



Department of  
**Primary Industries and  
Regional Development**



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## Crop establishment following amelioration

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# Crop establishment on ameliorated soils

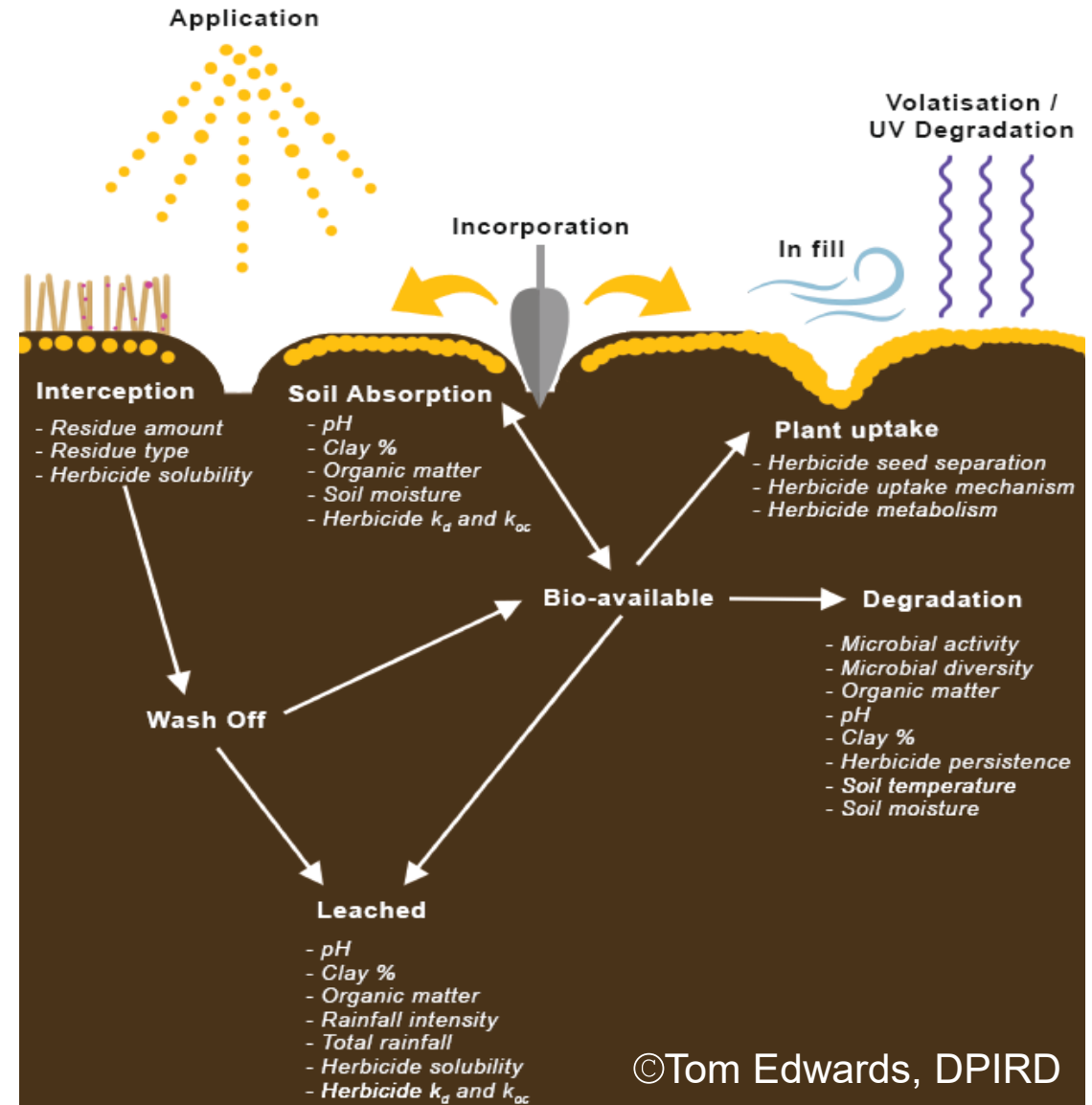


# Crop establishment on ameliorated soils



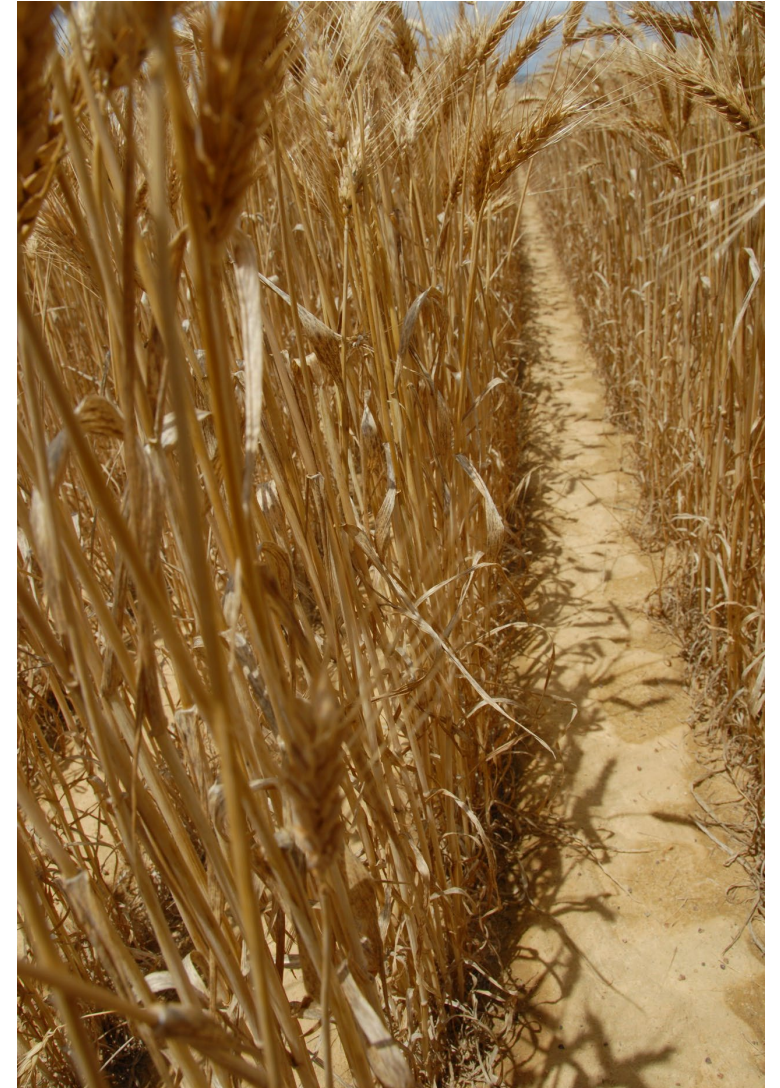
# Crop Establishment

1. Seeding depth/placement
2. Furrow infill
3. Herbicide damage
4. Soil crusting
5. Rapid soil drying
6. Other?



# Reliable crop establishment on ameliorated soils

1. Rapid establishment in moist soil
2. Ability to emerge from depth
3. Ability to chase moisture (if needed)
4. Ability to penetrate surface crust
5. Trafficability / Seedbed firming
6. Safe soil-applied herbicide options
7. High early vigour / groundcover
8. Dedicated/modified/effective seeding equipment



# Long coleoptile wheat and seeding depth

Ogilvie, 2022

Coleoptile Length Category	Coleoptile Length (mm)*	Sowing Depth (mm)
Short	~60	≤50
Breeder Selected		70-90
Long	120-140	>100

