



Raising confidence in grazing canola

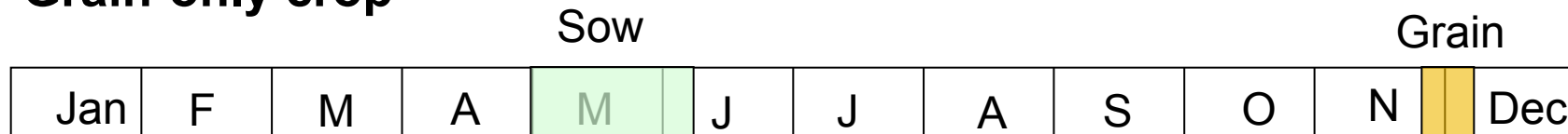
John Kirkegaard CSIRO
(and lots of others!!!)

National Research
FLAGSHIPS
Sustainable Agriculture

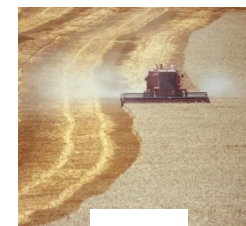


Dual-purpose crops

Grain-only crop

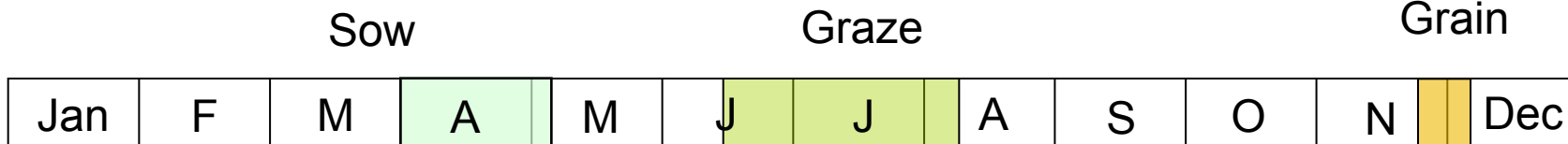


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Dual-purpose crop



Areas and systems for adoption

TABLELANDS/LONG-SEASON AREAS/IRRIGATION: Winter Canola



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



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



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



SOWING



GRAZE



FLOWER



HARVEST

First commercial crop grazed at Bobbara Station in 2007



Commercial experience in NSW

Tim Condon, Delta Agribusiness Harden/Young (10 growers, 2008)

*“All positive responses, all will try again, 4 weeks grazing @25 dse
Yield of grazed crops 2.4 t/ha , un-grazed 2.1 t/ha.
Unexpected benefits due to ease of harvest of less bulky crops”.*

Peter Watt, Elders Cowra (15 growers, 2008)

*“Generally positive results but variable, some yield penalties on crops
grazed late. Canola will become a standard option in the feed-base.
The concept has moved from the experimental to operational”.*

Tony Good, Harden District Rural Advisory Service (10% clients 2009)

*“Opportunity to clean up grass weeds arising from a phase of grazing
cereals so that the pastures can be cleaner and more productive. The
system benefits are the main attraction”.*

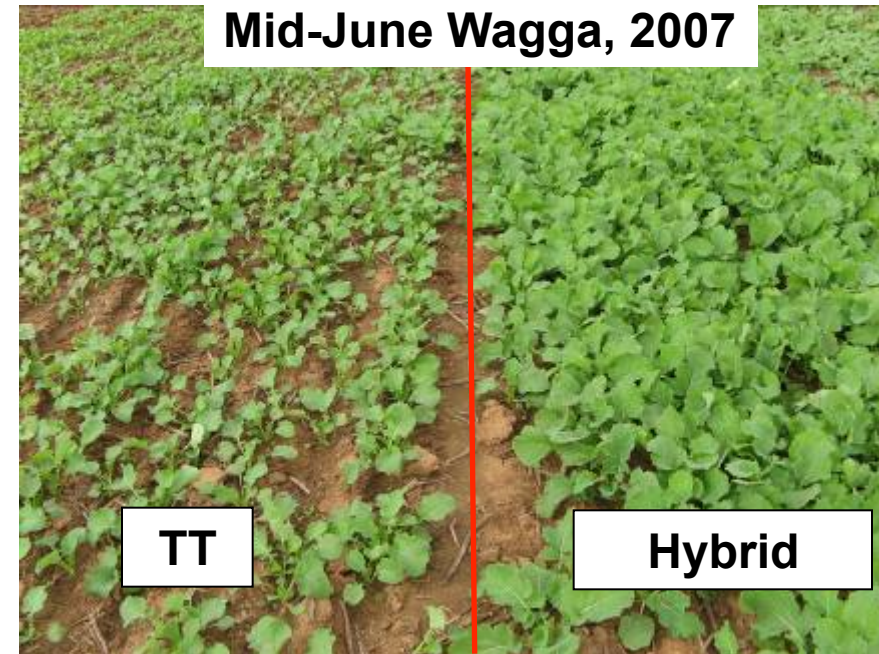
Best Bet management guidelines

- 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 to remove leaf. 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

