Lincoln University
Te Whare Wānaka o Aoraki
AOTEAROA • NEW ZEALAND

Alfalfa grazing management

Pergamino

17 October 2014

New Zealand's specialist land-based university

Farmer grazing issues

- 10% flowering – basal bud formation
- Average 23% higher but 3-weeks later
- Mostly cut and carry for hay/silage
- Ewes and lambs on lucerne pre-weaning?
- Animal health issues e.g. bloat

Experiment 2 flexible grazing

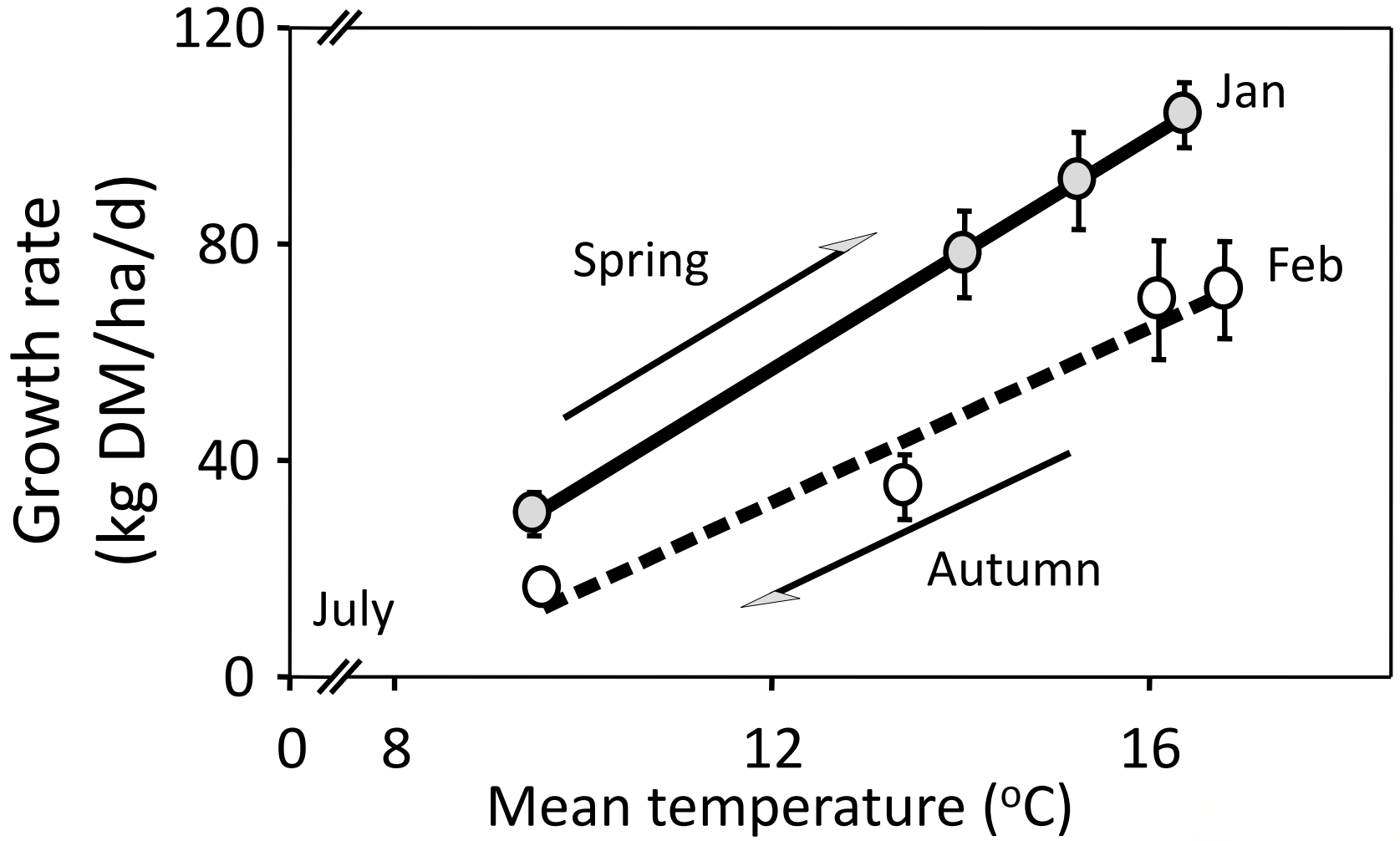
38 days resting

4 days grazing