## 2022 Experiment

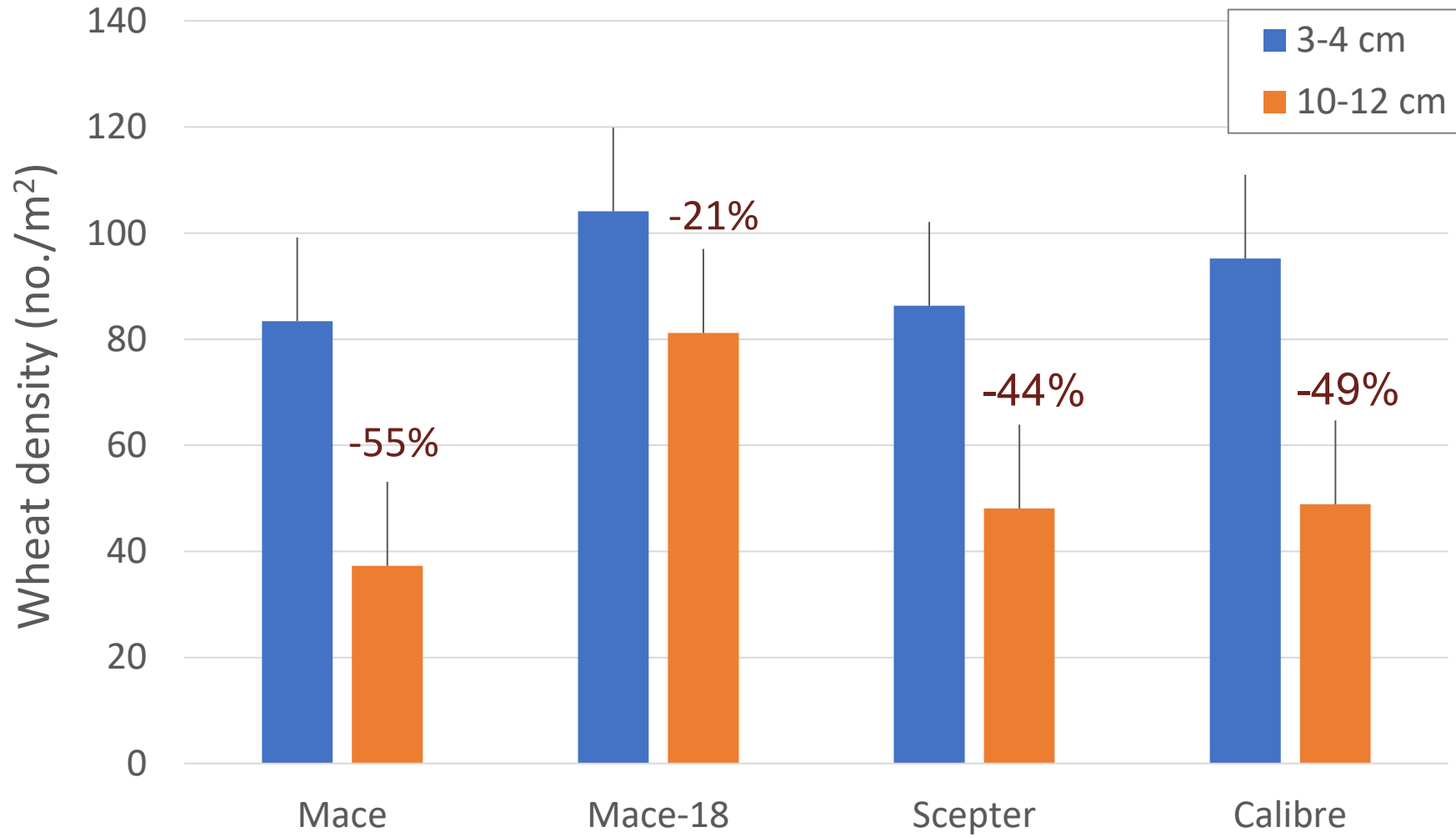
Wheat Lines	Amelioration	Seeding Depth (cm)	Target Density (plants/m <sup>2</sup> )
1. Mace (short coleoptile)	1. No-till	1. 3-4	1. 100
2. Mace-18 (long coleoptile)	2. Spaded	2. 10-12	2. 200
3. Scepter			
4. Calibre			