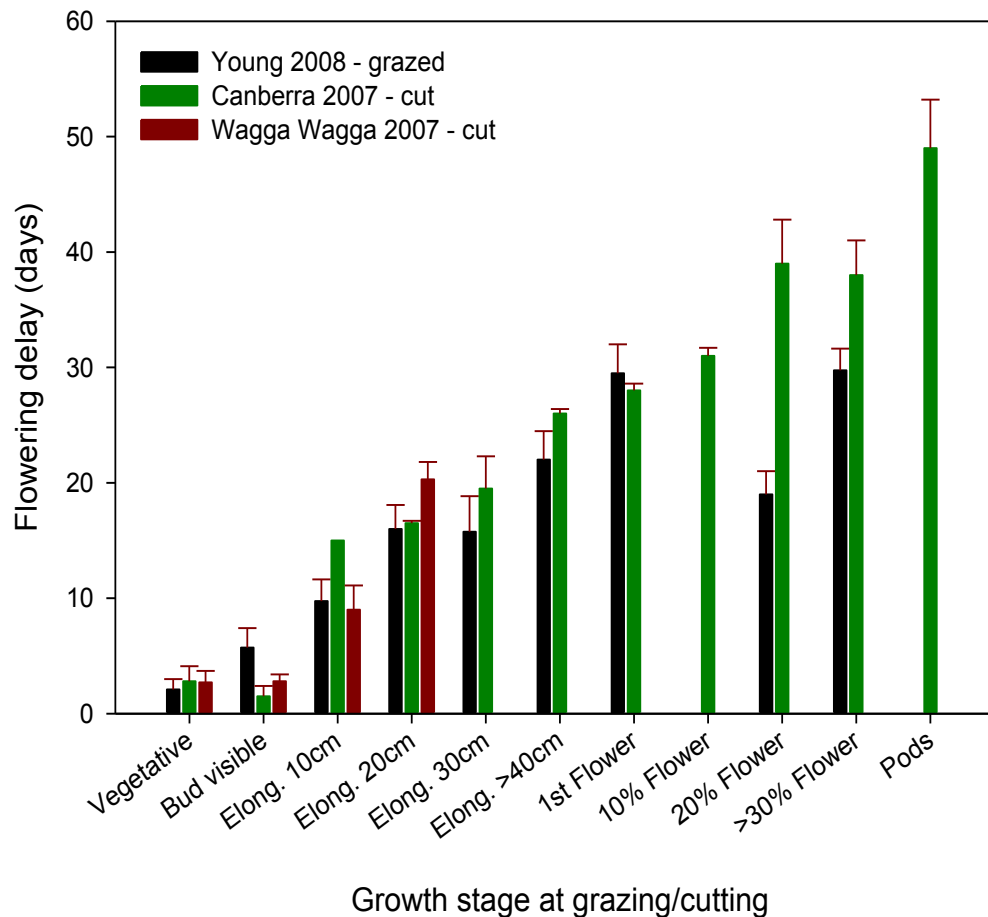
Adequate plant populations and good nutrition (watch N!)

