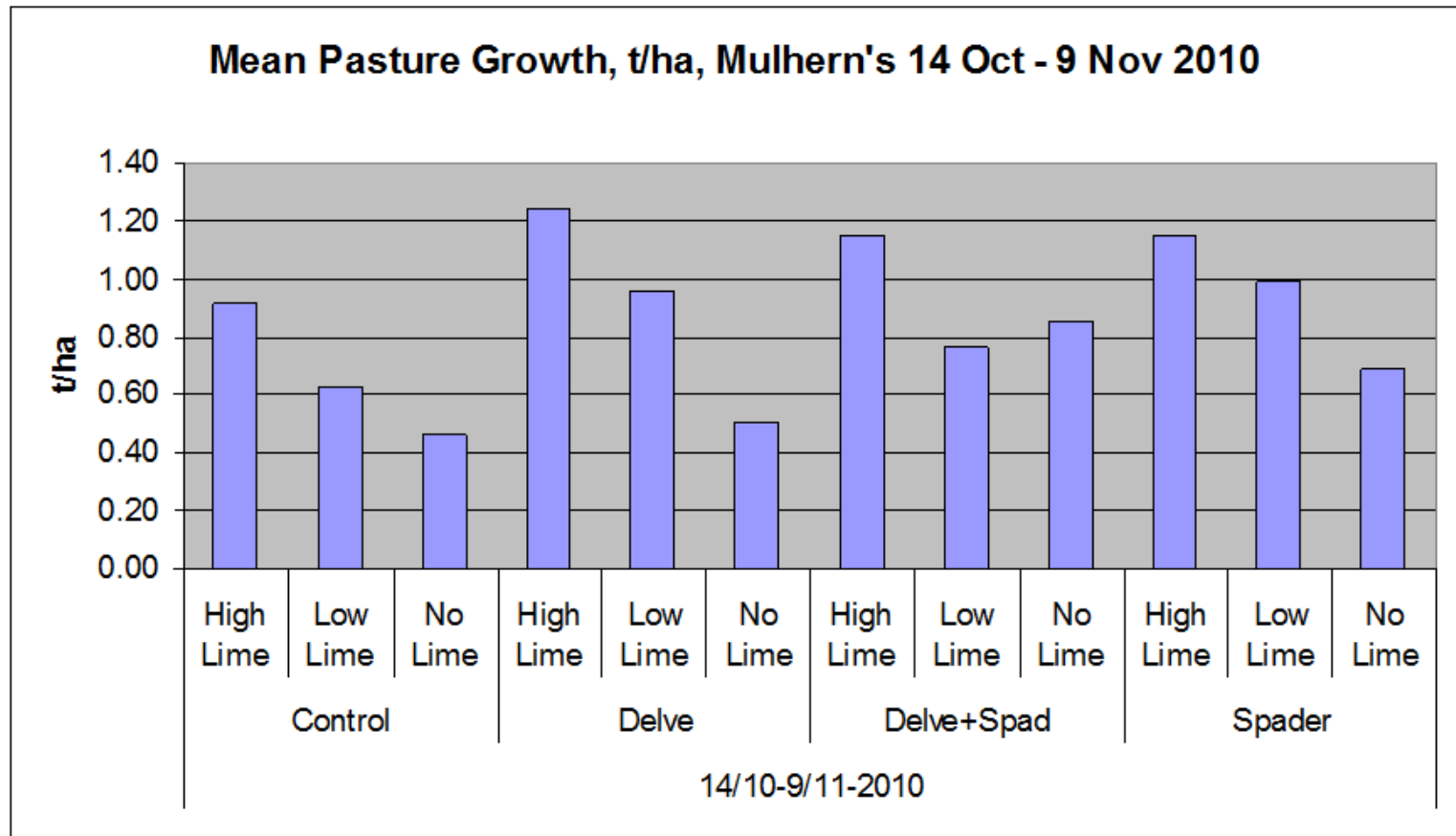
Low rate of lime (2 or 3 t/ha)

High rate of lime (4 or 6 t/ha)



