In season Potassium response in Barley

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Purpose: Evaluate Lokomotive as an in season foliar potassium source for correcting potassium deficiency and compare to muriate of potash (MOP).
Location: West Midlands Main Trial Site - Moora
Soil Type: Sandplain
Soil Test Results:

Depth (cm)	Colour	pH (CaCl)	EC	OC	N (NO3)	N (NH4)	P (Colwell)	K (Colwell)	S (KCl)
0-10	YWGR	5.5	0.09	0.88	35	3	20	30	4.8
10-30	YWBR	4.8	0.02	0.3	7	0	12	<15	3.5

Rotation: Lupins 2015, Wheat 2014
Growing Season Rainfall (April- October 2015): Main trial site rainfall - Moora

BACKGROUND SUMMARY

Potassium deficiency often goes unnoticed until cereals reach late tillering to early stem elongation, by which time it is difficult to predict if an economic response will be achieved if remedied. Granular products such as Muriate of Potash (MoP) require rainfall to become available and crop response is therefore often delayed. Lokomotive (27% K) is a new foliar potassium product from Loveland Industries that has low leaf burn risk and high foliar uptake and has demonstrated potential for correcting potassium deficiency. The active ingredient is potassium acetate.

TRIAL DESIGN

Plot size:	1.8m x 18m
Machinery use:	Trial plot seeder KPPW
Repetitions:	3
Crop type and varieties used:	LaTrobe Barley
Seeding rates and dates:	70 kg/ha 12th May 2016
Fertilizer rates and dates:	Landmark MES10 80 kg/ha + Urea 80 kg/ha @ sowing. UAN 60 L/ha at tillering. (72N,14P,0K,8S)
Herbicide rates and dates:	Trifluralin 2L/ha + Boxer Gold 2.5 L/ha Velocity 1 L/ha + Liberate 0.5% @ tillering

RESULTS/STATISTICS/ FINANCIAL ANALYSIS

Trt No.	Treatment Name		Rate	Rate Unit	YIELD T-MET		% above UTC	Profit	
1	Untreated				4.17	a			
2	Lokomotive	GS 32	5	l/ha	4.24	a	1.7%	-$	0
3	Lokomotive	GS 32	10	l/ha	4.36	a	4.6%	$	10
4	MOP	GS 32	30	kg/ha	4.39	a	5.3%	$	31
5	MOP	GS 32	60	kg/ha	4.28	a	2.6%	-$	7
LSD (P=.05)					0.203				
CV					2.67				
Treatment Prob(F)					0.2606		NS		

OBSERVATION/ DISCUSSION/ MEASUREMENTS

A trial was established west of Moora in 2016 to investigate in season potassium response in barley. The main objective was to compare Lokomotive, a liquid potassium product, to the more commonly used granular muriate of potash (MoP). Both soil and plant sample analysis showed the site to be marginal/deficient in potassium. Treatments were applied at GS 32. This timing was chosen as potassium deficiency is most commonly identified late in the growing season, when visual symptoms appear, and confidence in an economic response to applications of MoP in the current season is diminishing. At the time of application there were typical potassium leaf deficiency symptoms on the lower leaves.

Good growing conditions were experienced in Moora in 2016 and resulted in high barley yields of 4.17 to 4.39 t/ha. There was a small yield response (1.7% to 5.3%) from both Lokomotive and MoP however this was not significantly different to the untreated control. The small response to potassium in 2016 may be attributed to the wet spring conditions that would have made potassium in the soil more available to the crop. Further evaluation of in season potassium application is required when spring conditions aren't as favorable as 2016.

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