



Department of
Agriculture and Food



GRDC Grains Research &
Development Corporation
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Smart no-till furrow sowing to optimise whole-farm profit on non-wetting soil



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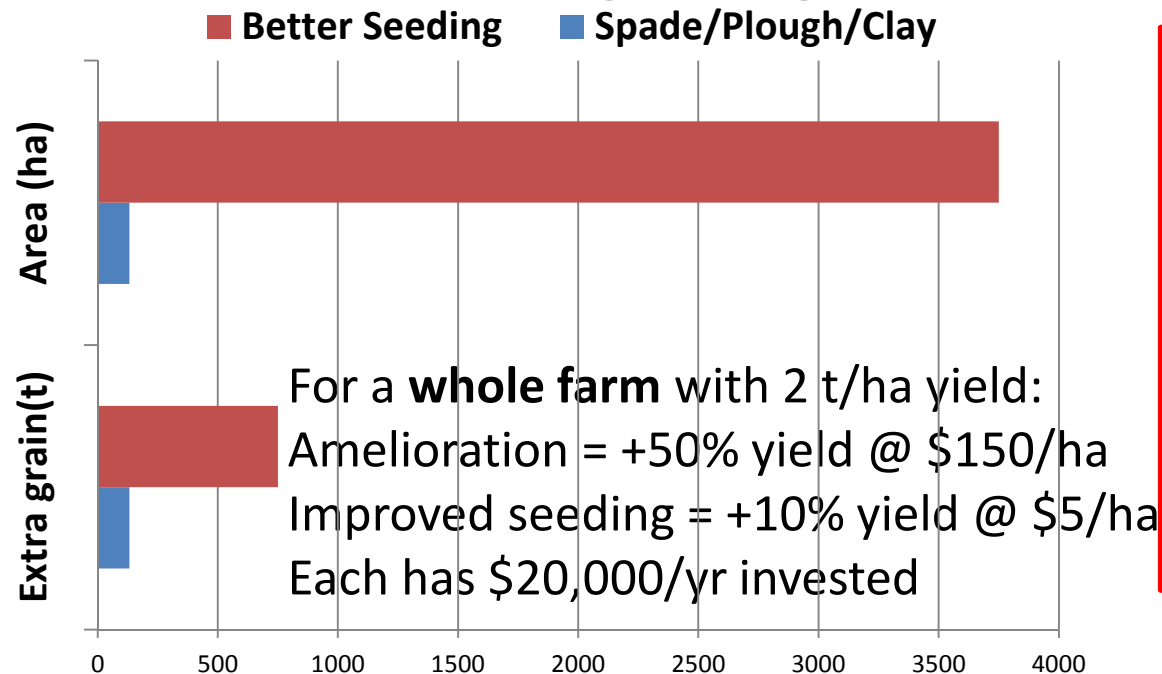


Contrasting yield responses to better management of non-wetting



Best whole-farm management of non-wetting is not just response per hectare!

annual non-wetting management is money and time limited



ASSUMPTIONS

5,000 ha farm

75% cropped

- **All farm non-wetting!**

- **All dry sown!**

BUT

- **Only one year!**



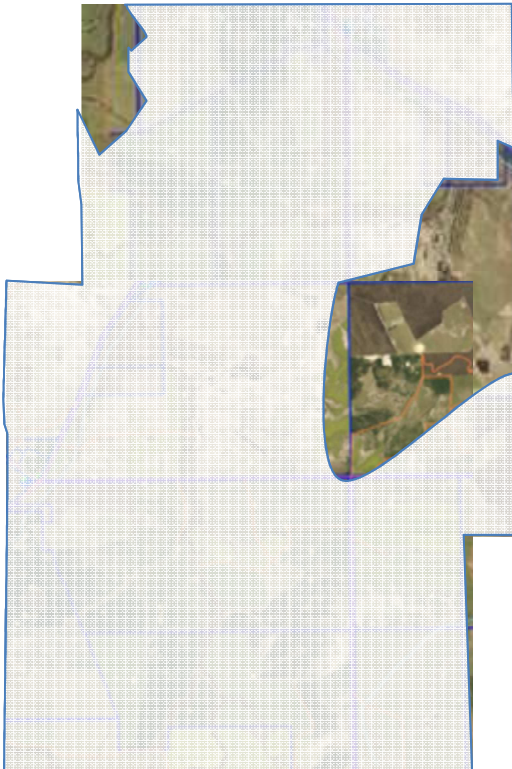
Whole farm model

- Area of non-wetting soil varied
- Area dry sown varied
- Investment in Amelioration/Mitigation varied
- Whole farm profit calculated over 10 years

