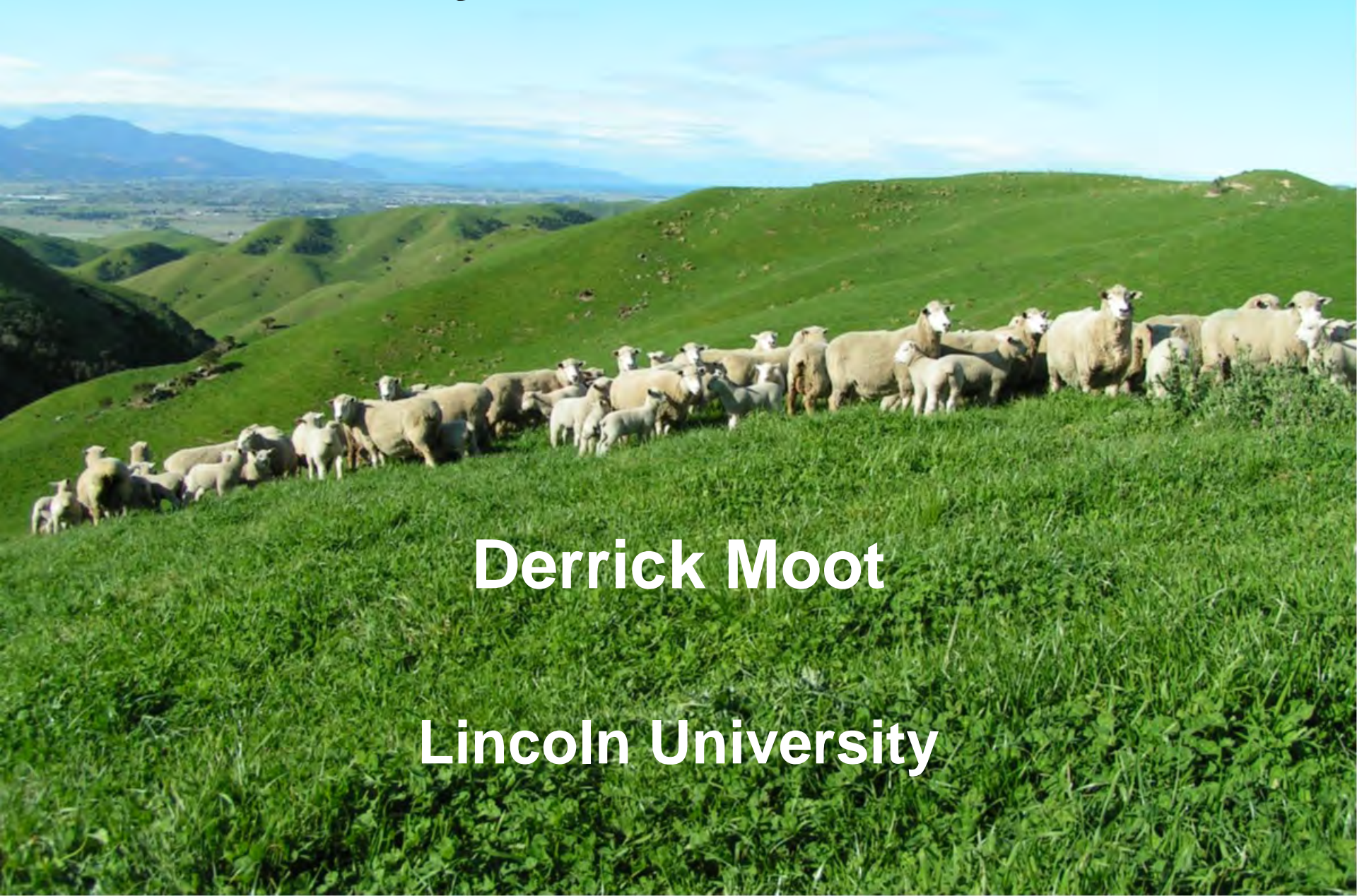




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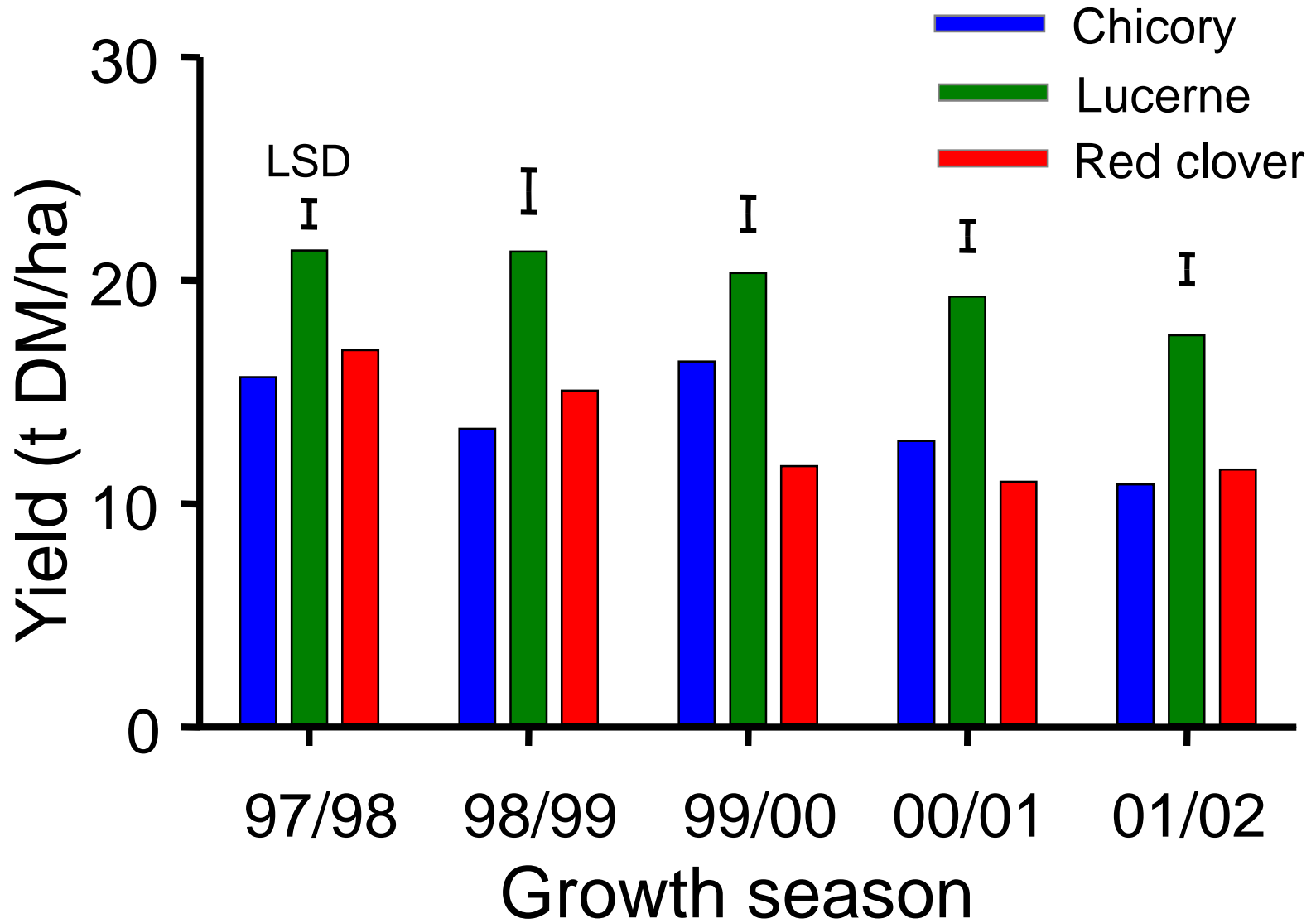
Dryland Pastures