Optimum grazing time

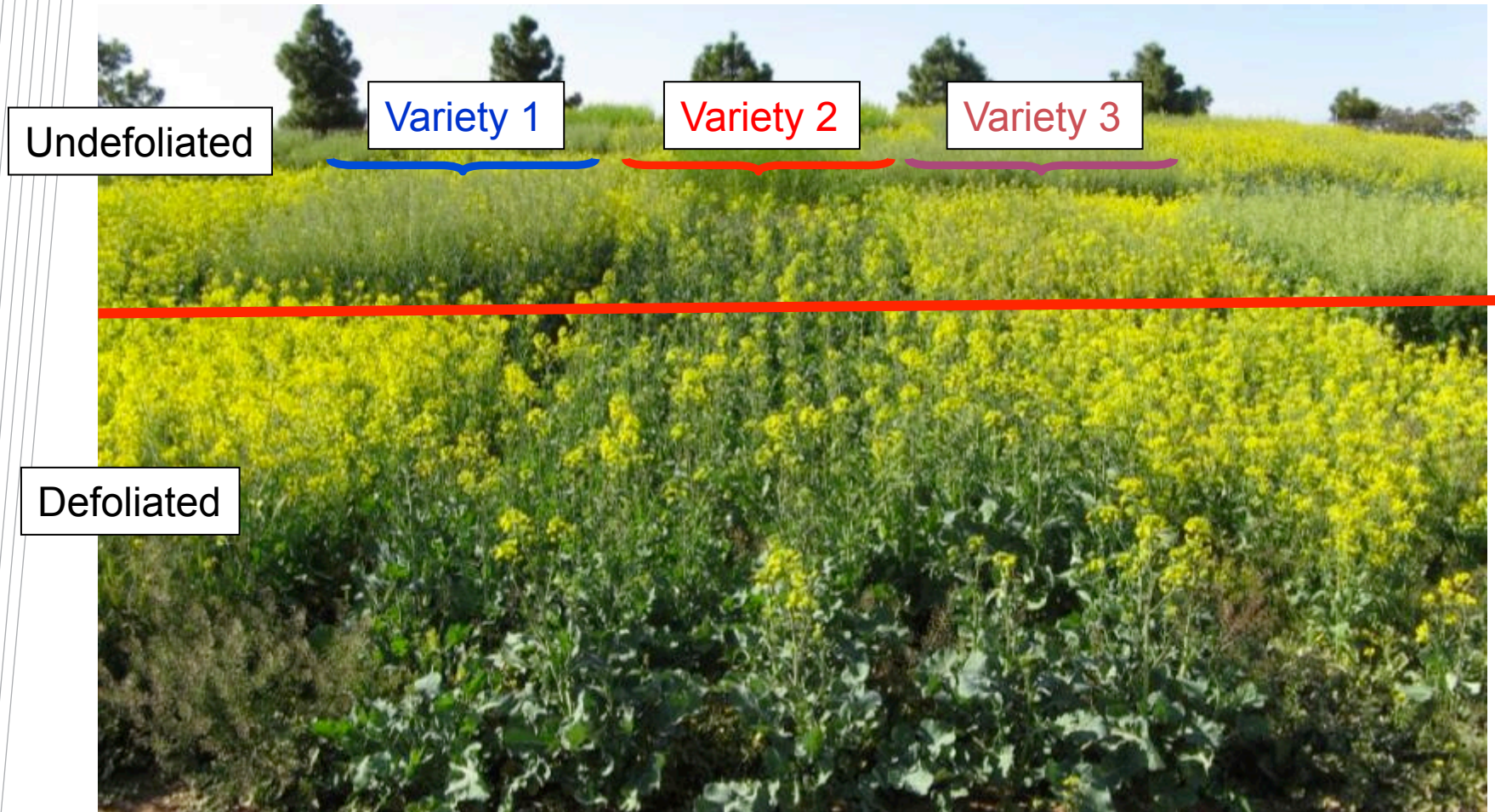


Timing of removal is the key!

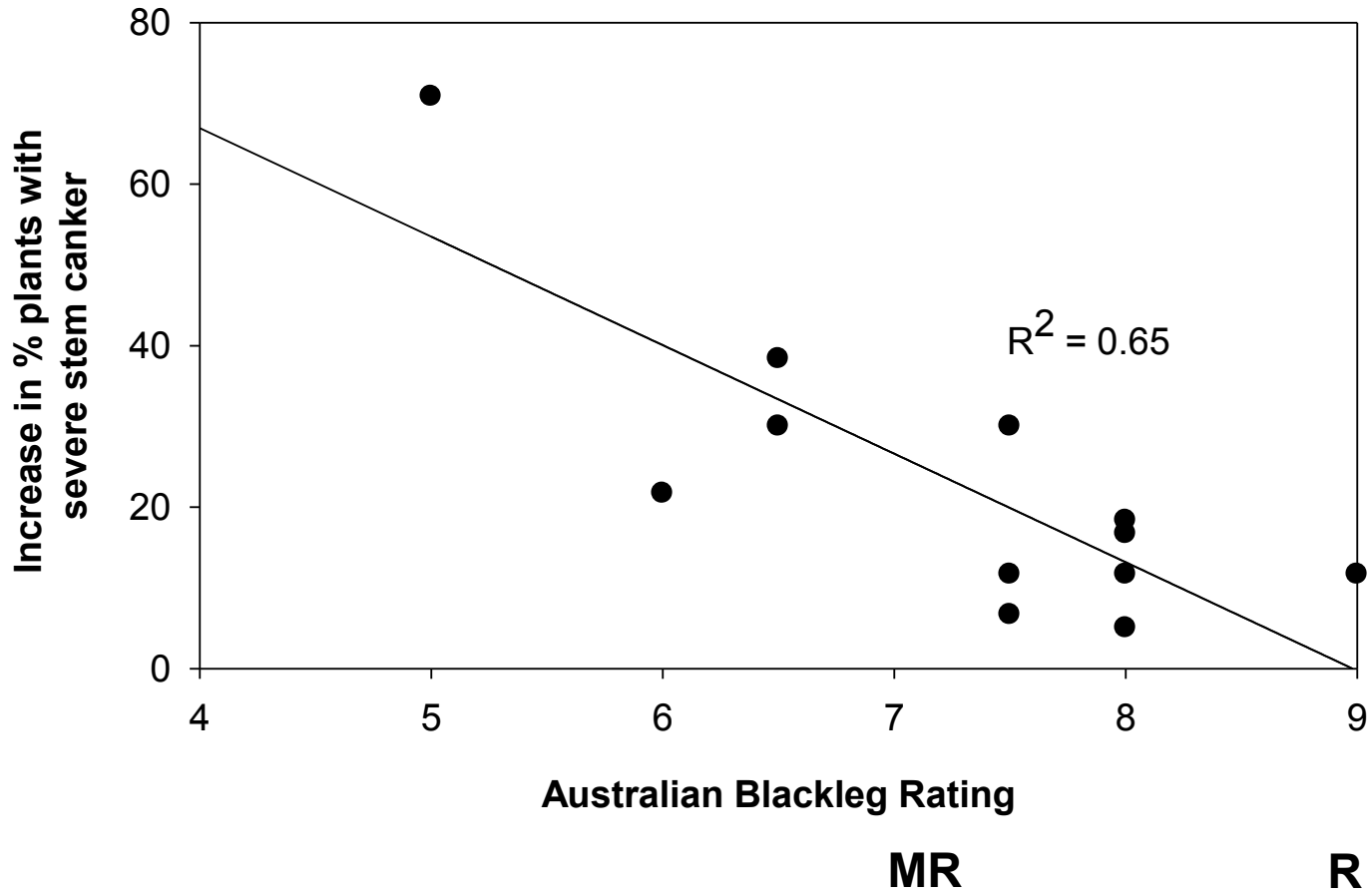
- Grazing after buds elongate > 10 cm delays flowering, potentially reducing yield



Delayed flowering



Use varieties with high Blackleg resistance (MR-R)



Grazing canola at Wagga Wagga

Jeff McCormick (PhD CSU, 2007- 2010)



Field experiments
Pot experiments
Modelling

*Growth, development and yield of dual-purpose canola (*Brassica napus*)
in the medium Rainfall zone of SE Australia.*

Grazing canola at Wagga Wagga (2008)

Two field experiments grazed by sheep in a hot, dry season

Sown	GSR (mm)	Grazing			Varieties	Yield (t/ha)	
		Time	SR	DSE.d/ha		UG	Graze
29 April	350	4-11/7	28 DSE	196	46Y78 Garnet Marlin	1.6	1.5
8 May	182	1-15/8	33 DSE	462	46Y78 Garnet Marlin	0.6	0.4*



Residual biomass 1.0 t/ha

Grazing canola at Wagga Wagga?

