Yumali Lime Trial 2020

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3 March 2021 PIRSA

Acknowledgement to Kevin Lucas landholder

Government of South Australia
Primary Industries and Regions SA

SARDI
South Australian Research and Development Institute

GRDC
Grains Research & Development Corporation

The University of Adelaide

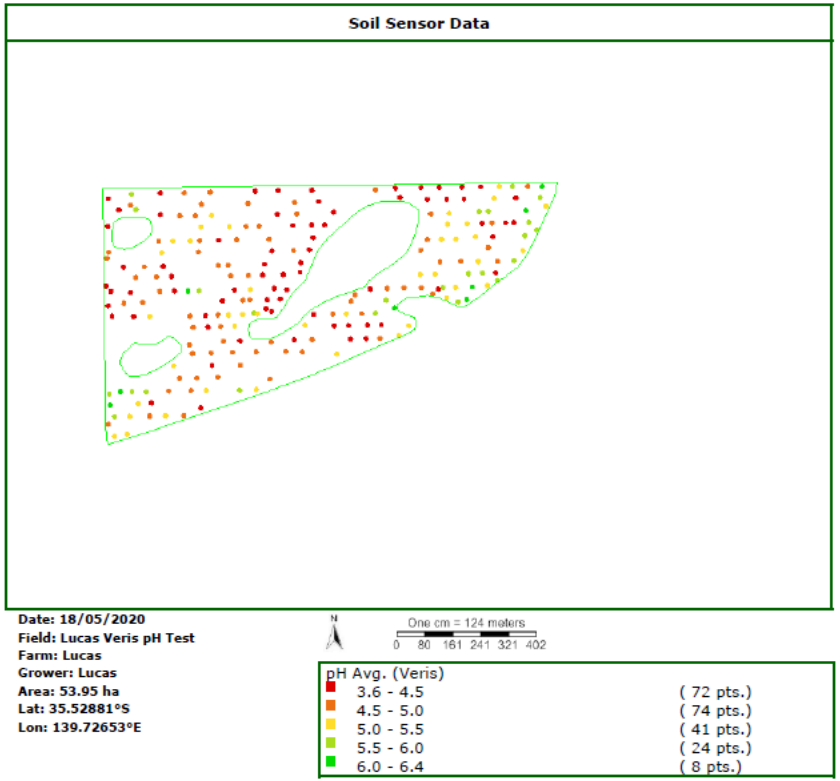
Government of South Australia
Department for Environment and Water

AgCommunicators

Trengove Consulting

Penrice Quarry & Mineral

Yumali Lime Trial 2020- Veris pH map



Yumali Lime Trial 2020

- Established in 2020
- Initial soil pHCa were 0-5cm 5.0, 5-10cm 4.6, 10-15 cm 4.8, 15-25cm 4.8, and 25-40 cm 6.6
- Soil type 40cm sand/clay
- Three lime sources, lime rate, biochar, clay, S, deep rip -30cms
- +/- incorporation by rotary hoe
- 16 treatments, 4 replicates
- Sown to Compass barley by farmer