25 days resting

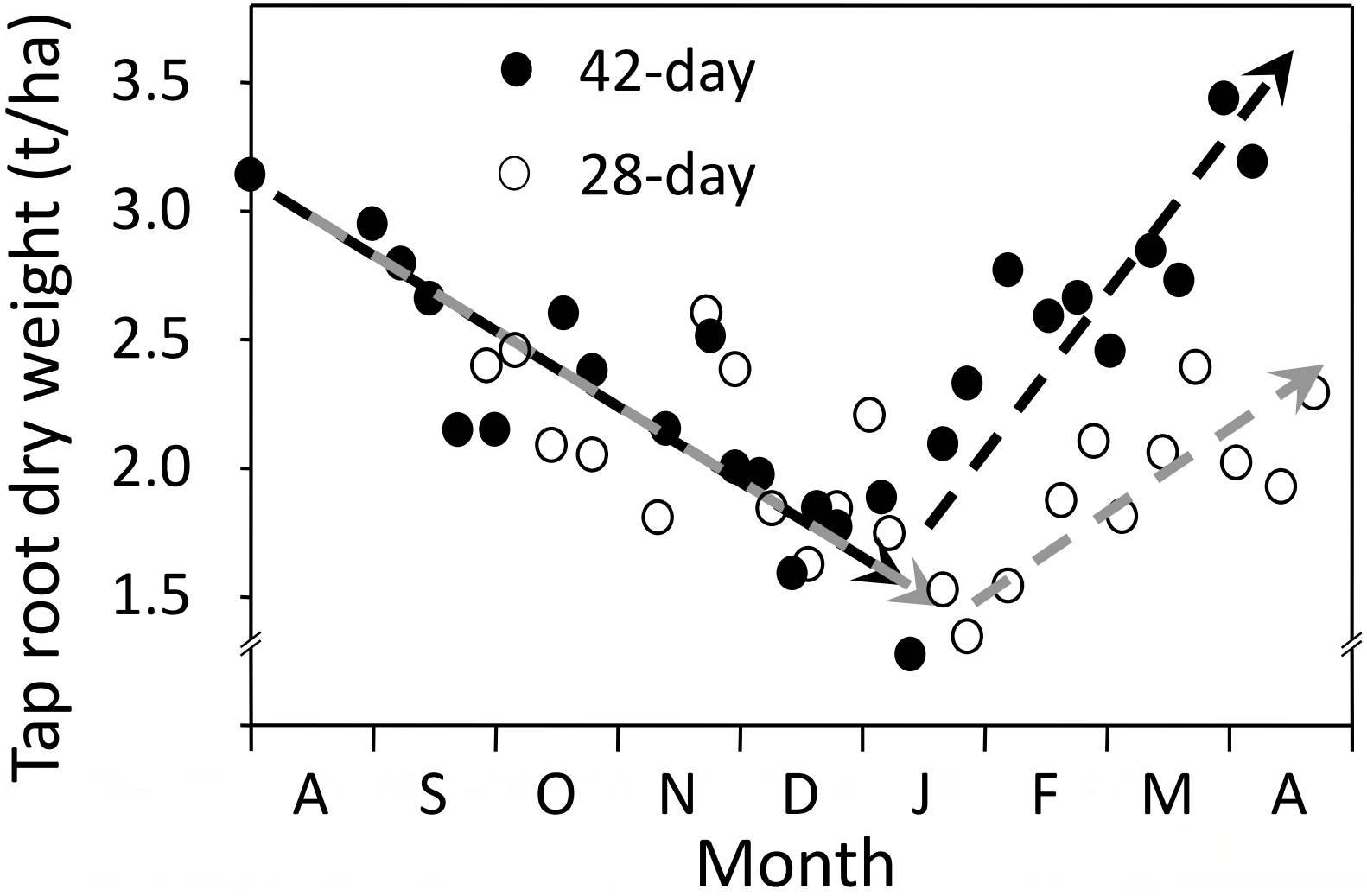
3 days grazing

Vegetative growth



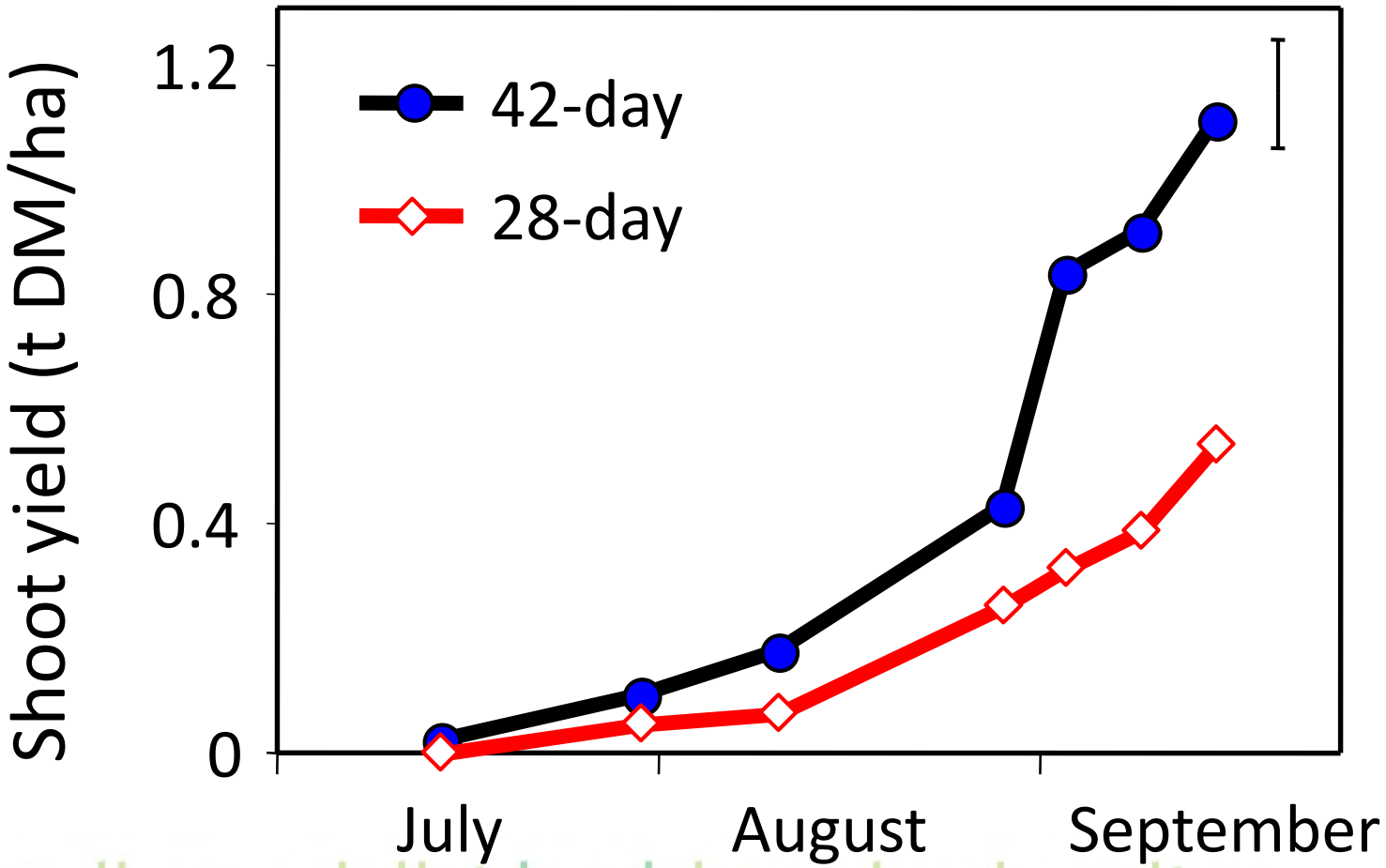
Moot *et al*. 2003

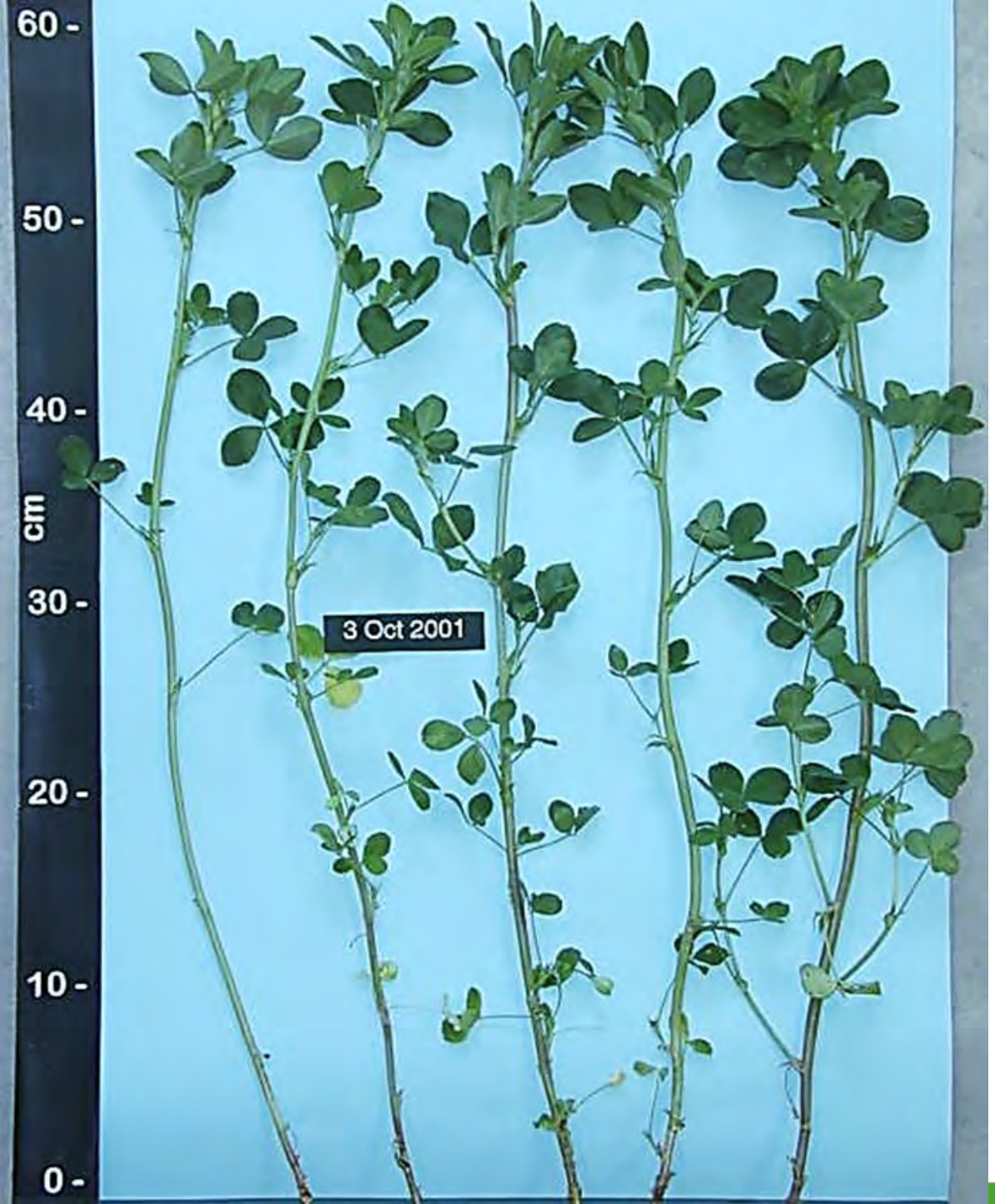
Partitioning to roots



Moot *et al*. 2003