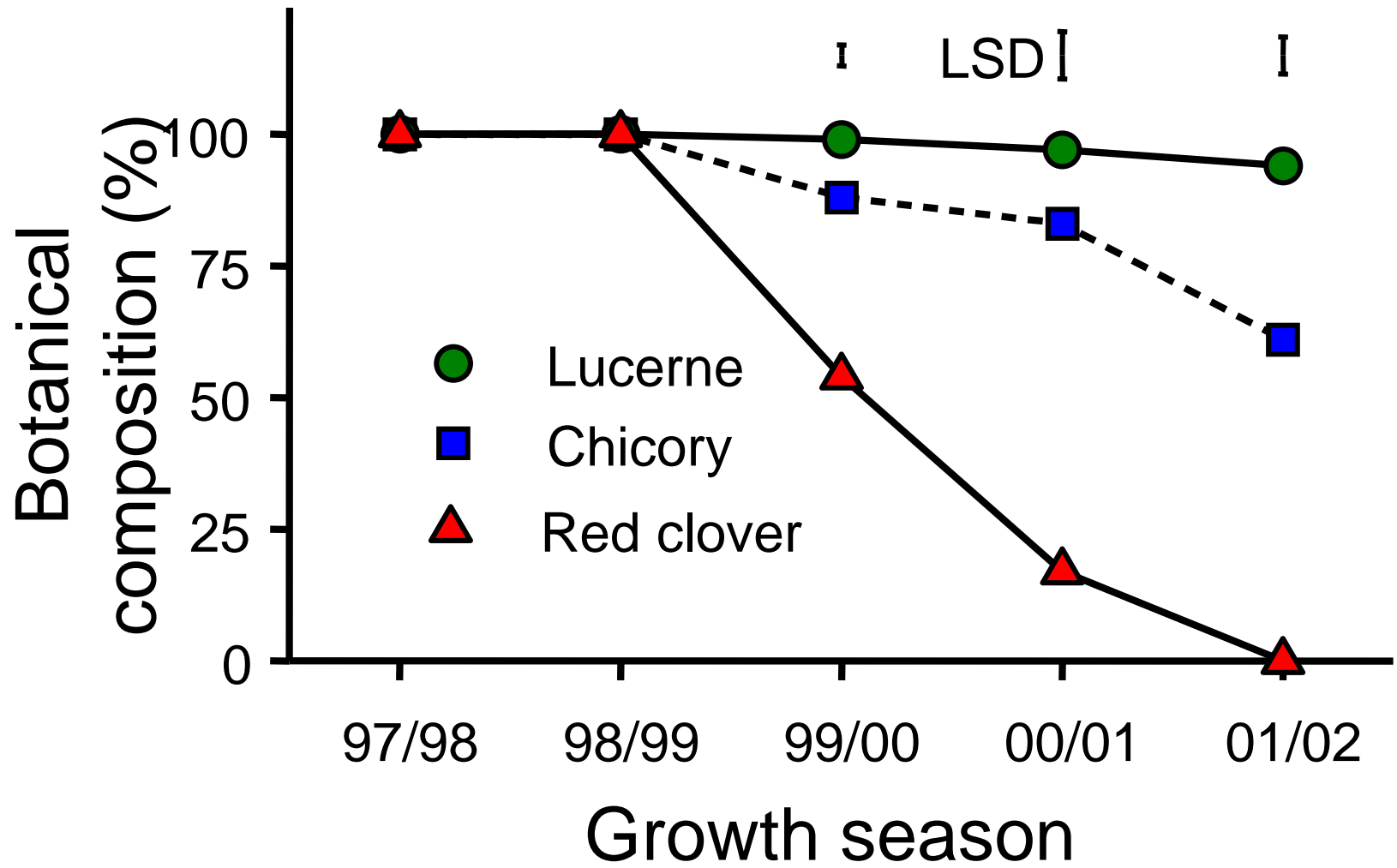
Derrick Moot

Lincoln University

Annual dry matter yields



Persistence



Once priority stock go onto lucerne.... They stay on it!



Doug and Fraser Avery “Bonavaree”
1100 ha 25% lucerne (55% of easier country)

23/01/2005



Lucerne (is not grass!!!)

- flushing at Bonavaree

04.03.2009

These are urine patches

400 kg N/ha

15 t DM/ha/yr

← 30 kg DM/mm water

this is GRASS...

↑
6 t DM/ha/yr

10 kg DM/mm water

N deficient grass



Tall fescue

Cocksfoot

Perennial Ryegrass

Objective

A photograph of a green pasture with several sheep grazing. A wire fence is in the foreground, and a wire mesh cage is visible in the background. The sheep are of various shades of white and grey, and they are all facing towards the right side of the frame. The grass is lush and green, and the overall scene is a typical rural farm setting.

- To quantify annual yield and botanical composition from lucerne, cocksfoot and ryegrass based pastures

