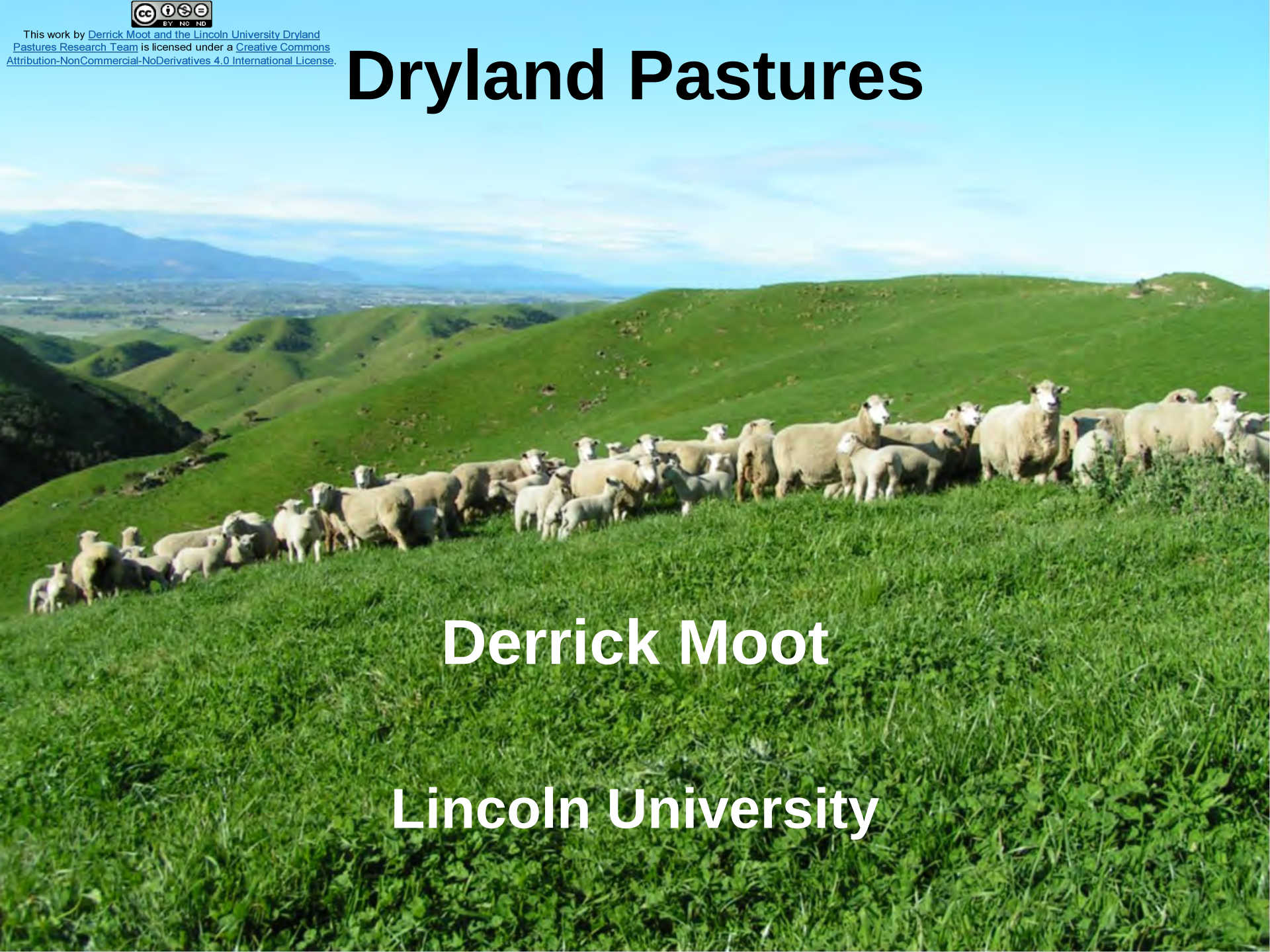
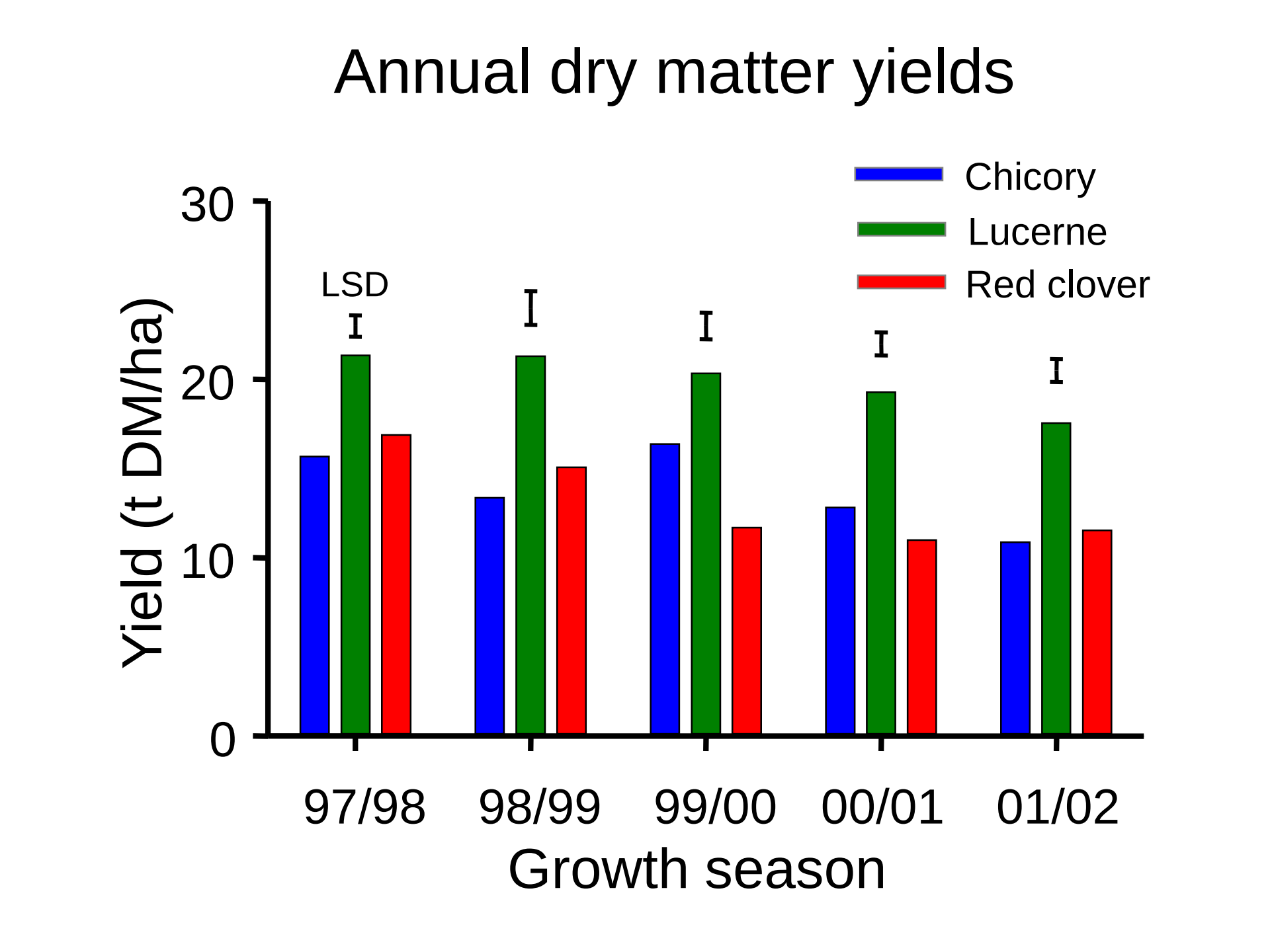
Dryland Pastures