Dry matter production in spring



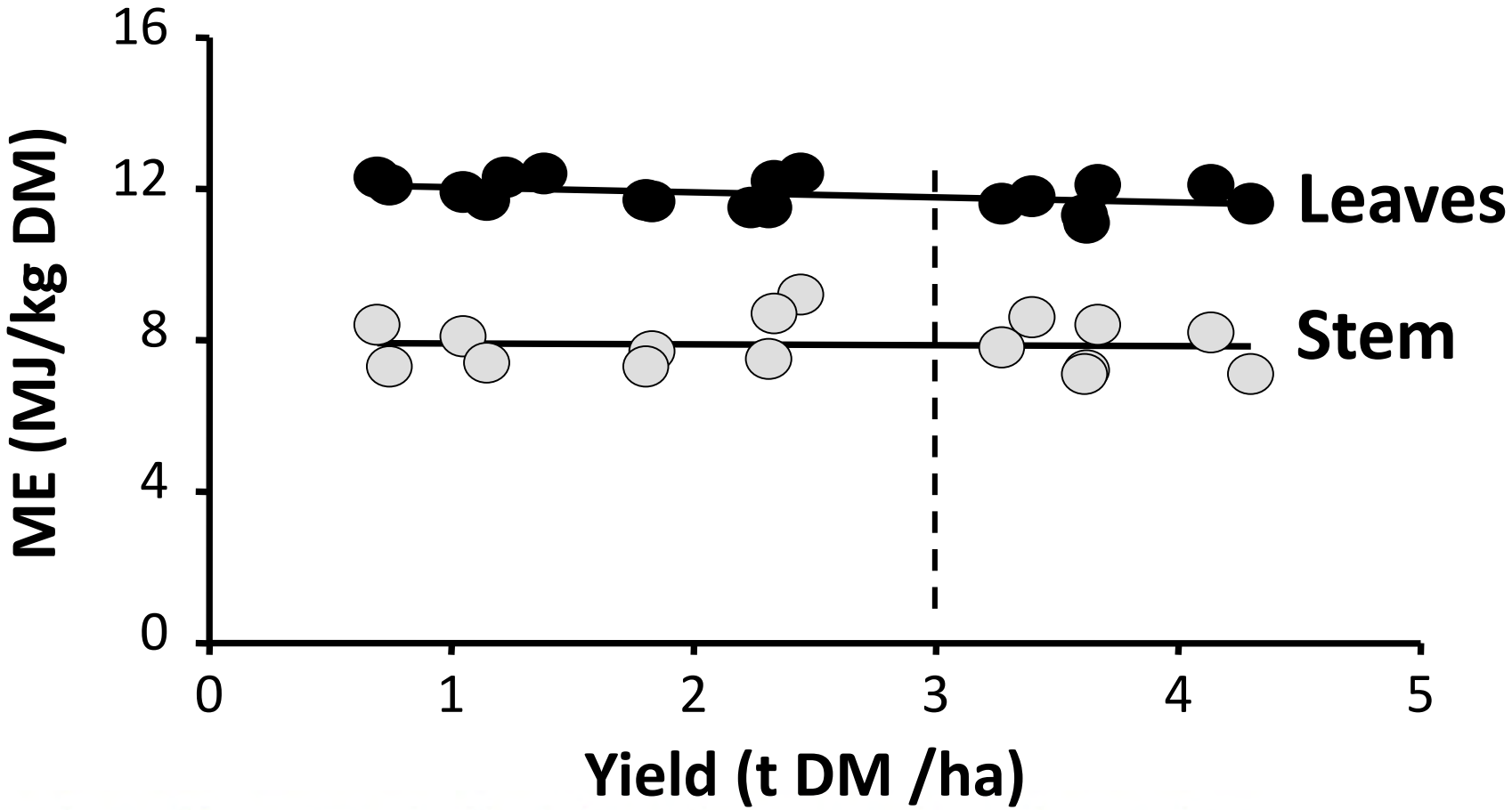


Lincoln University
Te Whare Wānaka o Aoraki
AOTEAROA · NEW ZEALAND

Stem height

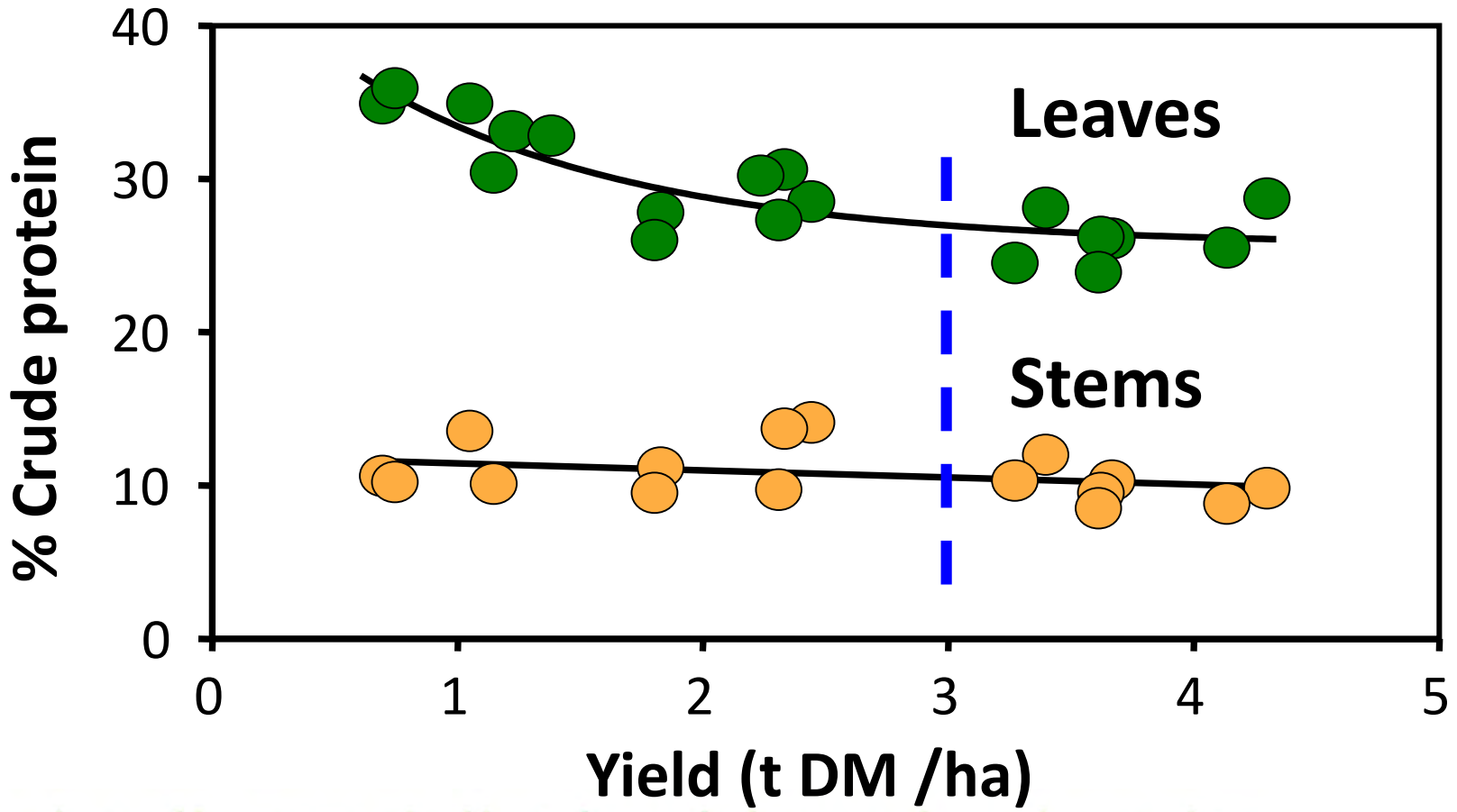
10% flowering; 60% stem

Metabolisable energy of lucerne