Materials & Methods

- **RCB**

- RG/Wc
- Luc
- CF/Sub

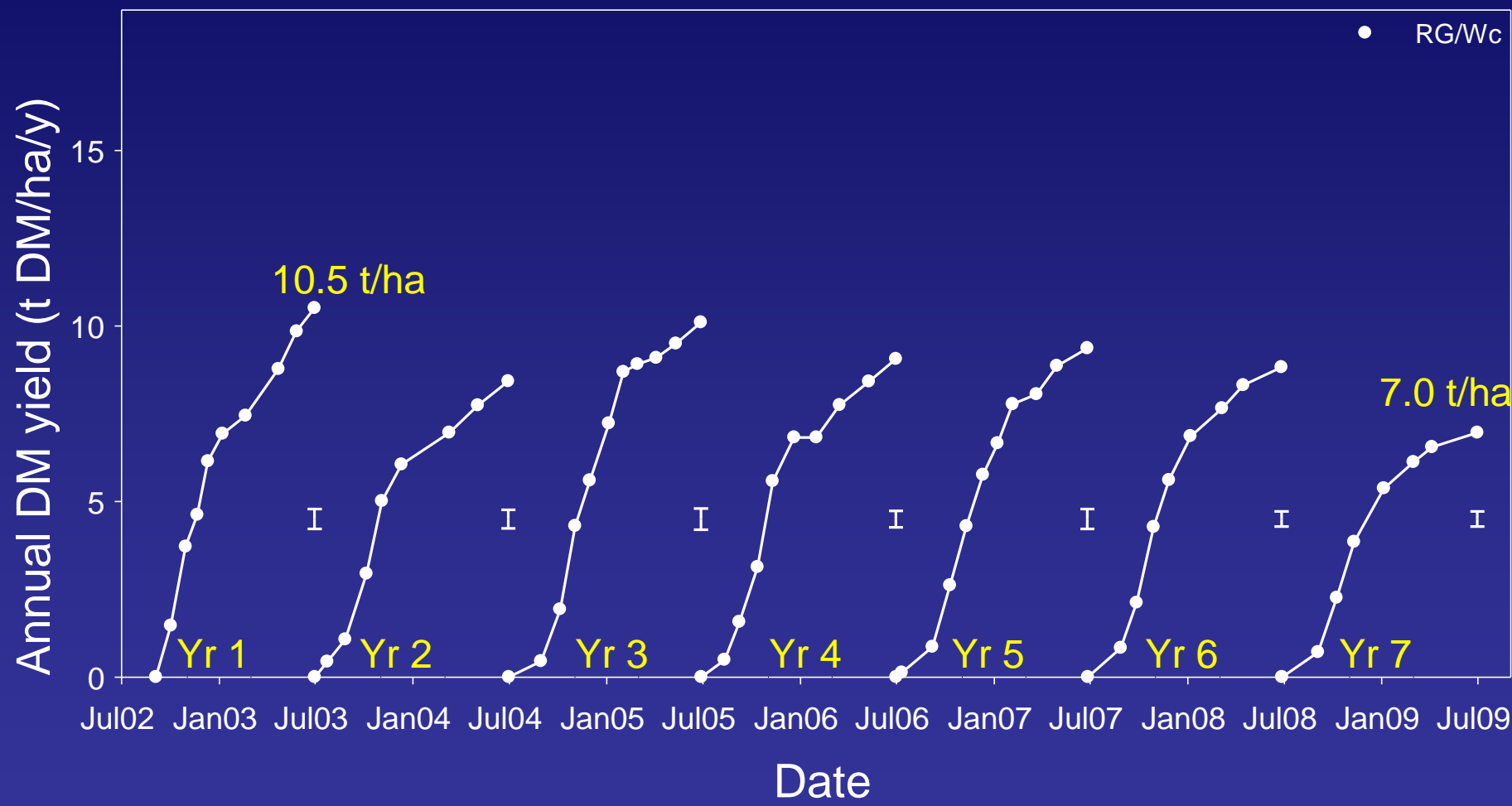
- 6 replicates
 - 0.05 ha plots

Established autumn 2002

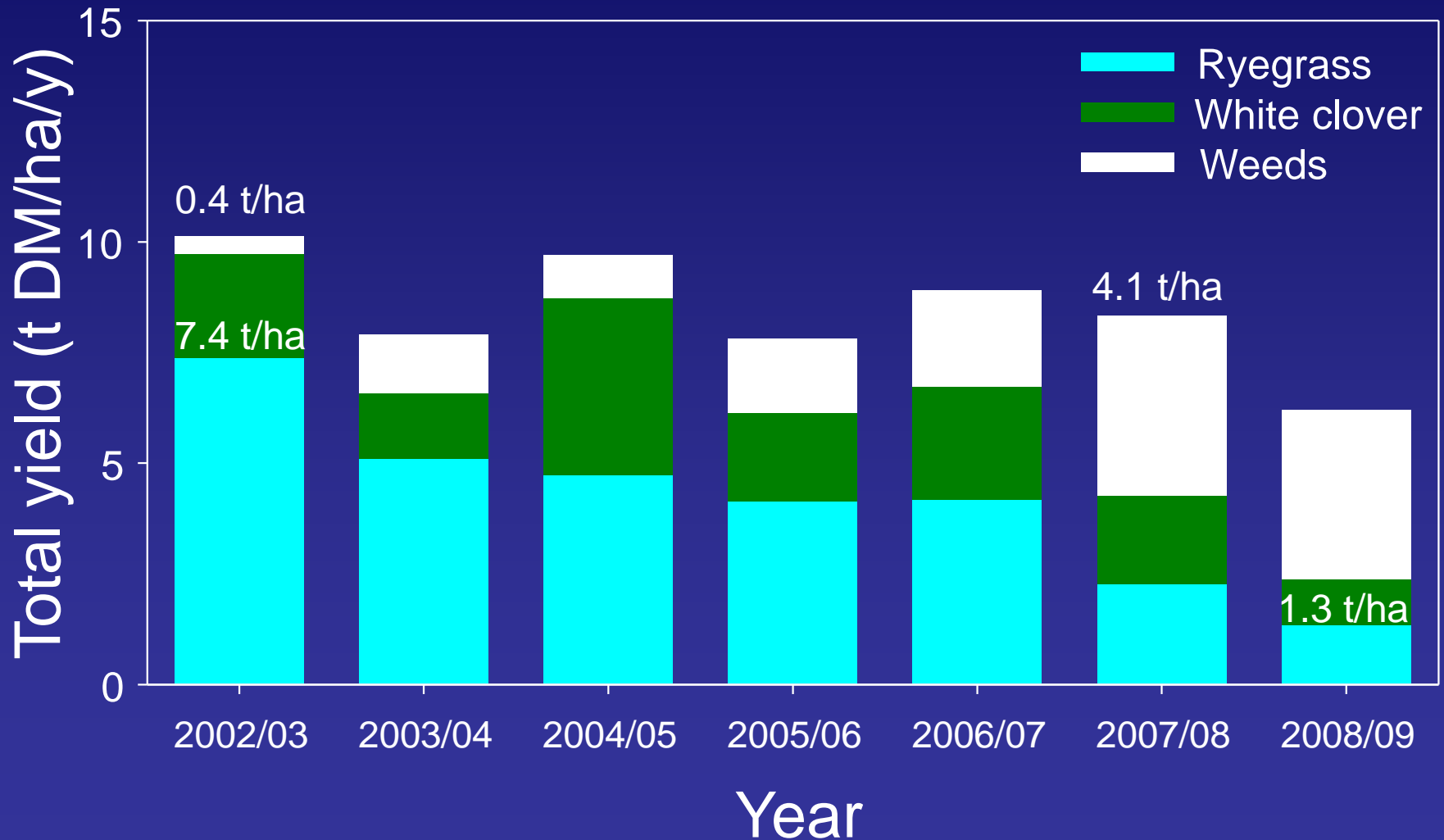


MEAT & WOOL
NEW ZEALAND

