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Dual-purpose crops – eastern tales.....

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Areas and systems for adoption

TABLELANDS/LONG-SEASON AREAS/IRRIGATION: Winter types



HRZ: Grain/Graze Trade-off – early sowing of Late Spring types



WHEAT BELT: Clip-grazing (No-trade-off) – Normal sowing window



Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec



SOWING



GRAZE



FLOWER



HARVEST

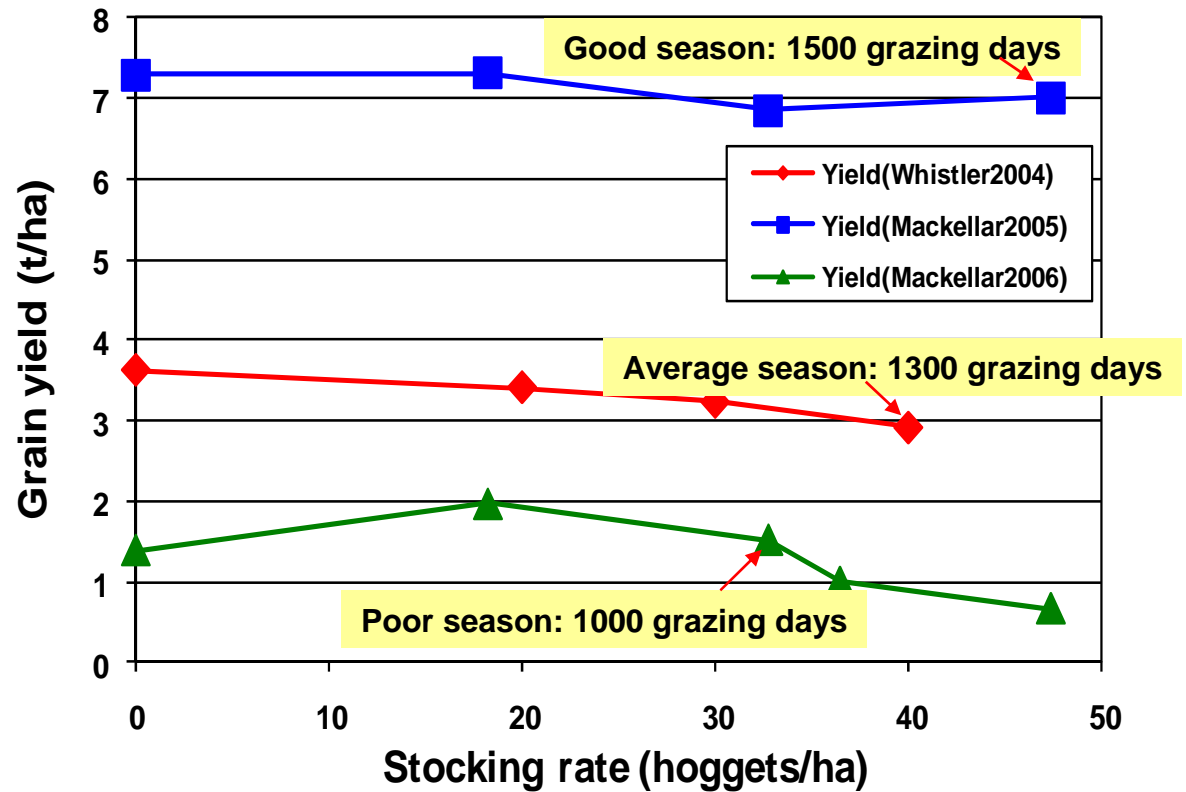
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Grazing without reducing grain yield



Grazed Ungrazed



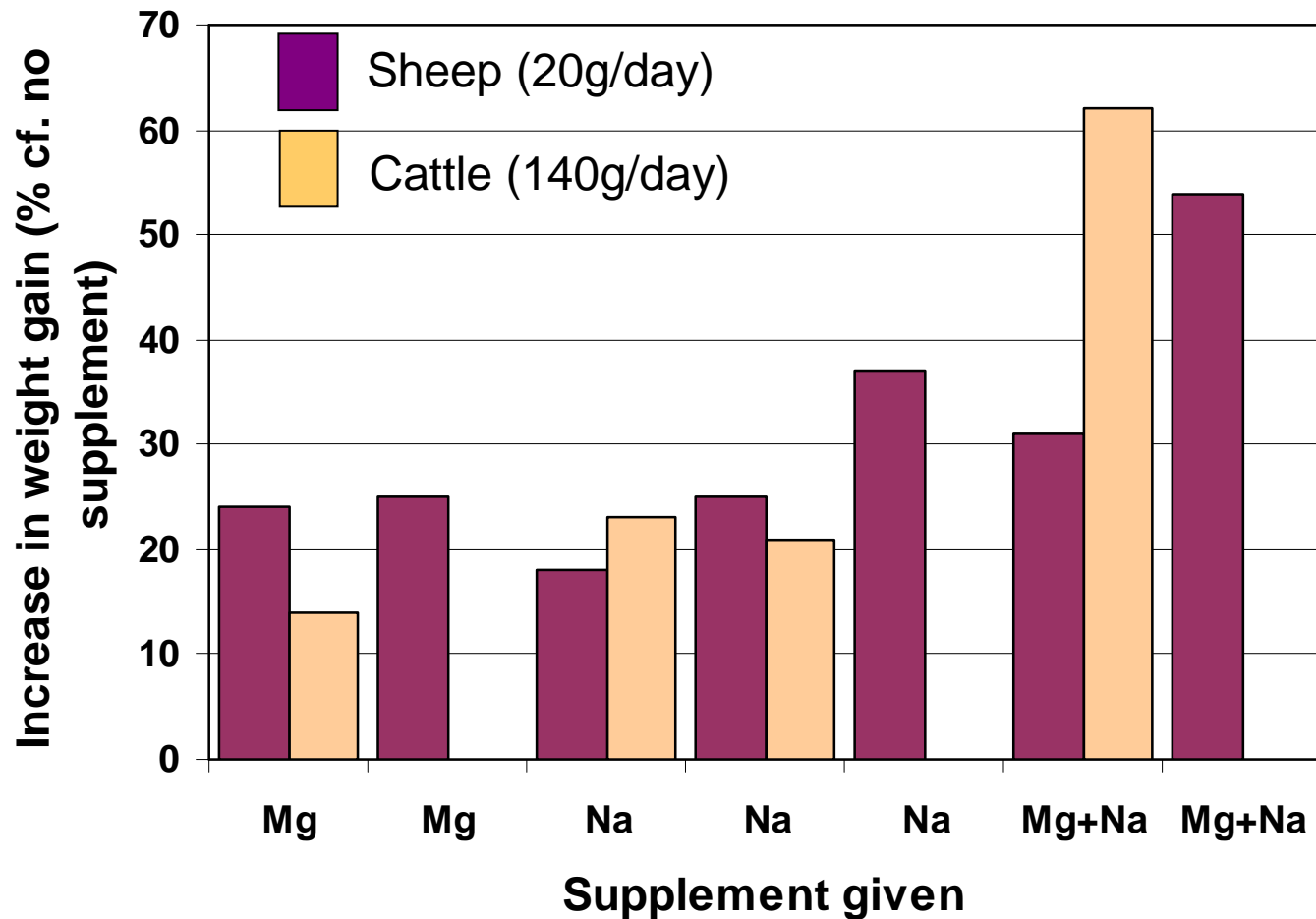
**Grazing has little impact within the “safe” window
- lock up at GS30**

“Clip” grazing Gregory wheat 2008



Wheat, mineral supplements and live-weight gain

15:1 return for cheap salt/causmag supplement for animals grazing wheat



Dual-purpose canola – a new option?