Brown & Moot 2004

Crude protein of lucerne herbage



Brown & Moot 2004

Seasonal grazing management

Spring

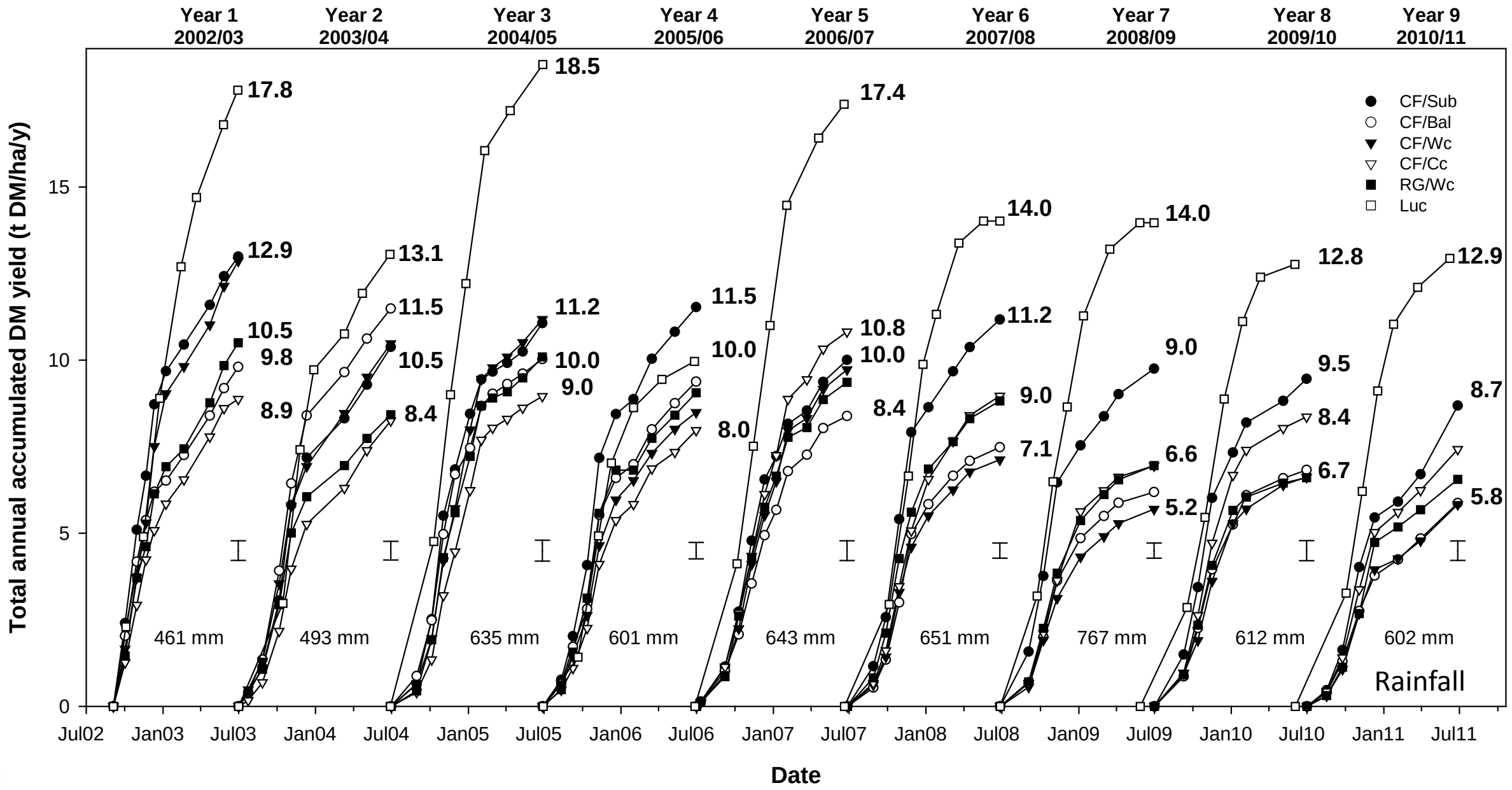
- 1st rotation aided by root reserves to produce high quality vegetative forage.

