



Department of
Agriculture and Food



GRDC Grains Research &
Development Corporation
Your GRDC working with you

Long term row spacing trials and stubble retention and implications for future development of varieties

Glen Riethmuller, Caroline Peek
and David Bowran, DAFWA

25 Feb 2013



Key messages

- Retaining stubble increased the yield of wheat in 15 seasons by an average of 5.7% over burning on a sandy clay loam at Merredin.
- Wheat yield decreased by an average of 1% per inch that row spacing increased from 7".
- Lower tillering lines may be useful in future for dry environments.



Trial details: Started 1987 at Merredin Research
Station on a red sandy clay loam

Treatments: 2 stubble levels, burnt and retained
4 row spacings, 9 cm (3.5"), 18 cm (7"),
27 cm (10.5"), 36 cm (14")

Row orientation: 21 degrees west of north

Randomised block with six replications

Each year the same treatment is applied to the same
plot.



Trial details for 2013:

Sown: 28 May 97 kg/ha Mace pickled with
25 g/L tebuconazole 4 g/L triflumuron
(Raxil®), (29 May 27 cm row spacing)

Fertiliser: None, soil P 43 ppm

Sprays: 13 May 2.0 L/ha glyphosate
28 May 2.0 L/ha Spray.Seed®
+ 118 g/ha Sakura®



2013 Rainfall Merredin Research Station (mm)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2013	59.8	2.0	52.4	11.2	42.6	9.4	34.0	43.8	46.0	17.4	6.2	1.0	325.8
1911- 2013 Mean*	15.5	15.1	20.2	21.5	37.5	48.6	47.4	37.5	23.5	16.8	14.6	14.1	311.6

*www.bom.gov.au/climate/averages/tables/cw_010093.shtml



Sown 28 May 2013 with autosteer (for the first time)