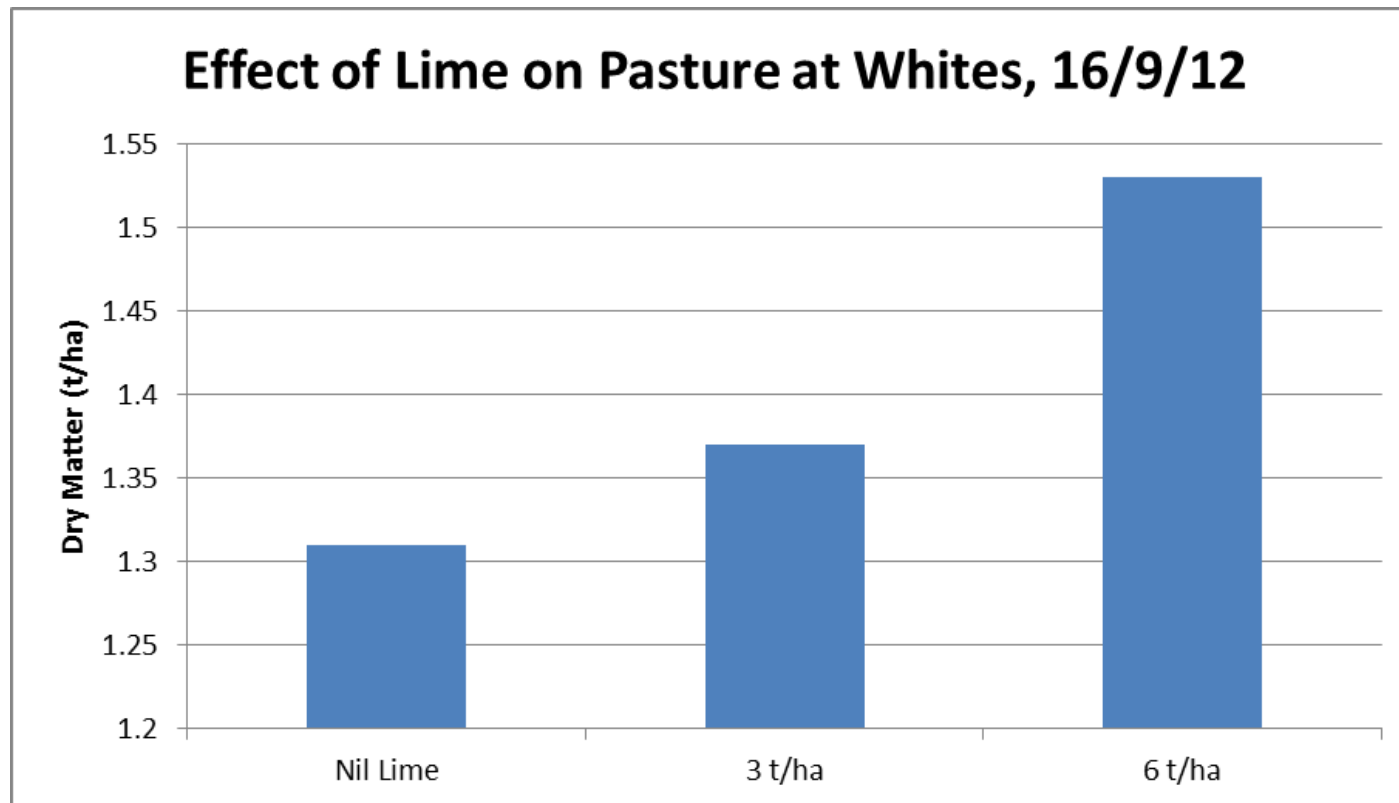
Mulhern's Trial Results

- Good responses to soil modification treatment and liming early but dropped off – lime used quickly by highly productive pasture.
- Site established to fodder rape and renovated after this.