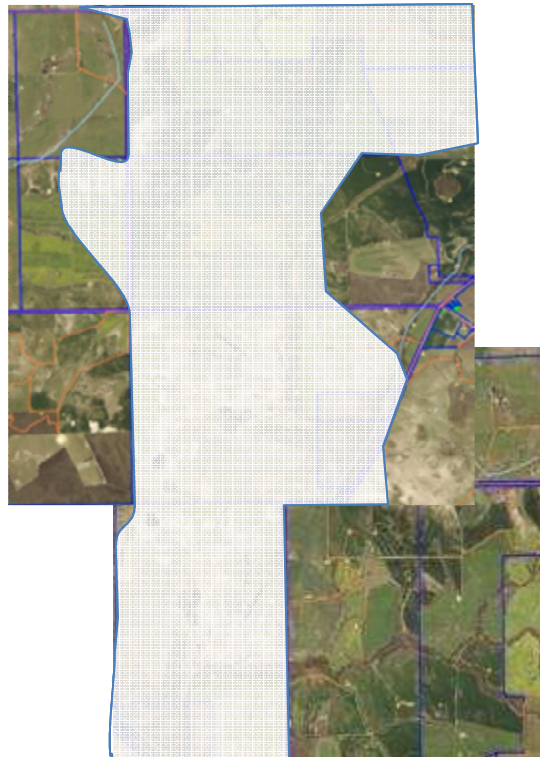


Range of non-wetting area

80%



60%



20%



contrasting dry sowing conditions

- **Dry autumns.....80% dry sown**
- **Late start.....50% dry sown**
- **Wetter start.....20% dry sown**