Acknowledgement: Dr Greg Rebetzke, CSIRO

# Long coleoptile wheat and seeding depth – crop density

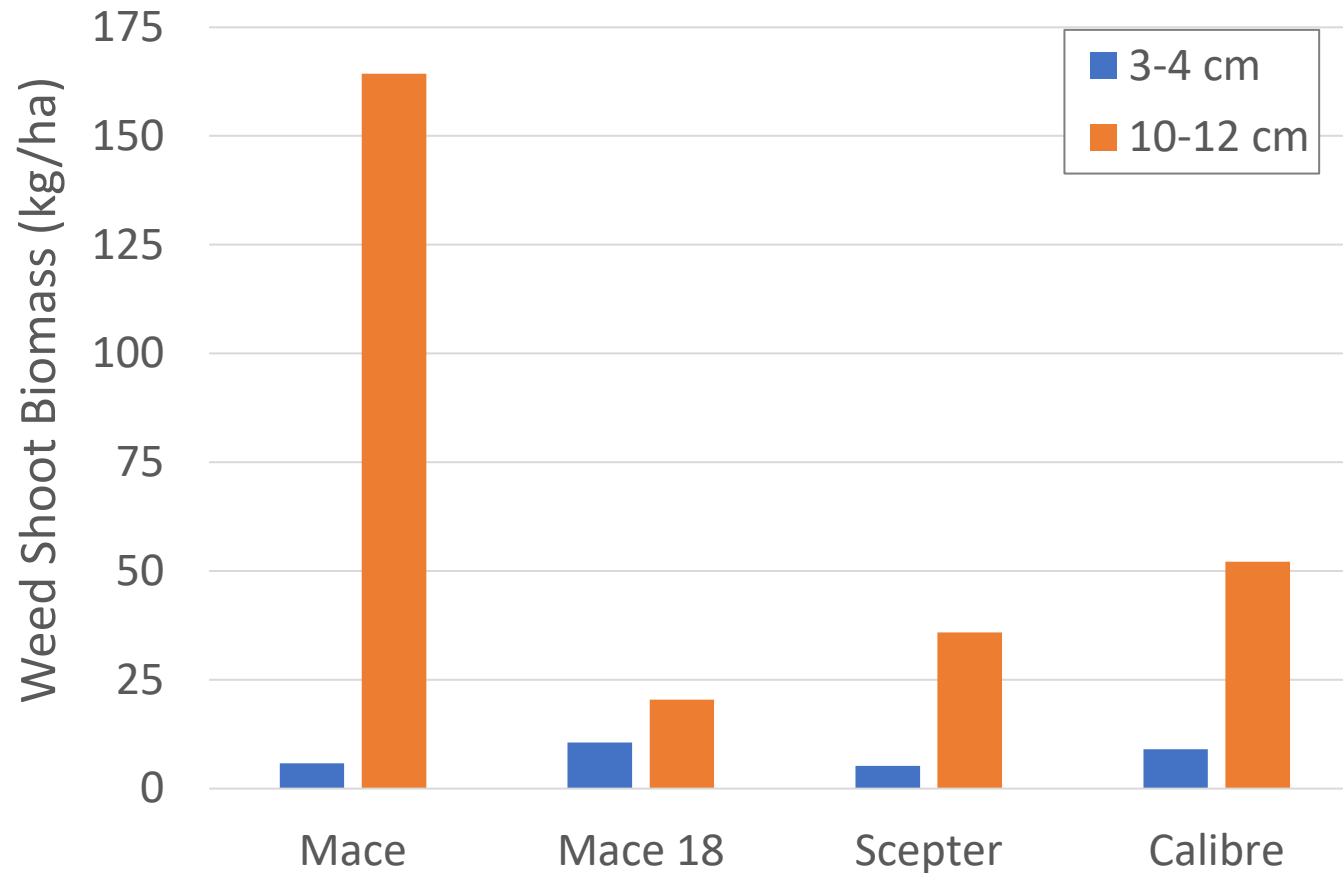
Ogilvie, 2022



Bars = LSD 5%

# Long coleoptile wheat and seeding depth – weed biomass

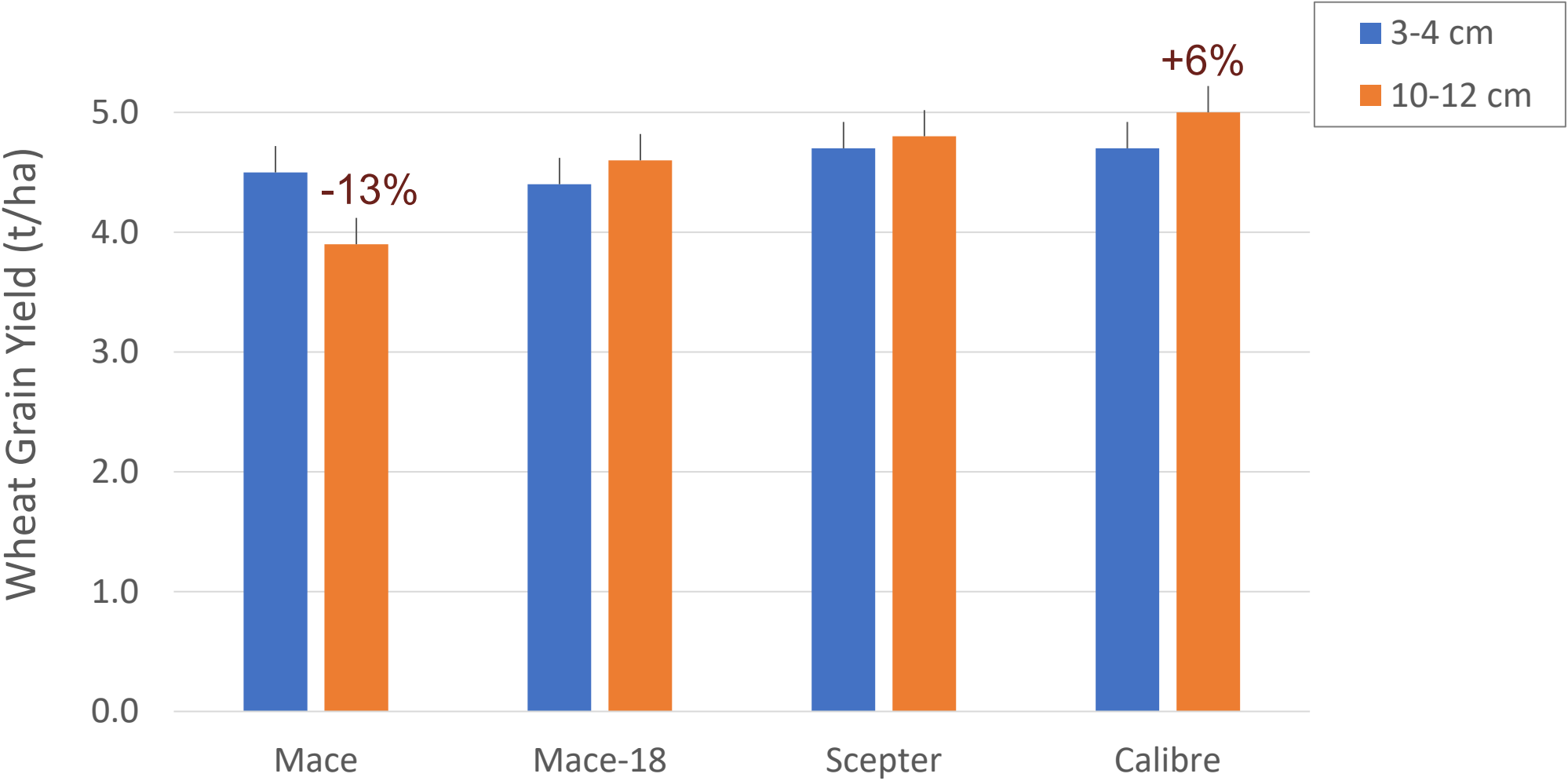
Ogilvie, 2022