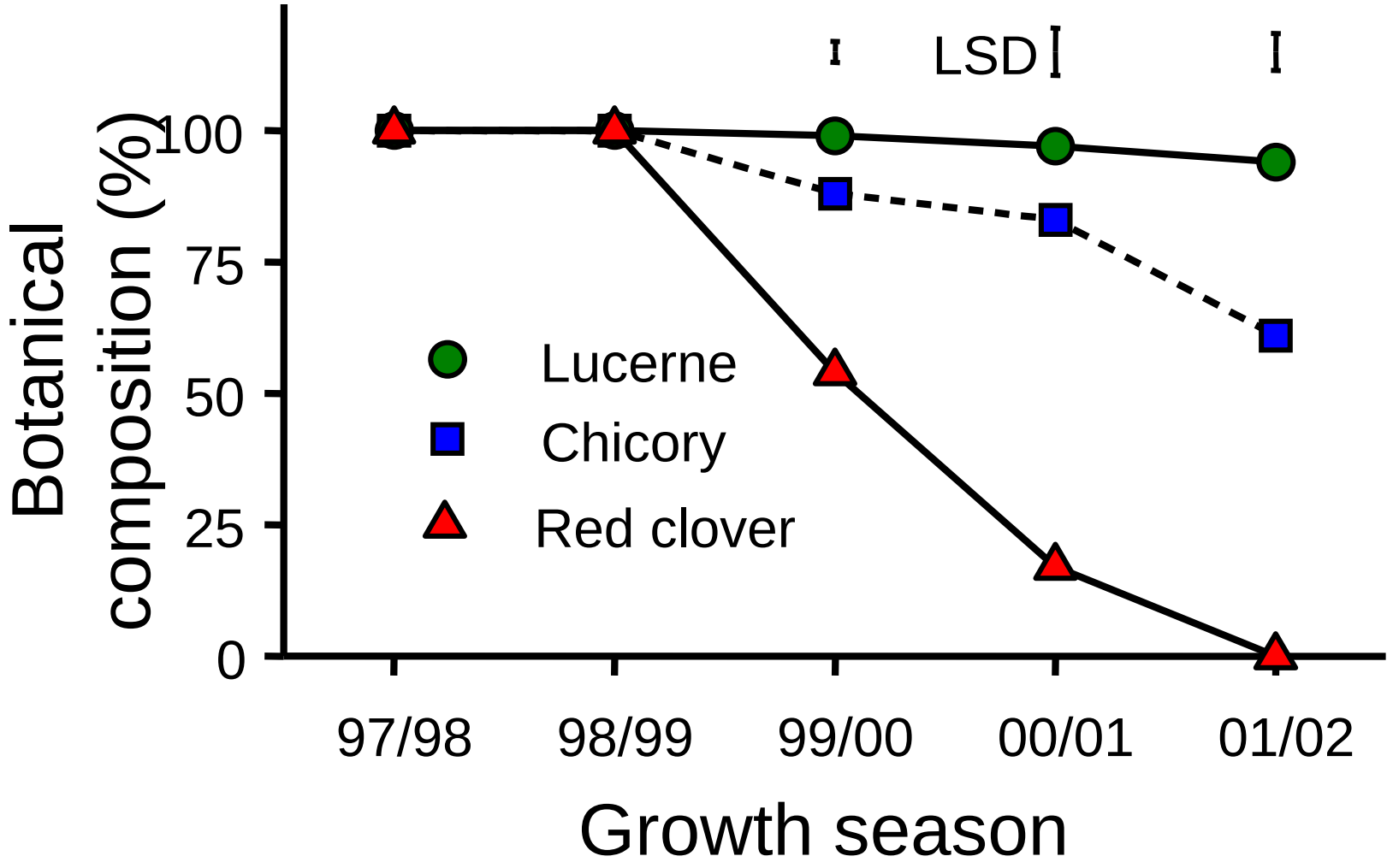


Derrick Moot

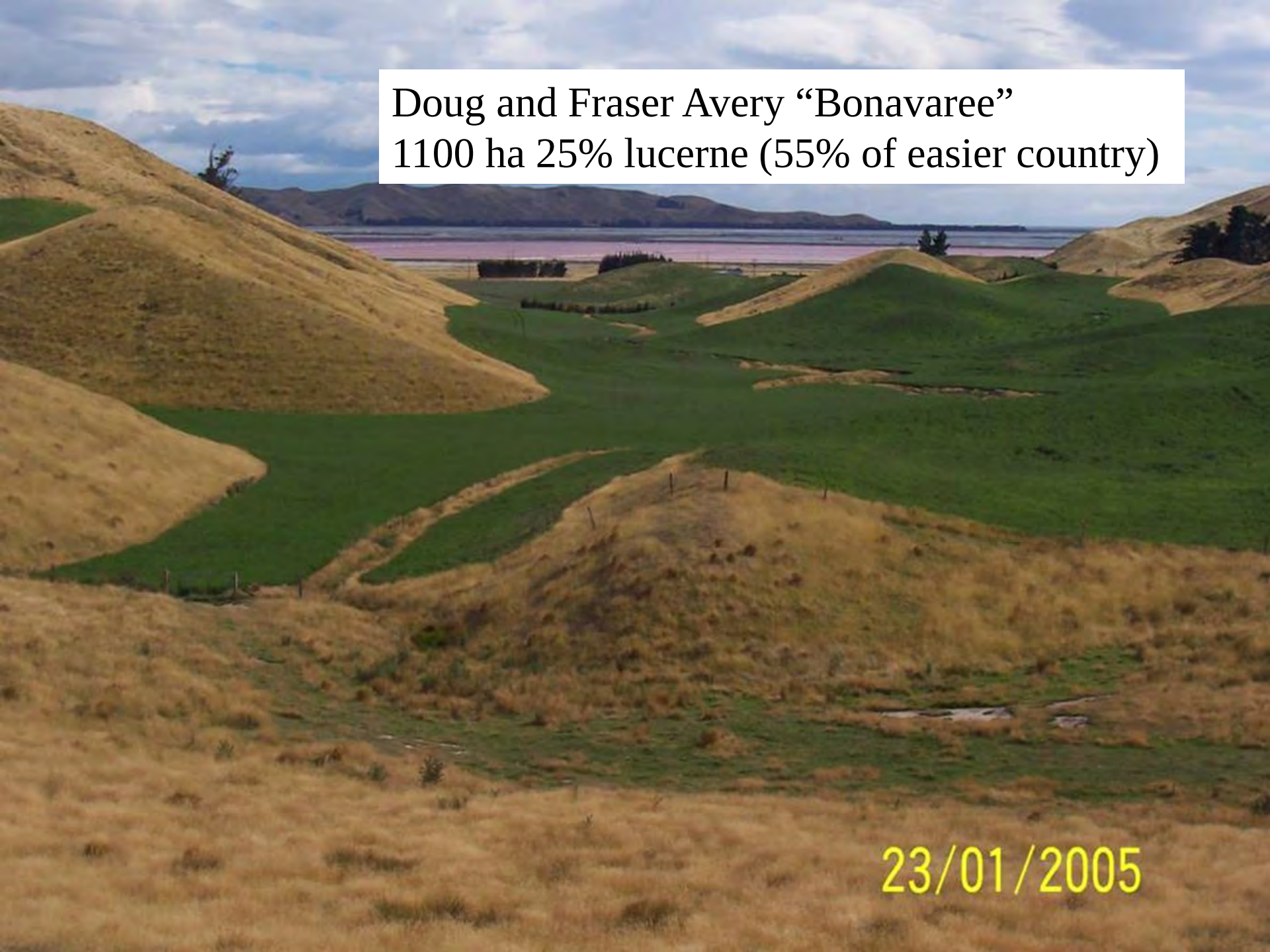
Lincoln University


Annual dry matter yields
Chicory
Lucerne
Red clover
LSD
30
20
10
0
Yield (t DM/ha)
97/98
98/99
99/00
00/01
01/02
Growth season