**all farms 5,000 ha and 75% cropping
wheat 2t/ha @\$280/t**

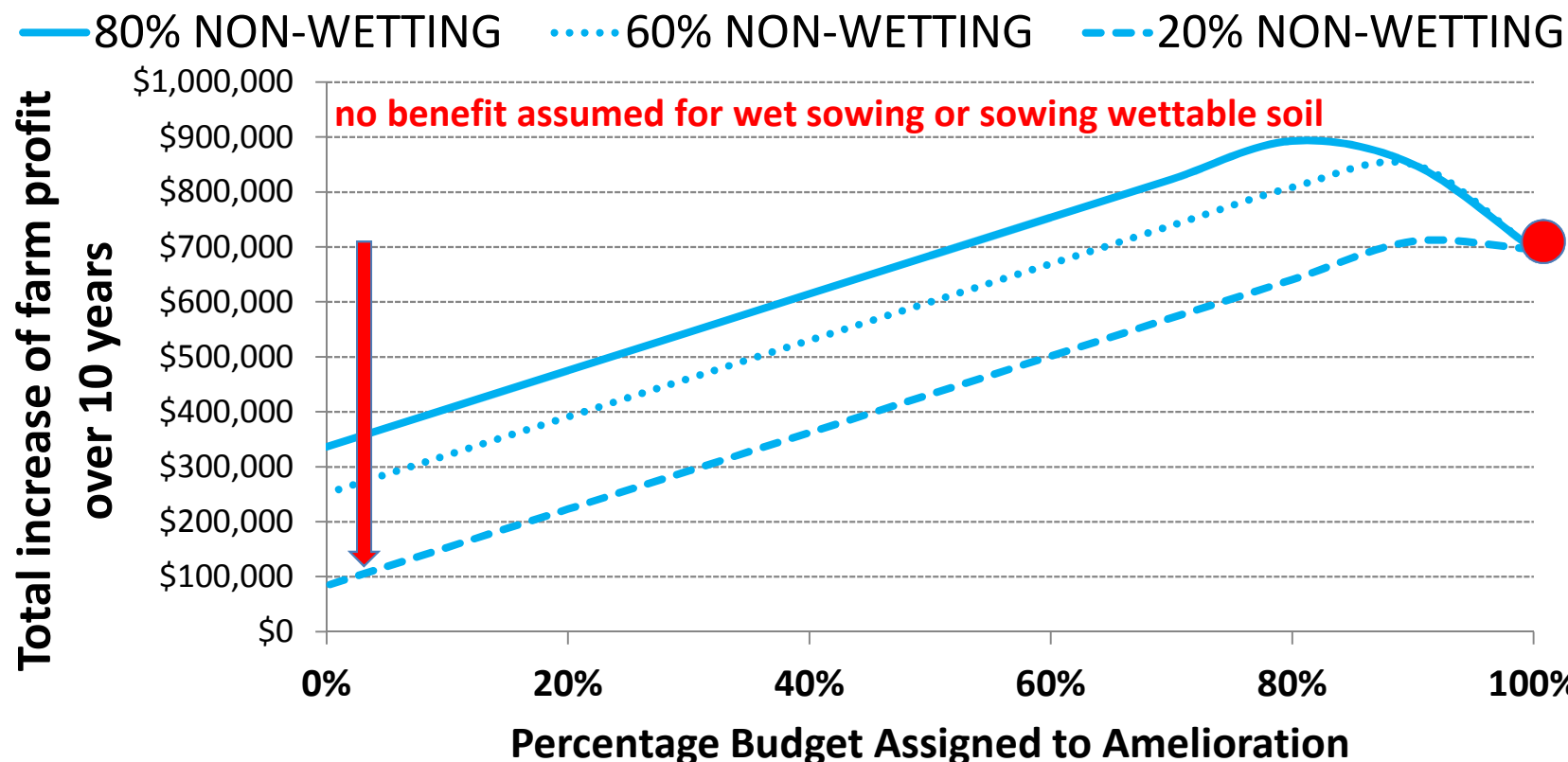


Annual investment in better management of non-wetting

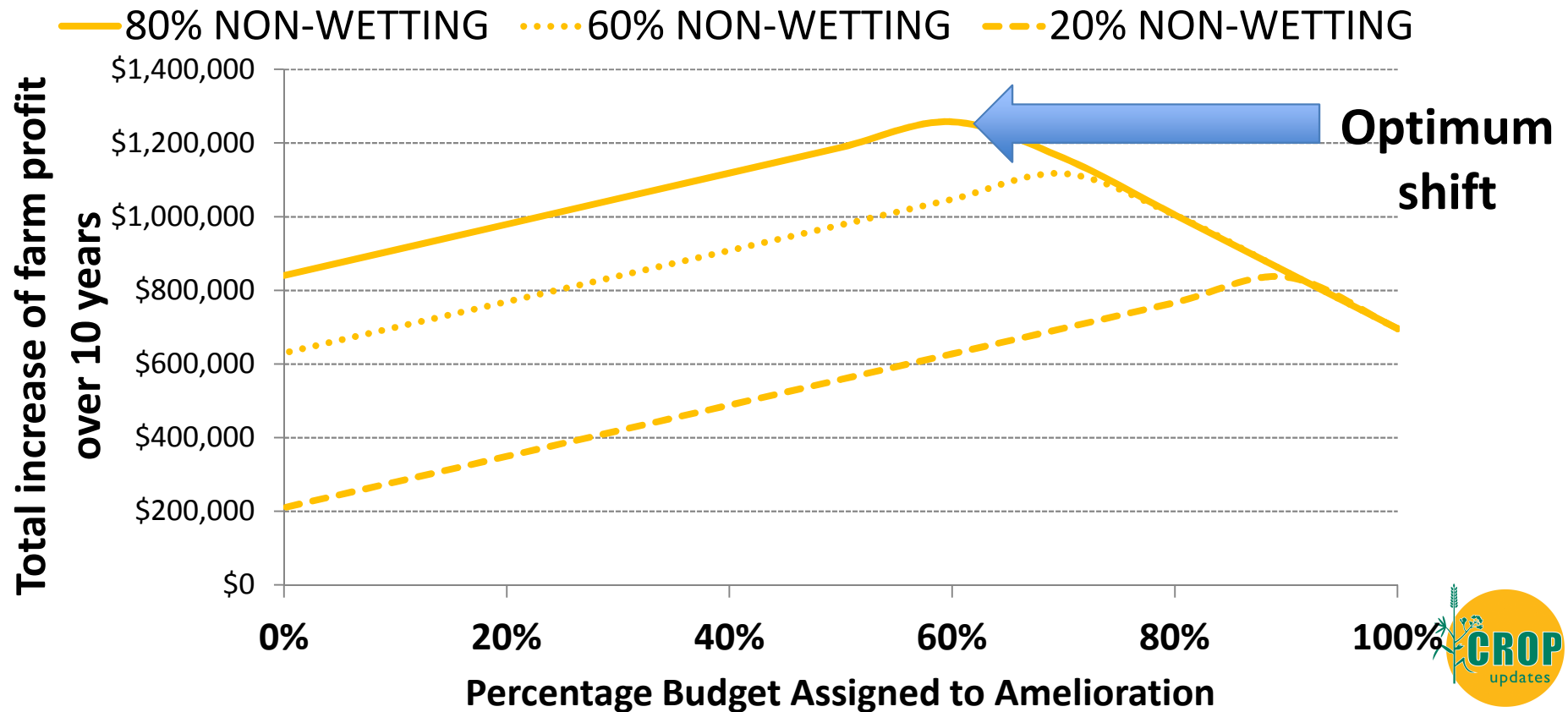
- Each farm has **\$20,000**yr for 10yrs invested in:
- **Amelioration** (spade, plough or clay)
 - 600 kg/ha/yr for ten years @ \$150/ha (year one)
- or **Mitigation** (improved seeding method)
 - 10% more yield per year at \$5/ha annually
- or **A combination of BOTH**