Why?

- Disease and weed break in cereals and grassy pastures
- Increase profitability, flexibility and reduce risk of canola (graze + grain)
- Widen operational windows (sowing, grazing and harvest)



Varietal selection



Grazing management

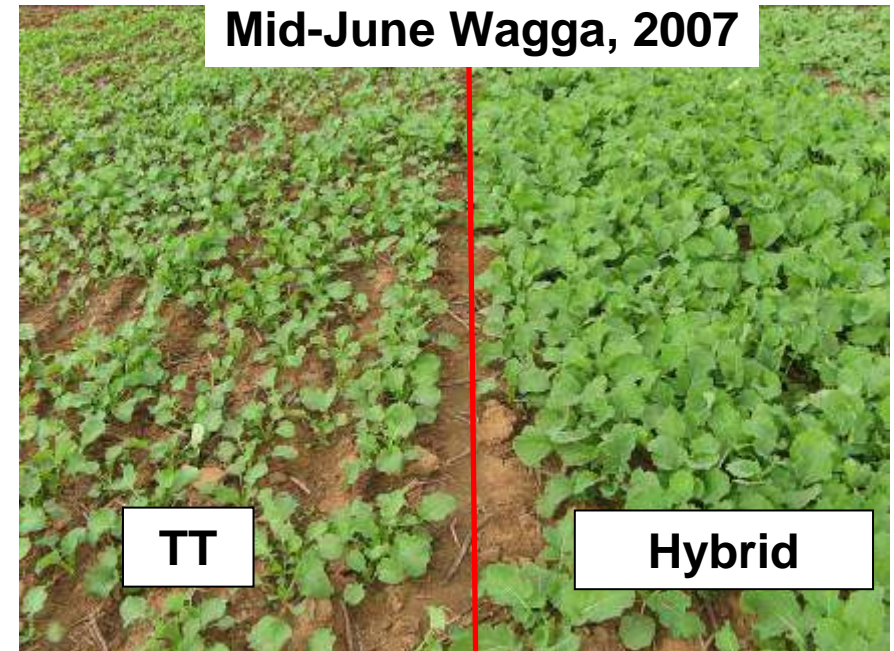
Best Bet management

- Select a suitable paddock planned for canola. Good moisture.
- Sow 2-3 weeks earlier than normal – be prepared
- Variety
 - appropriate phenology for the site/sowing time
 - good blackleg resistance, high vigour
 - weed control - early sowing and **chemical withholding periods**
- Commence grazing when plants are well anchored and there is adequate biomass (~1.5 t/ha) usually 6-8 leaves; mid-late June.
- Lock-up before buds elongate >10 cm, to avoid yield loss. If later, graze moderately. Bud removal delays flowering.
- Expect 600-800 DSE grazing days/ha (4-6 weeks @25 dse/ha)
- Consider top-dressing N after grazing if rainfall is forecast

Options for improved early biomass



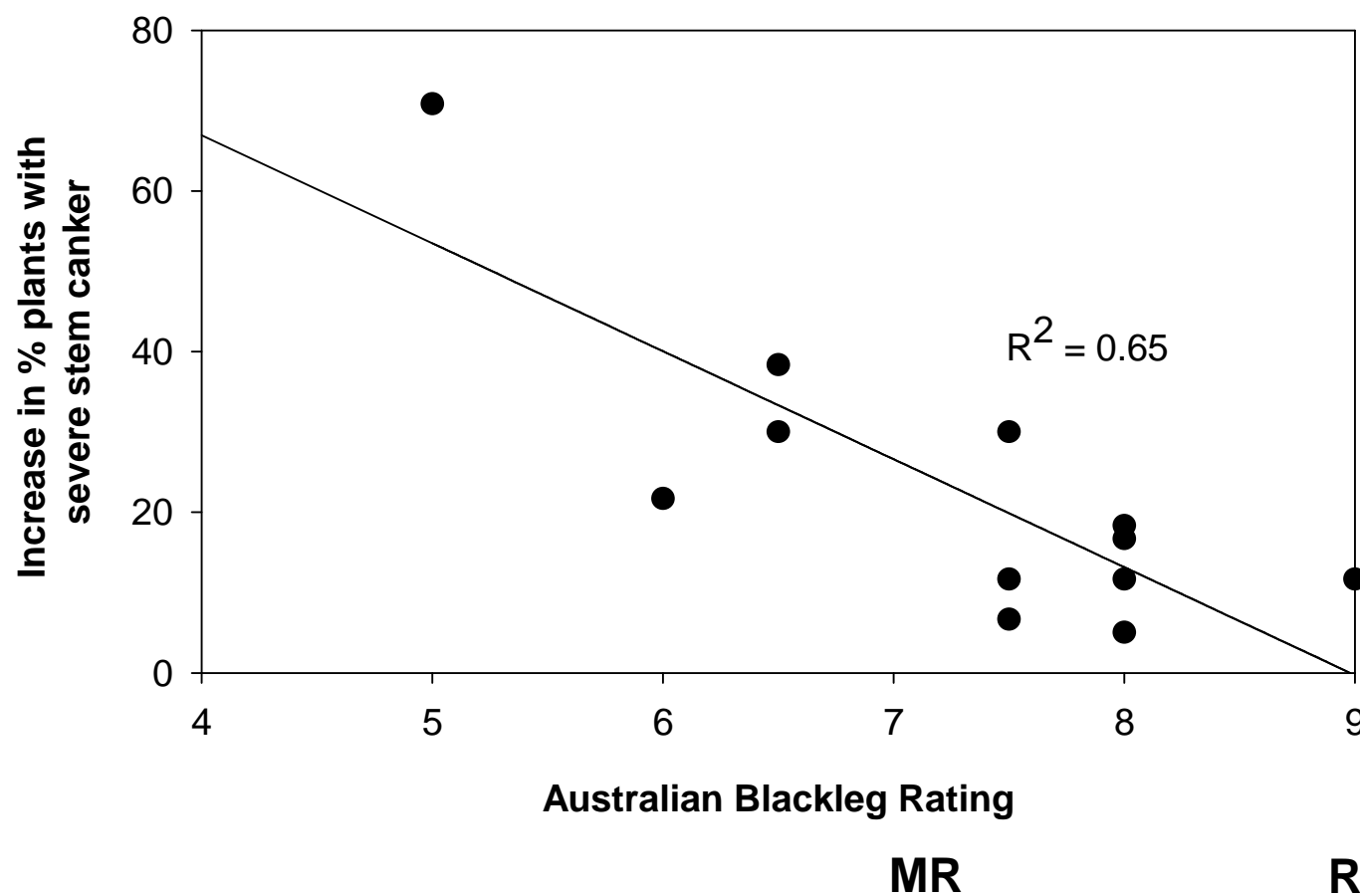
Sow early



Use vigorous variety

Adequate plant populations and good nutrition (watch N!)