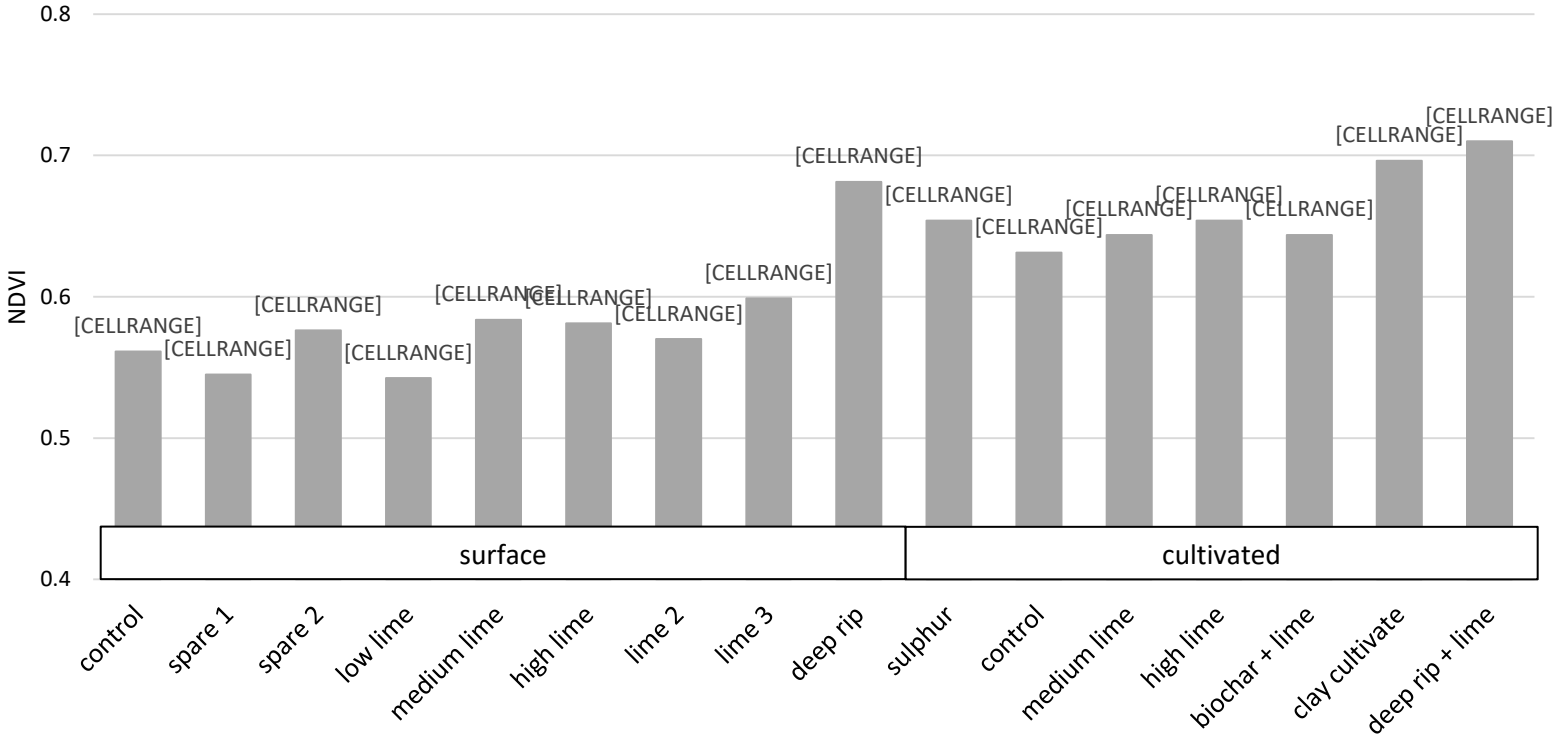
IMPACTS- YUMALI YIELD AND DRY MATTER

Yumali- thick sand over clay, year 1, barley, DM and yield response

Surface lime

Rip/cultivated/lime

Yumali Lime Trial – NDVI Sept



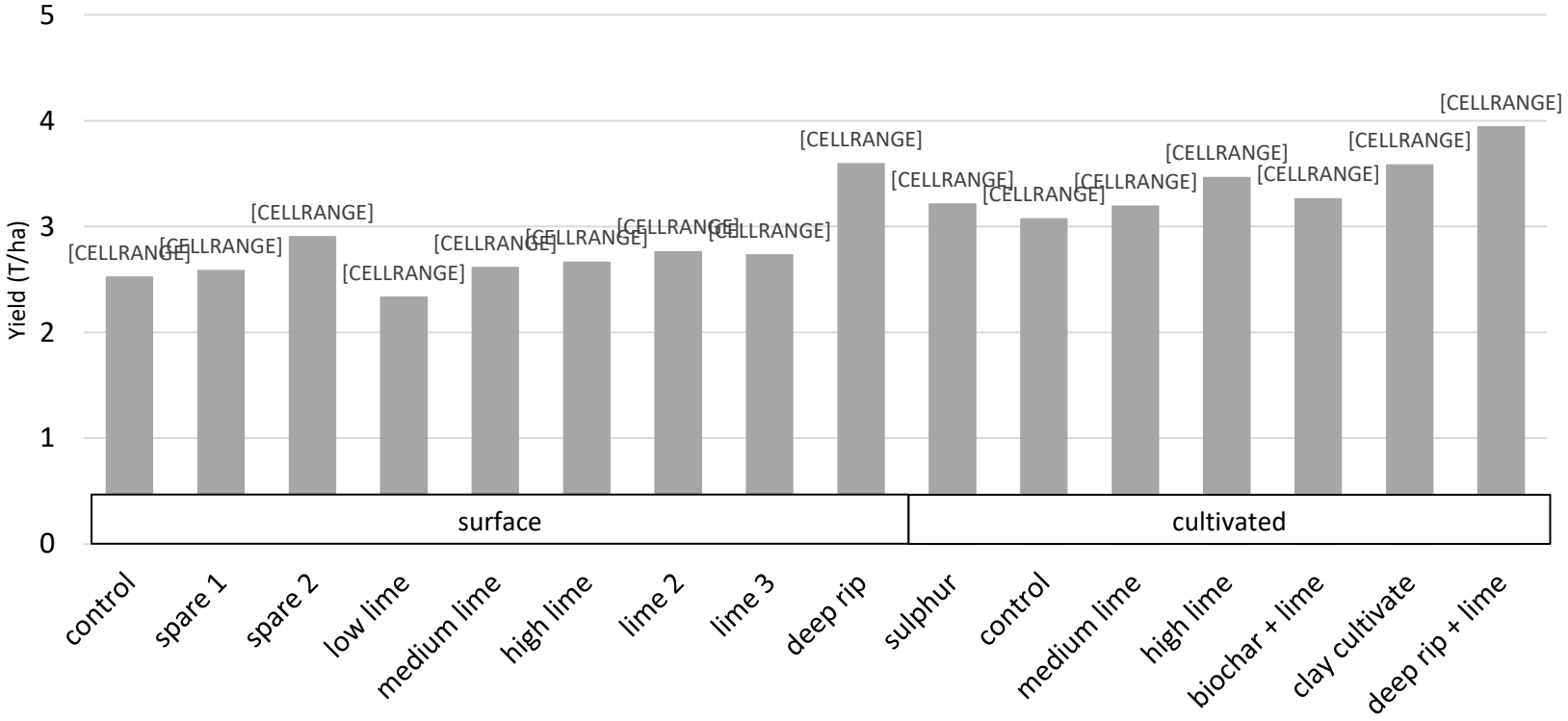
Deep ripping, clay response. Some response to cultivation.

Yumali Lime Trial – Plant Analysis

Treatment	Nitrogen	Phosphorus	Potassium	Calcium	Magnesium	Sodium	Sulfur	Boron	Copper	Zinc	Manganese	Iron	Aluminium	Molybdenum	Chloride
	%	%	%	%	%	%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
3 Deep rip lime and cult	3.86	0.37	2.78	0.41	0.12	0.089	0.26	6.9	3.7	21	24	82	18	0.267	0.92
4 control	3.82	0.35	2.21	0.46	0.13	0.13	0.24	7.3	4.5	28	39	100	20	0.138	0.9