# Long coleoptile wheat and seeding depth – grain yield

Ogilvie, 2022



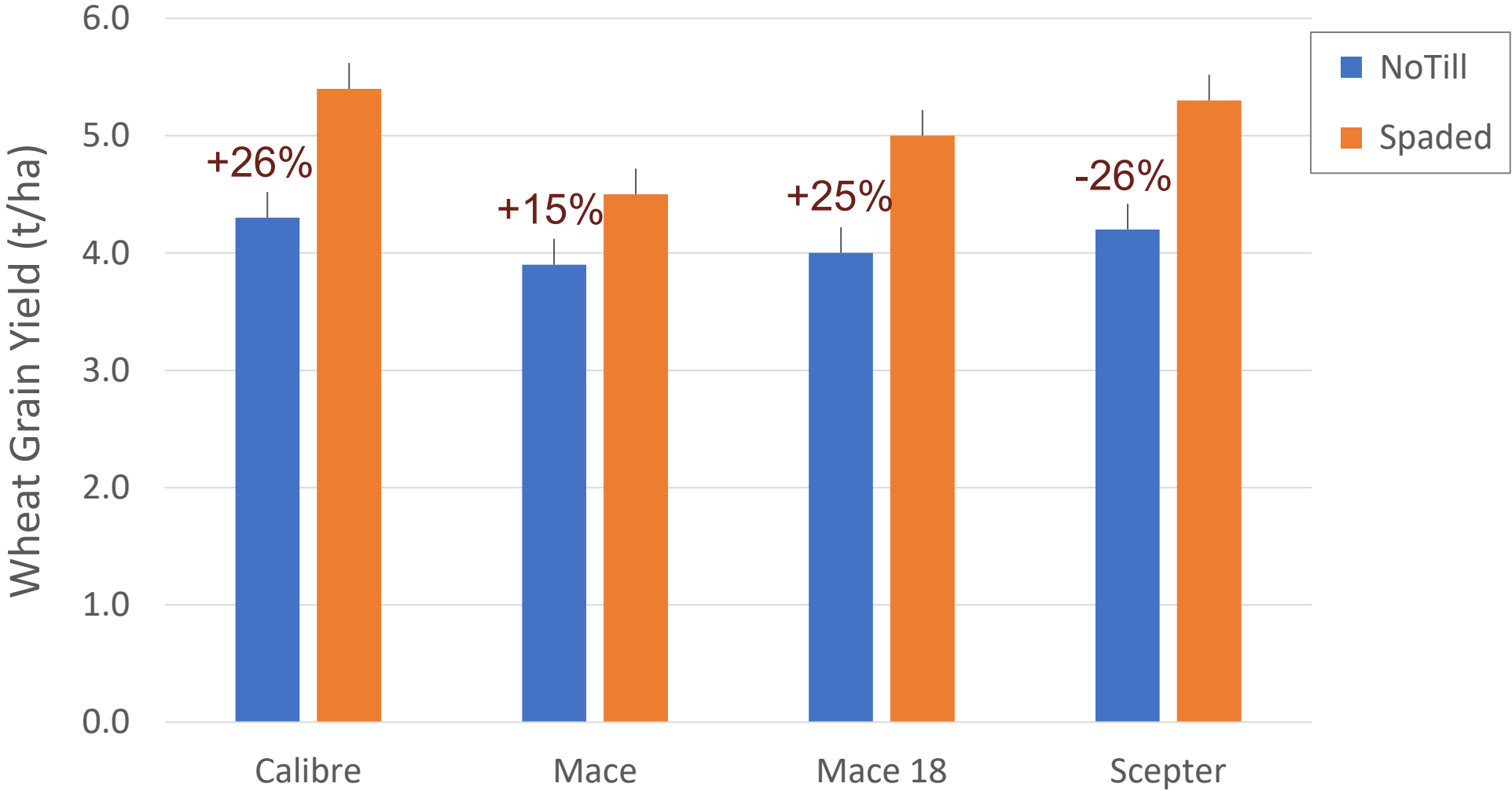
Bars = LSD 5%

# Long coleoptile wheat and seeding depth – grain yield



# Long coleoptile wheat and seeding depth – grain yield

Ogilvie, 2022



Bars = LSD 5%

# One-pass amelioration and seeding systems

Ogilvie and Cunderdin



# One-pass amelioration and seeding systems

Ogilvie and Cunderdin



# One-pass amelioration and seeding systems

Ogilvie and Cunderdin

## Seeding System Treatments

1. No-till, knife point seeding
2. Rip then Spade, Roll, seed with knife points (two-pass)
3. Rip then Spade, Roll and Seed in one-pass
4. Broadcast spread seed, then Spade