Use varieties with high Blackleg resistance (MR-R)



Optimum grazing time



The twist test



OK to start



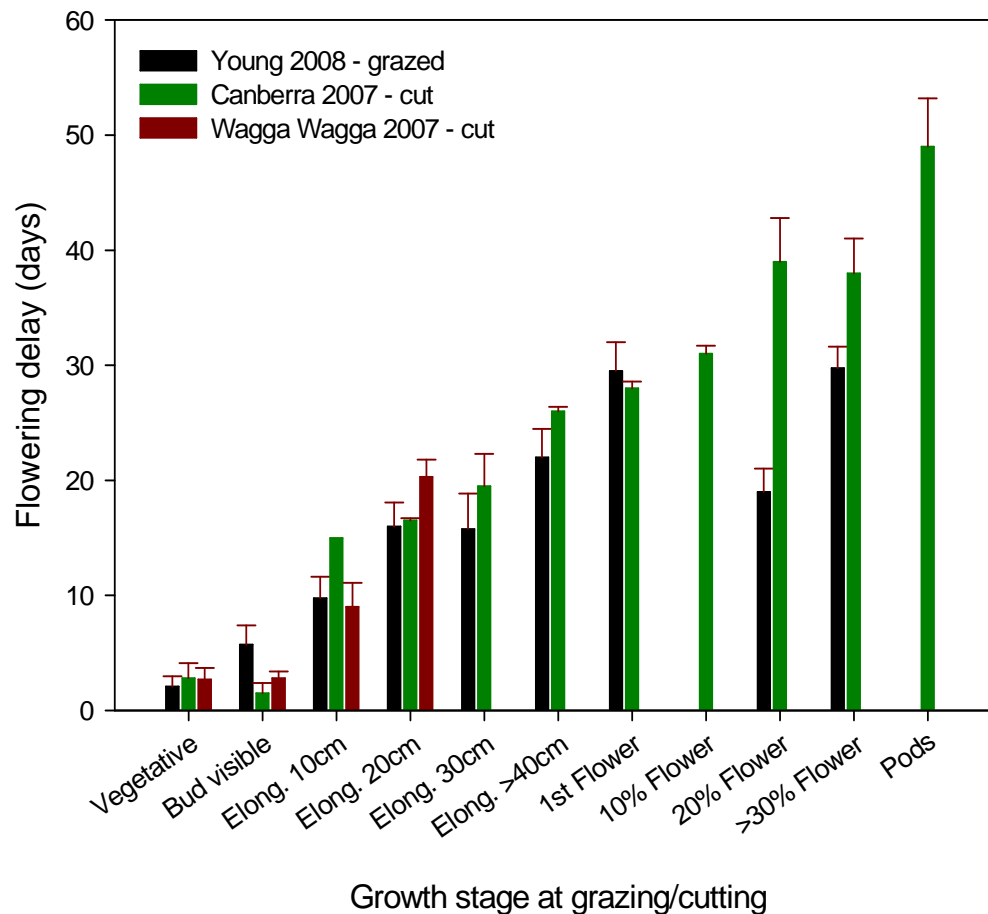
Monitor bud elongation



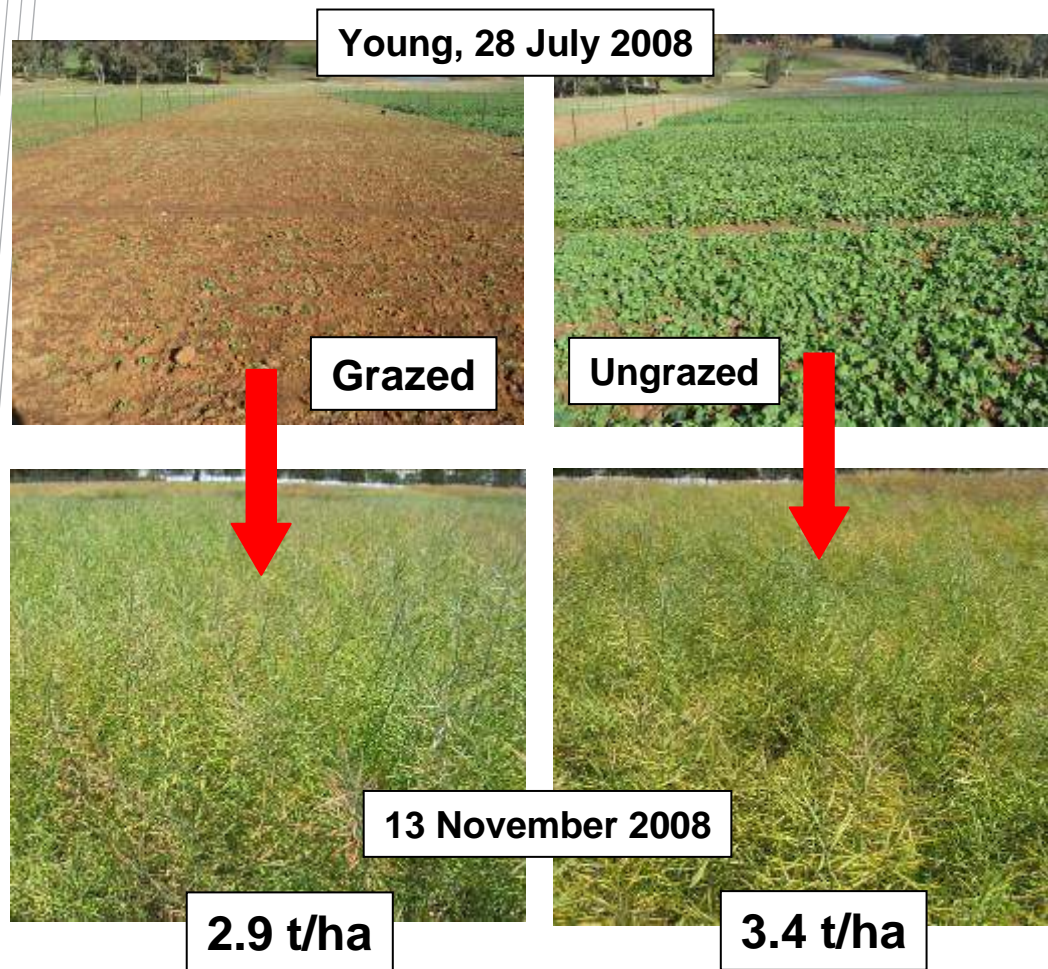
Getting late

Timing of stock removal is the key!

- Grazing after buds elongate > 10 cm delays flowering, potentially reducing yield