Dr Jeff McCormick conclusions from PhD work.

Grazing canola without yield penalty (assuming 5 t/ha biomass at flowering)

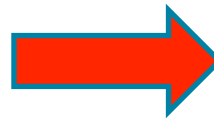
- Early sowing opportunity ~50% chance before May
- Grazing (assume 1.0 t/ha) Mid-June to mid-July
- Expect 400 to 1000 DSE.grazing days (4 weeks @ 20 DSE)

Significant opportunity to capture significant benefit without yield loss

Grazing canola at Temora (2010 and 2011)

Two field experiments with **FarmLink** at Coleman's (Water-Use Efficiency Site)

Sown	GSR (mm)	Grazing			Variety	Yield (t/ha)	
		Time	SR	DSE.d/ha		UG	Graze
15 April	460	30/6-1/7	Crash	517	Tawriffic	4.1	4.0
14 April	200	24-25/6	Crash	~800	45Y82	3.4	3.1



Residual biomass 0.4 t/ha

Grazing canola at Sea Lake, Vic (2012)

Experiment conducted by the **Birchip cropping group** (Grain and Graze)

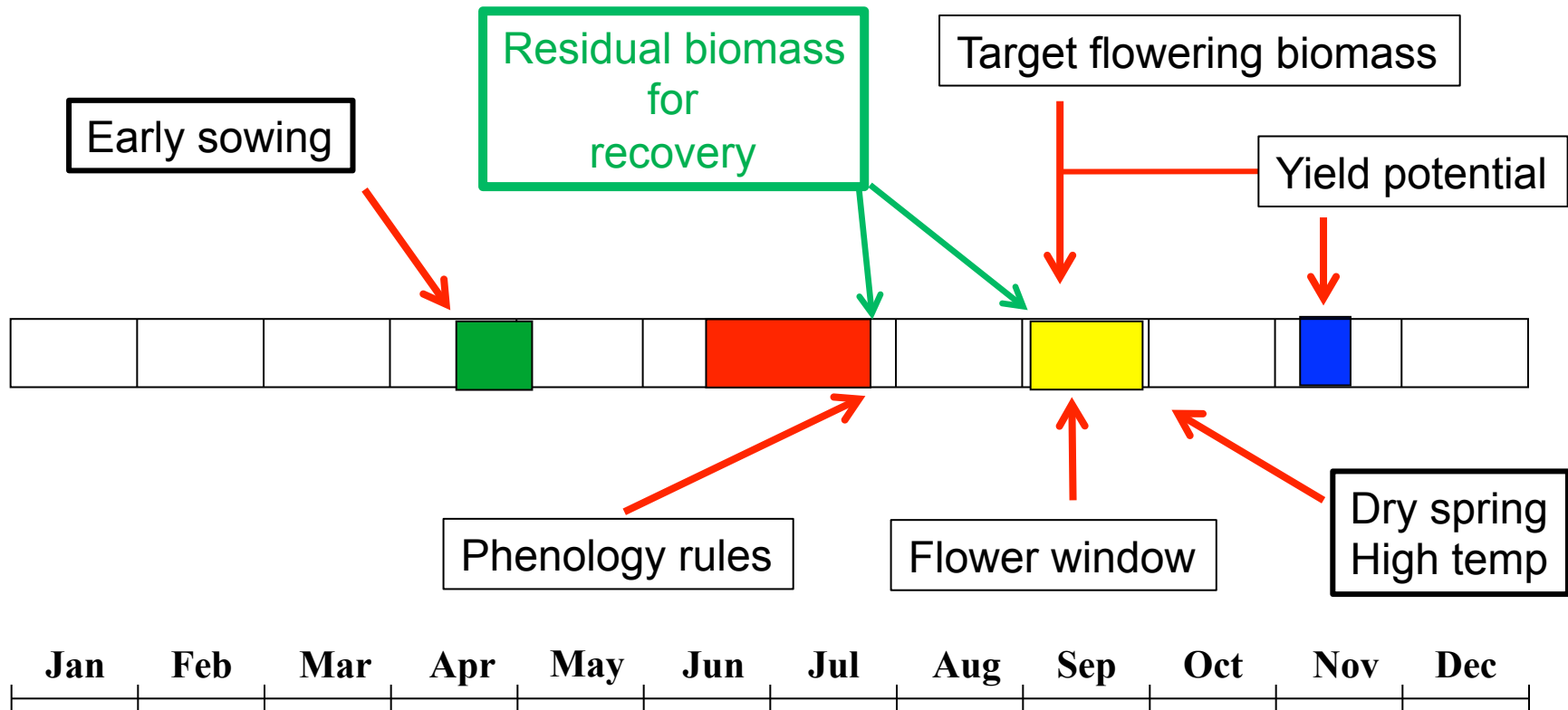
Sown 19 April, 43C80 Hybrid, GSR 103mm (Ave. 206) – Good subsoil moisture

Treatment	Date	Forage (t/ha)	Grain yield (t/ha)	Oil (%)
Un-grazed		0	1.7	40.4
G - 6-8 leaf	2/7	0.2	1.9	41.5
G - mid cabbage	17/7	1.6	1.8	41.0
G – late cabbage	26/7	1.5	1.8	40.1
G – 6-8 + late	2&26/7	1.0	1.6	38.3
G – mid + N	17/7	1.6	1.8	40.6

Decile 1 season, but early sowing into good subsoil moisture was key.