5 high lime cult	3.84	0.35	2.68	0.46	0.13	0.13	0.26	6.3	4	24	28	110	20	0.312	1.2
9 sulphur cult	3.85	0.37	2.63	0.41	0.12	0.078	0.27	6.2	4.1	23	32	93	16	0.141	0.96
10 med lime surf	3.72	0.3	2.01	0.42	0.12	0.15	0.23	5.4	3.9	24	29	94	22	0.173	1
11 med lime cult	3.68	0.36	2.38	0.33	0.11	0.093	0.22	5.2	3.7	22	22	95	16	0.266	0.83
13 biochar lime cult	3.56	0.35	2.6	0.39	0.12	0.11	0.23	6.3	4.2	23	22	98	22	0.252	0.97
14 control cult	3.59	0.37	2.31	0.35	0.12	0.08	0.23	6.1	3.7	23	29	90	22	0.137	0.86
16 clay cult	3.75	0.35	3.16	0.36	0.12	0.057	0.24	7.2	3.6	24	24	120	16	0.311	0.71
Adequate Barley YEB late tillering	3.5-5.4	0.3-0.5	2.4-4.0	0.21-4	0.13-0.3	<0.5	0.15-0.4	5--10	5--50	15-70	25-300			0.1-0.5	<2
	marginally low														
	slightly higher from products applied														