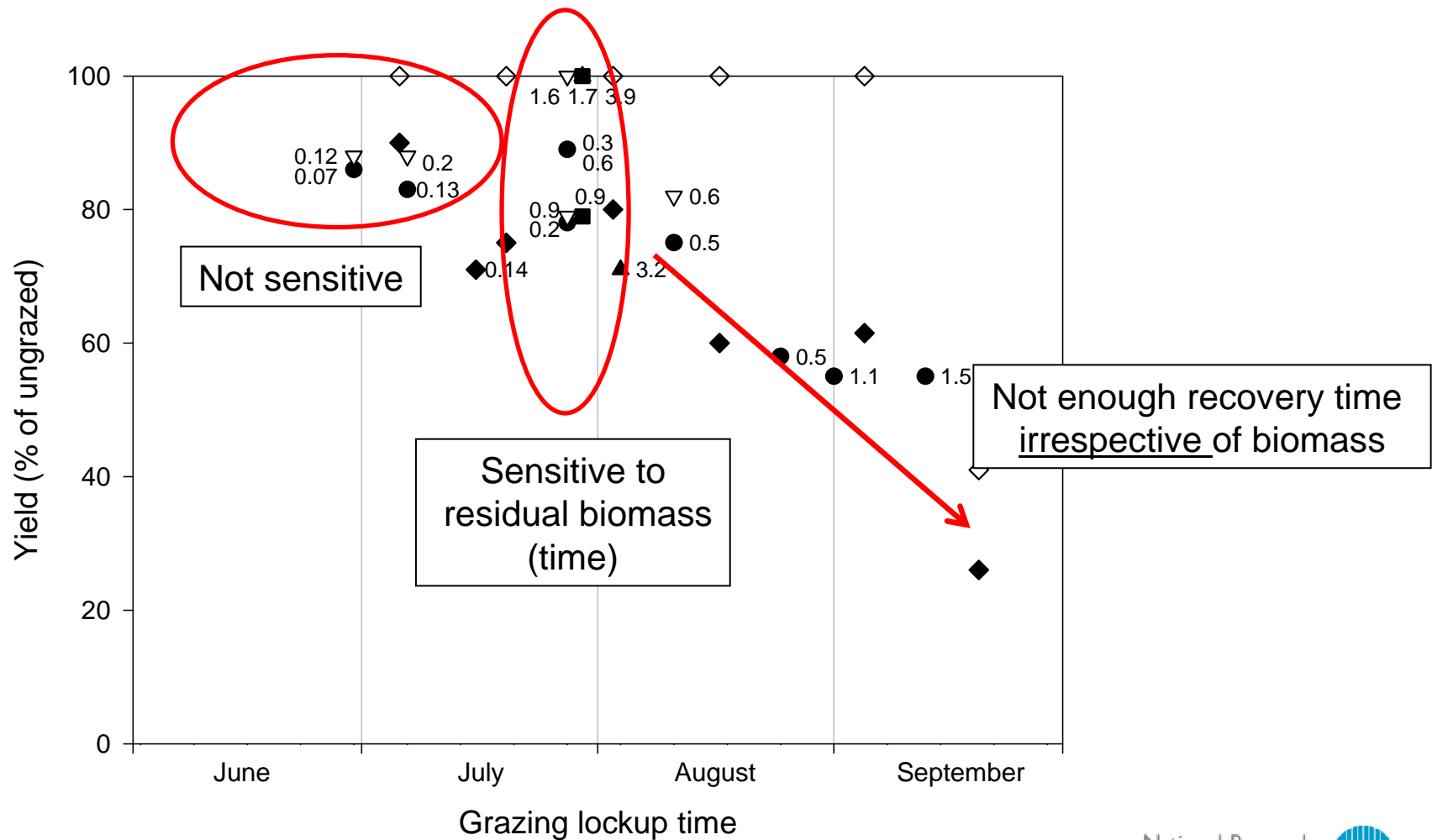


Grazing intensity and residual biomass



Lock-up time and residual biomass (Canola)

Canola experiments at Young 2007-2009 – sown mid-April



Recent work - profitability, risk and system benefits

If yield penalty is avoided, feed is added value

\$GM increase of \$100 - \$400/ha; whole-farm \$10-40/ha

Indirect benefits include

- Canola is a grass weed and cereal disease control option
- Winter pasture spelling provides lambing feed in late winter
- Wider sowing and grazing windows for crops
- Reduced crop height to facilitate windrow and harvest
- Graze, hay and grain option = increased flexibility, lower risk

“A decade ago we only grew fine wool.....

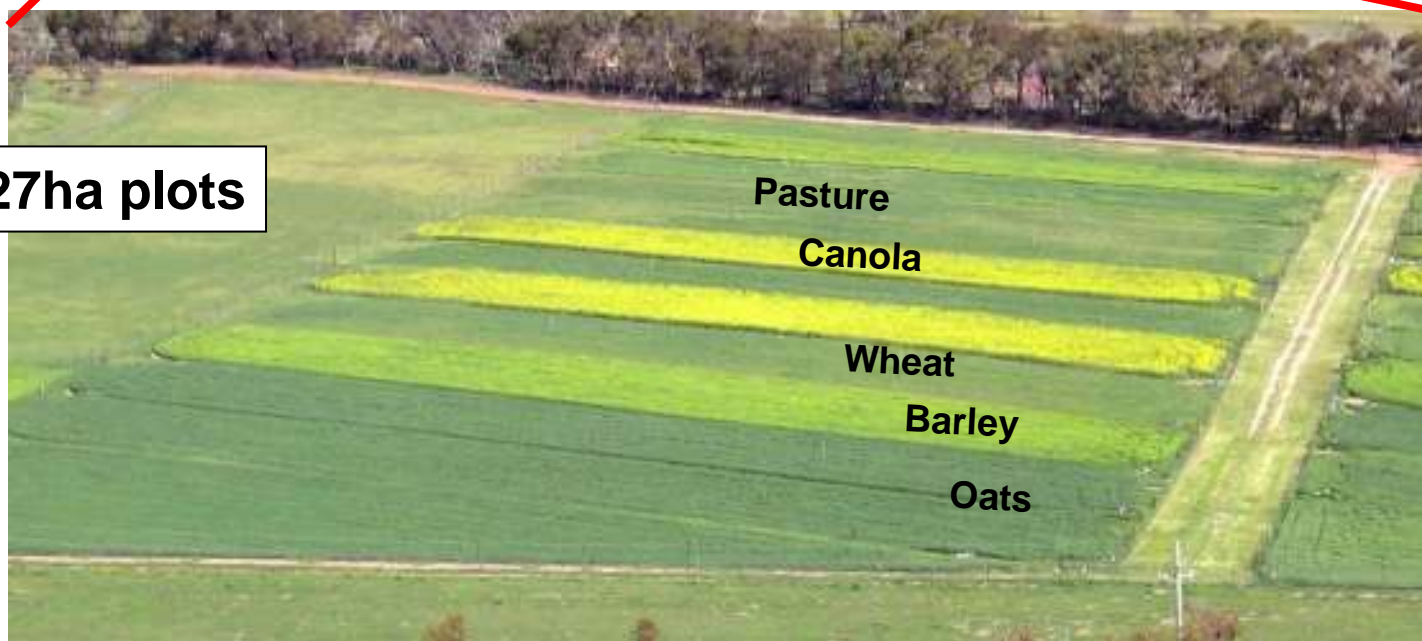
*Now we produce a range of crops and
pastures for forage, silage, hay and grain
as well as meat from sheep and cattle”*