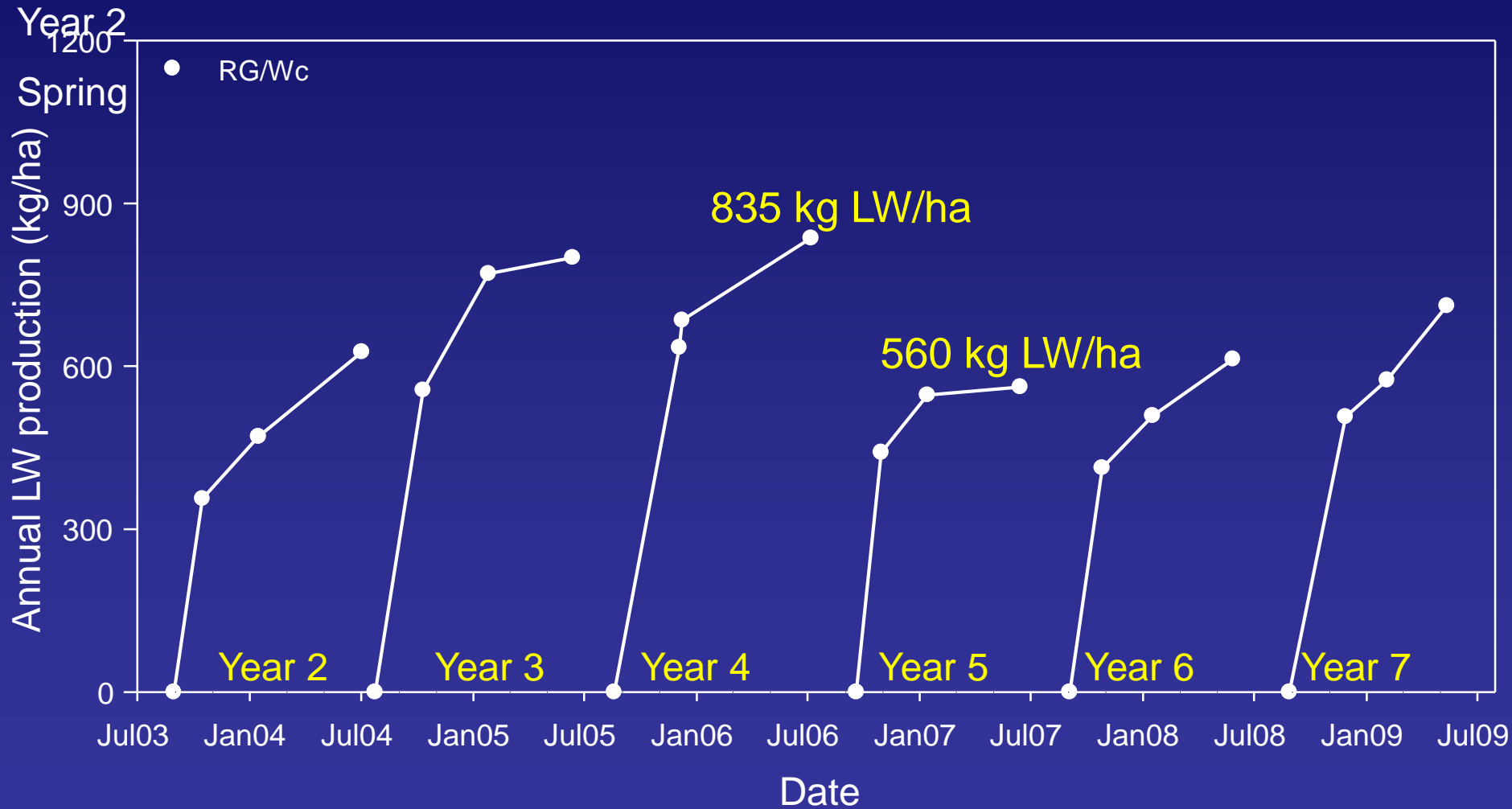
Results - Total Annual Yield



Botanical composition - RG/Wc

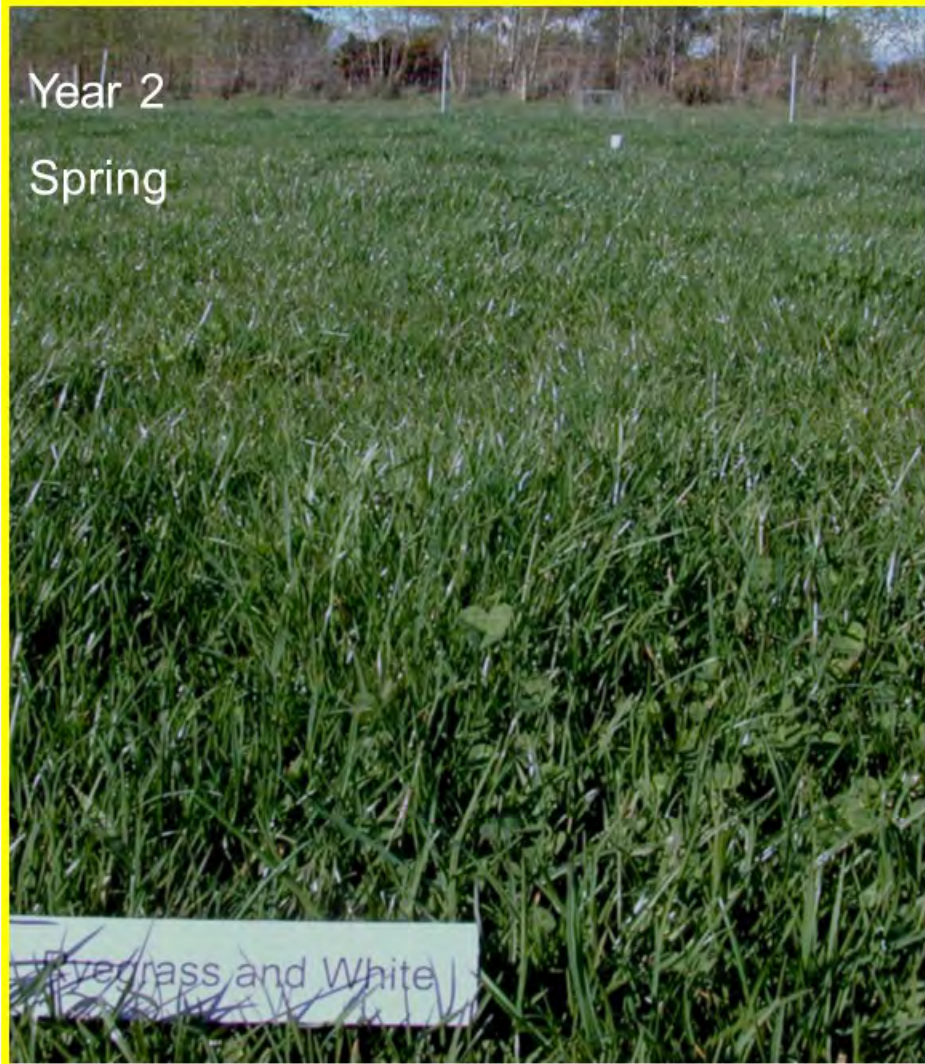


Annual LW production



Annual LW production

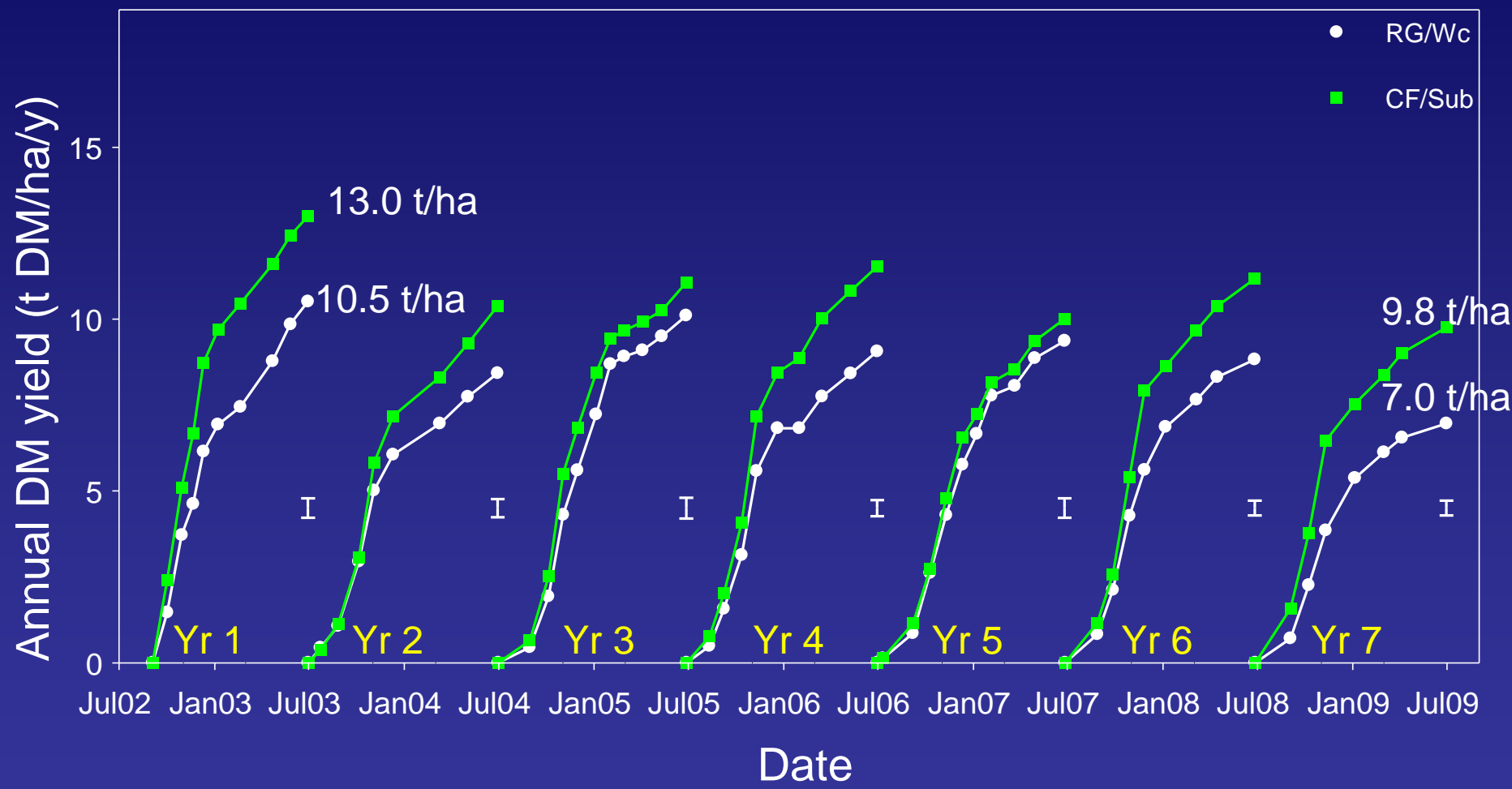
Year 2
Spring