Low K, Mg can be related to acidity. Low Cu often on sand, Mo responded to liming, Mn worse where liming occurred. Note site had Cu, Zn and Mn foliar spray.

Yumali Lime Trial – yield



Apparent response to deep ripping, clay, cultivation, maybe small lime response where cult.

Yumali Lime Trial – Conclusions

- NDVI response to cultivation, deep ripping, clay
- Yield response to cultivation, deep ripping, clay
- Incorporated lime possibly small response which is unusual in first year
- Marginal low nutrients linked to sand, acid and lime application.
- Will be planted to wheat in 2021- looking at more sensitive cultivar the Scepter- (Yipti, Scout??)
- 2 spare plots – could look at 2 new treatment- inclusion plates, spading, whole hog?

Coomandook Ag Bureau Spader, Mouldboard and Organic Matter Trial
Harvest Results 2020 – R Tonkin, B Hughes, B Armour

Government of South Australia
Department of Primary Industries and Regions

3 March 2021

Acknowledgement to Paul Simmons, landholder and SARDI staff involved

LANDSCAPE SOUTH AUSTRALIA MURRAYLANDS AND RIVERLAND

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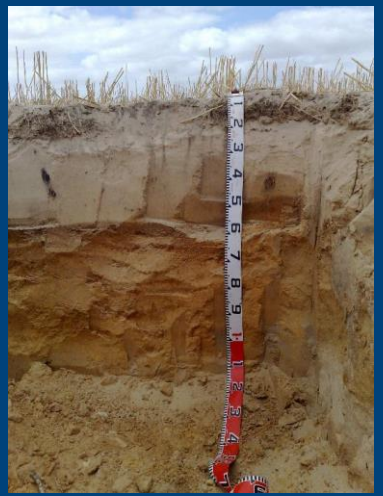