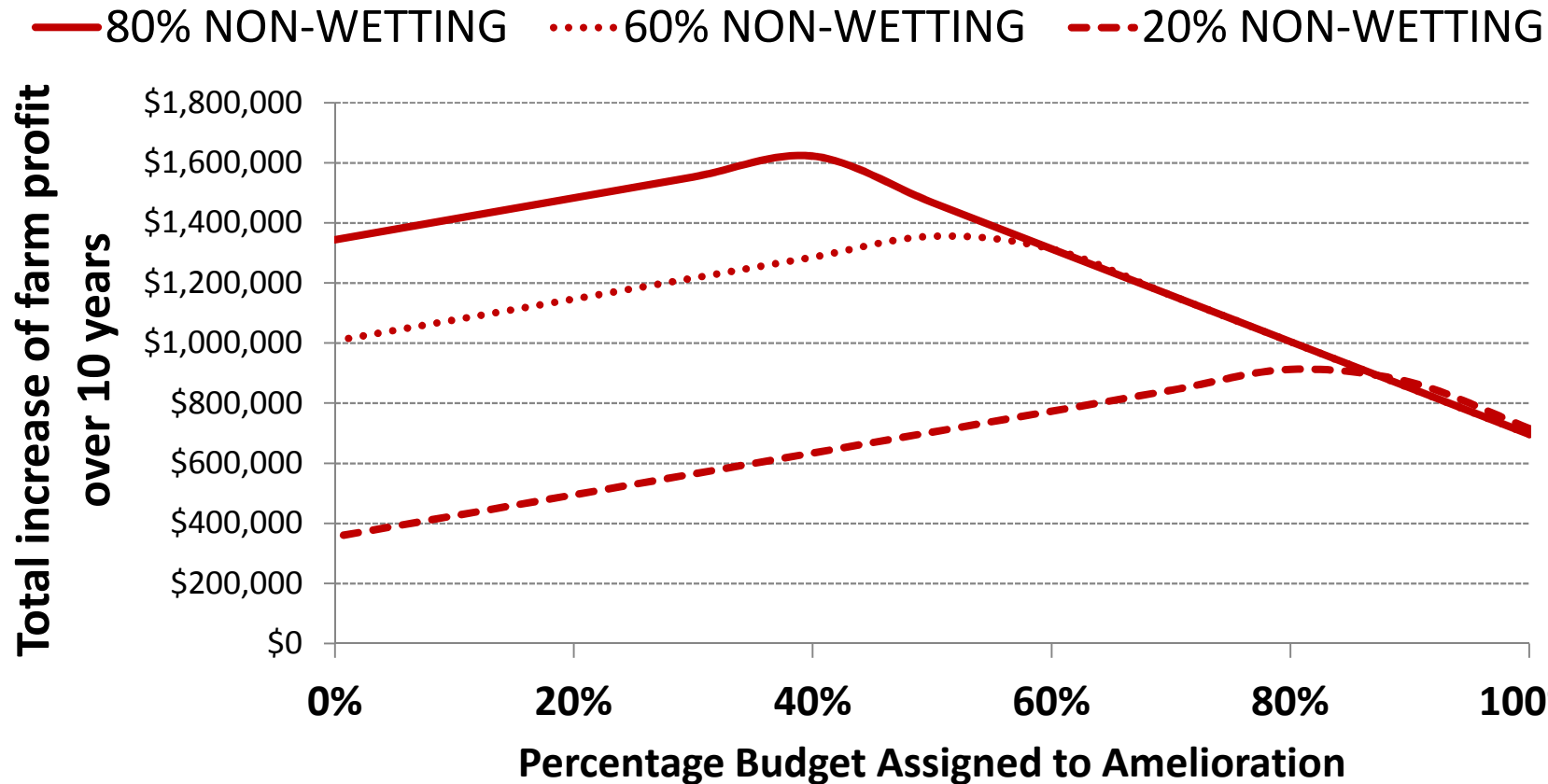
Wetter autumns (20% dry sown)



Dry autumns (50% dry sown)



Very dry autumns (80% dry sown)



General trends and exceptions

- **Dominant repellence and much dry seeding**
 - Optimise seeding & invest 40-50% in amelioration
- **Minor repellence and little dry seeding**
 - Invest mainly in amelioration
- **Exceptions include**
 - Major herbicide resistance- **bury**
 - Hay cutting, leasing, uncertainty- **mitigate**



Improving the seeder

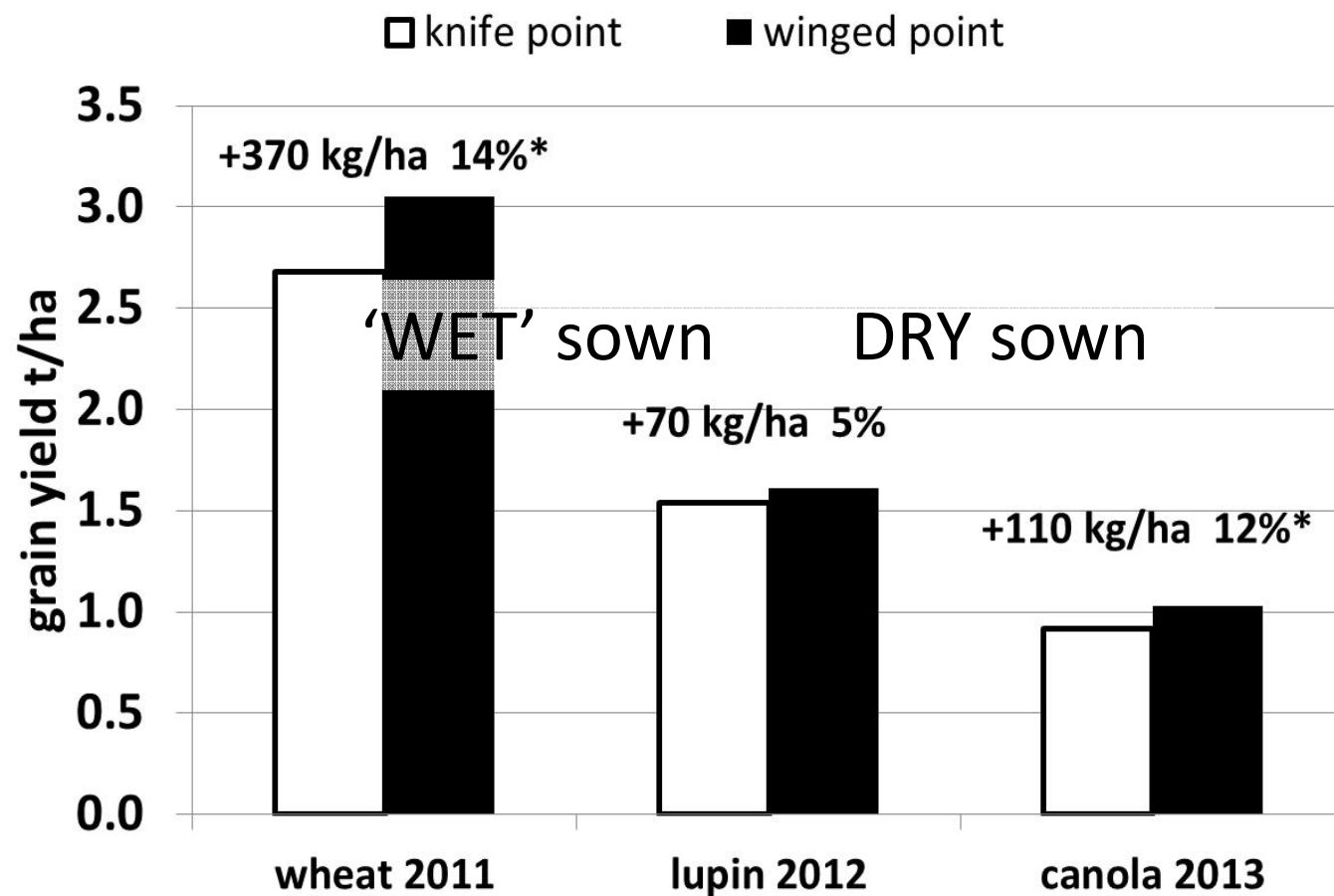
- Winged points
- Winged boots
- Banded wetter
- Sowing on the old row