## Varieties

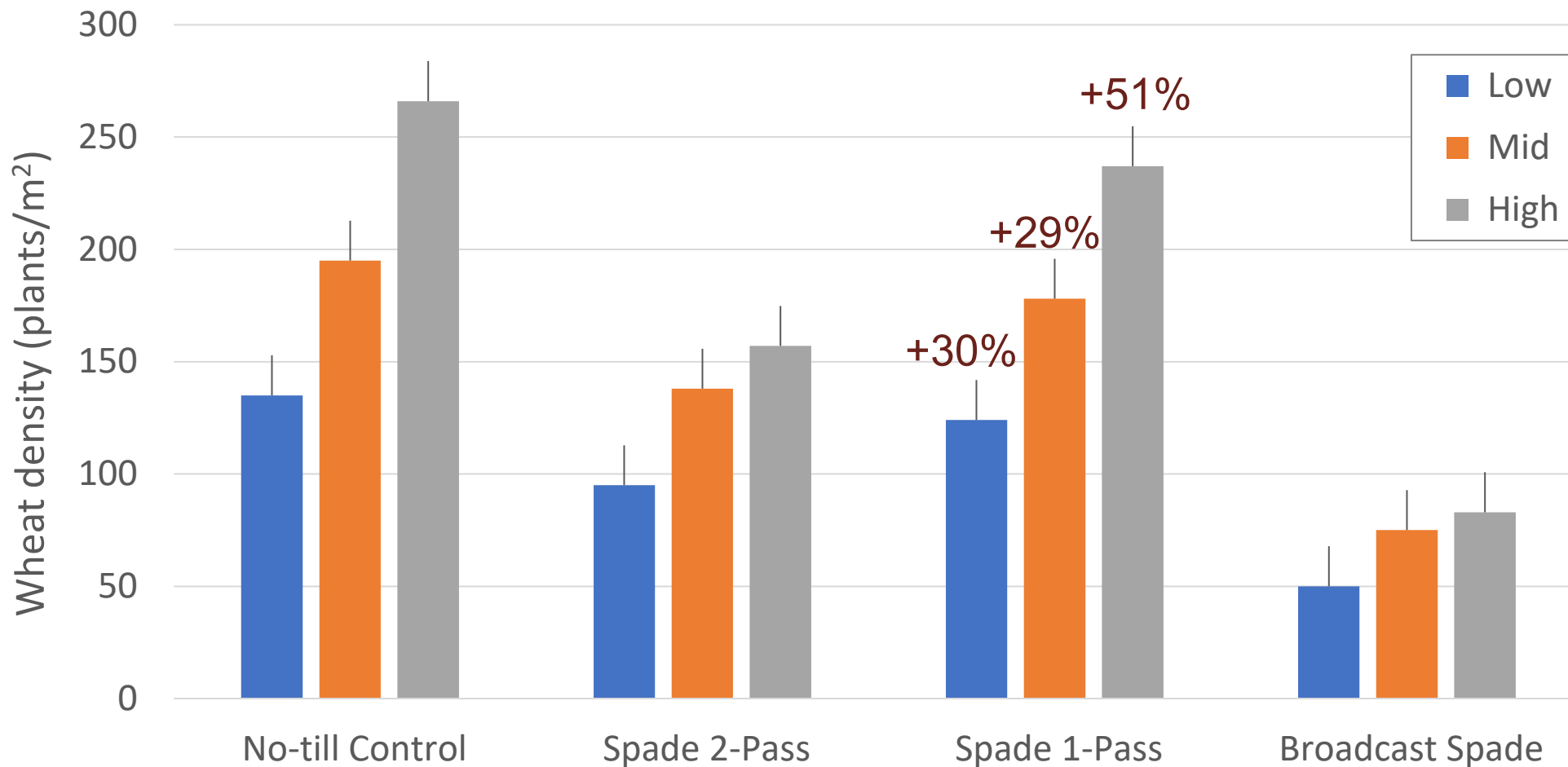
1. Calibre
2. Scepter

## Seed Rates (Target Populations)

1. Low
2. Medium
3. High

# Seeding systems – crop density

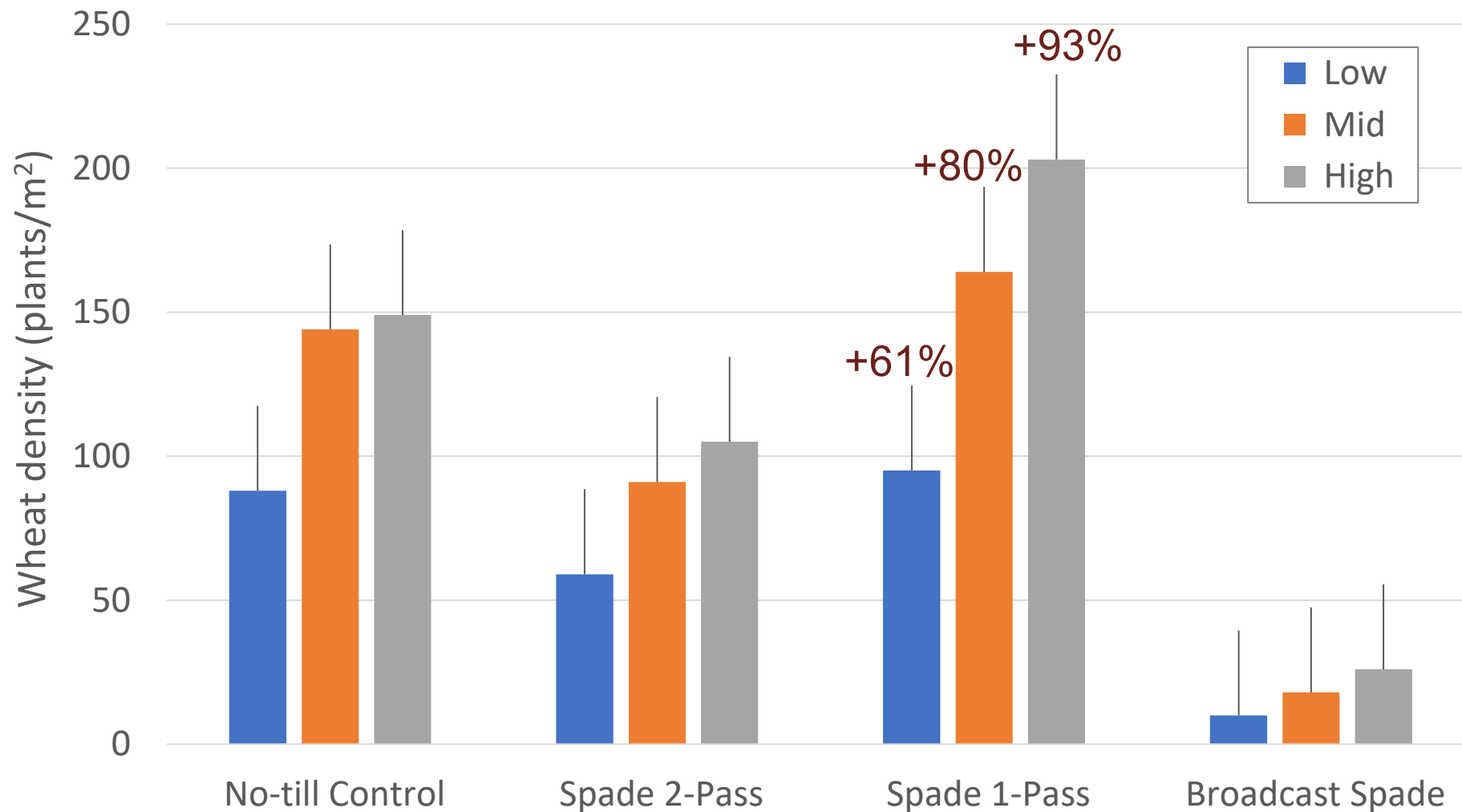
Cunderdin



Bars = LSD 5%

# Seeding systems – crop density

Ogilvie

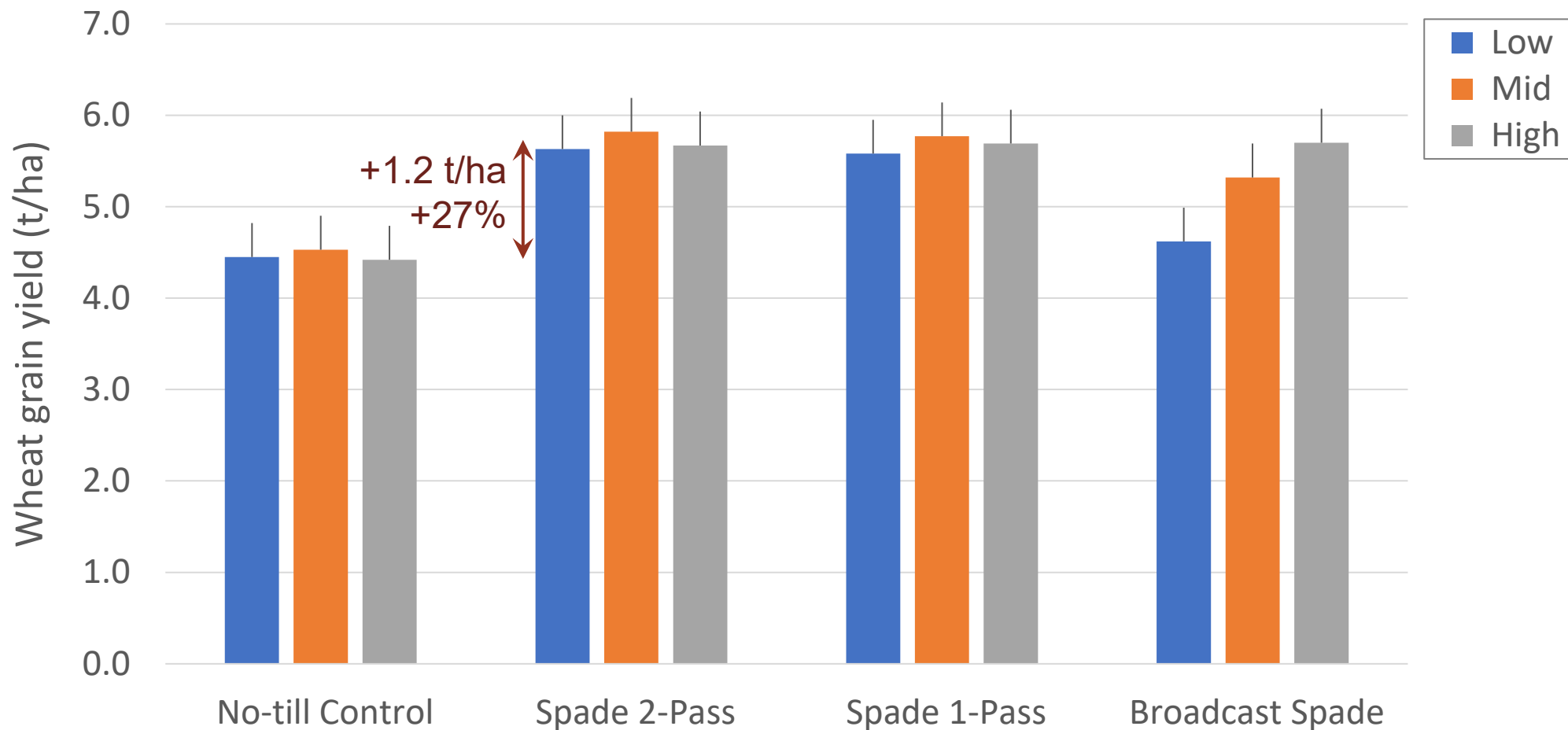


Bars = LSD 5%



# Seeding systems – grain yield

Ogilvie



Bars = LSD 5%

# One-pass amelioration and seeding systems?



# Summary

1. High quality seed source
  - Clean
  - High germination %
  - High protein
  - High kernel weight
2. Safe pre-emergent herbicides
3. Increase seed rates
4. Utilise well adapted, high vigour, long-coleoptile wheats when available

## DAW1901-006 Increasing profitability and longevity of benefits following soil amelioration



Thanks to all DPIRD research staff involved in this work:

Dr George Mwenda, Andrew Blake, Tom Edwards, Deb Barker, Melanie Kupsch, Ranny Wilkins, Jo Walker, Chad Reynolds  
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# Thank you

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