MEAT & LIVESTOCK AUSTRALIA

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For the latest in red meat R&D

Managing soil acidity

A/Prof Jason Condon

Charles Sturt University

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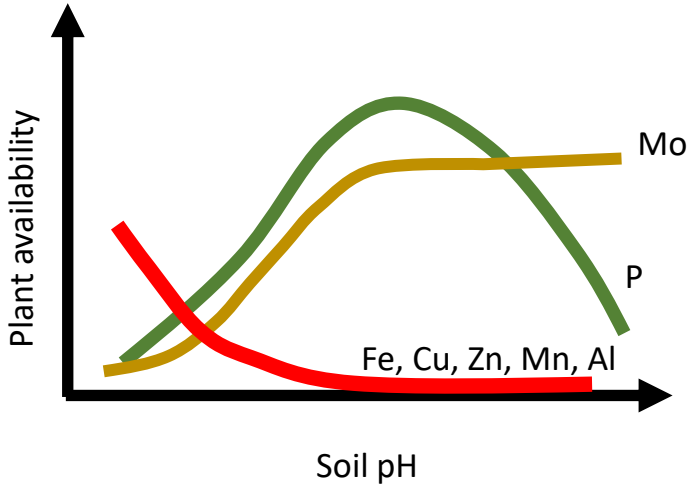
Acidity

Affects plant growth

Nutrient availability



Source: agric.wa.gov.au

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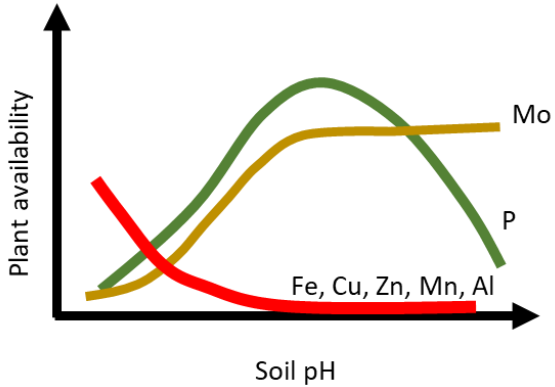
Acidity

Affects plant growth

Nutrient availability

Root growth decreased

Nodulation decreases



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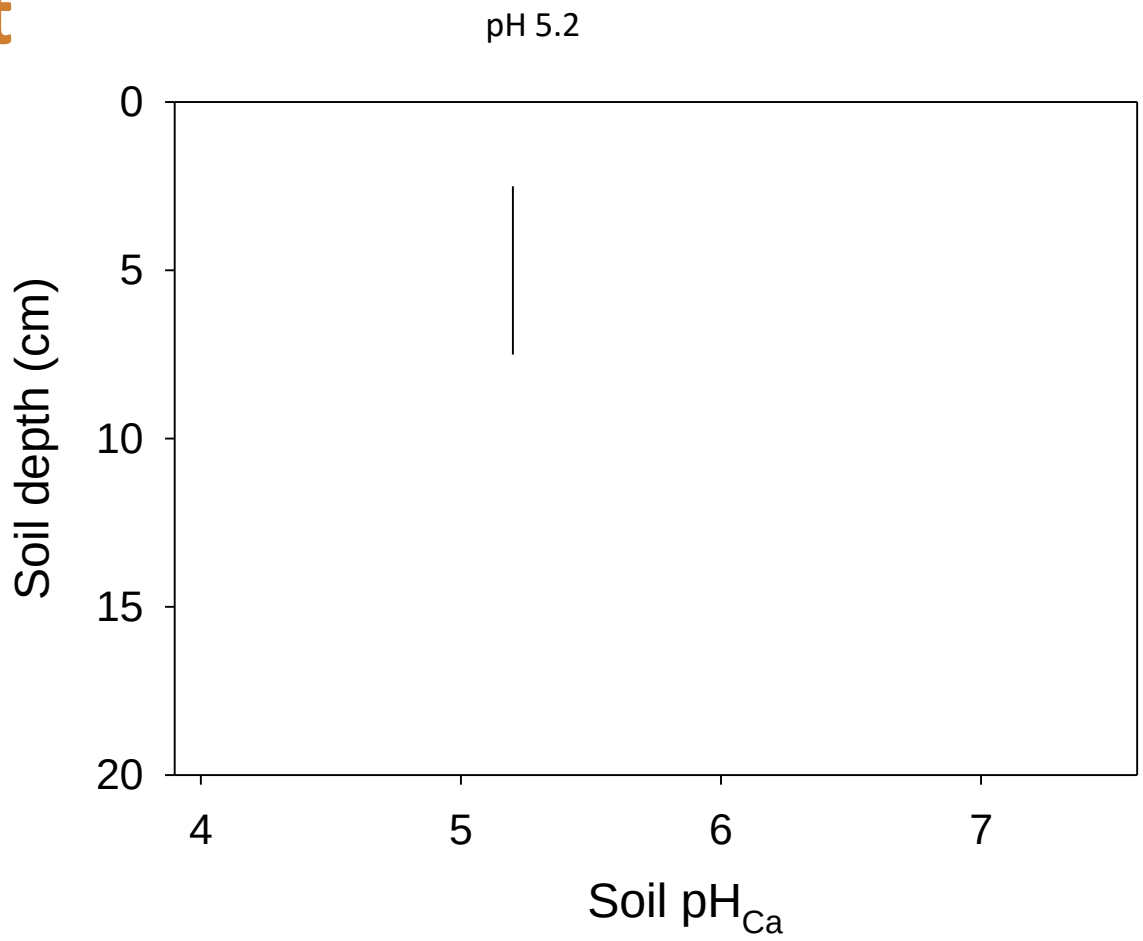
The result