Persistence



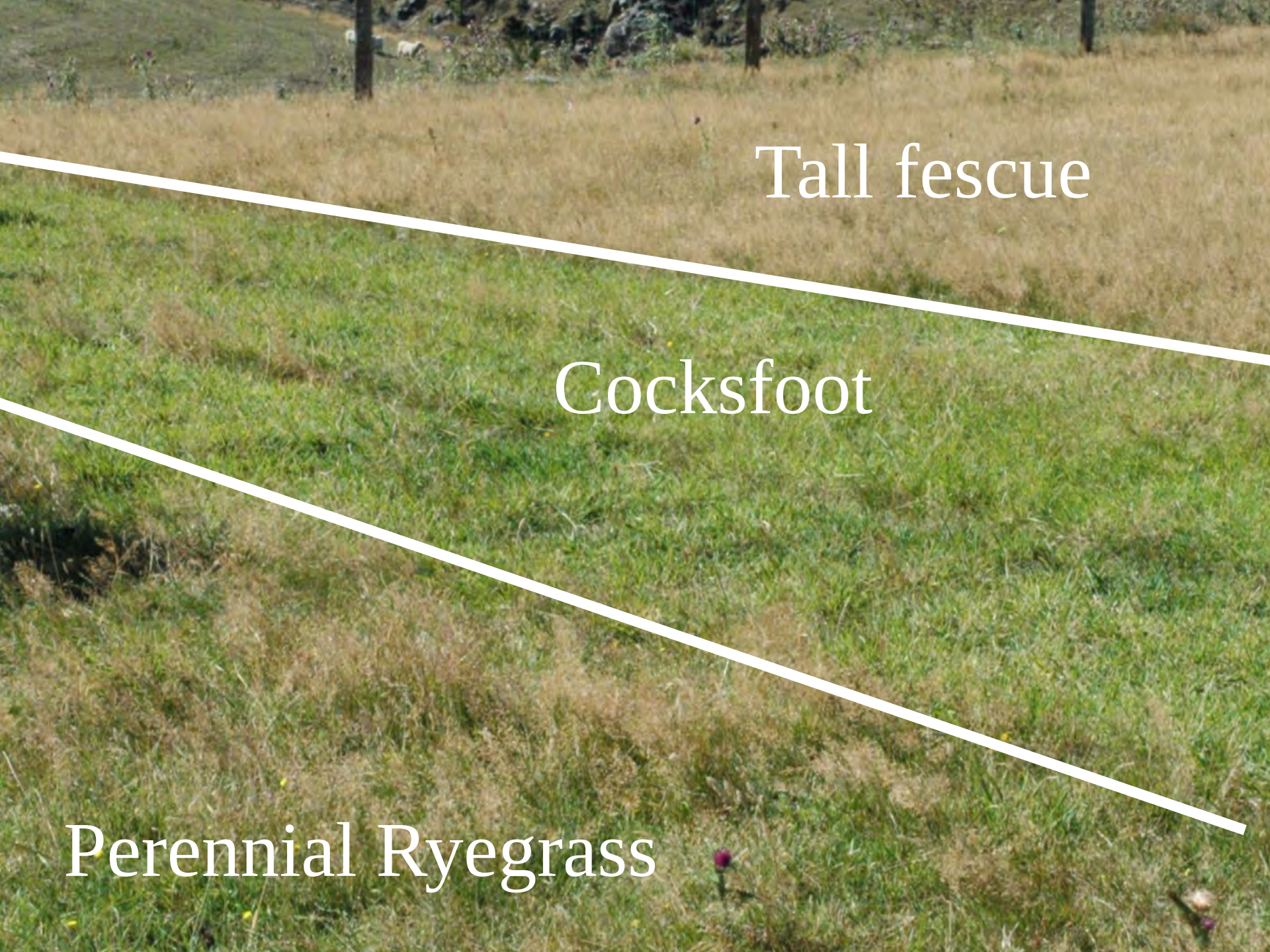

Once priority stock go onto lucerne…. They stay on it!


Doug and Fraser Avery “Bonavaree”
1100 ha 25% lucerne (55% of easier country)
23/01/2005

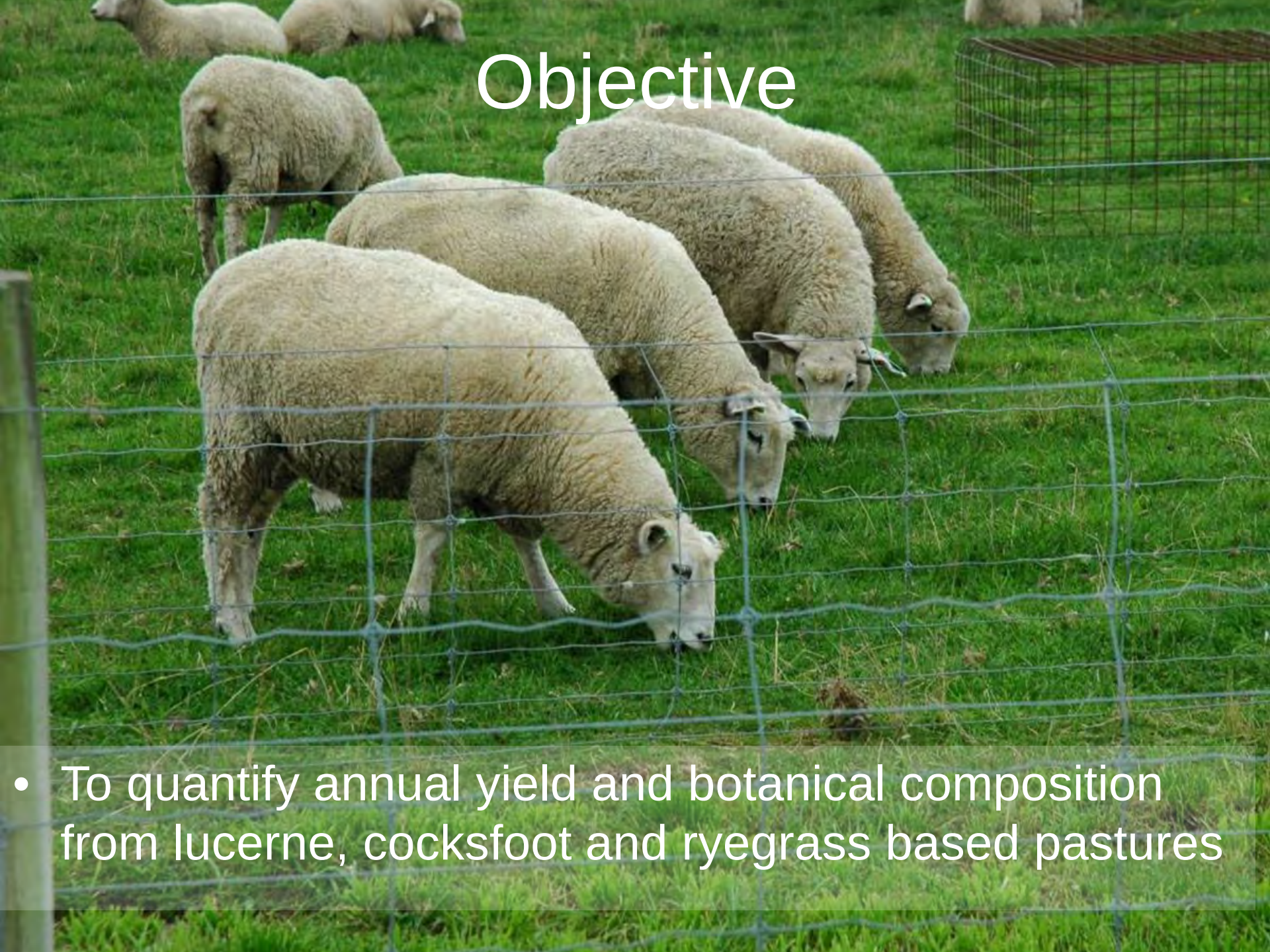
Lucerne (is not grass!!!)