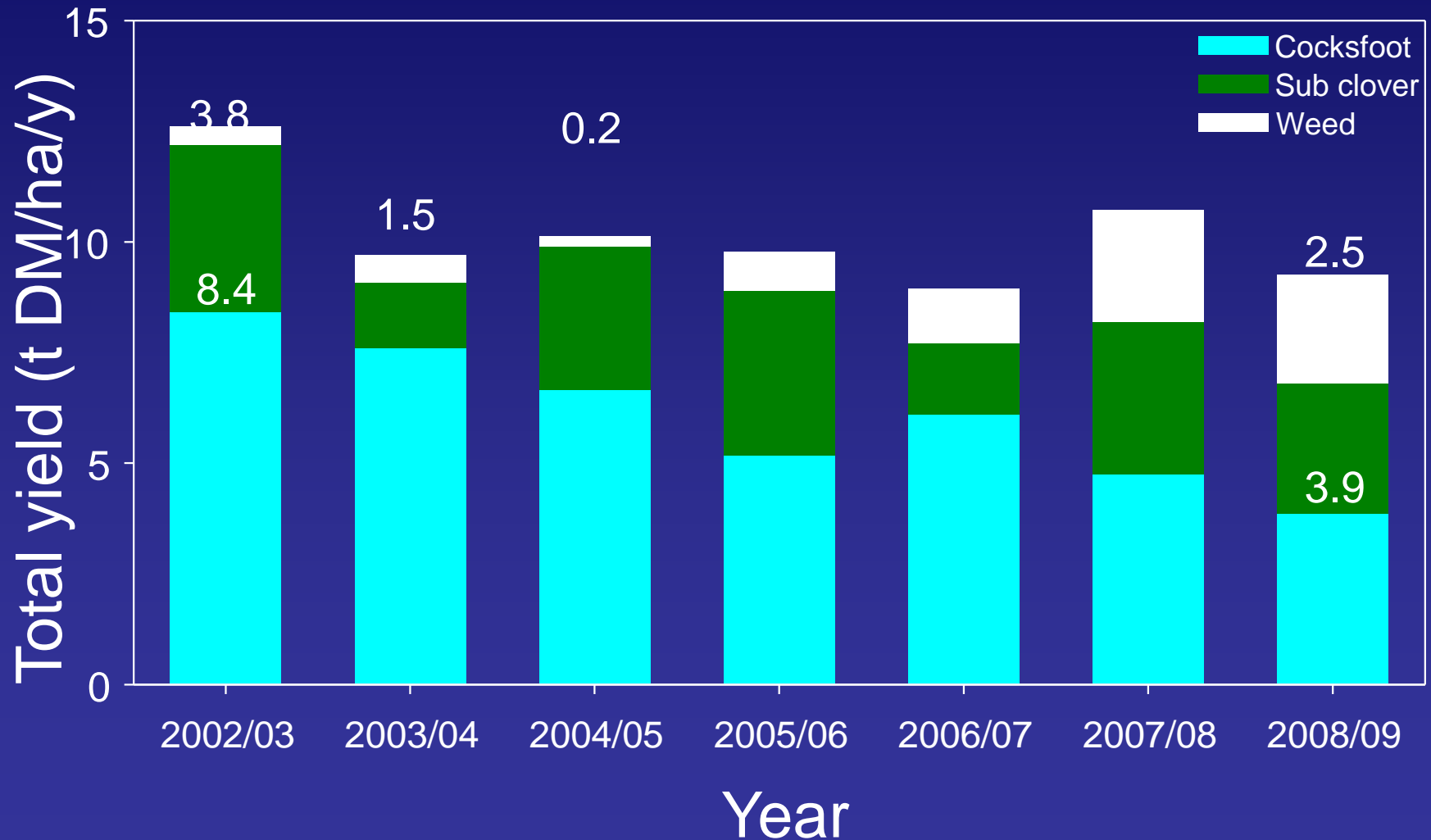
Year 4
Summer



Results - Total Annual Yield



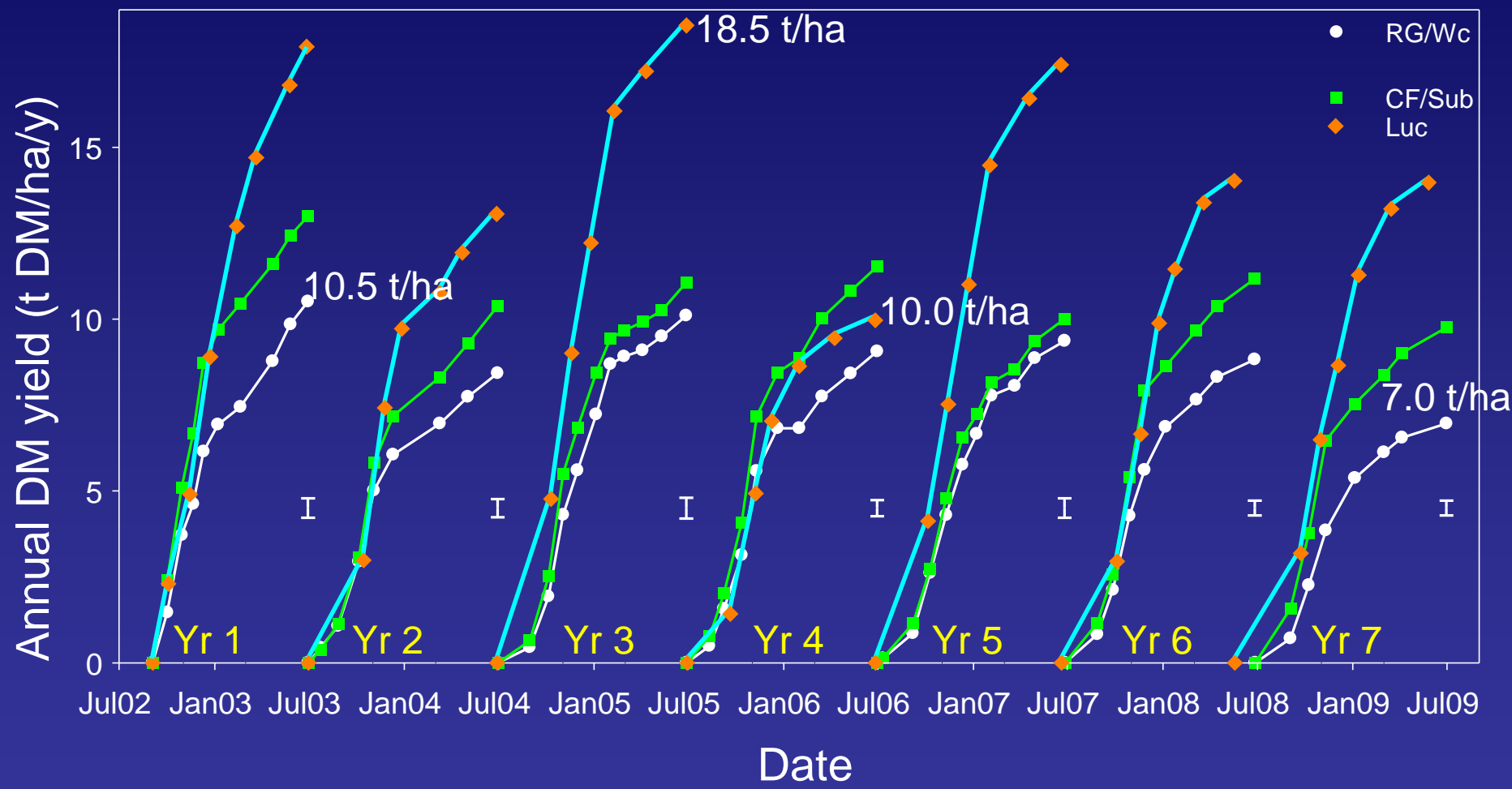
Botanical composition - CF/Sub



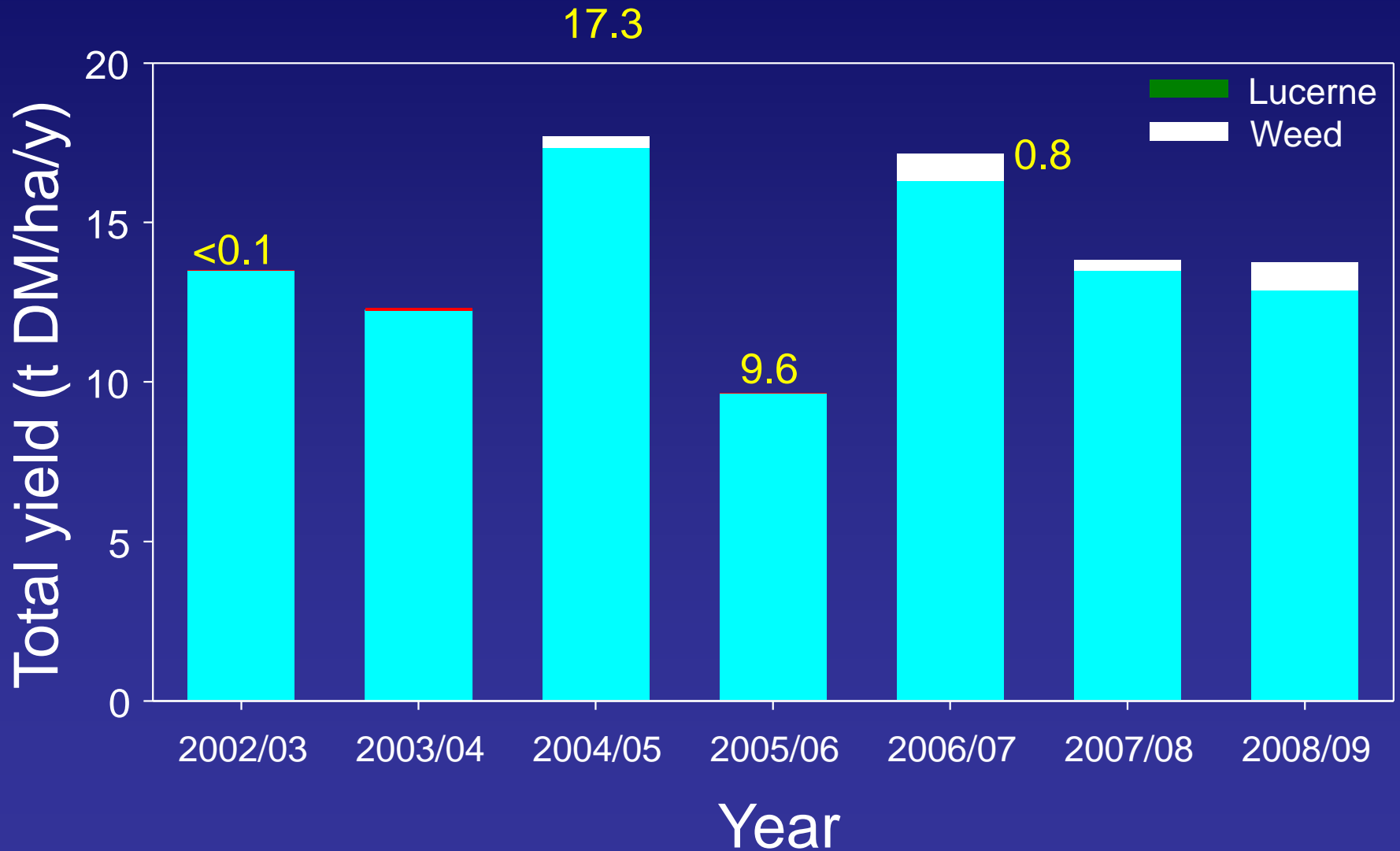
Annual LW production



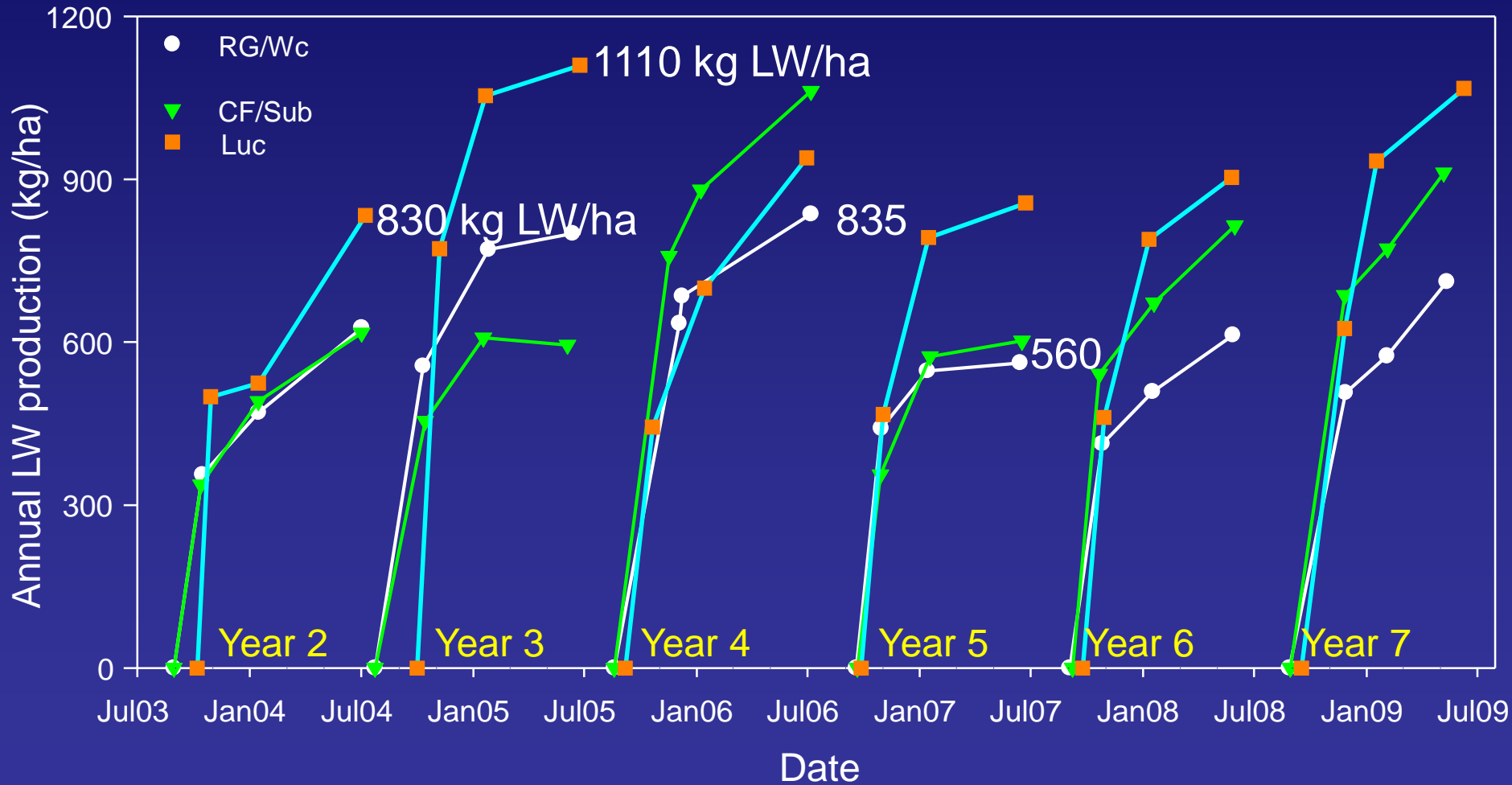
Results - Total Annual Yield



Botanical composition - Lucerne



Annual LW production



Summary

- **Lucerne : If you can grow it do so – “king of forages”
- learn how to graze it.**
- **RG/Wc : Weedy not persistent grass or clover suited to irrigated or high rainfall environments – endophyte?**
- **CF/Sub: Overall, best performing grass based pasture for lowland dryland situations –where you can drill – 10 kg/ha of cultivars with different flowering dates!**