0-10 cm

Lime worked

But did it?

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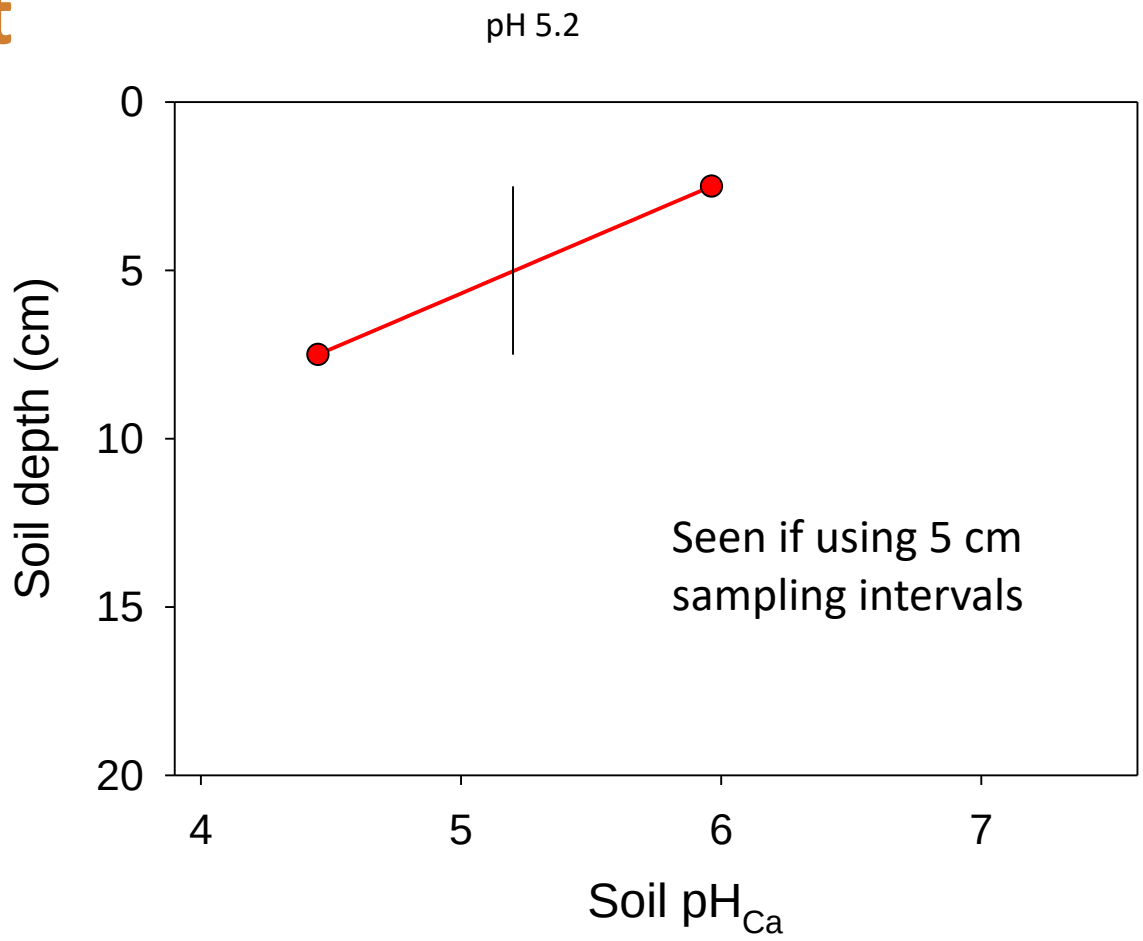
The result