- flushing at Bonavaree


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



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

Materials & Methods

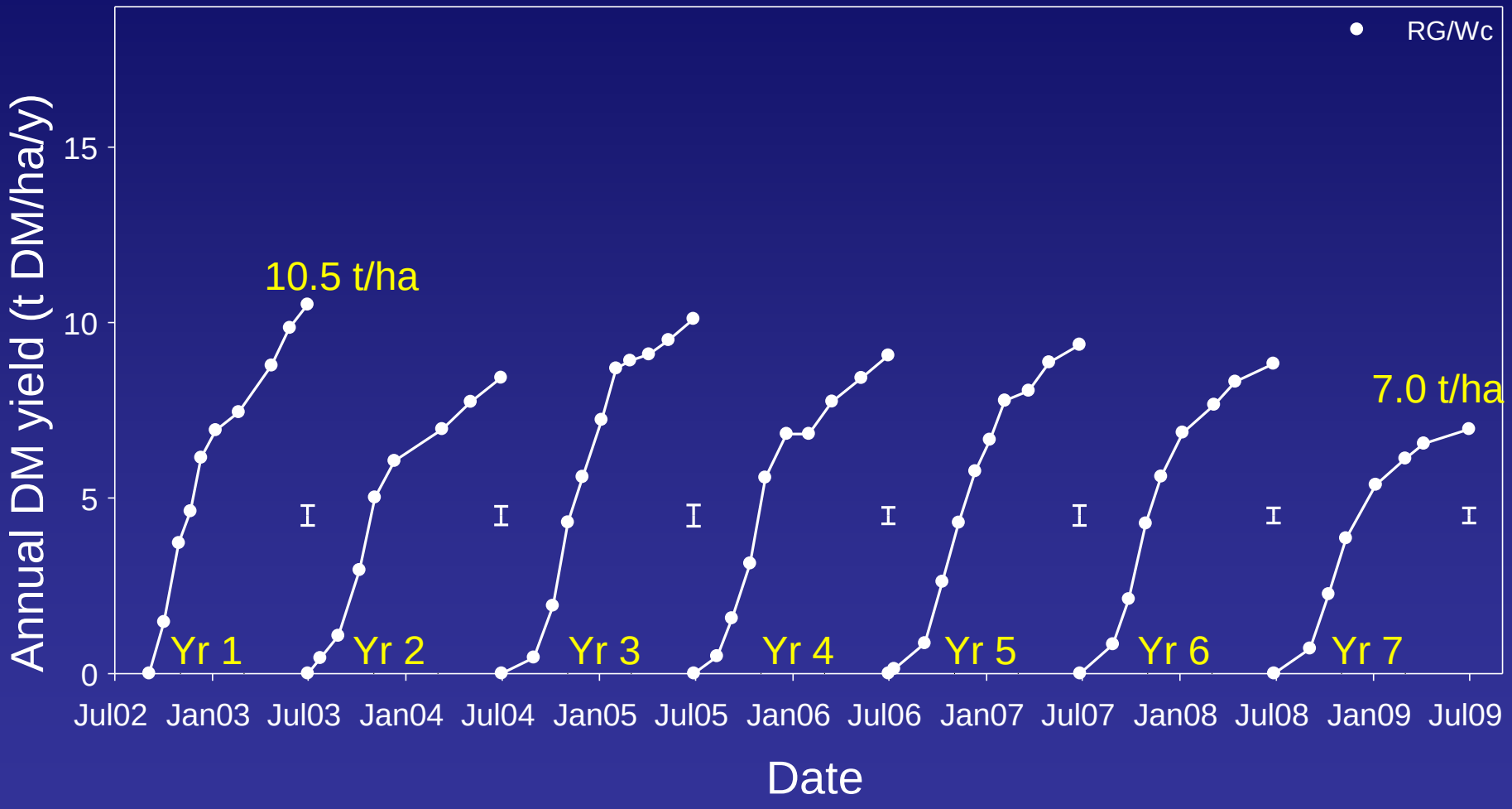
- **RCB**
  - RG/Wc
  - Luc
  - CF/Sub

