



Developing and testing innovative, practical and reliable methods for incorporating lime into acidic sandplain subsoils

Chris Wilkins & Caz Abbey, WMG

Purpose: To evaluate the effectiveness of two bolt-on attachments to a deep ripping tine at lime incorporation.

Charles Roberts, "Kayanaba", Dandaragan

Soil Type: Wakea, red loamy sand

Soil Test Results:

Soil analyses for adjacent Summit K trial site												
Depth	NH4+	NO3-	P	K	S	Cu	Zn	Org C	pH[Ca]	Al	EC	PBI
0-10	14	2	29	38	6	0.64	0.3	0.69	5.1	0.6	0.04	35
10-20	8	2	19	32	5	0.63	0.15	0.59	4.6	0.3	0.02	44
20-30	3	1	8	32	6	0.31	0.02	0.31	4.5	1.2	0.02	45

Rotation: Canola stubble and burnt windrows. 2014: canola, 2013: wheat, 2012: oats

Growing Season Rainfall (April- October 2015): as for 2015 the WMG field day site

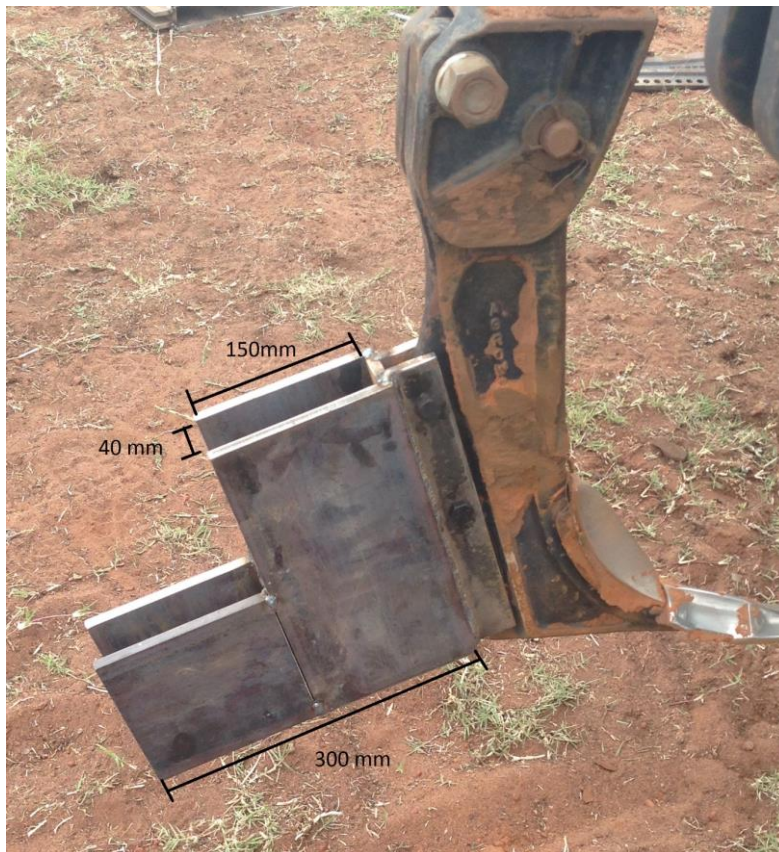
BACKGROUND SUMMARY

The trial was aimed at assessing the effectiveness of simple and cheap 'bolt-on' attachments to deep ripper tines at incorporating topsoil and applied lime into acidic sandplain subsoils.

TRIAL DESIGN

		Plot number			
	Treatments	Rep 1	Rep 2	Rep 3	Rep 4
1	Nil	1	8	12	20
2	Deep rip - single tine. 350 mm depth	2	6	11	16
3	Deep rip with wings / sweep point just below surface (peanut cutter)	3	7	13	19
4	Deep rip with "long bottom boot"	4	9	15	17
5	Deep rip with "long bottom boot", positioned 2cm deeper	5	10	14	18

Figure 1: “Long Bottom Boot” attachment, as used by WMG in the 2015 trial



Seeding rates and dates: Sown on 25 May with Mace wheat at 100kg/ha. 80 kg/ha of MAXamRITE and 50 litres/ha of MAXamFLO applied at seeding. 100kg NKS applied in late June.