Coomandook Trial – Background

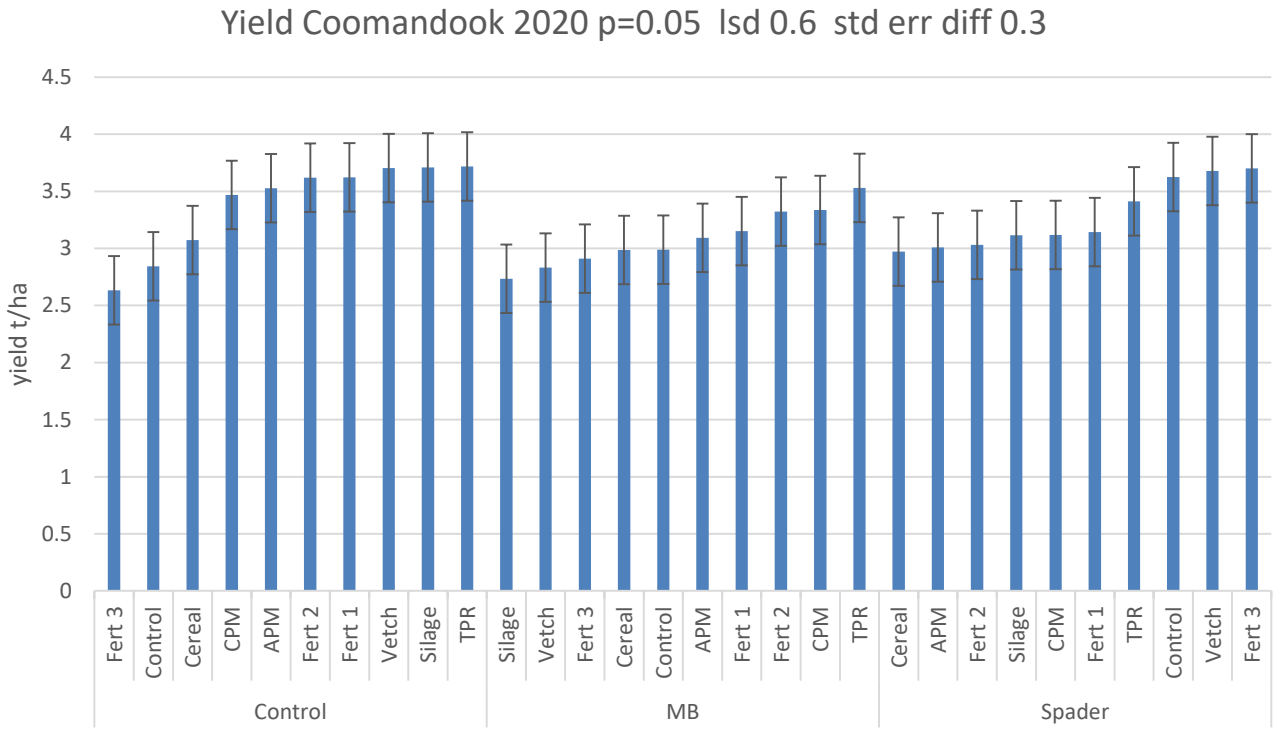
- Established May 2013
- Thick sand over sandy clay in places
- Incorporation treatments
  -mouldboard ploughing, spading, control/ surface
- Amendment treatments
  -Control (nil),
  -Aged Pig Manure (APM) and composted Pig Manure (CPM) at 10 t/ha,
  -cereal straw, triticale silage and vetch hay at 5 t/ha,
  -composted grape marc (TPR) at 20 t/ha, and
  -DAP fertiliser, applied before sowing and then twice at 3 week intervals afterwards giving a total of ~ 50 units of N and P (Fert 2), 25 units (Fert 1) and 12.5 units (Fert 3)

Coomandook Trial – Background

- Monitored 2013-15
- Results showed that the spader had the best effect of the soil modification treatments. Mouldboard ploughing reduced water repellence in the soil, but did not improve productivity as much as spading. TPR grape marc and Composted Pig Manure had the highest yield benefits

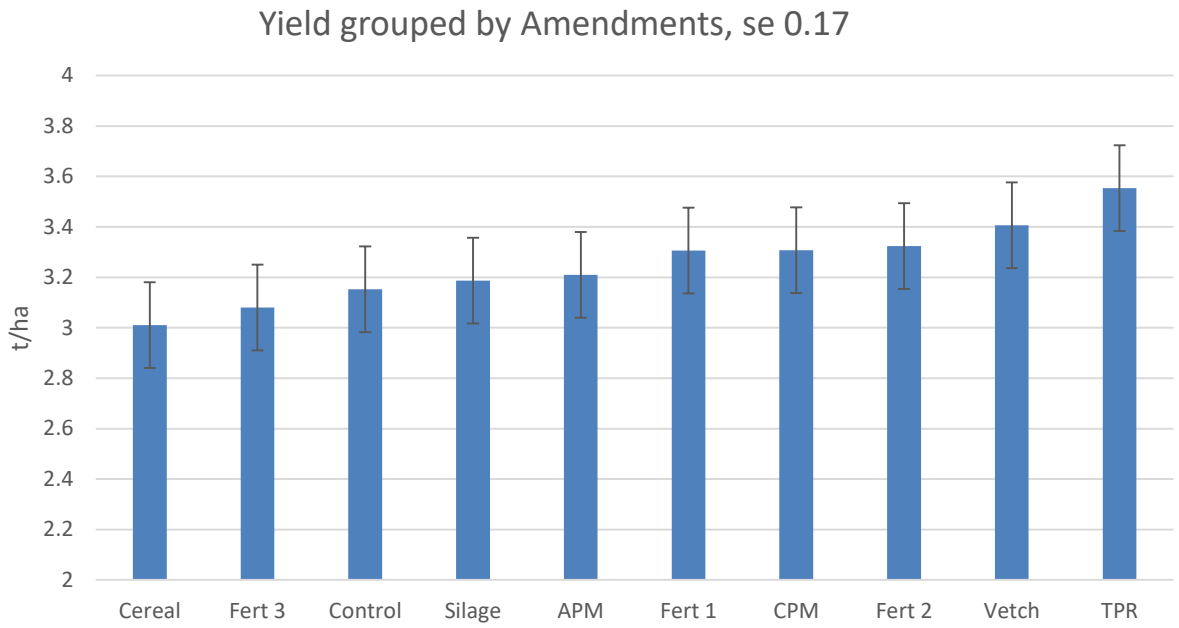
- In 2018 measurements of water repellence at the site showed that the spaded and ploughed plots had lower water repellence and soil strength than the control plots