- 6 replicates
  - 0.05 ha plots

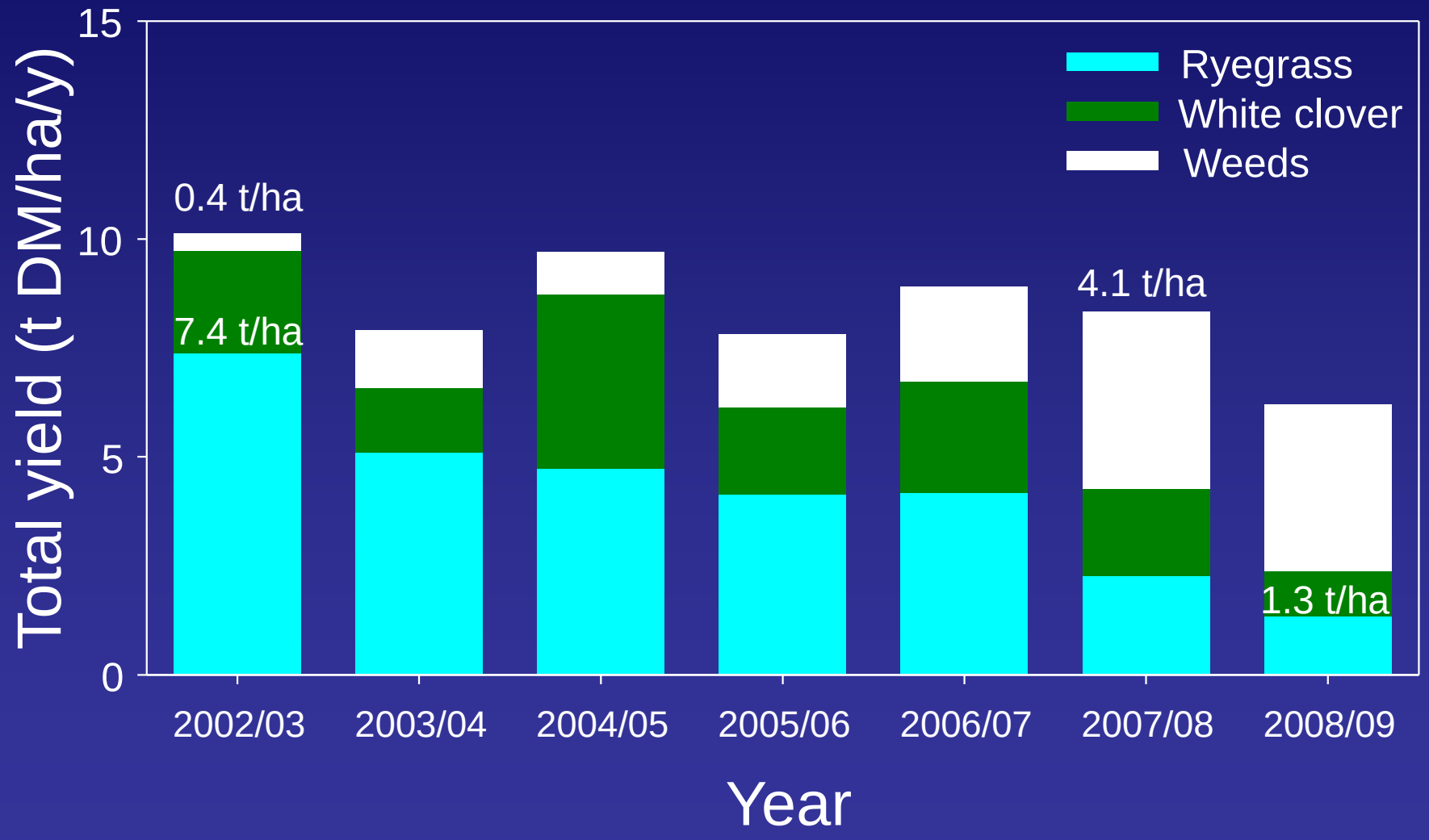
Established autumn 2002

MEAT & WOOL
NEW ZEALAND

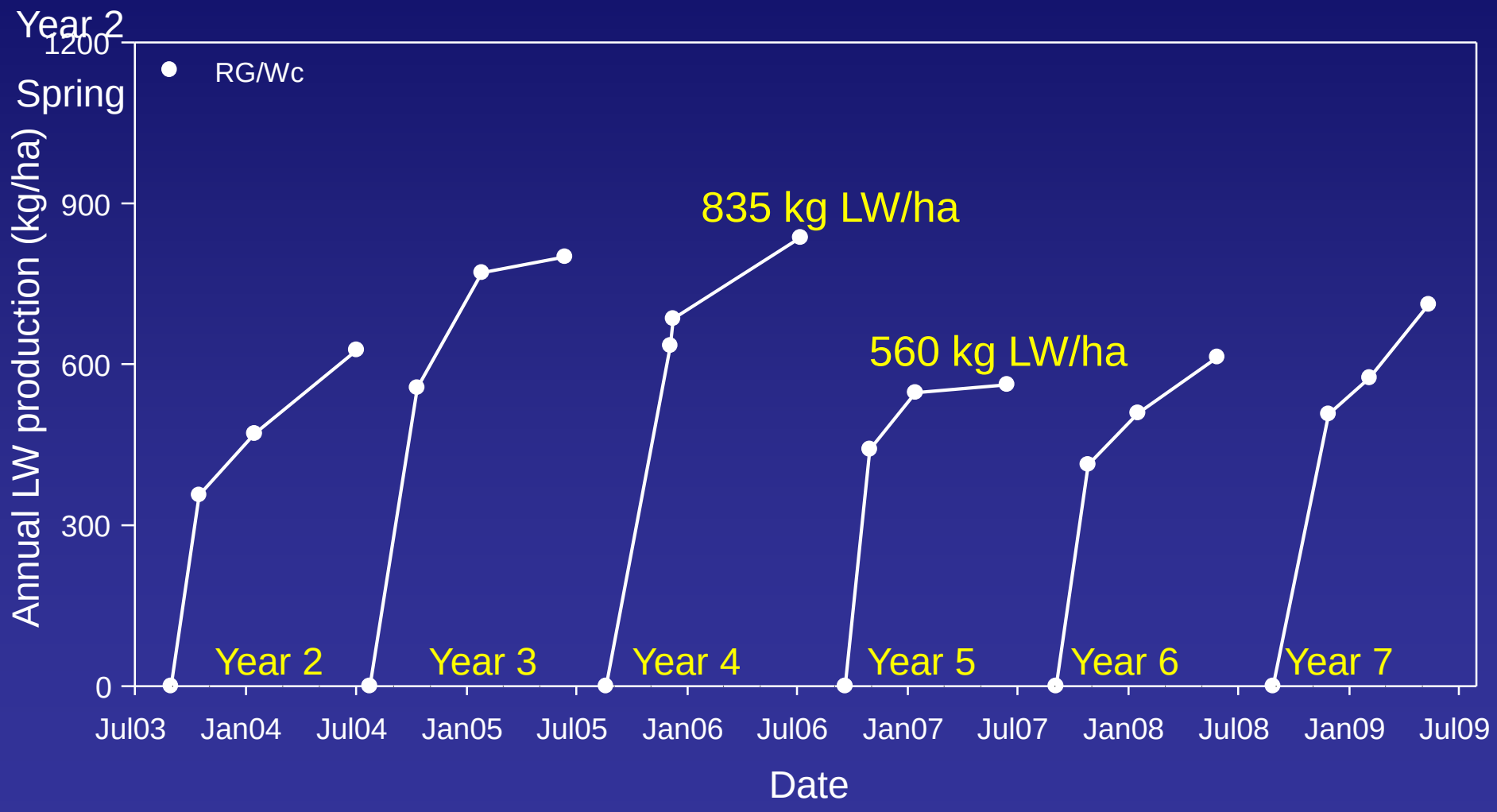
Results - Total Annual Yield



Botanical composition - RG/Wc