Integrating options at farm scale - experimental



0.27ha plots



Grazing of crops = spelling of pastures

Pre-graze



Canola

Wheat

Grazing



End of graze



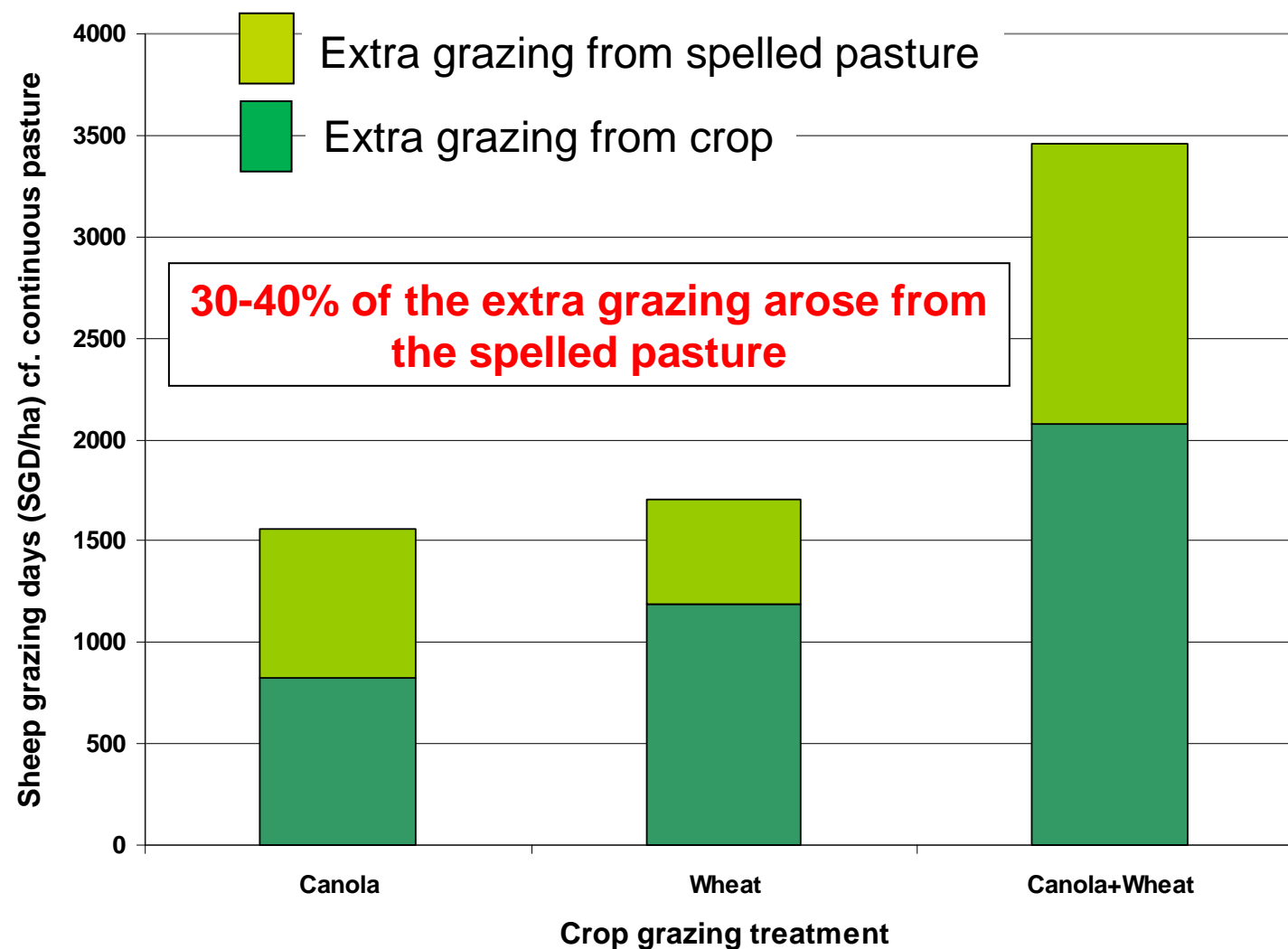
Continuous grazing



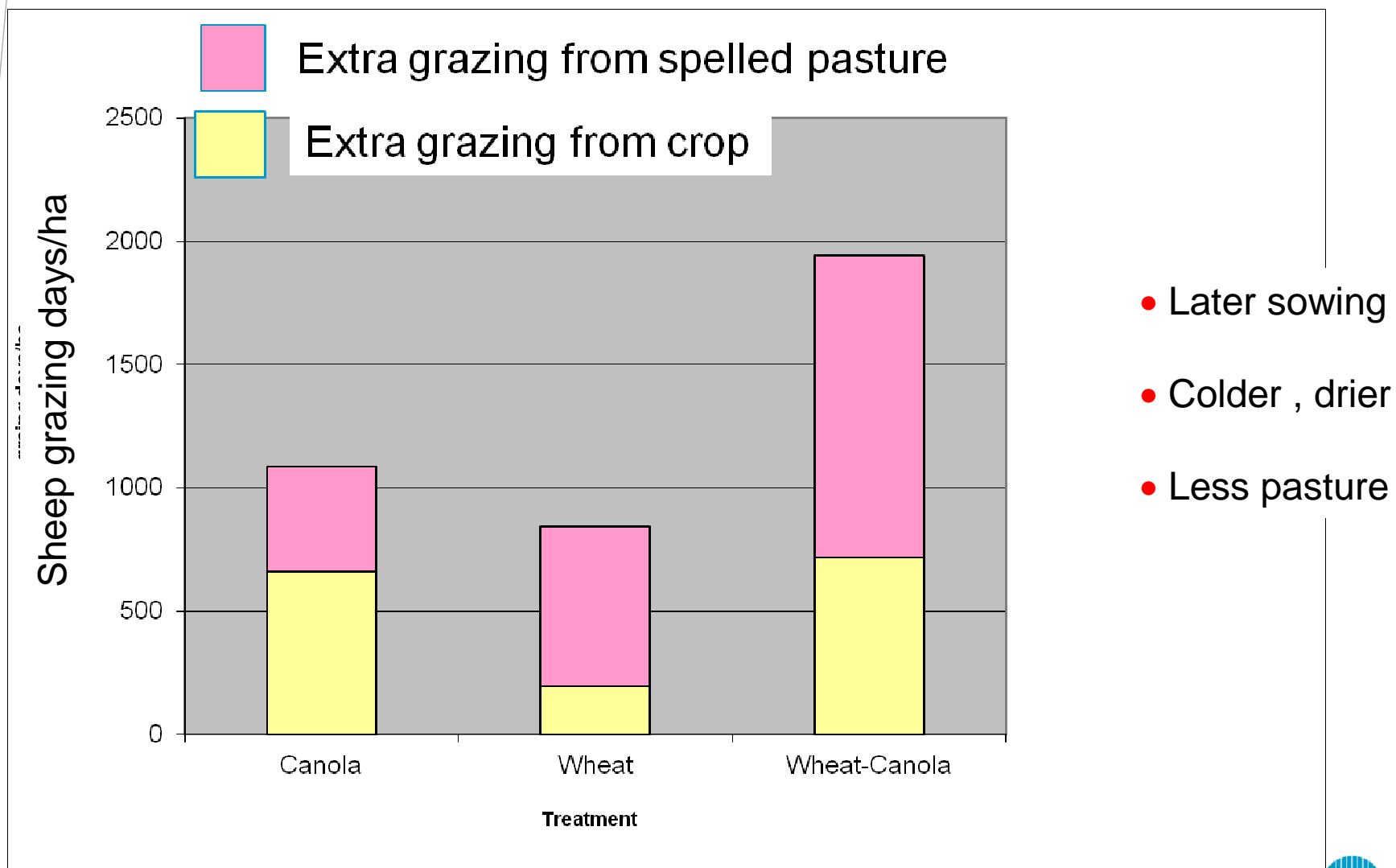
Pasture spelling during crop grazing



Extra grazing days from grazed crops - 2010



Extra grazing days from grazed crops - 2011



- Later sowing
- Colder , drier
- Less pasture

Capitalising on the extra feed (crop and pasture)

Based on arable land area, environment, management ability.....