- can graze before flowers appear (~1500 kg DM/ha) ideally ewes and lambs but

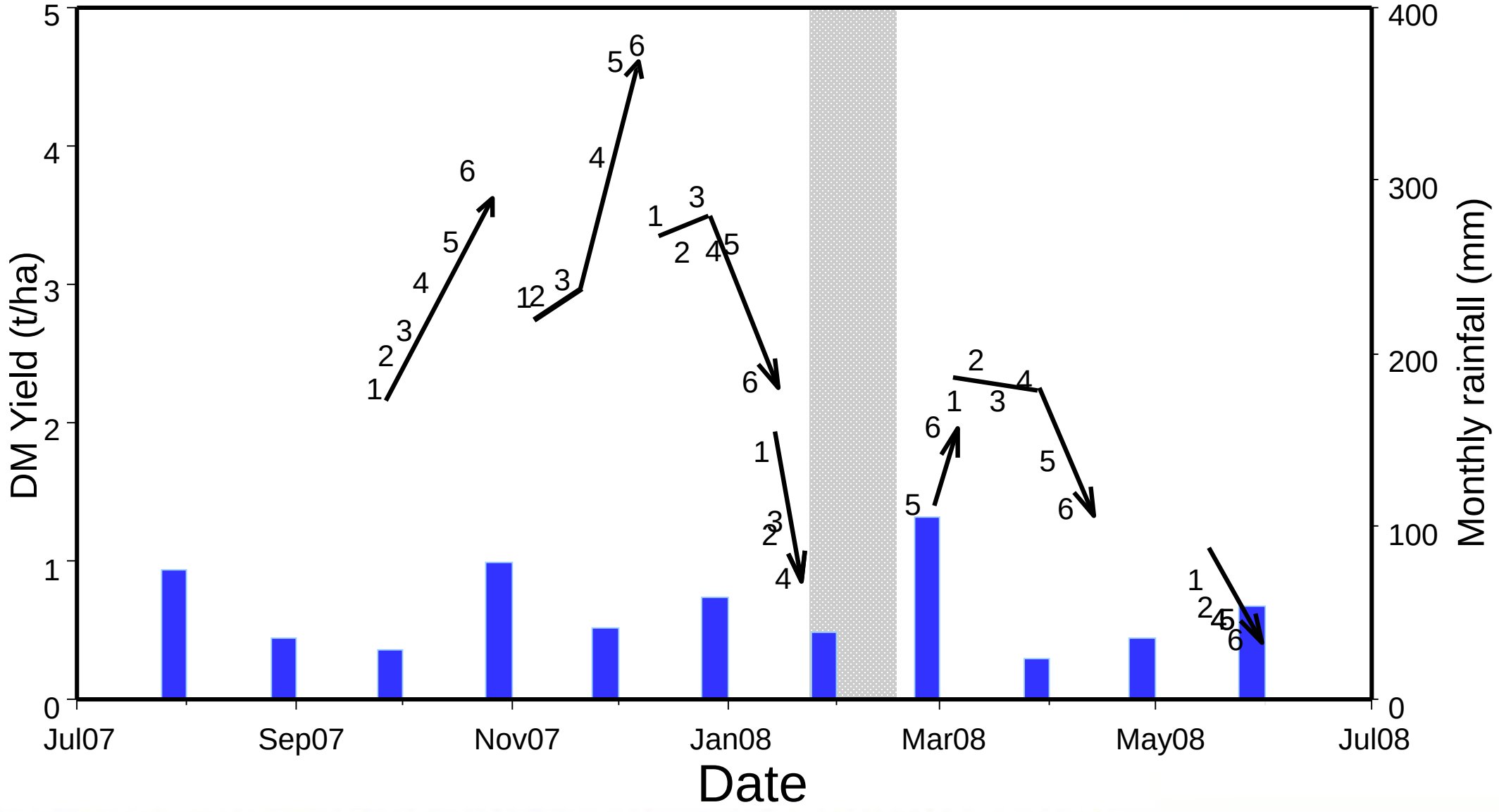
Growing point at the top of the plant

The ‘MaxClover’ Grazing experiment in paddock H19 at Lincoln University

Figure 1. Total annual accumulated dry matter production



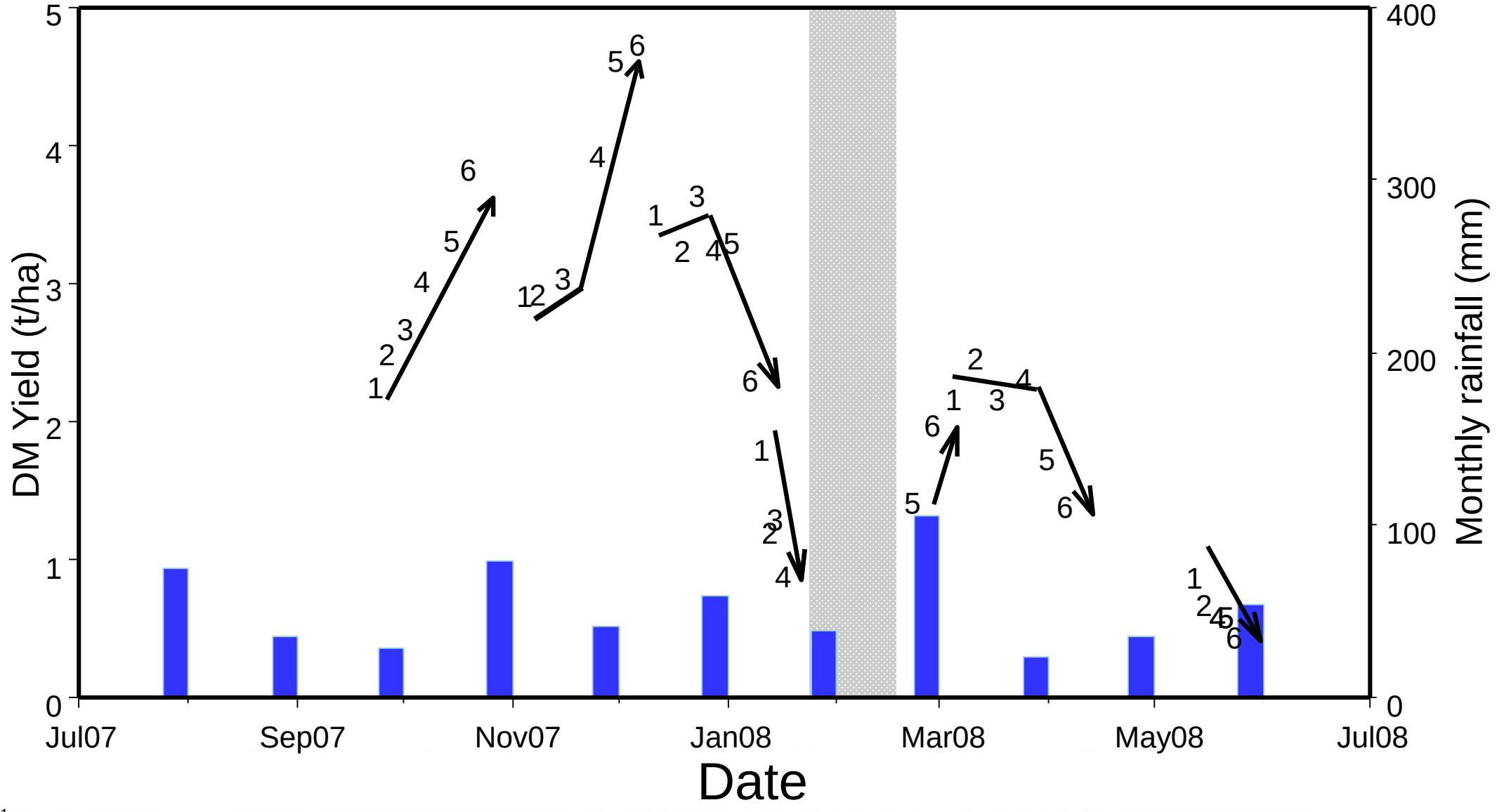
MaxClover – 38-42 day rotation



Moot & Smith 2011

Rotation 1 Pre-graze
Plot 1 (21/9/07)
2.3 t DM/ha
20-25 cm tall

MaxClover – 38-42 day rotation



Moot & Smith 2011

Rotation 2 Pre-graze
Plot 1 (2/11/07, 38 d)
2.9 t DM/ha
35-40 cm tall

Grazing sequence – Plot 25
Day 0 (7/9/2009)

Grazing sequence – Plot 25
Day 1 (8/9/2009)