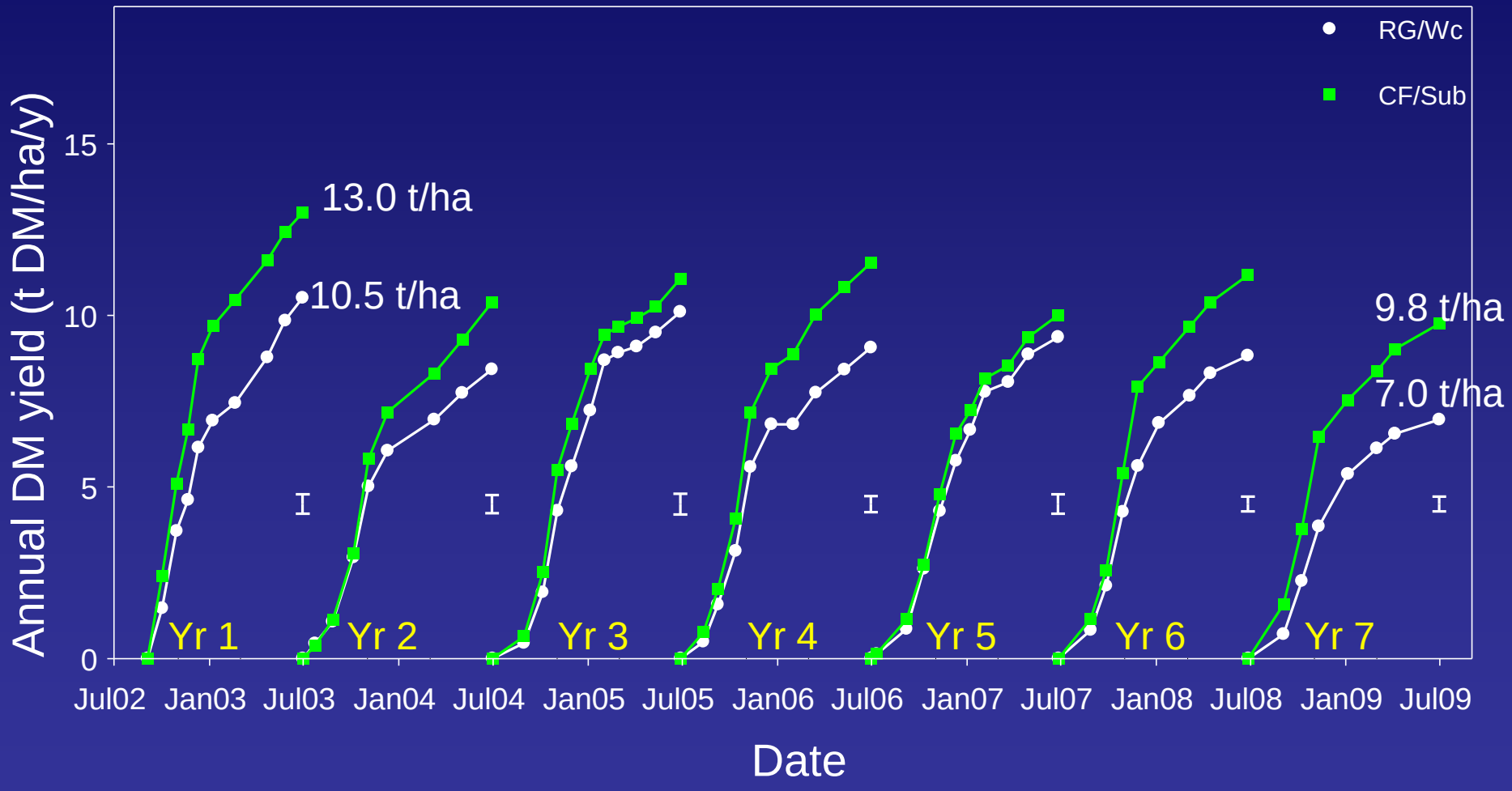


Annual LW production

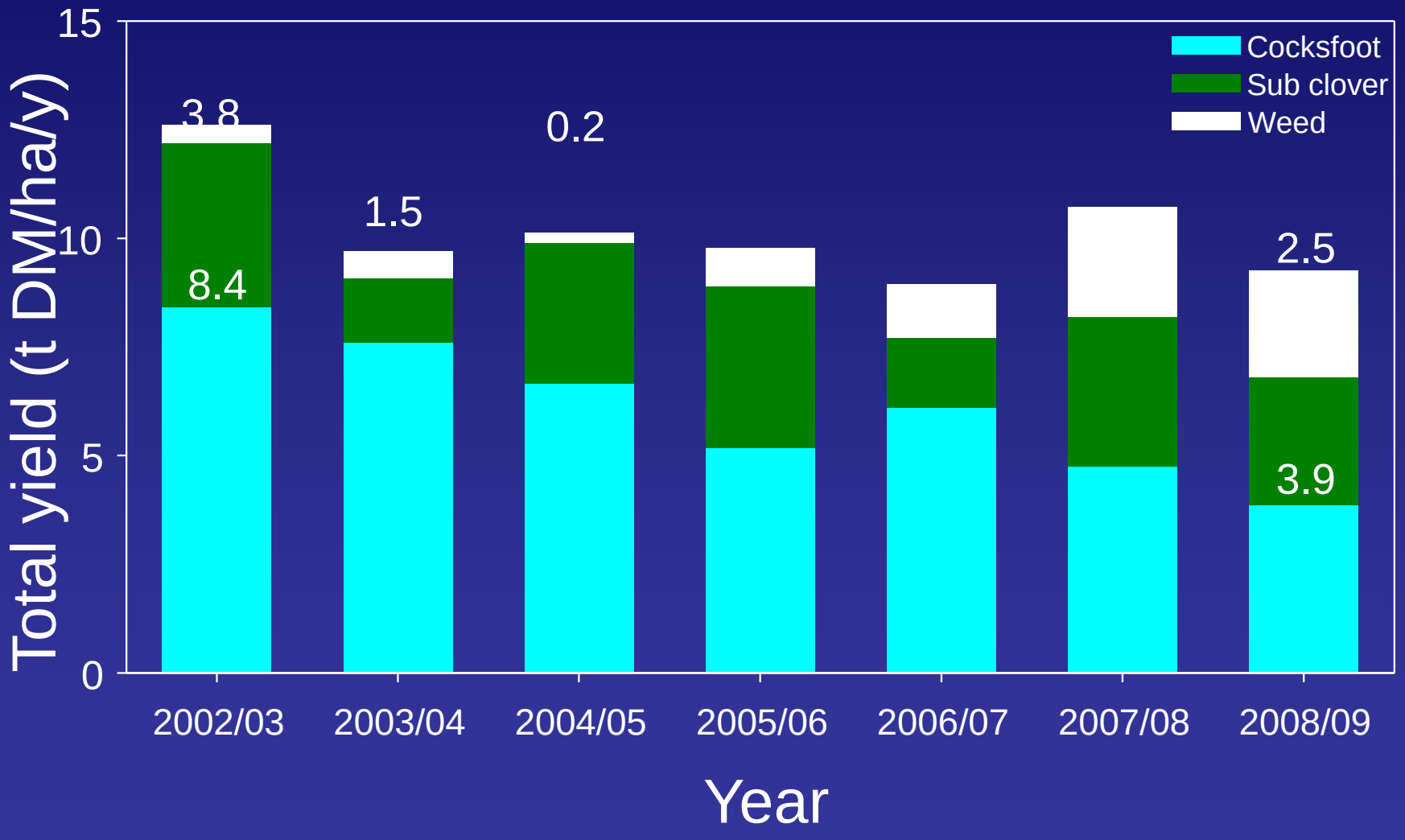


Annual LW production

Results - Total Annual Yield

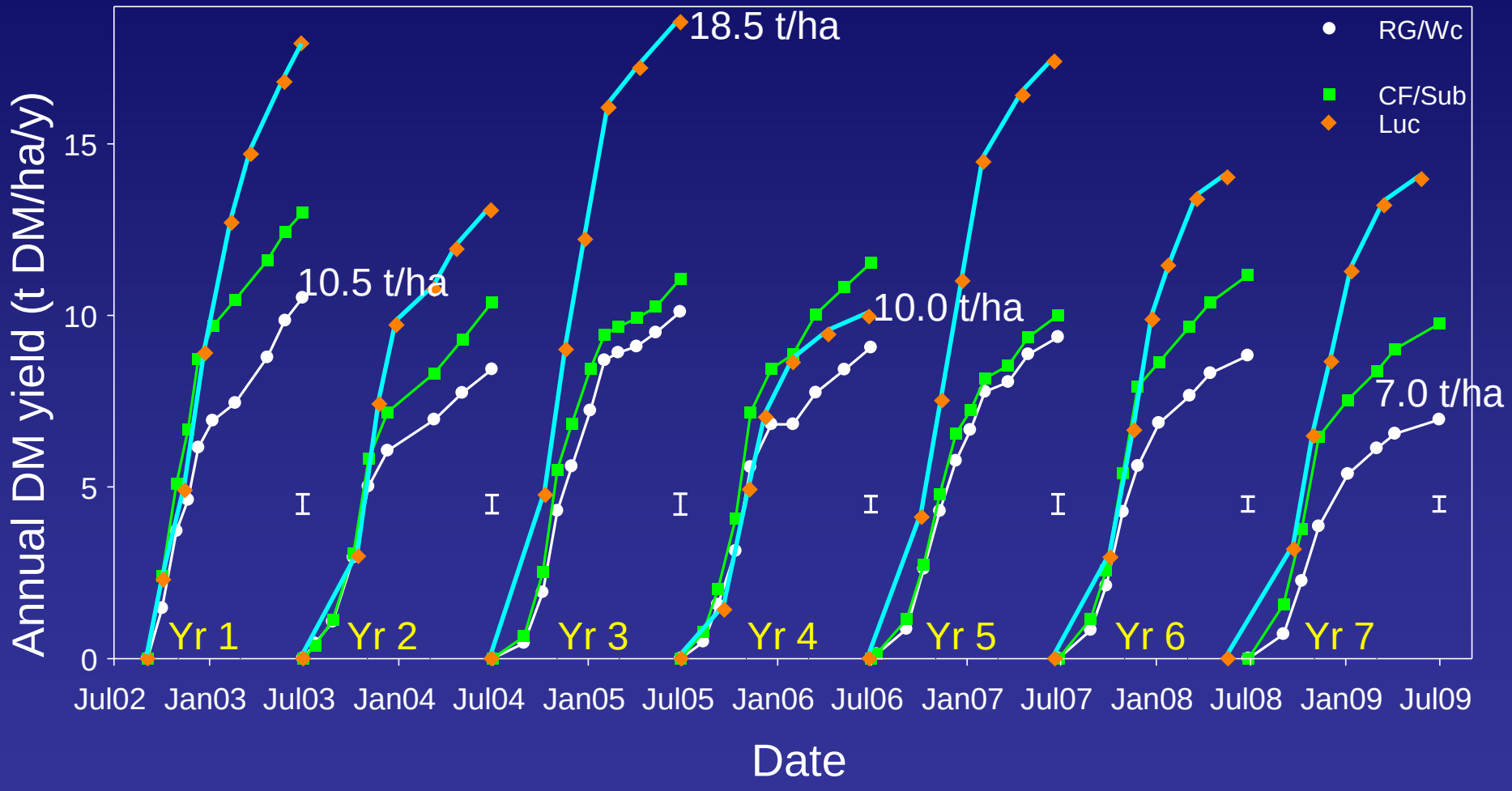


Botanical composition - CF/Sub

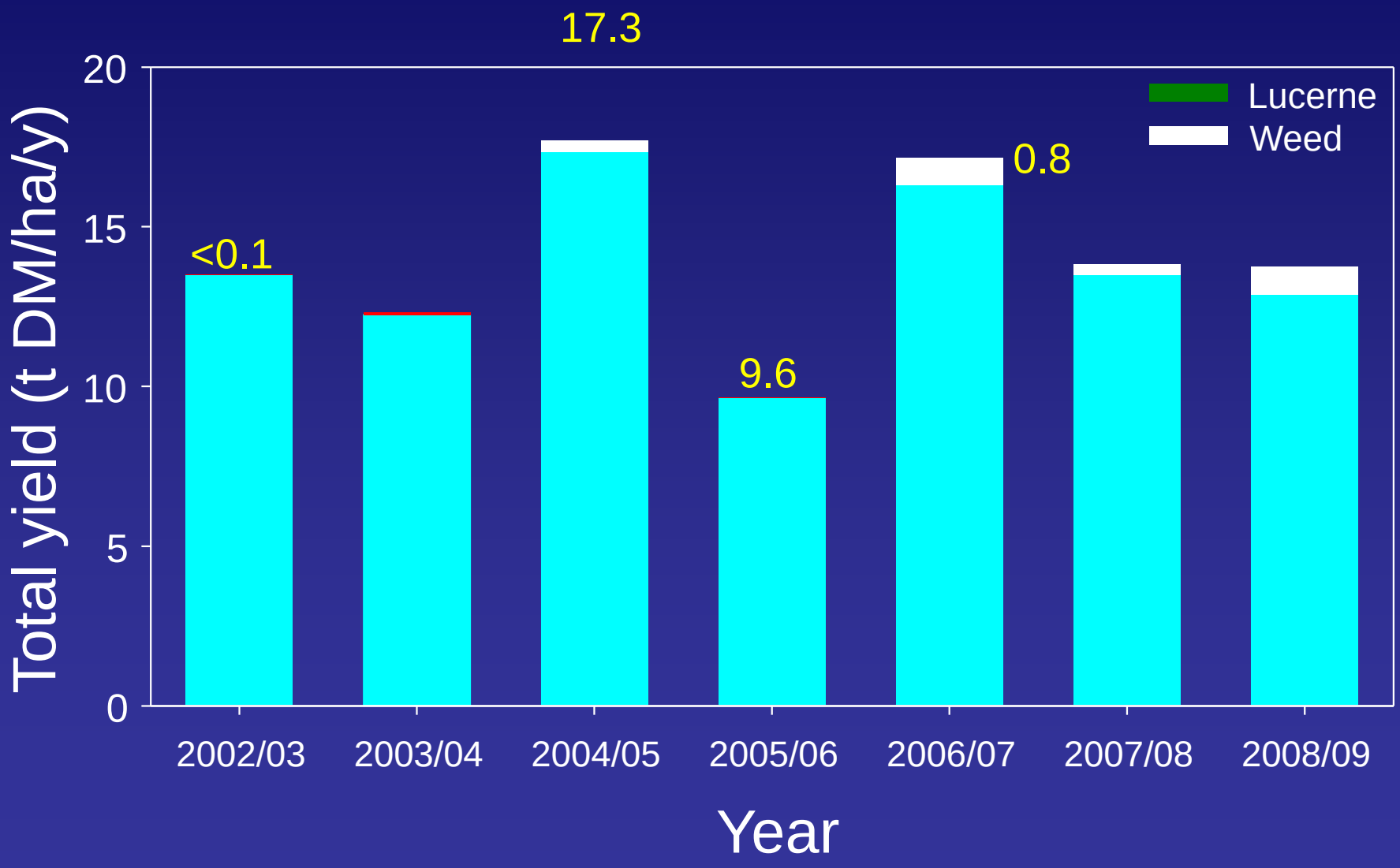