Ring harrows behind press wheels to reduce soil crusting



Stubble retained (left) and burnt (right), 27cm row spacing, 5 August 2013



9cm (3.5") row spacing, 2 September 2013



18cm (7") row spacing, 2 September 2013



27cm (10.5") row spacing, 2 September 2013



36cm (14") row spacing, 2 September 2013



Hump between 27cm rows, 5 August 2013



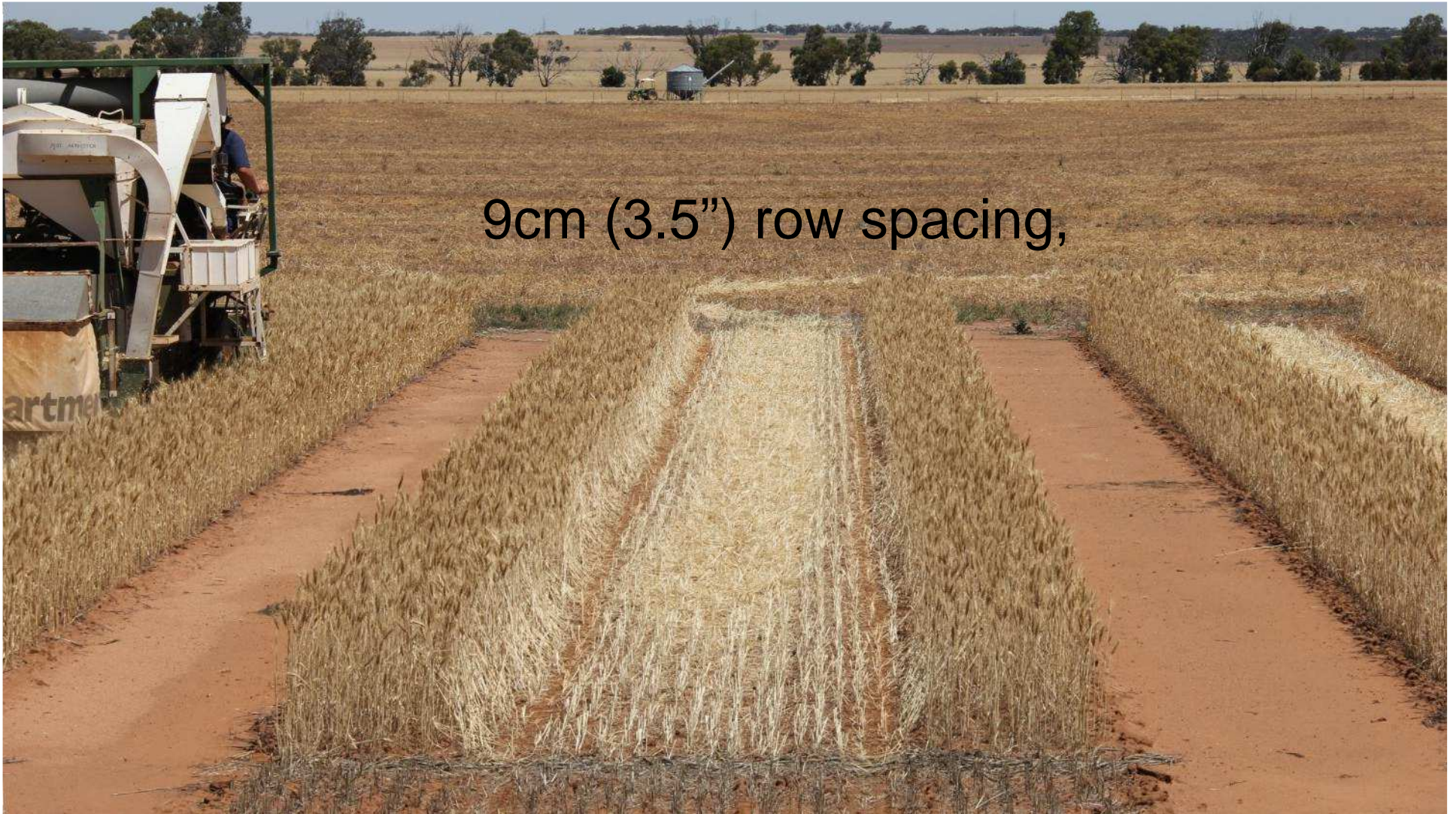
Hollow between 36cm rows, 5 August 2013



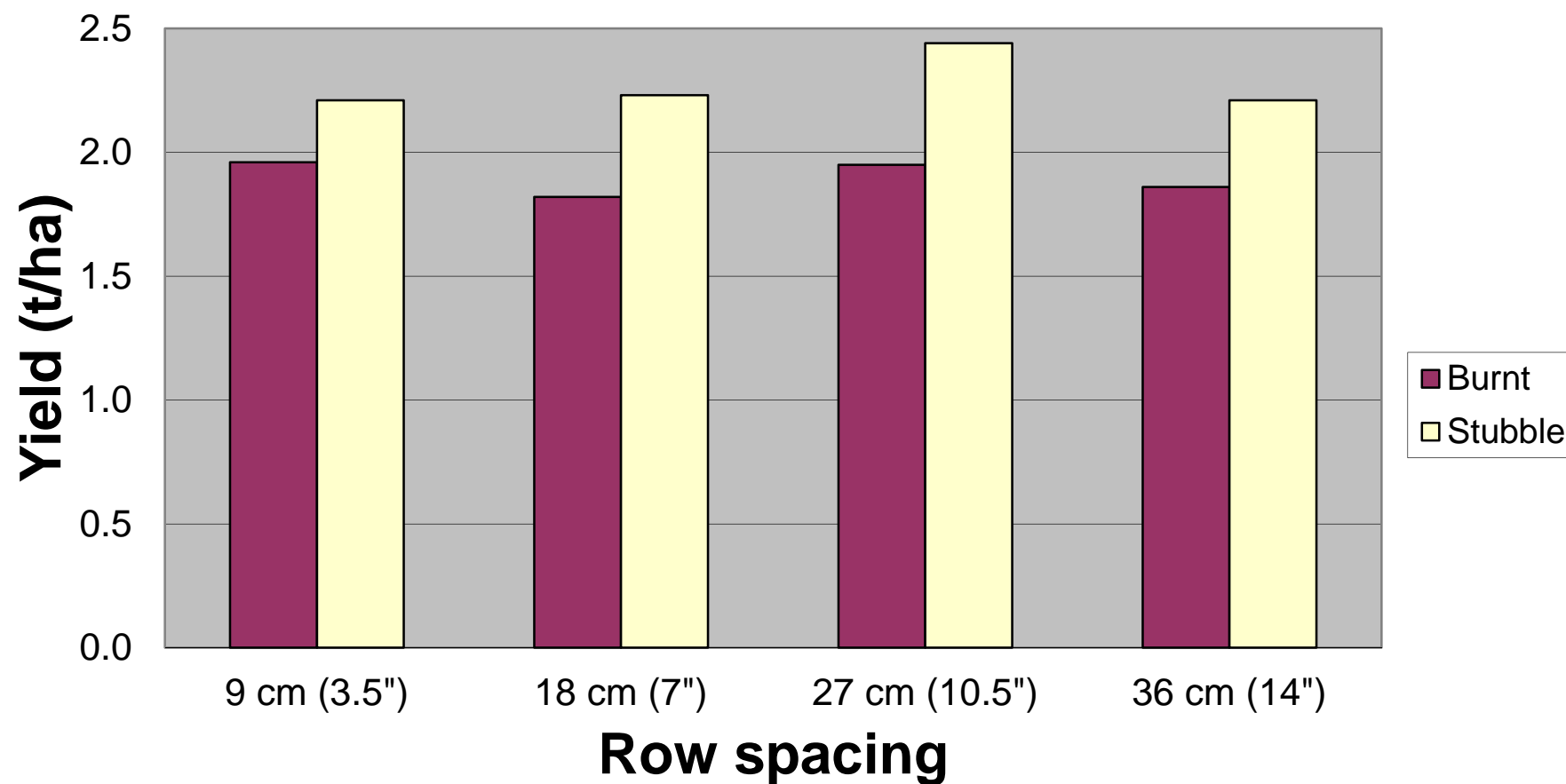
36cm (14") rows,
26 November 2013



9cm (3.5") row spacing,