Build seed bank in first year



Early flower – late Sept



Late flower – mid Oct



Seed maturing – early Nov

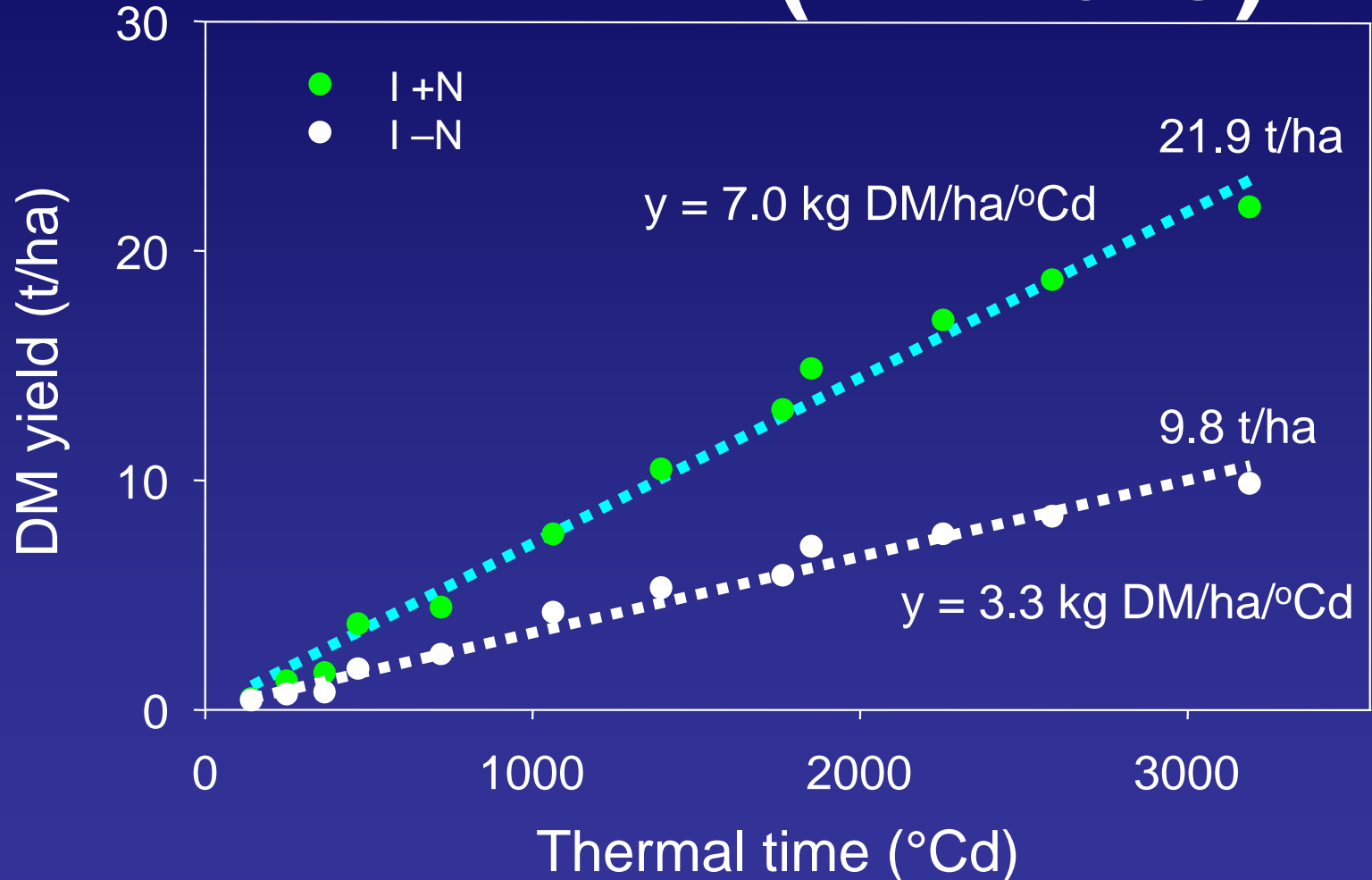


Mature seed – late Nov



Nitrogen fixation
25 kg N/t DM

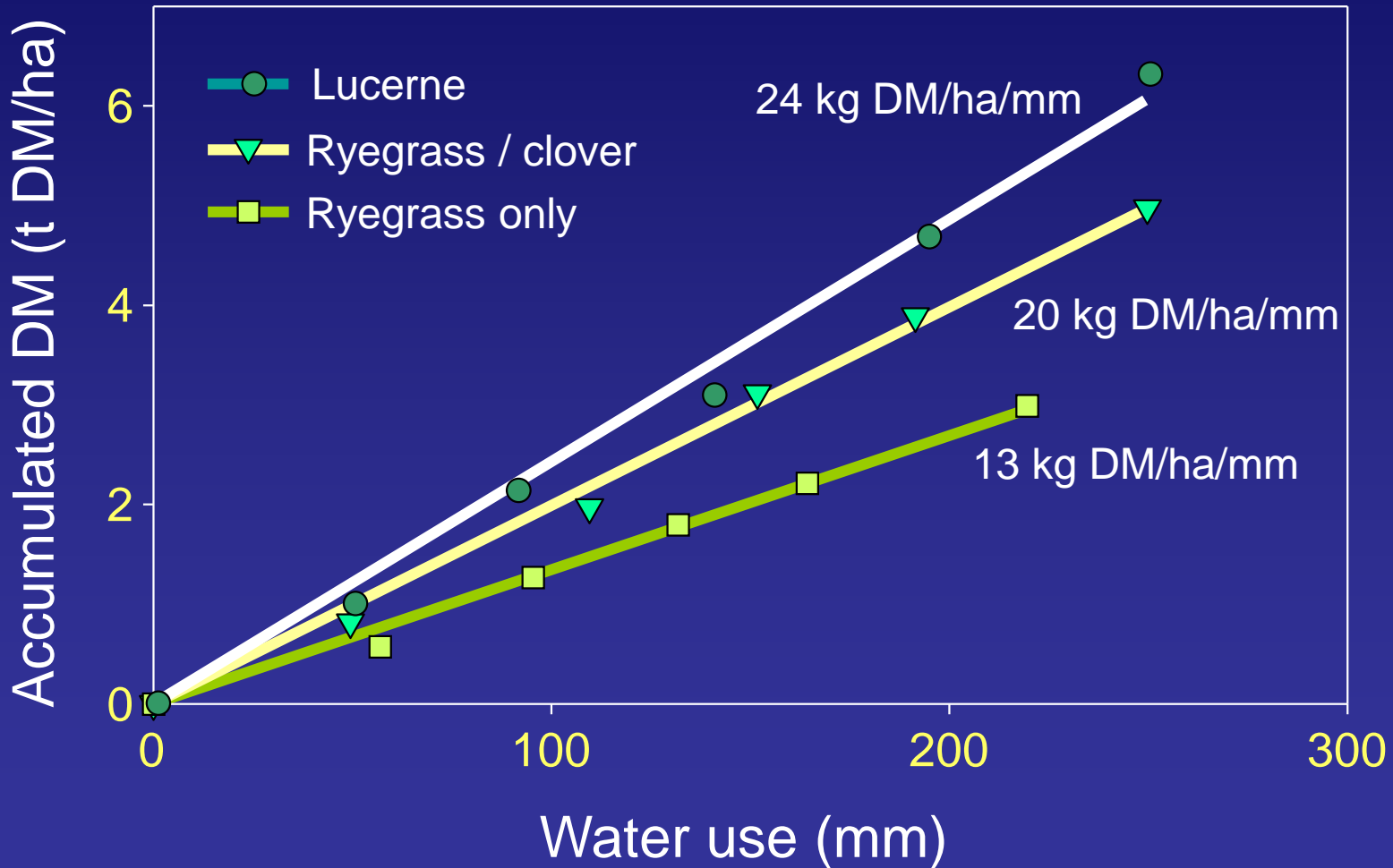
DM yield response to thermal time ($T_b = 3^\circ\text{C}$)





Clover....(no grass)
30 kg DM/mm water

Spring WUE: legume = (nitrogen)



Sheep prefer 70% legume, 30% grass



Ryegrass/white clover

30% cover

15% clover DM on offer





Tall fescue/Caucasian/Sub clover
90% cover, 60% clover DM on offer

How to get more legume??

- Grass is a WEED!!!!!! (in the eyes of clover)
- Understand competition: - Grass vs. Legume
 - N, P, S, K – grass has more roots
 - Water – annual clovers, deep rooted perennials
 - Light – taller legumes?
- Management: -
 - Sow legume friendly grasses at low seeding rates
 - Grow legumes alone, overdrill grasses later
 - Use a range of legume species & cultivars
 - Avoid N fertiliser on grass/legume pastures
 - Build large seed bank in the first year, manage to maintain it

A wide-angle photograph showing a vast field of gland clover (Trifolium glandulosum) in full bloom. The flowers are a vibrant pink color and are densely packed across the entire field, creating a sea of pink. The green foliage of the plants is visible between the flowers.

Gland clover

A close-up photograph of Balansa clover (Trifolium pratense). The image shows several large, bright green trifoliate leaves with serrated edges. Interspersed among the leaves are clusters of flowers, some in full bloom and others as buds. Some of the flowers appear to be in a later stage, with some petals showing a brownish-orange hue.

Balansa clover

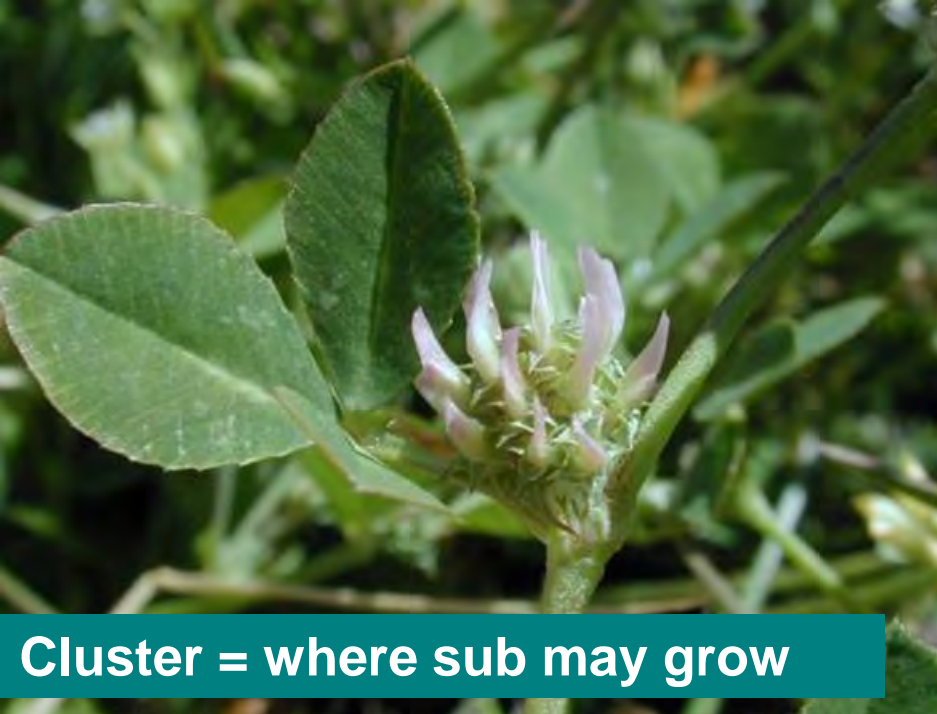
Arrowleaf clover



15. 12. 2008



Lucerne



Cluster = where sub may grow



Striated



Suckling



Haresfoot

- Takes several years to build seed reserves



27. 10. 2003

Conclusions

- Dryland resilience requires different species, grazing management and takes time.
- Capture light and maximize soil moisture by focussing on legumes.
- Become a legume fanatic, hate the grasses
- For economic survival dryland farmers must increase legume production each year.
- Ask/talk about “legumes” and “pasture”.
- Use legumes as the green driver of your business.

Acknowledgements

- Meat & Wool NZ Ltd/ Pastoral21
- The Cocksfoot Growers Association
- Lincoln University
- MAF Sustainable Farming Fund



Mt Barker sub



Denmark sub