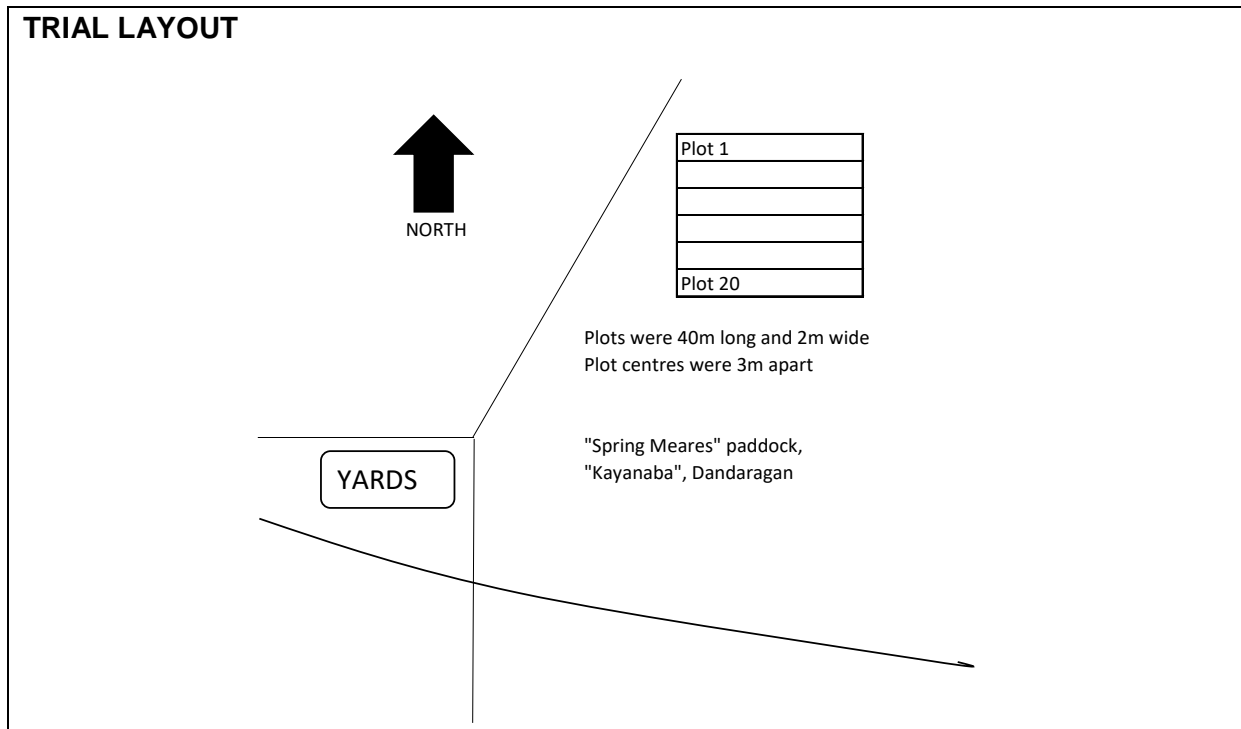
The trial was seeded by Charles Roberts as he seeded the remainder of the paddock.

Herbicide rates and dates:

Knockdown (pre seeding)	Seeding 25th May	Post seeding	Post seeding
80L Water Rate	80L Water rate	100L Water rate	300mL Tebuconazole
0.4L 2,4-D ester 680	2L trifluralin 480	0.8L 2,4-D ester 680	Alpha Cyper 125mL
1.8L Roundup 570	1L Sprayseed 300ml chlorpyrifos	10g Logran 50g Lontrel	Wetter 1000 0.2%

Other applications/ treatment rates and dates:

Plots were ripped on Tuesday 28 April 2015, using DAFWA’s experimental ripper towed by a Fastrac tractor provided by AFGRI Moora. The soil was dry for the top 7.5cm, wet underneath.



RESULTS/STATISTICS

Plant establishment counts were collected on 22 July 2015. There was large plot-to-plot variation, due to the site being non-wetting. There were no significant differences between treatments.

Treatment		plants / m2
1	Nil	155
2	Deep rip - single tine. 350 mm depth	157
3	Deep rip with wings / sweep point just below surface (peanut cutter)	160
4	Deep rip with "long bottom boot"	153
5	Deep rip with "long bottom boot", positioned 2cm deeper	153

Soil test results are not yet available.

OBSERVATION/ DISCUSSION/ MEASUREMENTS

The Long Bottom Boots functioned reasonably well at first, but tended to plug with soil from underneath after multiple passes and on finer textured soil to the south of the trial area.

We think that a design that was wider at the back (60 – 80 mm) and therefore more open would improve soil flow down the boot, and reduce the risk of plugging.

PEER REVIEW/REVIEW

Bill Bowden

ACKNOWLEDGEMENTS/ THANKS

DAFWA Merredin (Glen Reithmuller) for the use of the ripper, AFGRI Moora for use of the Fastrac Tractor, and Charles Roberts for land and crop husbandry.