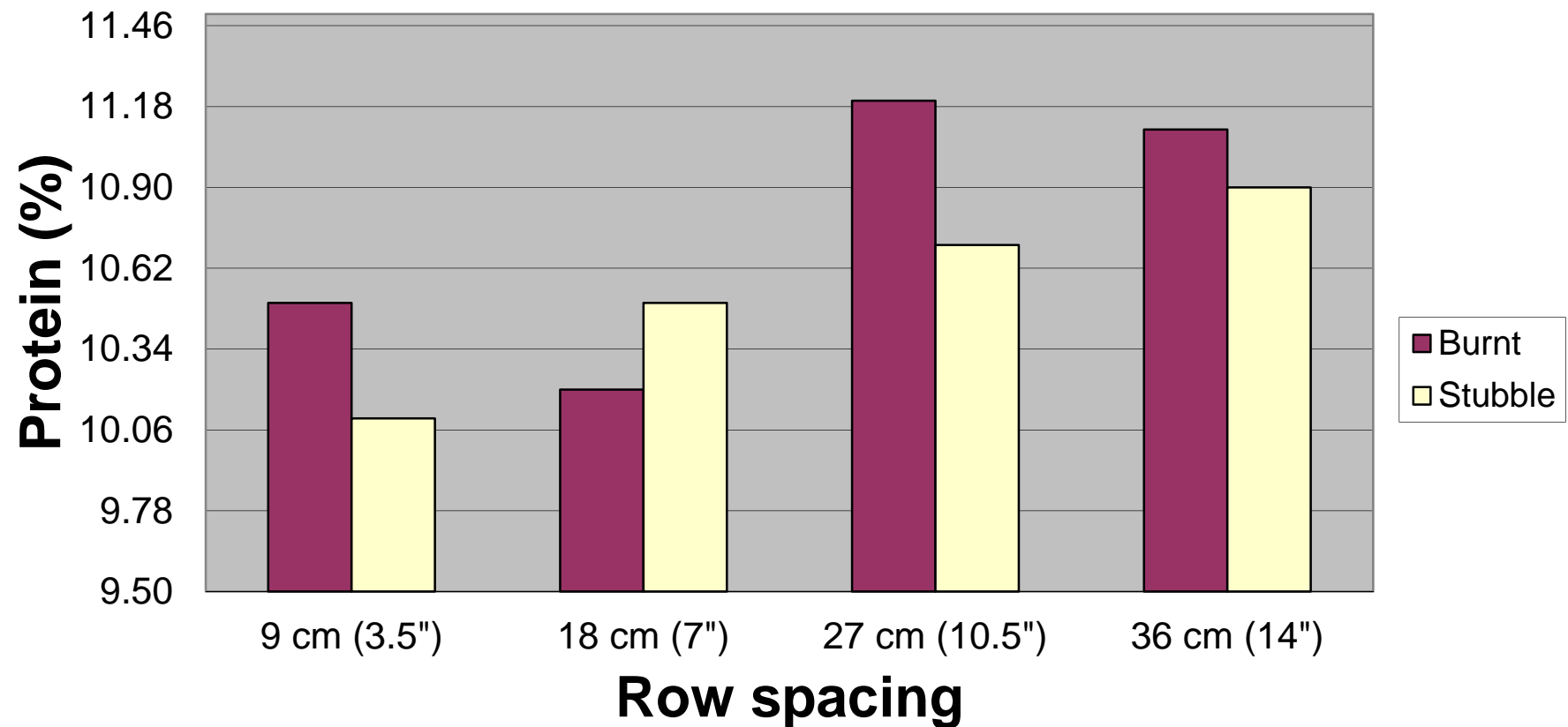


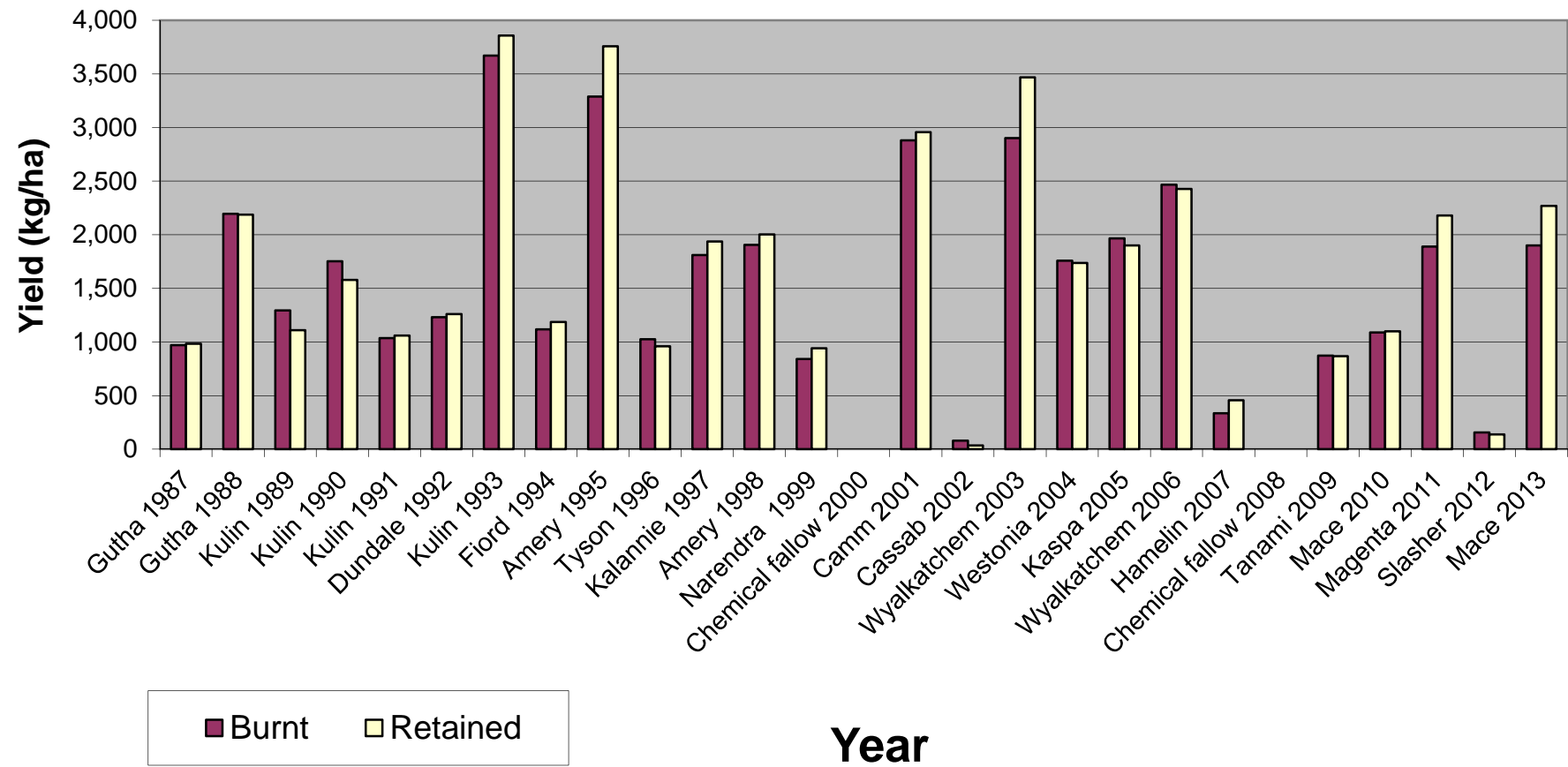
Wheat yield with stubble and row spacing 2013



Wheat protein with stubble and row spacing 2013

(Lsd spacing = 0.28)





87M71 Average yield of 15 wheat crops with stubble and row spacing (1988 - 2013)



Variety x row spacing in 2013 at Merredin

- Two varieties: Mace (70 kg/ha) and DBW10 (reduced tillering at 78 kg/ha), + foliar N
- 25 cm (10") and 50 cm (20") row spacing
- Sown 23 May 2013
- No fertiliser
- Sprays: 2.0 L/ha glyphosate + 118 g/ha Sakura



