Potassium * Lime

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Purpose: To investigate potassium and lime responses and effects on lime and potassium requirements
Location: Bolgart
Soil Type: Deep grey sand
Rotation: CSBP trial since 2011: 2011-2014 Wheat; 2015 pasture
Growing Season Rainfall (April- October 2015): 364mm

Soil Test Results:

Depth (cm)	pH	EC	OC	Nit N	Amm N	P	PBI	K	S	Ex Ca	Ex Mg	eCEC	Ex Al%	Al
0-10	5.2	0.09	1.1	7	2	12	42	25	6	2.8	0.42	3.5	2	0.9
10-20	4.2	0.02	0.5	1	1	14	38	15	2	0.7	0.14	1.3	27	6.5
20-30	4.2	0.02	0.3	1	1	14	36	17	2	0.3	0.07	0.8	50	9.2
30-40	4.3	0.01	0.2	1	1	8	36	15	2	0.2	0.06	0.7	51	7.7

BACKGROUND SUMMARY

This trial is looking at different amounts of potassium fertiliser as well as lime applications and the long term effects to crop yields.

TRIAL DESIGN

Seeding:	17 May	80 kg/ha La Trobe barley
Fertiliser:	12 Apr	MoP
	30 Jun	140 L/ha Flexi-N (basal)
Pesticides:	27 Apr	1.5 L/ha Roundup, Ester, Treflan, Response, 2.5 L/ha Boxer Gold, 300 ml/ha Lorsban
	8 May	Farmer knockdown + Lorsban
	17 May	1.8 L/ha Ultramax, 2 L/ha Treflan
	30 Jun	700ml/ha Velocity, 1% Hasten,440ml LVE
	12 Aug	300 ml/ha Prosaro, 150 ml/ha alphacypermethrin, 1% oil
Harvest:	29 Nov	

RESULTS/STATISTICS

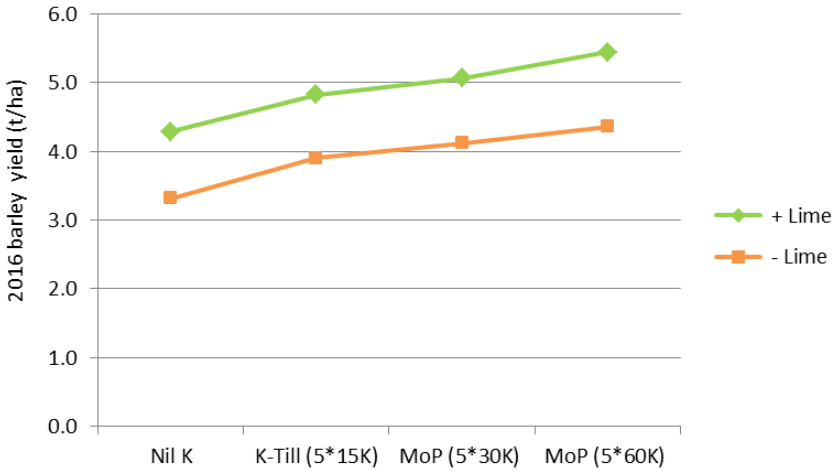
Trt	2011 & 2014 Lime (t/ha)	2011, 2012, 2013, 2014, 2016 IBS (kg/ha)	Banded (L/ha)	Banded (kg/ha)	N	P	K	Harvest Yield (t/ha)
1	-	-	50 FN	120 Agstar Extra	97	17	0	3.32
2	-	-	56 FN	140 K-Till Extra	97	17	15	3.90
3	-	60 MoP	50 FN	120 Agstar Extra	97	17	30	4.12
4	-	120 MoP	50 FN	120 Agstar Extra	97	17	60	4.36
5	3.0 + 2.6	-	50 FN	120 Agstar Extra	97	17	0	4.29
6	3.0 + 2.6	-	56 FN	140 K-Till Extra	97	17	15	4.82
7	3.0 + 2.6	60 MoP	50 FN	120 Agstar Extra	97	17	30	5.06
8	3.0 + 2.6	120 MoP	50 FN	120 Agstar Extra	97	17	60	5.44
						LSD K		0.30***
						LSD Lim		0.21***
						LSD K *Lim		ns

OBSERVATION/ DISCUSSION/ MEASUREMENTS

Barley yields exceeded 5 t/ha with strong responses to lime and potassium fertiliser.

The 1.0 t/ha response to potassium (K) was not as strong as in the previous two wheat crops (1.4 t/ha in 2013 and 2.4 t/ha in 2014). This was probably partly due to better control of ryegrass in plots without K fertiliser compared to previous years.

The response to lime applied in 2011 and 2014 was also 1.0 t/ha. This followed a 0.35 t/ha response in 2014 wheat. Like 2014, lime did not affect response to K.



Compared to topdressing potash, banding K increased early crop vigour, but 140 kg/ha K-Till Extra (15K) did not supply enough K to satisfy demand of the high yield potential.

This trial has highlighted the importance of maintaining K inputs (if required) when undertaking liming programs.

Ongoing responses to lime are likely to increase future demand for K because soil reserves will be depleted at an increasing rate.