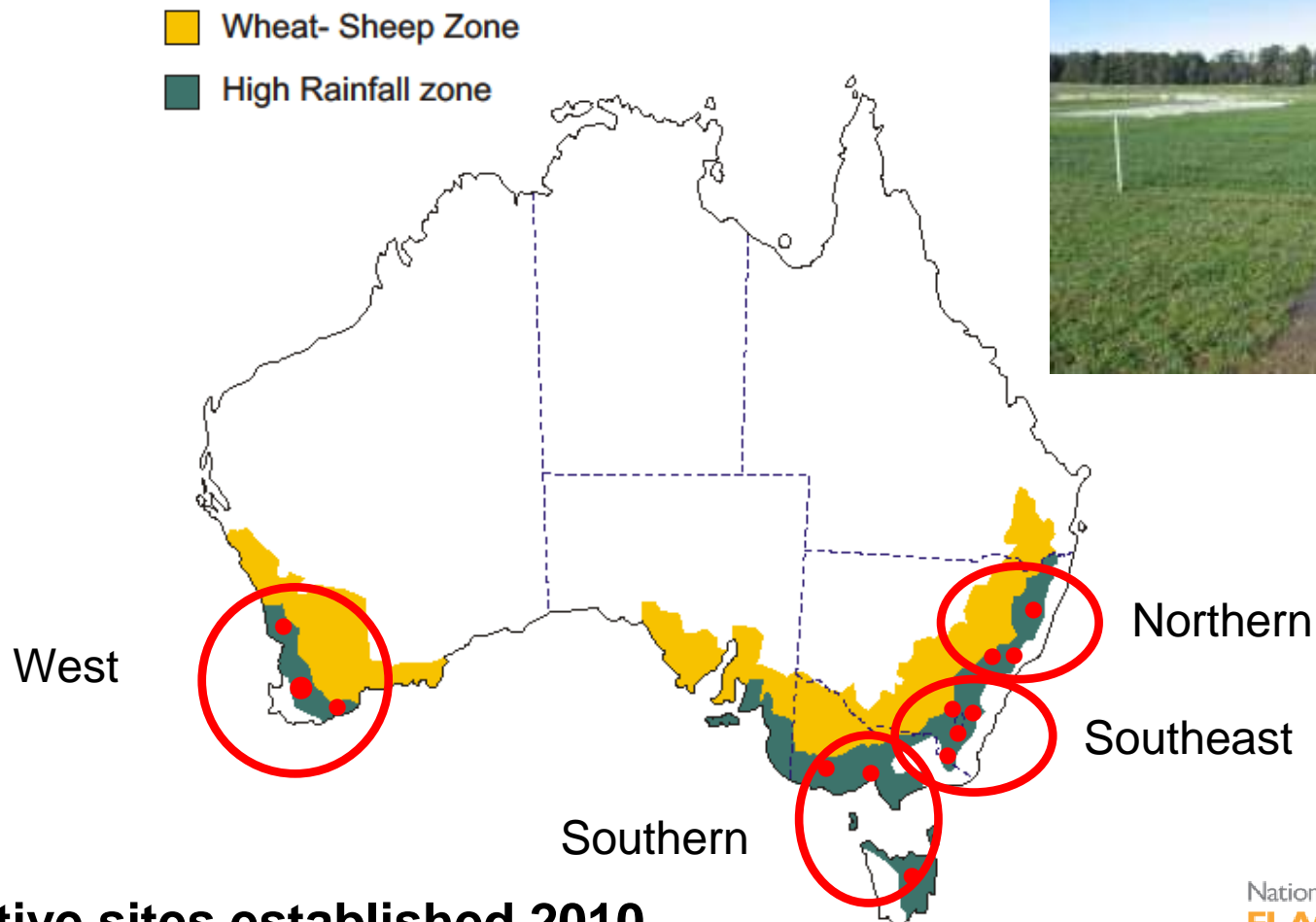


Increase overall farm stocking rate by;

1. More females through winter
2. Agistment or trading stock
3. Increase crop area

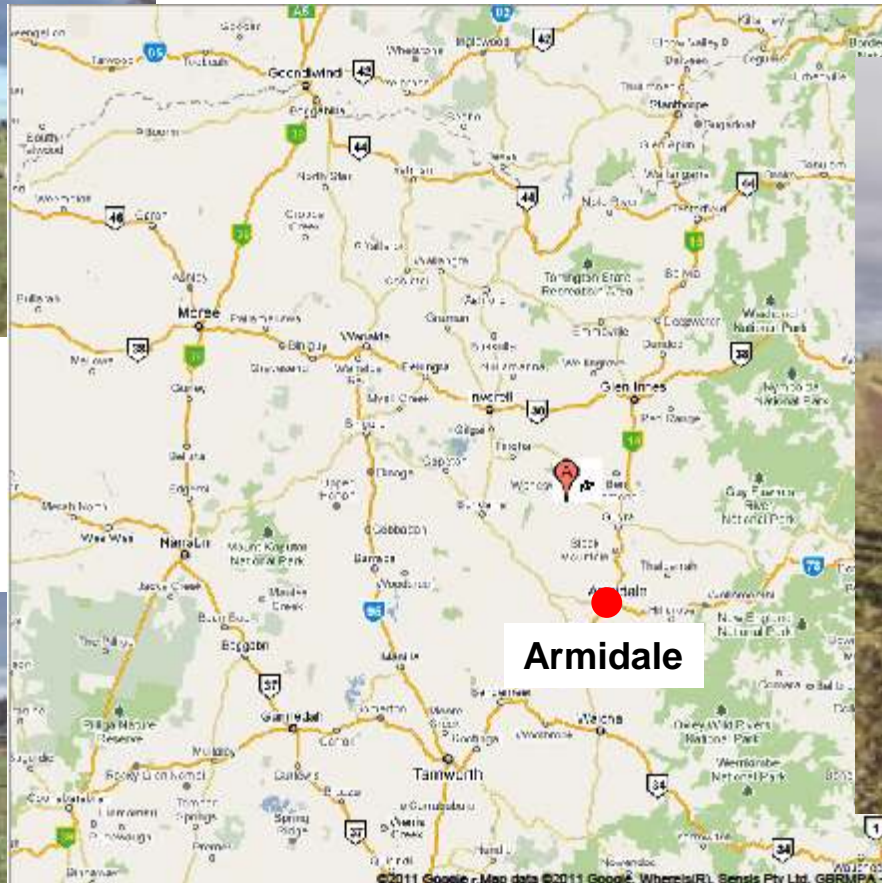
Extrapolating and fine-tuning in different areas?