Lime = pH change at the surface only

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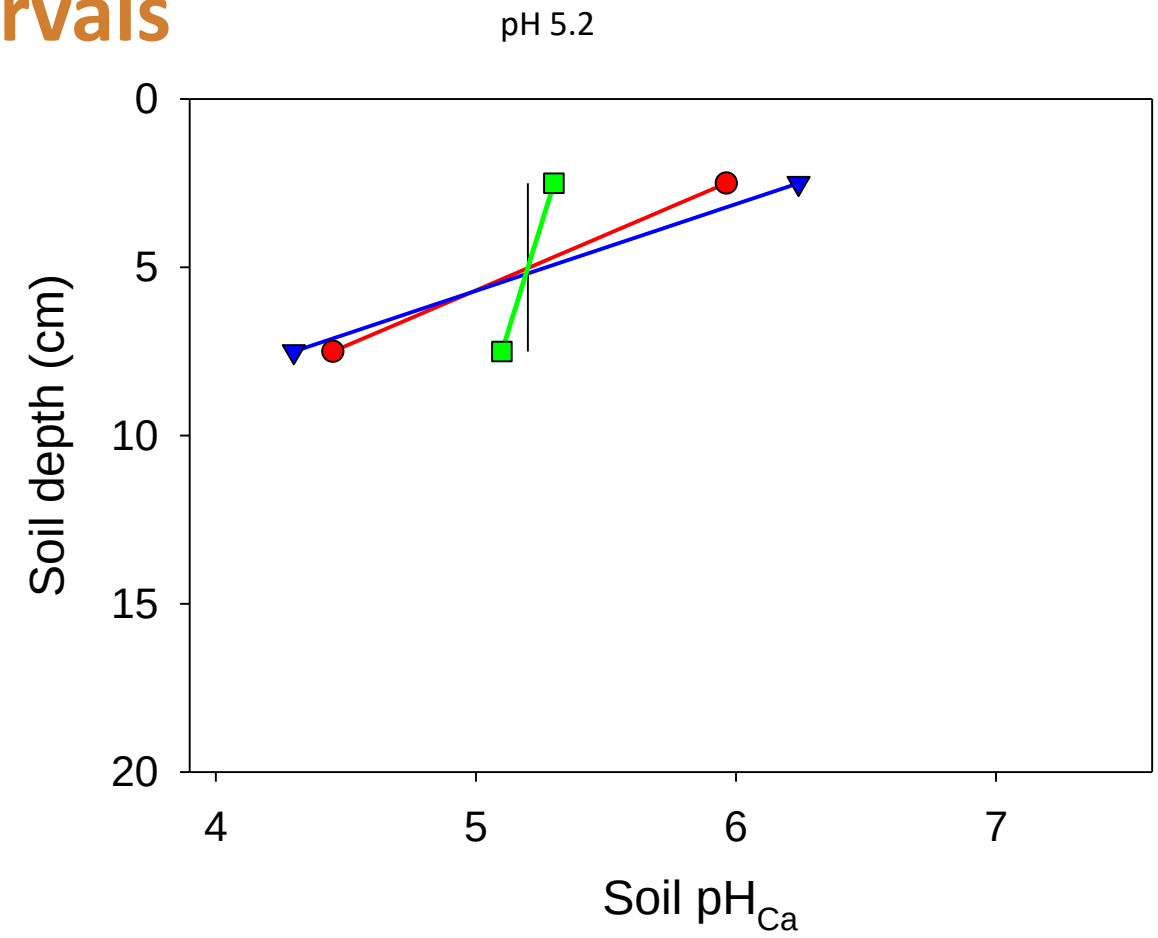
5 cm intervals