Whites Fleurieu Trial Results

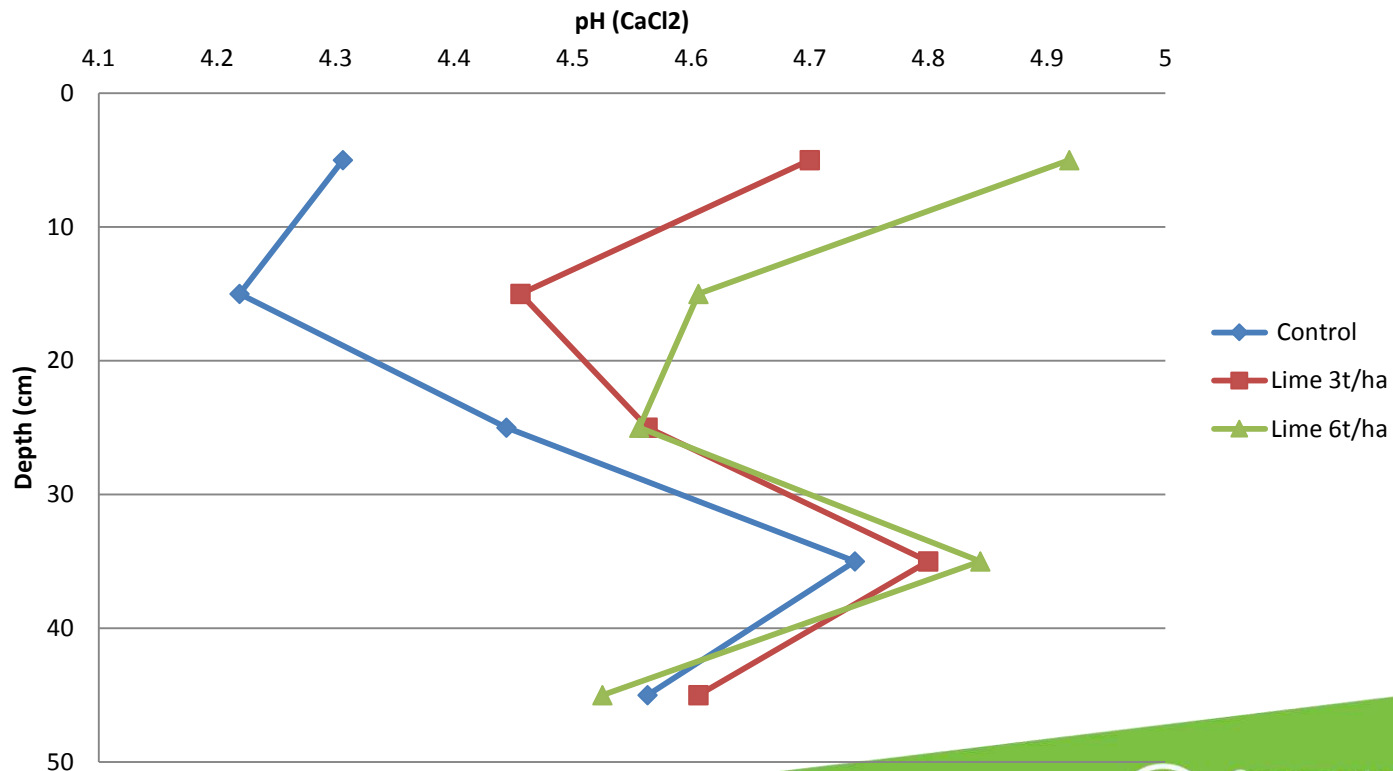
- Very good responses to soil modification treatment early but dropped off
- Lime responses became better at Whites over time