GRDC HRZ Dual-purpose crop Initiative

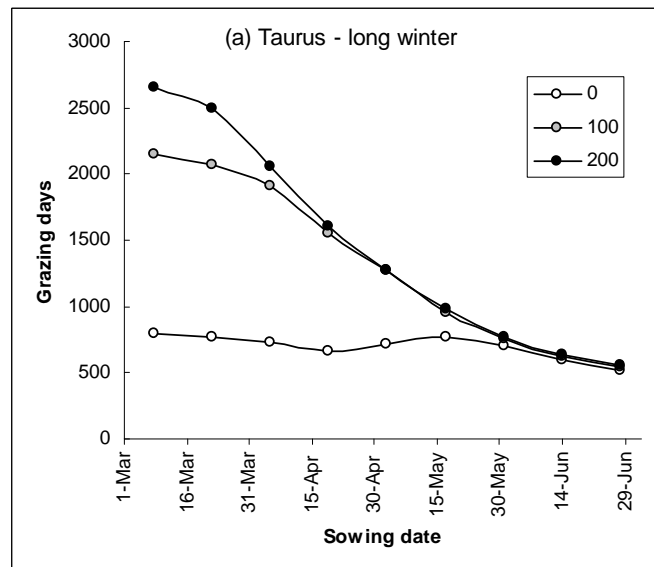
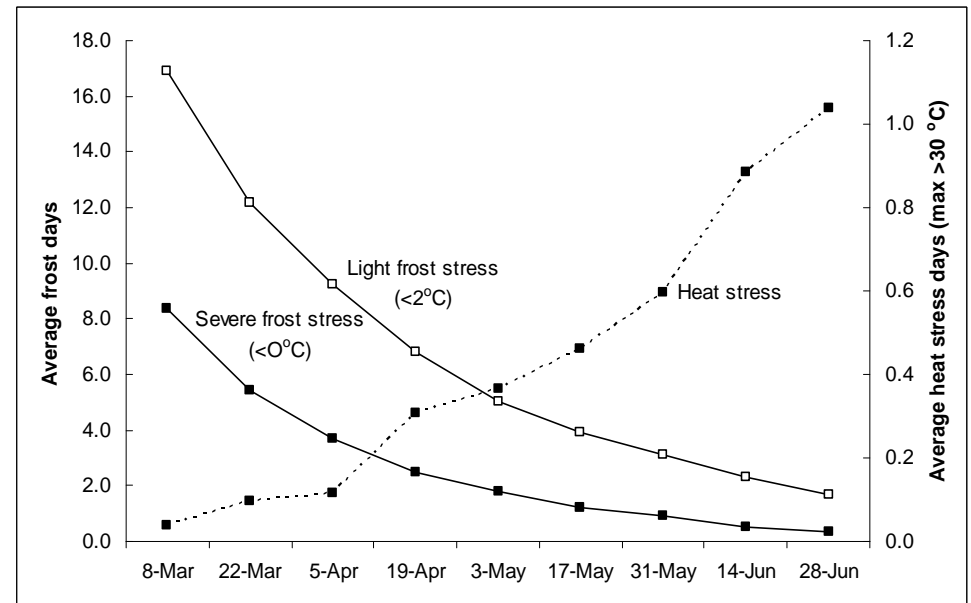
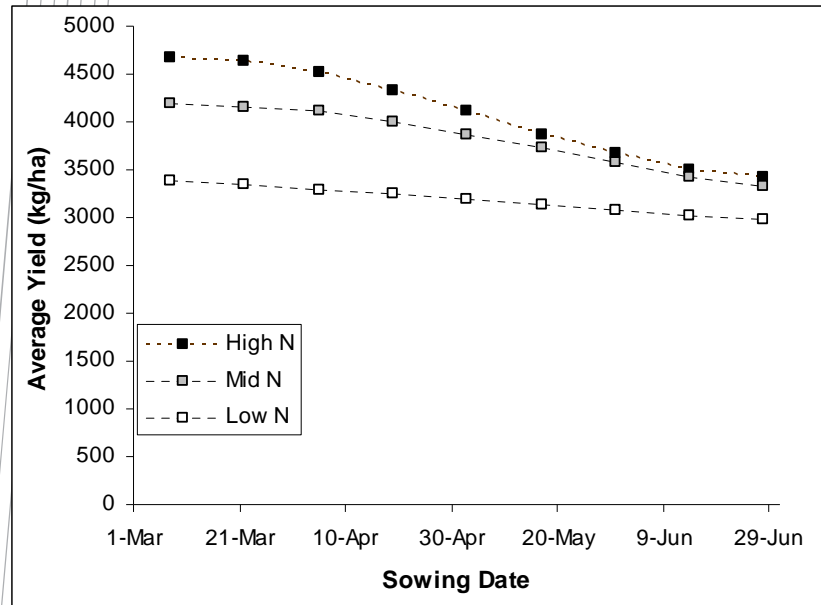


Collaborative sites established 2010

Dual-purpose winter canola in New England area?



Predicting crop and livestock productivity



Early April sowing optimises

- grain yield
- grazing
- risk

Tour of DP crops in WA (July 2011)