Annual LW production

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.

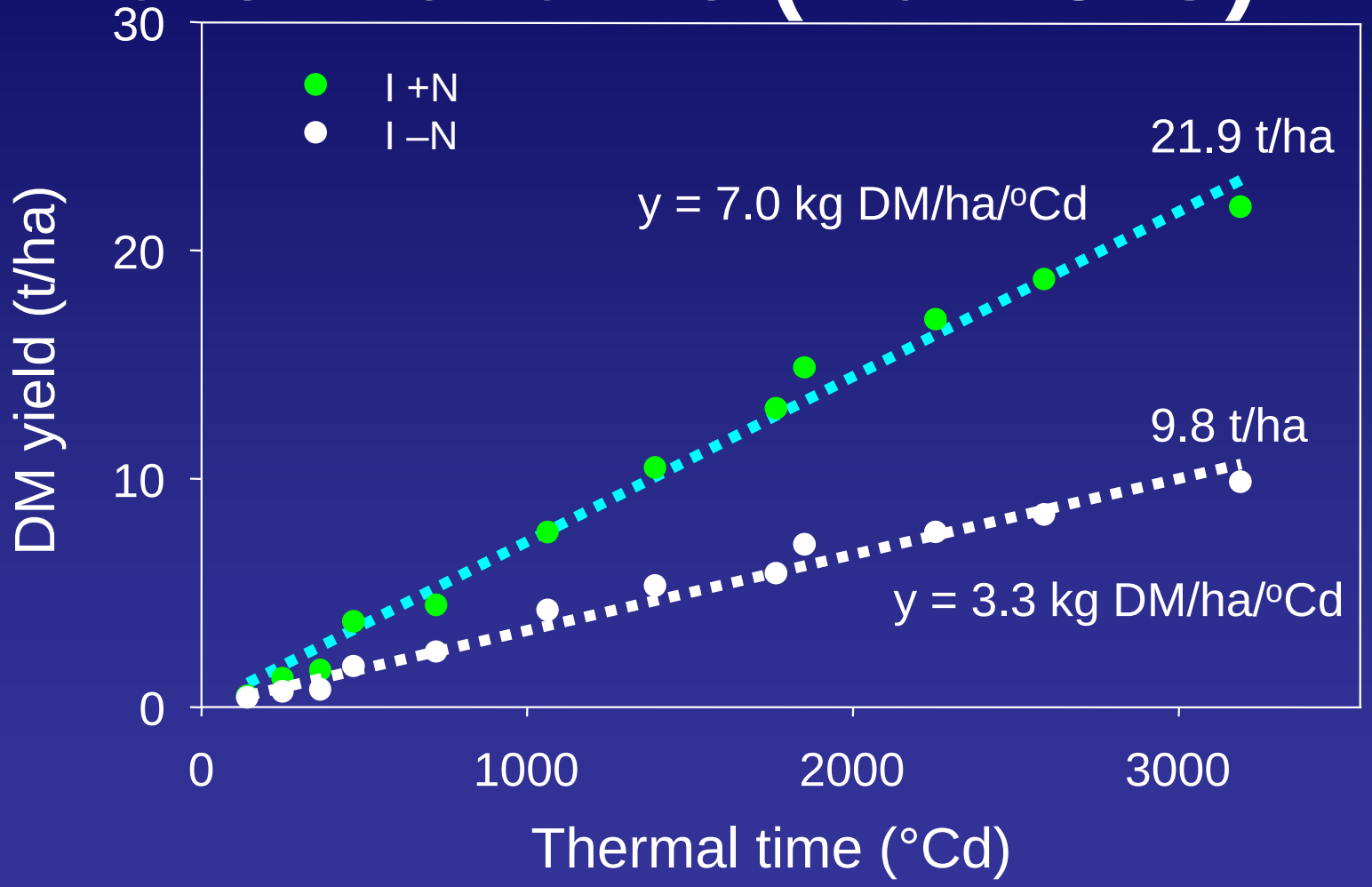
- **RG/Wc : Weedy not persistent grass or clover suited to irrigated or high rainfall environments – endophyte?**