Refining the grazing rules to avoid yield loss

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



SOWING



GRAZE



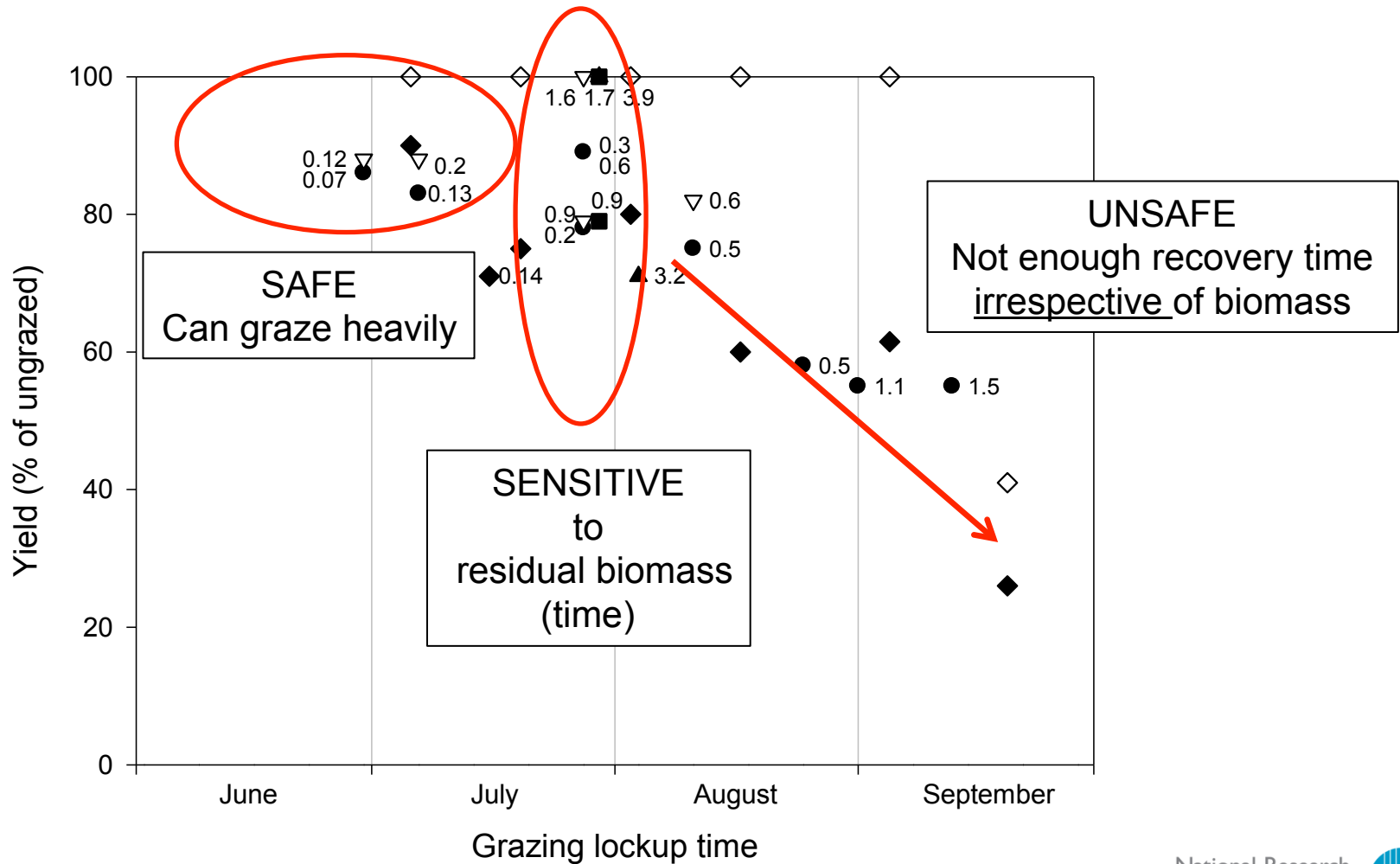
FLOWER



HARVEST

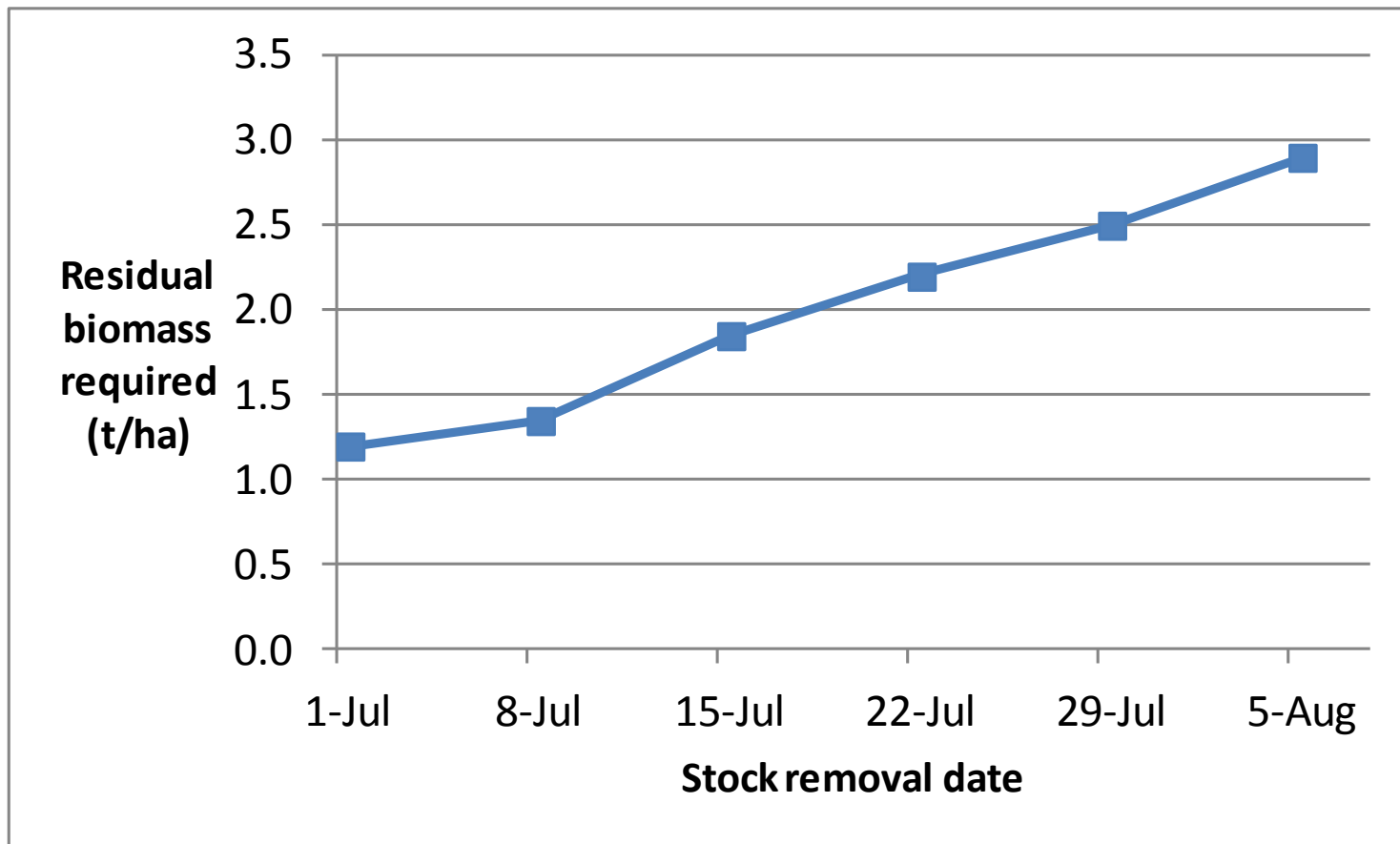
Lock-up time and residual biomass (Canola)

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



Residual biomass and lock-up dates

To achieve peak biomass of 5 t/ha on September 1 at Wagga (for 3 t/ha yield)



Best Bet management guidelines

- Select a suitable paddock planned for canola. Good moisture.
- Sow 2-3 weeks earlier than normal (early to mid April) – 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.
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- Expect 600-800 DSE grazing days/ha (4-6 weeks @25 dse/ha)
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Other hints...

The crop.....

- Choose variety based on role as a break crop – grazing is a bonus
- Hybrids produce more biomass, but variety response to grazing similar
- Recovery is slower than cereals - graze more established plants once
- Dry surface soil significantly retards quick recovery

The animals.....

- Few animal health issues - follow guidelines for grazing *Brassica*
- Lag in animal weight gain (10-14 days) – try to graze canola for 3-4 weeks
- Cattle seem more sensitive than sheep to dietary issues
- No need for Na/Mg supplement, some roughage for fibre