Larger paddocks

Earlier start, earlier lock-up

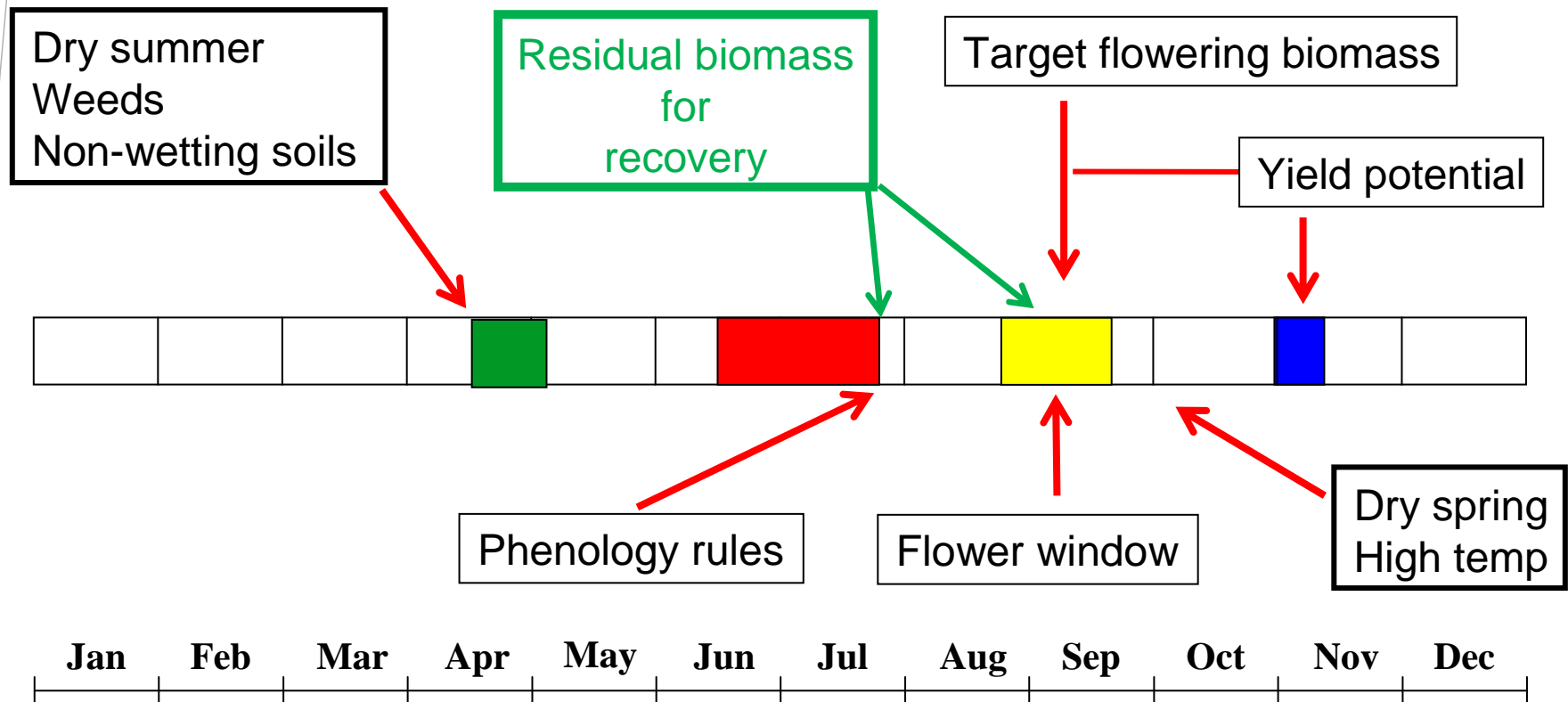
Lower stocking rates on bigger areas



Issues with establishment for early sowing on non-wetting sands

Grazing crops in WA

WHEAT BELT: Clip-grazing (No-trade-off) – Normal sowing window



SOWING



GRAZE



FLOWER



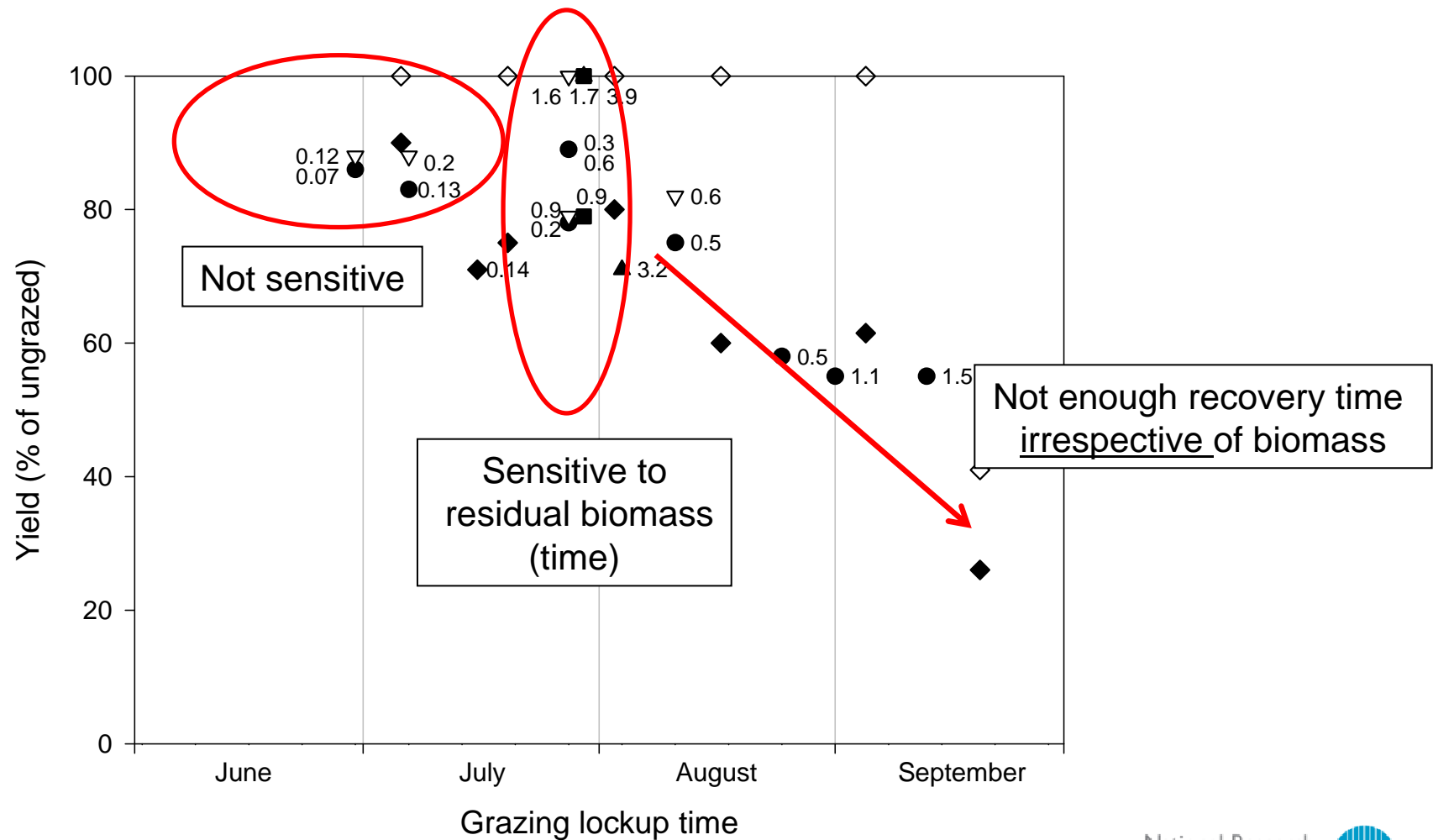
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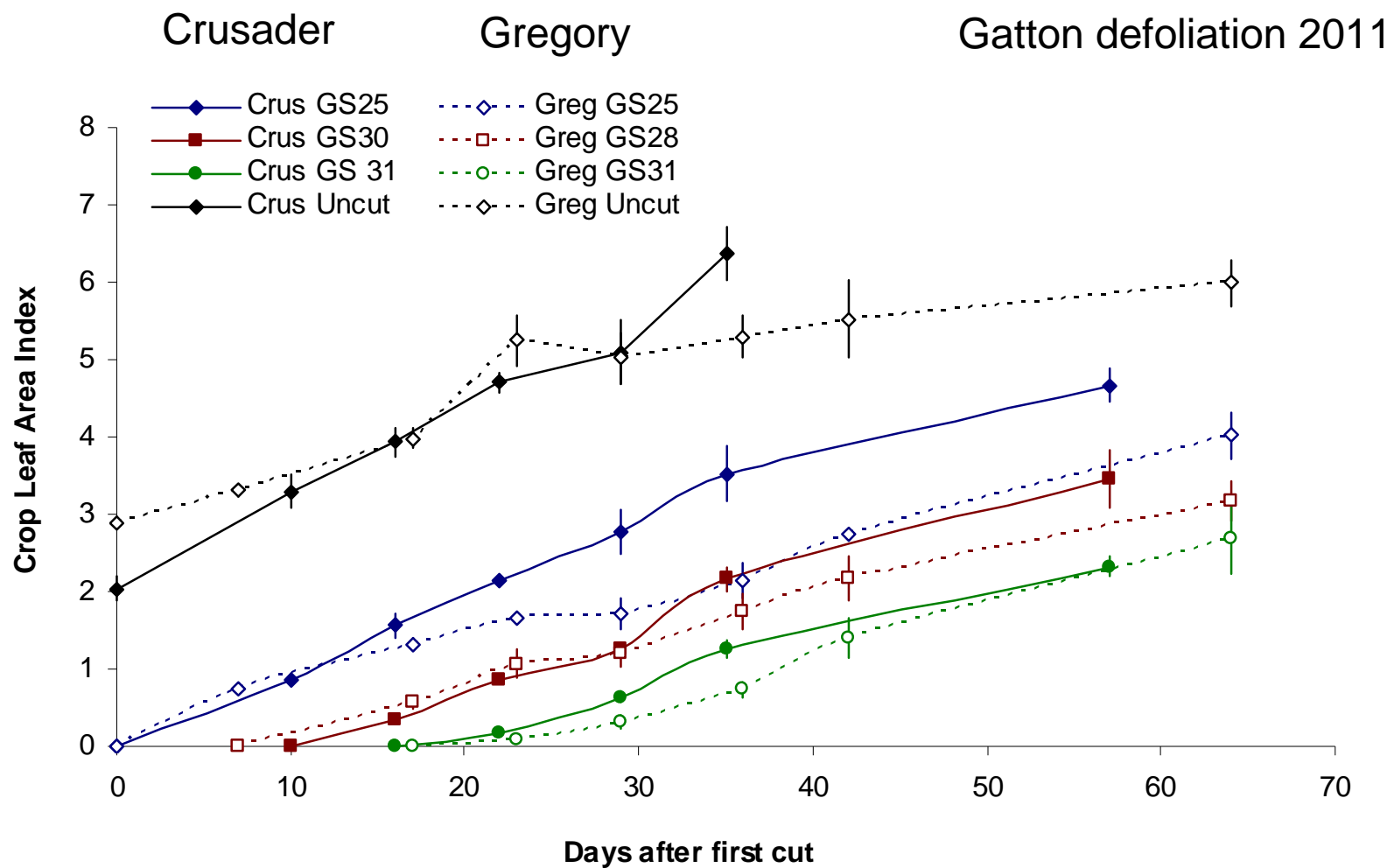


Lock-up time and residual biomass (Canola)

Canola experiments at Young 2007-2009



Spring wheat varieties vary in recovery



New dual-purpose cropping projects

MLA (2012 – 2017)

“Step changes in meat production systems from dual-purpose crops in the feed-base”

Nodes of work in Canberra, Wagga, Hamilton, (DAFWA) **Esperance (WA)**

GRDC (2012 – 2015)

“Refining variety and management recommendations to improve productivity and resource use efficiency of dual-purpose crops”

Nodes of work in northern, southern and western (DAFWA) **Esperance (WA)**

Website

<http://www.csiro.au/HRZ-dpc>