Winged points



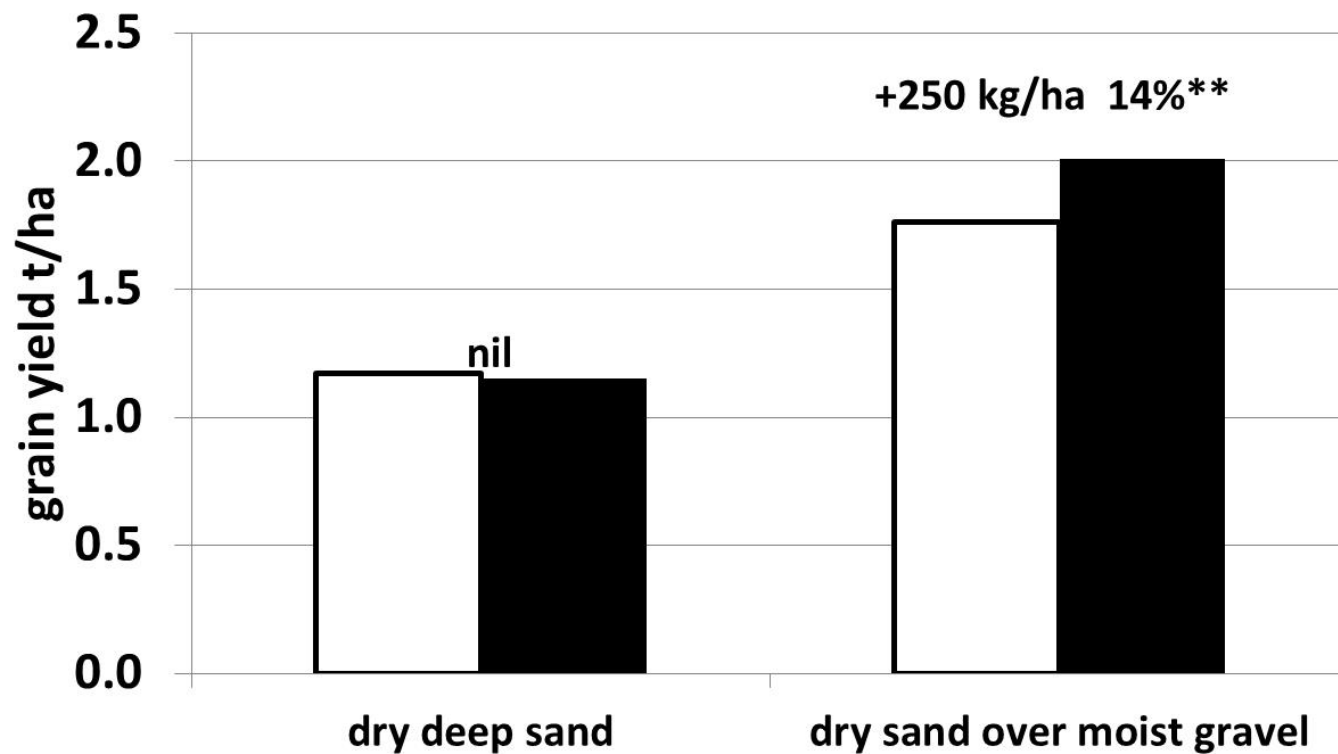
Better grading & water harvesting



BINNU moderately non-wetting yellow sand

Shallow moisture delving

□ knife point ■ winged point



BADGINGARRA 2012
Severely non-wetting
sand over gravel

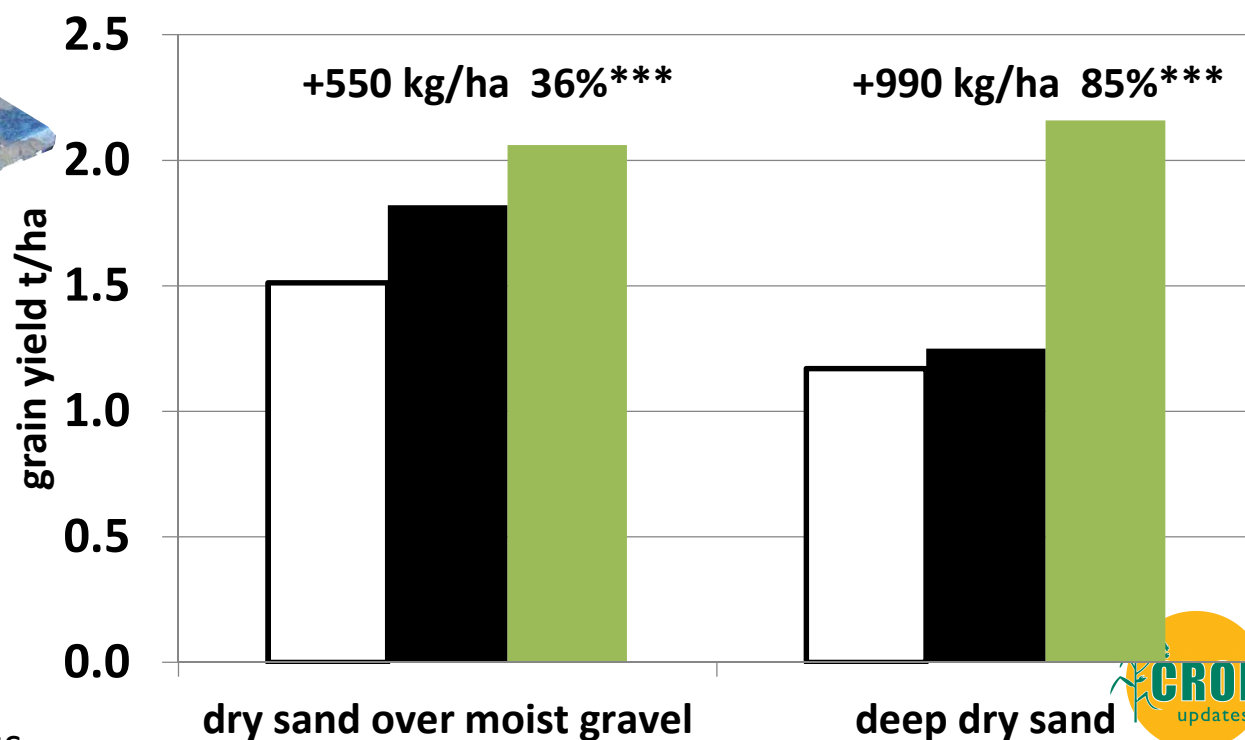




BADGINGARRA 2012
Severely non-wetting sand
dry sown, much brome grass

Winged boots