50 cm (20") row spacing, 23 May 2013







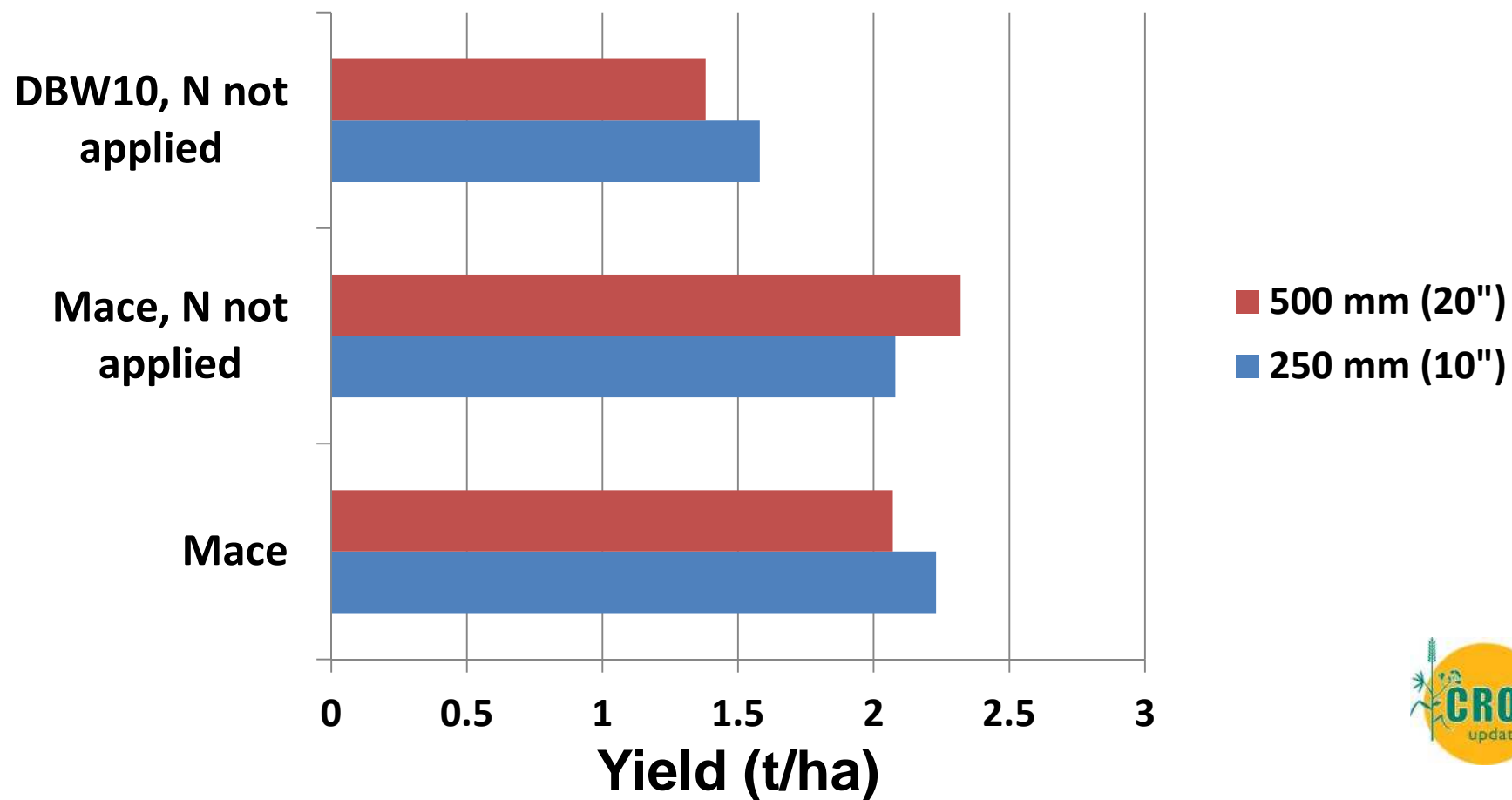
50 cm (20") row spacing, Mace, 11 Nov 2013



50 cm (20") row spacing, DBW10, 11 Nov 2013



Yield with variety and row spacing



New developments

- CSIRO work shows that reduced tillering wheats have advantages in water stressed environments
- Strongly reduced tillering combined with new water harvesting ideas could boost yield in very low rainfall environments.



Three key messages

- Retaining stubble on a sandy clay loam at Merredin increased the yield over burning averaged over 15 wheat seasons.
- Wheat yield decreased with increasing row spacing.
- Lower tillering lines may be useful in future for dry environments, but needs research.





Department of
Agriculture and Food



GRDC Grains Research &
Development Corporation
Your GRDC working with you

Questions?

Glen Riethmuller

DAFWA Merredin

glen.riethmuller@agric.wa.gov.au

08 9081 3111, 0417 975 360