Whites Fleurieu Trial Results

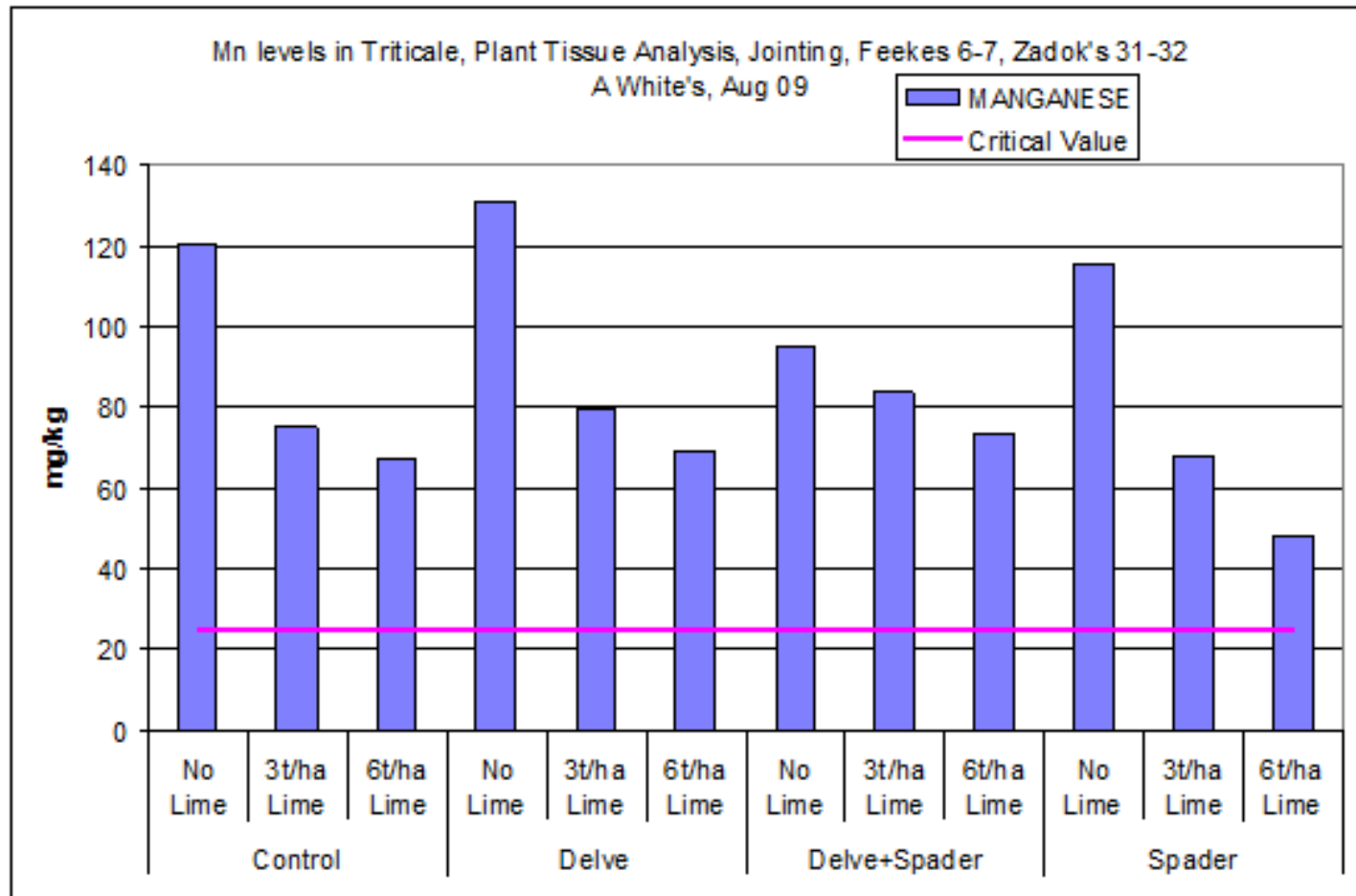
- Soil pH is altered more and to deeper in the profile by higher lime rates

pH(CaCl₂) of White's Trial Plots, June 2013



Effect on plant Manganese

- Avoid over liming on sand as high lime rates can induce manganese issues.



Tungkillo Liming Trials

Background – concerns over loss of Nutrilime and other suitable products, development of subsurface acidity, trialling granulated products and what about low intensity grazing land

Site 1 – Bartsch's- lower intensity grazing pasture. pH_{Ca} 4.3, Al levels 2.3 in the 0-10.

Site 2 - Cameron's- intensively cropped paddock. pH_{Ca} 4.4/4.2, Al levels 5.2/9.1 in the 0-10/10-20 layers.

Supported by NRM - SAMDB



Treatments- L 3t/ha, H 6t/ha, no in-furrow or liquid lime treatments on Bartsch.