□ knife point ■ winged boot (1 row) ■ winged boot (2 rows)



Banded wetter

- Tricky to set up
- Can work well
- Closes gaps in rows (nb weeds)
- Less erosion risk
- Still a few strange results



REQUIREMENTS

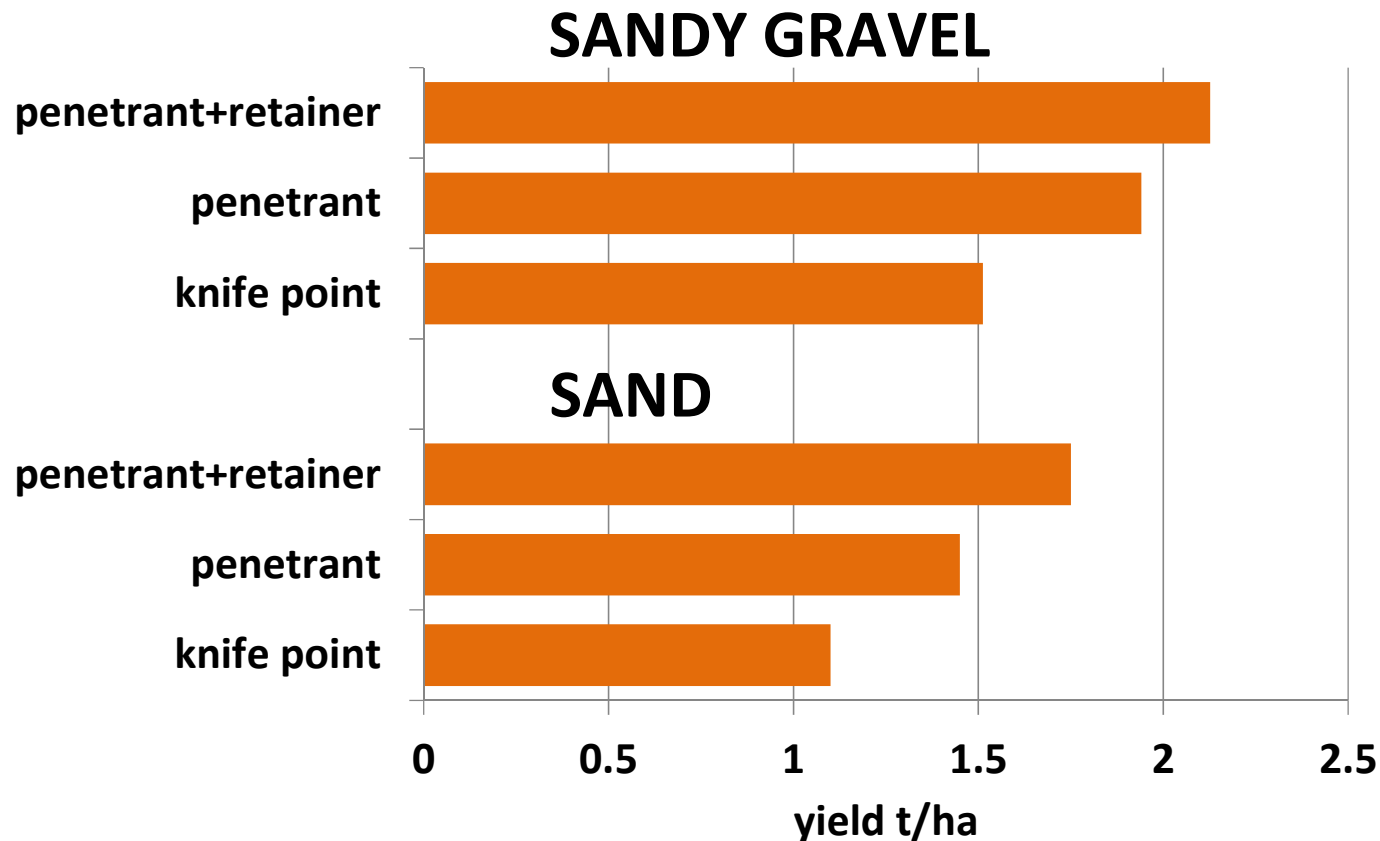
- **Safer presswheels**
- **Safe spray direction**
- **Sensible tank size**
- **Water & nutrient retainer chemistry**
- **Turn off in wet soil**