Coomandook Trial – Yield Assessment 2021



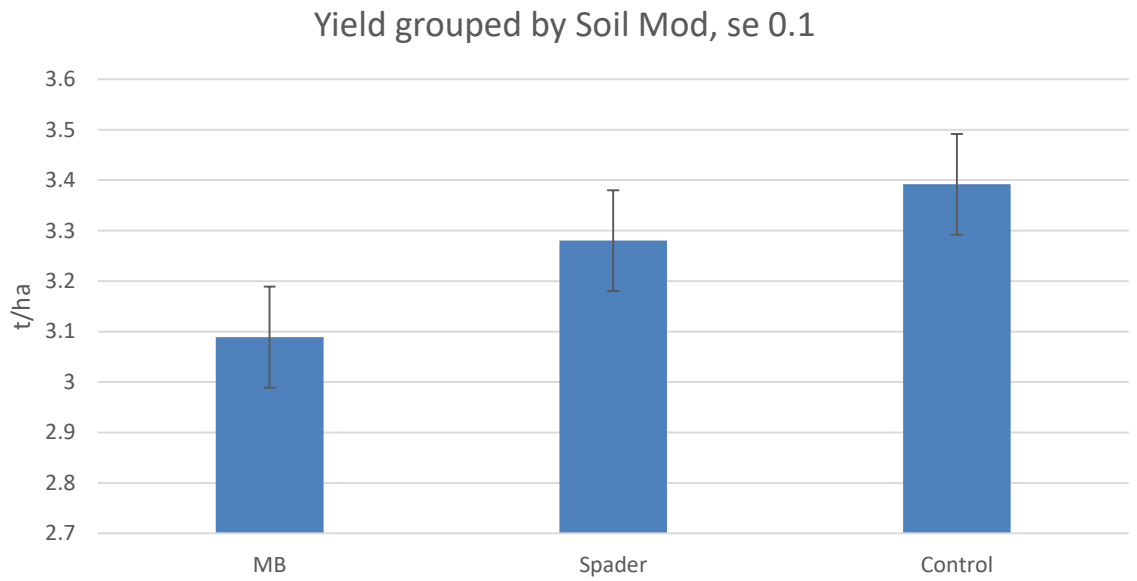
All data order different between treatments

Coomandook Trial – Effect Amendment 2021



TPR (0.4t/ha) and vetch hay (0.25t/ha) best others not much different

Coomandook Trial – Effect Incorporation 2021



surface applied methods was slightly in front of spading (not sig) and significant better than mouldboard plough

Coomandook Trial – Summary 2021

- TPR still responding – high rate, high K content grape marc
- While spading and MB have dropped maybe due to better years earlier and nutritional issues now?

Further work 2021

Intend to analyse soil from some treatments and determine of any changes in carbon, ph and K in particular.