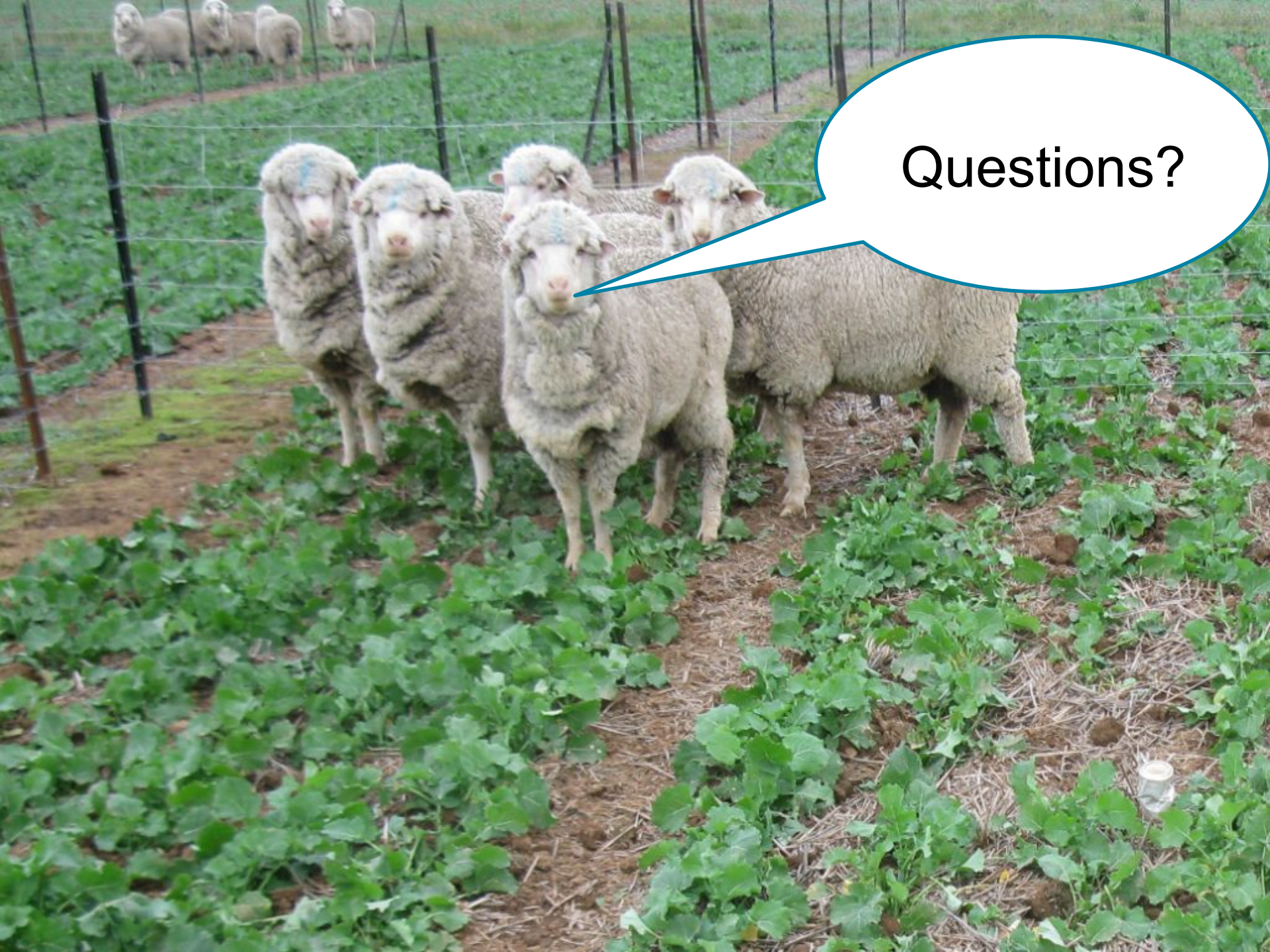
Capitalising on the extra feed (crop and pasture)

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



Increase overall farm stocking rate by;

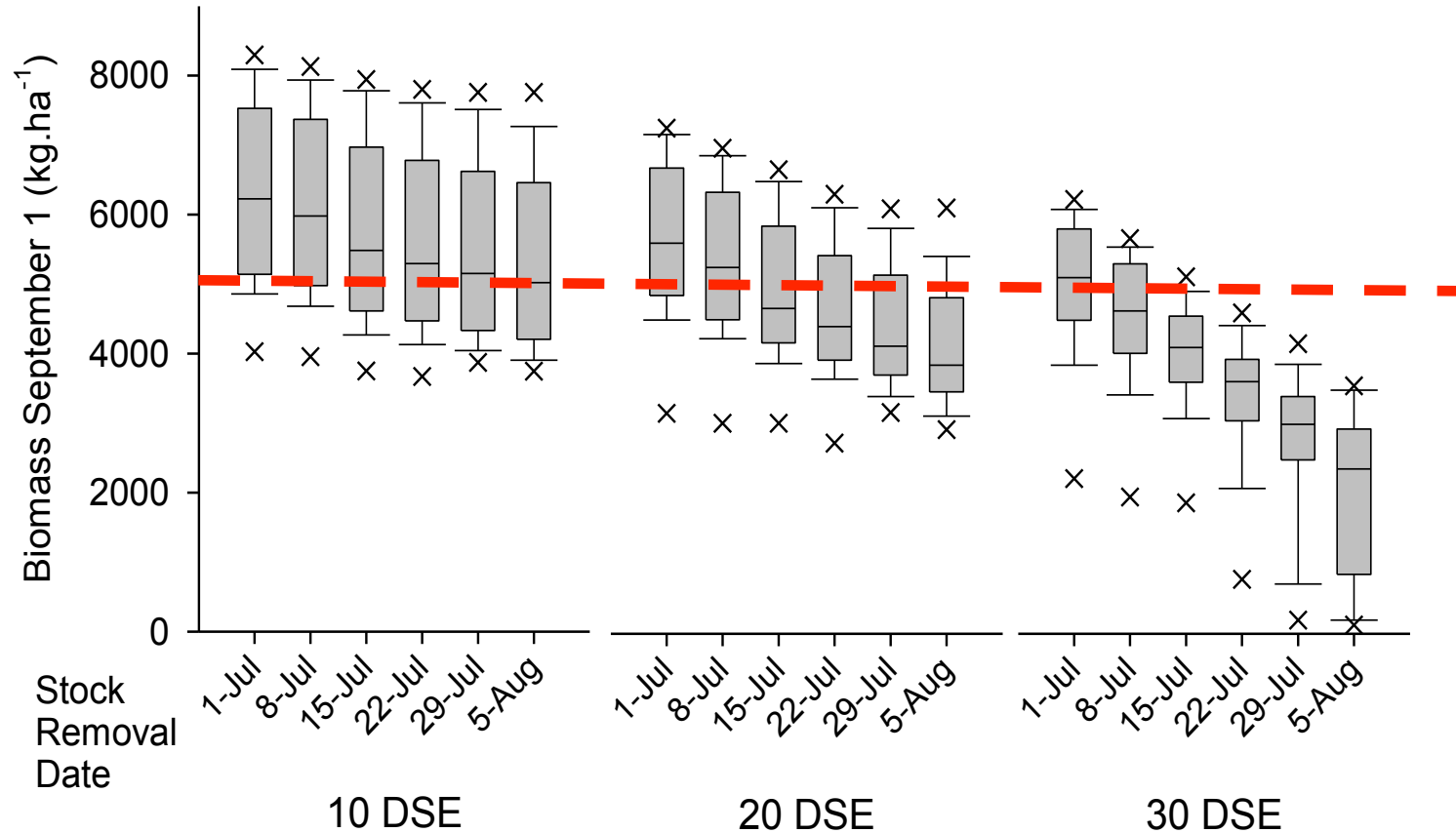
1. More females through winter
2. Agistment or trading stock
3. Increase crop area