Trial yields = +0-30% yld (mn 10%)

Cost approx. **\$5-10/ha**



Better formulations show promise

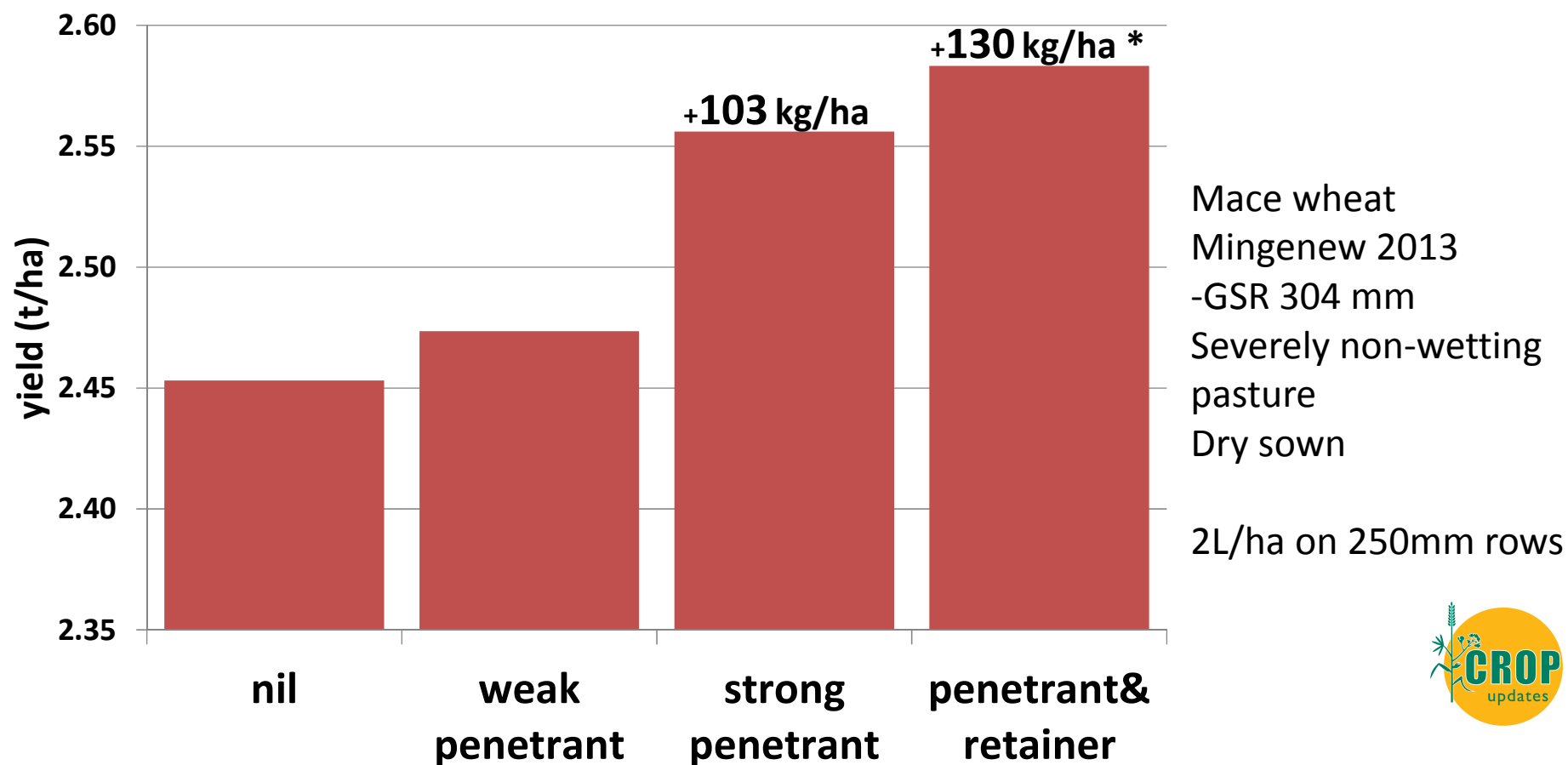


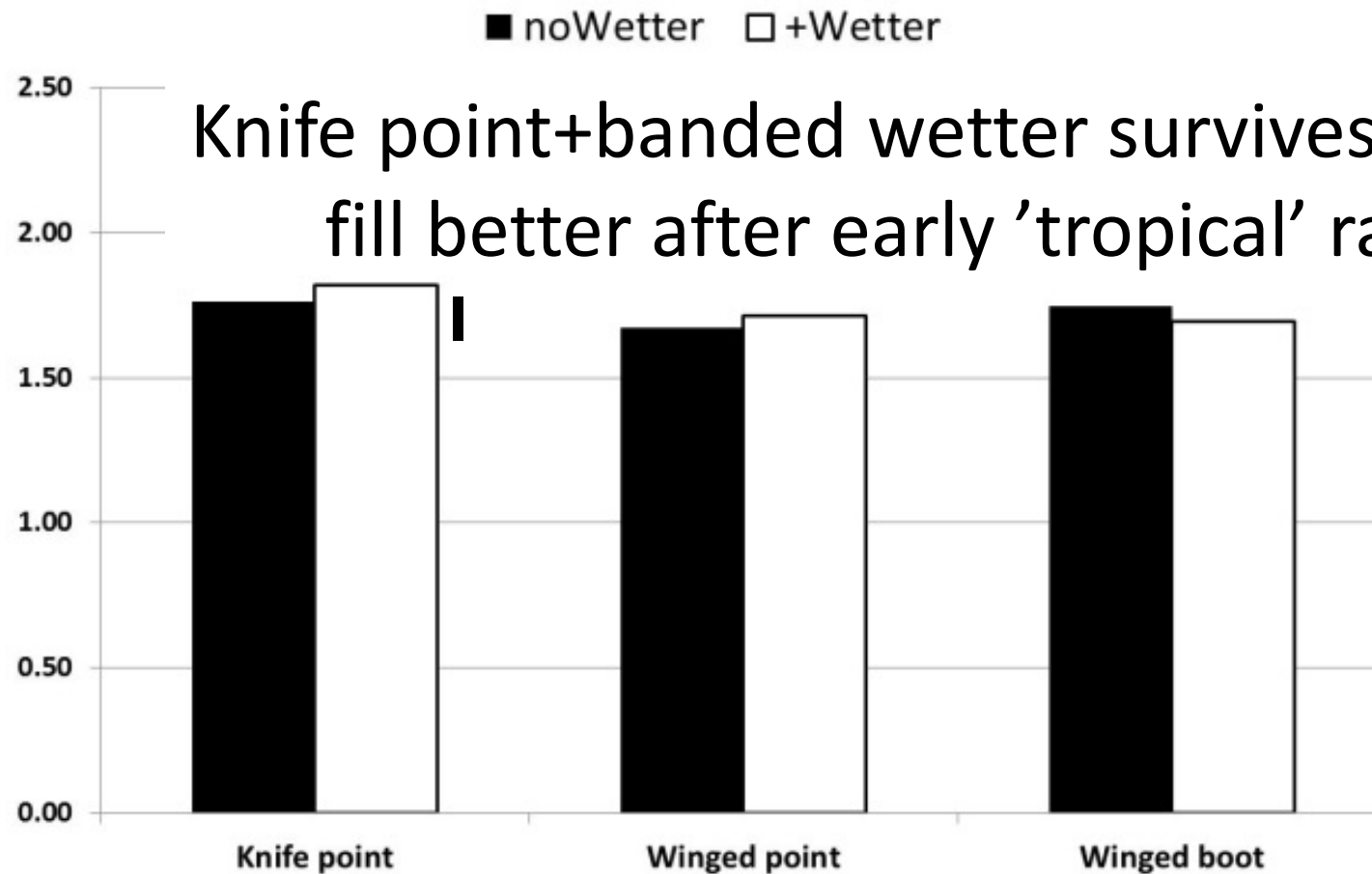
Mace wheat
Badgingarra 2012
-GSR 325 mm
Severely non-
wetting paddock
Dry sown

1L/ha on 300mm
rows



Retention chemistry shows benefit in leaching season





Sowing 'on' the old row

REQUIREMENTS

- RTK autosteer/old row guidance
- Offset hitch/seeder autosteer
- Forward planning
& ideally
- Discs or disc coulters
- CTF

on.....orbetween
the old rows

Extreme effects seen at Jerramungup in 2012

J. Lemon 2003

Don't miss out on profit!

Careful not to miss out on investing in better seeding methods if most of your farm is non-wetting and you dry sow most of the farm.

Also be careful not to spend too much on improved seeding if the minority of the farm is non-wetting





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