- **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

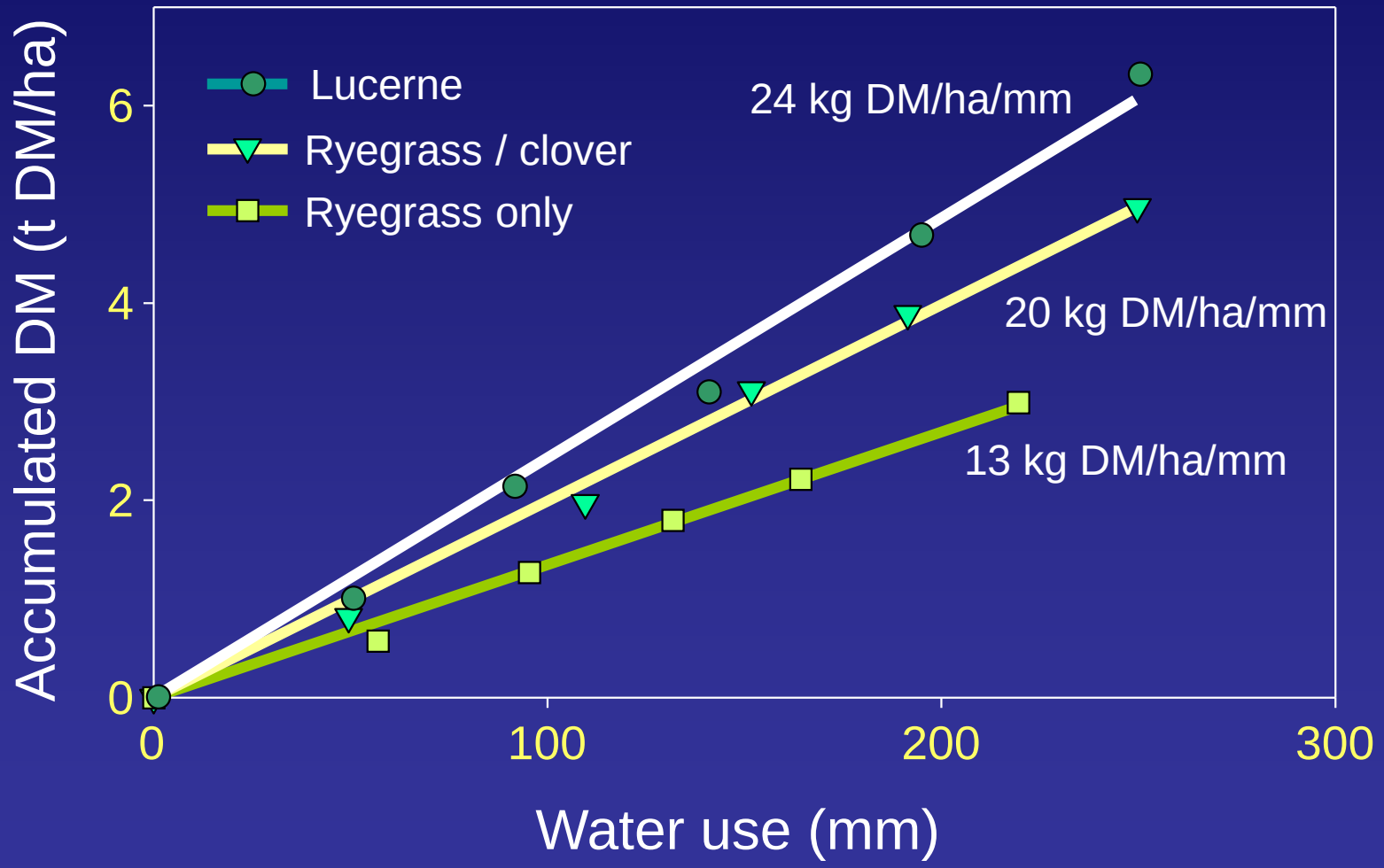

Nitrogen fixation
25 kg N/t DM

DM yield response to thermal time (Tb = 3°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 fertilser on grass/legume pastures
  - Build large seed bank in the first year, manage to maintain it


Gland clover


Balansa clover

Arrowleaf clover

Lucerne


Cluster = where sub may grow


Striated


Suckling


Haresfoot

- Takes several years to build seed reserves

Conclusions

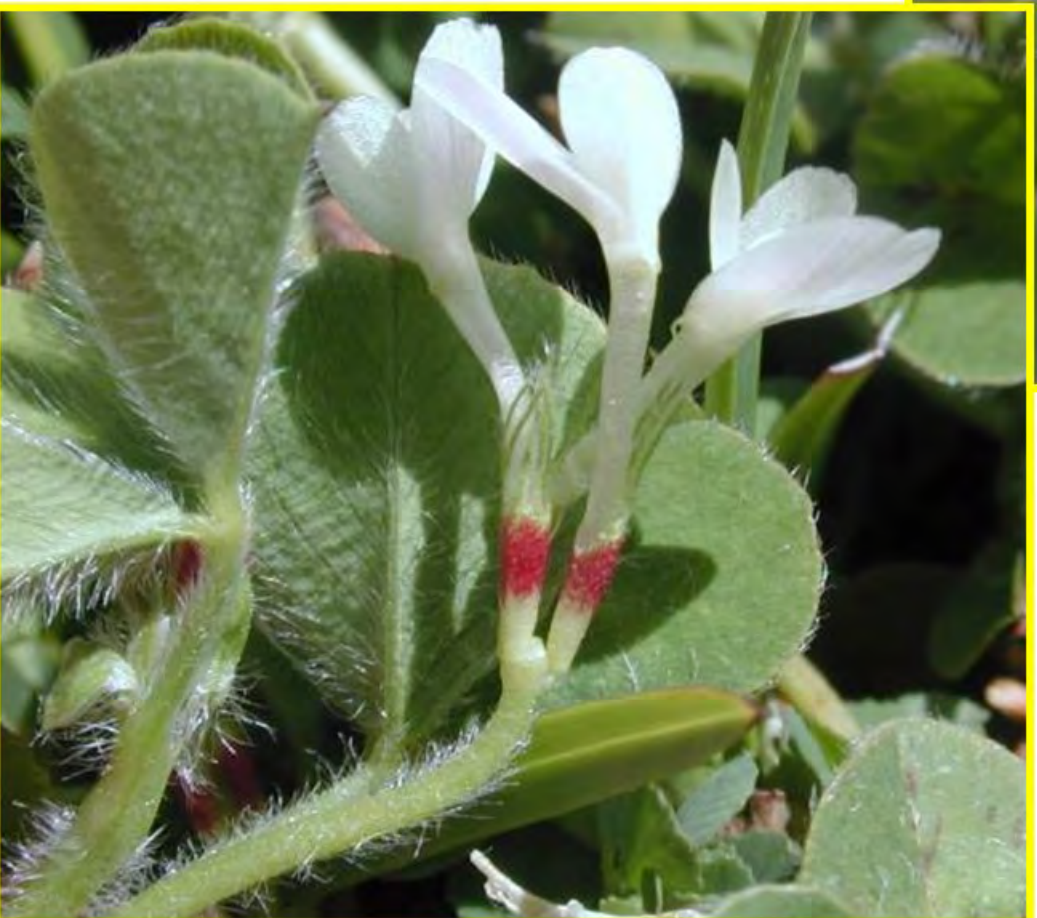
- Dryland resilience requires different species, grazing management and takes time.
- Capture light and maximize soil moisture by focussing on legumes.
- Become a legume fanatic, hate the grasses

- 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