Many ways to get the same average

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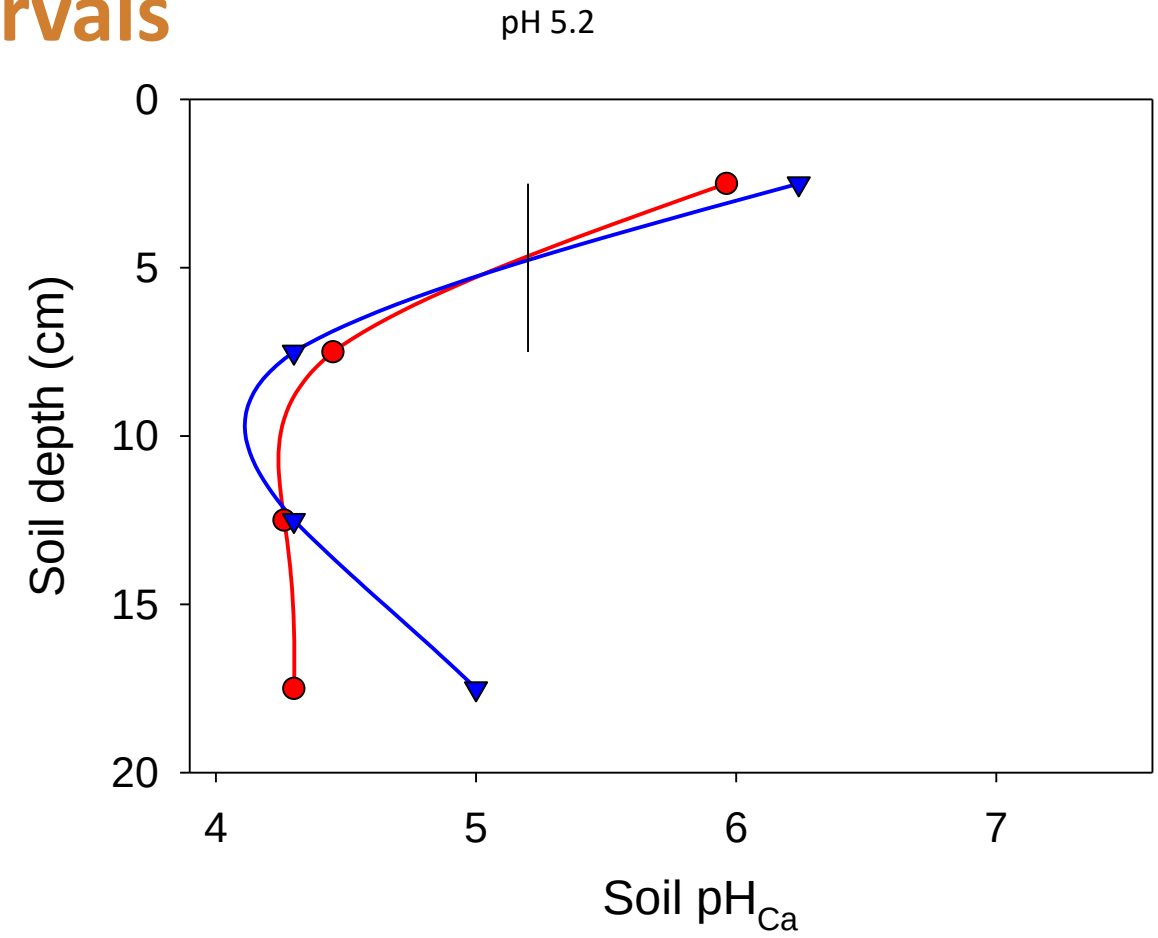
5 cm intervals



Different needs

Different outcomes

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5 cm intervals

Barriers

- Cost

4 layers to 20 cm = $160 inc GST
(soil pH, Colwell P, Cations incl Al^{3+})

- Time

Hand held corer

Multiple cores = 1 cutting

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5 cm intervals

When to use

- Concerned about acidity

Poor pasture performance

Establishing new pasture

- Checking if liming worked

BEFORE sowing sensitive species

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Current research

We have the tools to measure the problem

We also have better tools to manage it

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What's the best way to fix the problem?