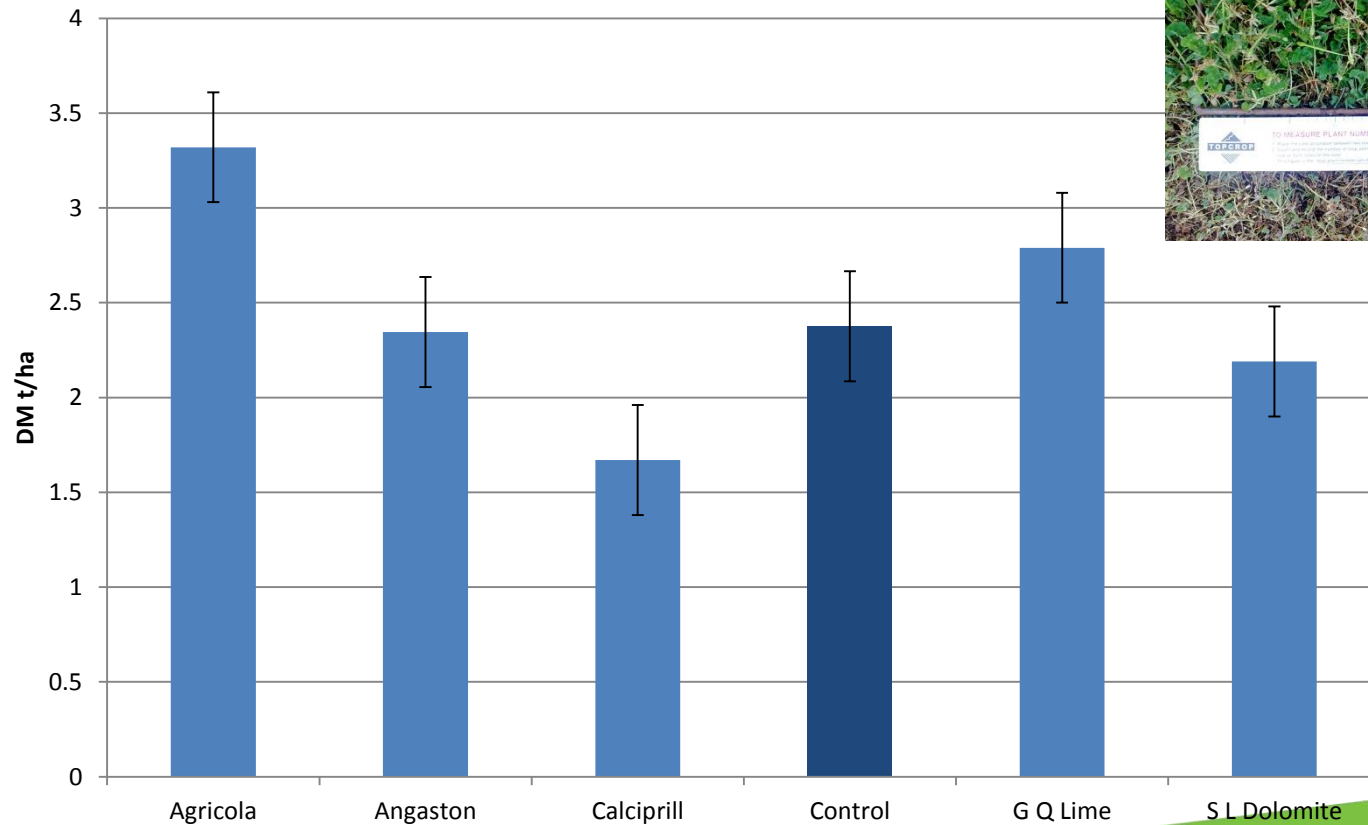
| | | |
|-----------------|---------|---------------------------|
| Control | Control | surface |
| Control | Control | furrow |
| Calciprill | L | surface |
| Calciprill | H | surface |
| Calciprill | L | furrow |
| Calciprill | H | furrow |
| Agricola | L | surface |
| Goolwa Quarries | L | surface |
| Angaston | L | surface |
| Southern Lime | L | surface |
| Agricola | H | surface |
| Goolwa Quarries | H | surface |
| Angaston | H | surface |
| Southern Lime | H | surface |
| Liquid Lime | 50 L/ha | Surface spray (2015 only) |



Dry Matter production – Bartsch 2014

(Low rates of lime - 3 t/ha)

Pasture production Oct 2014 Bartsch



Other lime trials recently set up:

- As with the Tungkillo group, many farmers are looking for new sources of lime, and want to evaluate their effectiveness and value for money.
- There are local lime rate trials at Stockport, Barabba and Koonunga (2014).
- There are lime source trials at St Kitts and Halbury (2014).
- pH at the sites ranges from 4.5 to 4.7, with Al values mostly above 2 ppm (toxic level for plants).
- Yield results are expected this year (2015)



Other lime trials recently set up:

- Another lime trial has been set up at Laura, early in 2015. This is a replicated trial examining the effect of both lime source (4 lime products) and rate (at equivalent NV rates of 3 and 6 t/ha).



Other lime activities:

- Trials and information sharing and gathering is continuing in the South-East, Kangaroo Island and the acidic areas of Eyre Peninsula.



Any questions?