Questions?

Lock-up time and residual biomass (Canola)

46Y78 Sown late April at Wagga, grazing commences 1.0 t/ha



Jeff McCormick, PhD (in review)

Effects of defoliation – initial effects

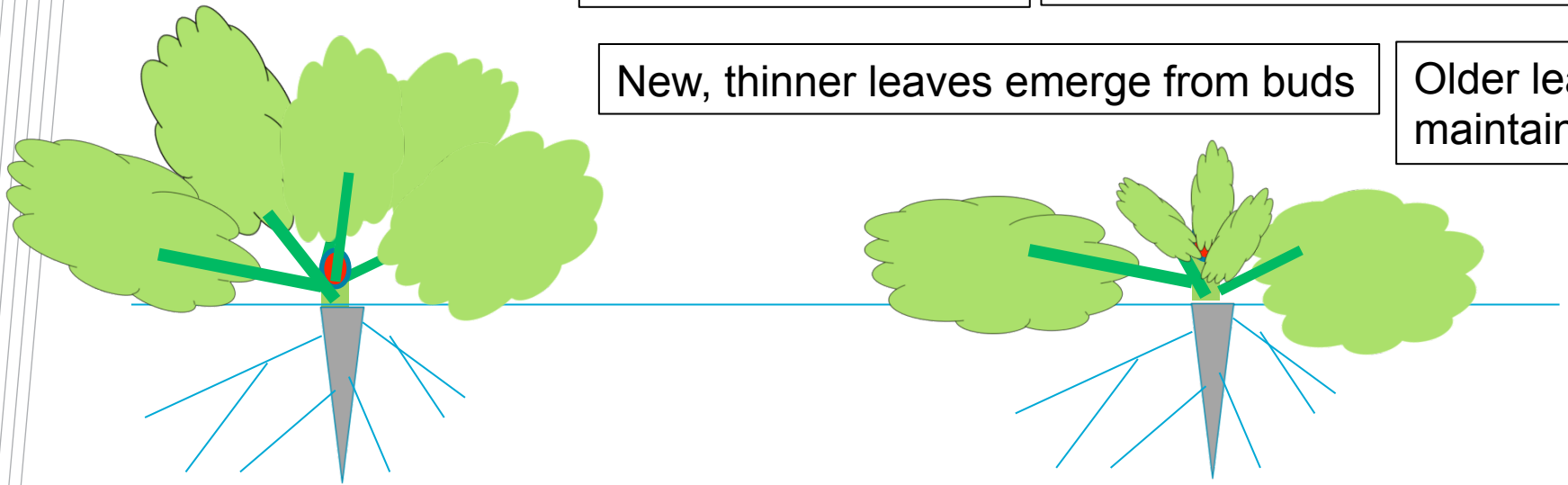
Loss of youngest leaf lamina

Stem growth reduced

Shoot CHOs decline (sucrose)

New, thinner leaves emerge from buds

Older leaves maintain PS



Jeff McCormick Phd

Fine root growth ceases

Taproot starch levels decline

In summary – a rapid recovery of leaf area

Summary of potential yield effects

- Reduced growth and lower peak LA/biomass

Reduce yield if below level to satisfy seasonal yield potential

No effect if at or above level to satisfy seasonal yield potential

Increase yield if water sparing in dry seasons increases yield

- Delayed/shortened flowering and pod-fill stage

Reduce yield if flowering/seed fill shortened or delay (hot/dry period)

No effect if good conditions persist

Increase yield if frost risk is reduced or early dry spell avoided

DP crops in WA , Kojonup

Grazed RR-canola used to clean up dirty rye-grass paddock for cropping



DP crops in WA (Andy Fowler)

Hybrid RR Canola after grazing



Increased crop area by 10% and increased winter dse from 12 to 18/ha



DP crops in WA – Case 4, Renovation, Dumbleyung



TT canola sown into run-down clover pasture

Grazed, spray, graze for grass weeds

\$900/ha lamb production

Clean clover locked up to seed down

N benefit for cereal, then clean clover



Saved on pellets to finish lambs

DP crops in WA – Case 6, Neridup

Grazing canola relatively new

Polled wiltshires grazed buds

Opportunity for weed control

A bit late, season dependant



Barley is a good option

Quick feed from later starts

Safer finish in WA environment