Effect of pH target and incorporation – Lyndhurst

	Lime rate (t/ha)	Application
Control	0	
Lime rate targeting pH 5.2	5	Surface or incorp
Lime rate targeting pH 5.8	6	Surface or incorp
Lime rate targeting pH 5.8 (in 0-5 cm surface layer)	3	Surface
'Once-in-a generation' pH 5.8 to 15 cm	7	Incorp

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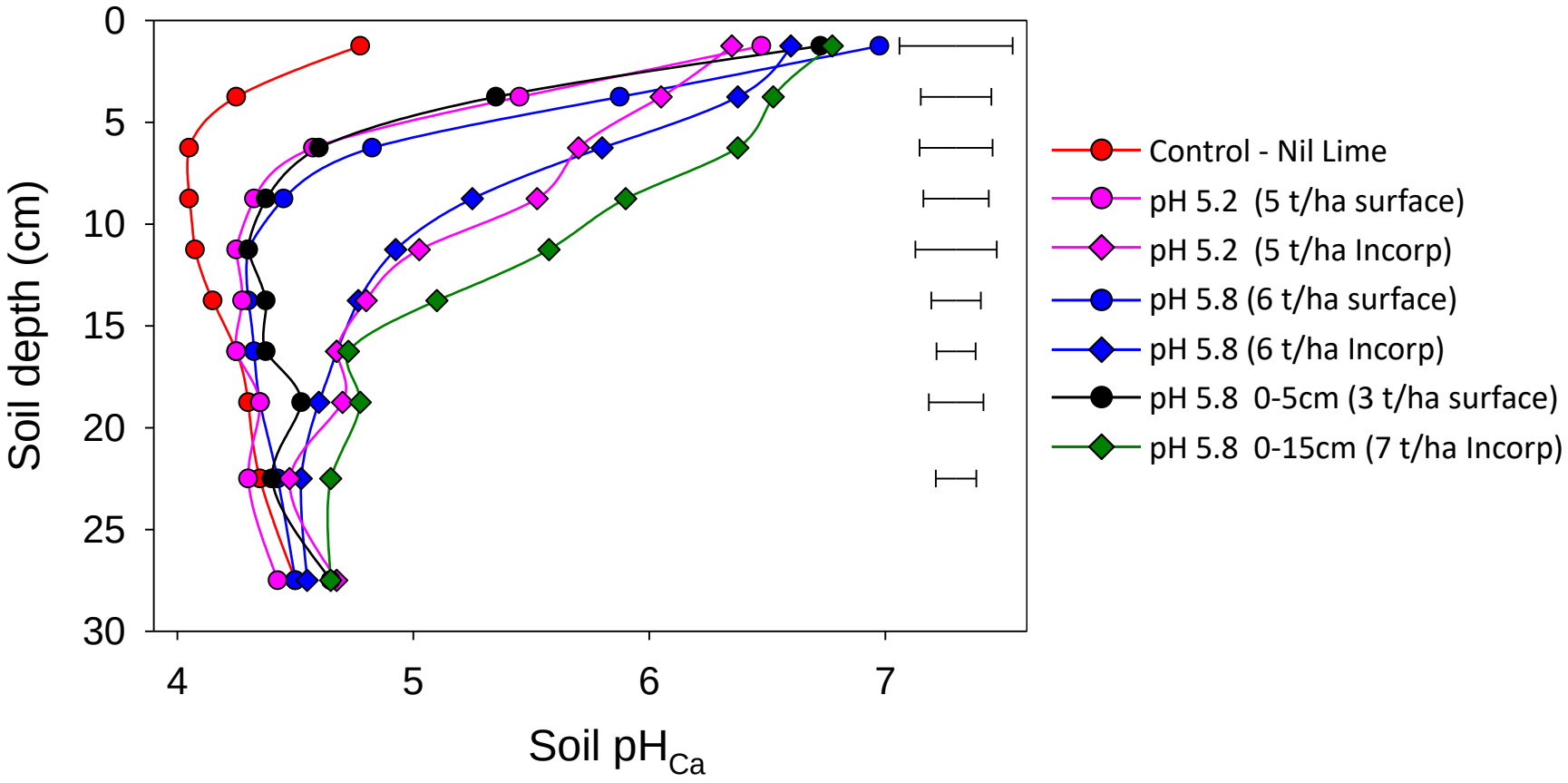
Effect of pH target and incorporation – Lyndhurst

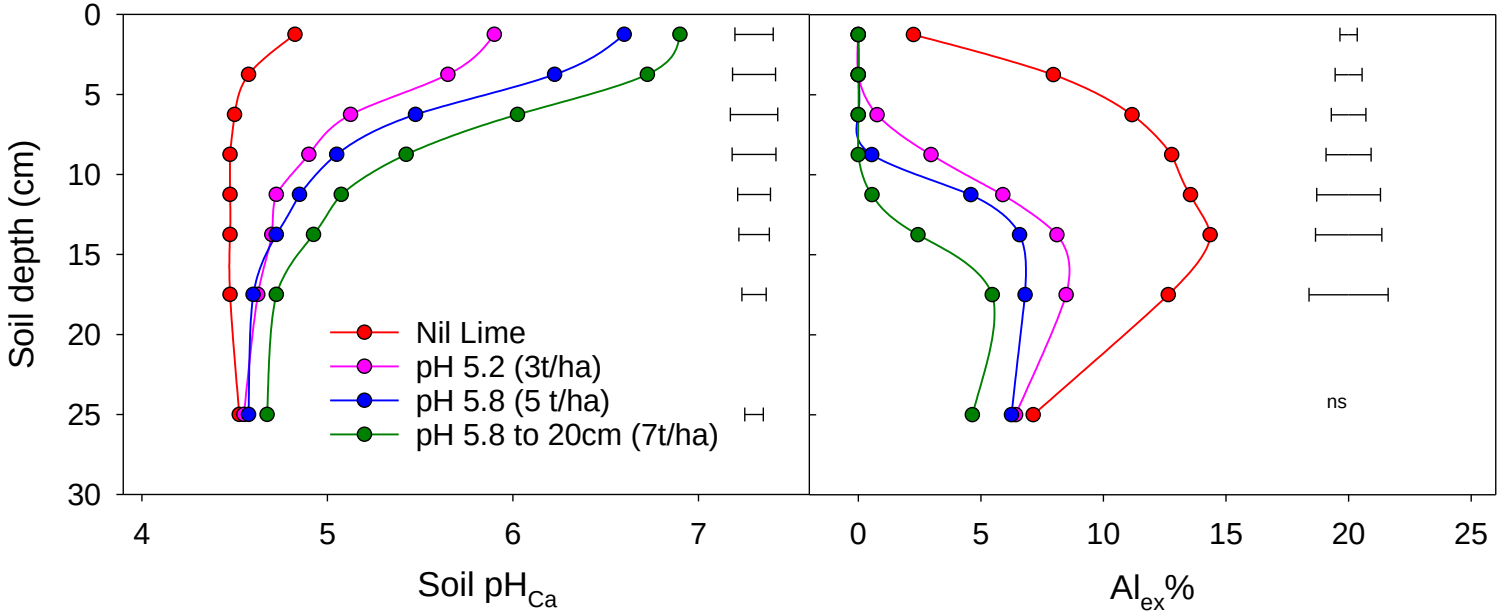



Buffer (nil)
5 t/ha Inc
5 t/ha surface
6 t/ha surface
6 t/ha Inc
Nil
7t/ha Inc
3 t/ha surface

Existing pasture – Mannus HLN PDS

	Lime rate (t/ha)	Application
Control	0	
Lime rate targeting pH 5.2	3	Surface
Lime rate targeting pH 5.8	5	Surface
‘Once-in-a generation’ pH 5.8 to 15 cm	7	Surface

Existing pasture – Mannus HLN PDS



Source: Nick McGrath, Holbrook Landcare Network, MLA PDS

Keep an eye out for

Molybdenum toxicity

- Mo application post liming

pH 5.8 60 g Mo/ha | Control | pH 5.8 60 g Mo /ha

Source: Grace Kaveney CSU

New MLA and DPI investment

High Performing Pasture Mixes on Acid Soils

Using new and existing sites – with new pH targets

- What species and mixes can be grown (including competition, persistence)
- Impact on pasture production and pasture nutrition – (including mineral composition)
- Footprint – northern, central and southern NSW

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Take home messages

- Sampling in 5 cm intervals to 20 cm defines the pH stratification
- Keeping pH_{Ca} >5.5 helps liming effect move deeper…..make pH 5.5 re-liming trigger
- Incorporation gets you a head start – put enough lime on to do the job
- Soil testing is how we check what our actions are doing to our soils

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Thanks to

Helen Burns, Dr Richard Hayes and Anne-Maree Farley (NSW DPI)

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James Holding (FarmLink), Helen McMillan (CWFS), Nick McGrath (HLN)

Anna Van Dugteren, Jenilee Cumberland (ACT NRM)

Many thanks to the advisors and producers that work with us to move forward – especially those that host our trial sites

Tools and resources

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https://holbrooklandcare.org.au/acid-soils-program/

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