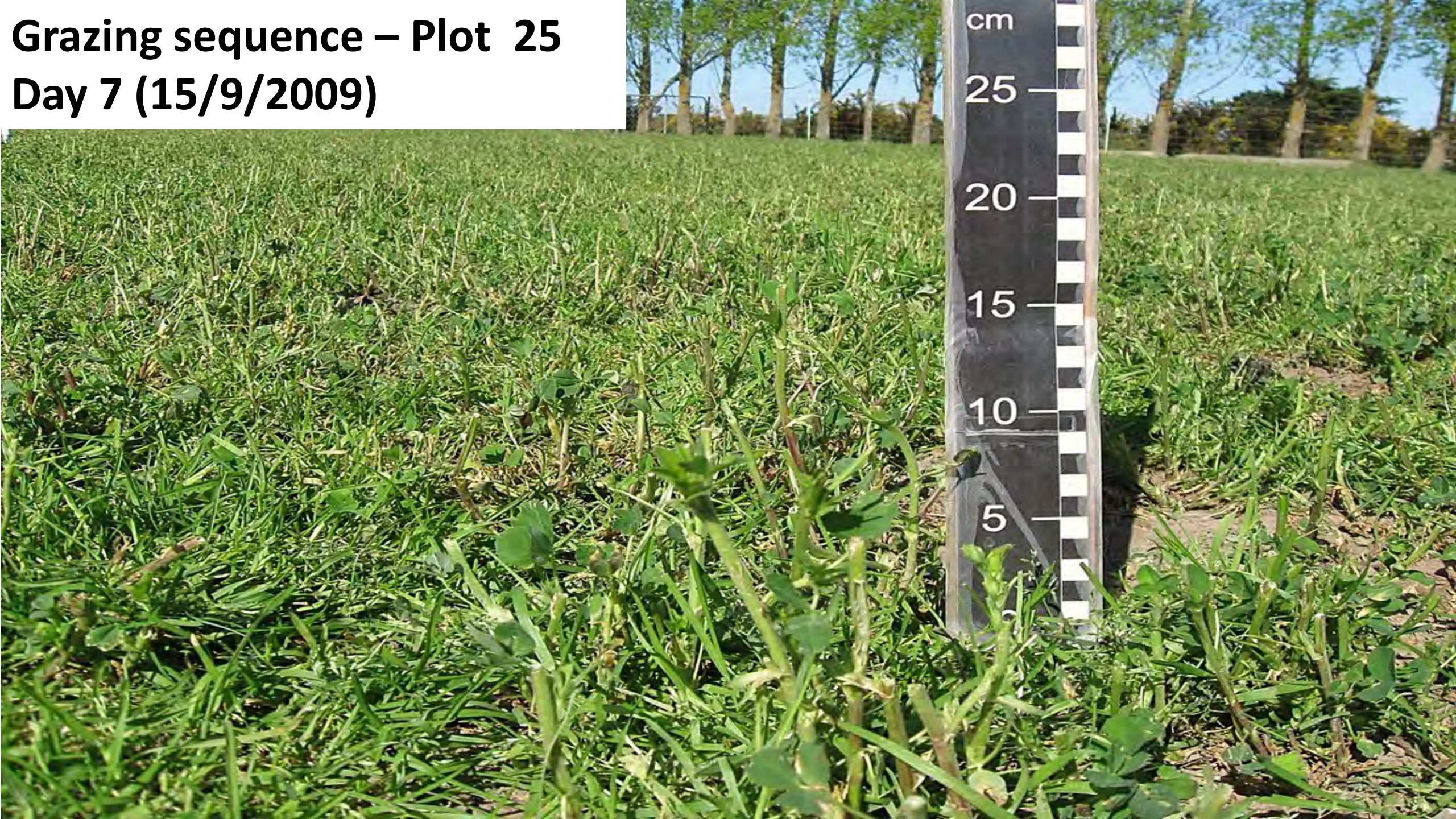
Grazing sequence – Plot 25
Day 2 (9/9/2009)

Grazing sequence – Plot 25
Day 3 (10/9/2009)


Grazing sequence – Plot 25
Day 4 (11/9/2009)
30
cm
25
20
15
10

Grazing sequence – Plot 25
Day 5 (12/9/2009)

Grazing sequence – Plot 25
Day 7 (15/9/2009)




30
cm
25
20
15
10
5

5th September 2011 – Cave Sth Canterbury

Seasonal grazing management

Lincoln University
Te Whare Wānaka o Aoraki
AOTEAROA · NEW ZEALAND

Spring/summer (Nov-Jan)

- Priority is stock production (lamb/beef/deer)
- graze 6-8 weeks solely on lucerne
- 5-6 paddock rotation stocked with one class of stock (**7-10 days on**)
- allowance 2.5-4 kg DM/hd/d – increase later in season

Spring grazing

Stocking rates in New Zealand

- Spring 14 ewes plus twins/ha
- Summer 70 lambs/ha
- Ideally 7-14 days maximum on any one paddock
- Lush growth requires a source of fibre

Maximize reliable spring growth – high priority stock

Photo: D Avery
'Bonavaree', Marlborough

Photo: D Avery
'Bonavaree', Marlborough

Photo: D Avery
'Bonavaree', Marlborough

Seasonal grazing management

Spring/summer (Nov-Jan)

- Priority is stock production (lamb/beef/deer)
- graze 6-8 weeks solely on lucerne
- 5-6 paddock rotation stocked with one class of stock (7-10 days on)
- allowance 2.5-4 kg DM/hd/d – increase later in season


14 ewes + twins/ha

Animal health

- **Clostridial bacteria:** vaccinate
- **Cobalt:** vitamin B12 injection
- **Worm haven:** Camping on small area – river edge?
- **Avoid flushing if:** leaf spots or flowering lucerne
  - new regrowth or tops only are O.K.

Dairy cows

Animal health

- **Redgut:** problem on high quality feeds – fibre
- **Bloat:** cattle more than sheep – capsules
- **Na def.** (0.03%): salt licks/fence-line weeds/pasture
- Require 0.11% Na - sheep/beef/dairy

High numbers for 7-10 days

Bloat (Note– this animal survived)

Photo: D Avery
Bonavaree , Marlborough

Seasonal grazing management

Lincoln University
Te Whare Wānaka o Aoraki
AOTEAROA · NEW ZEALAND

Early autumn (Feb-April)

- terminal drought ⇒ graze standing herbage
- allow 50% flowering
- long rotation (42 days) somewhere between Jan and end of May

⇒ **build-up root reserves for spring growth and increase stand persistence**

Autumn = flowering plants
But don't flush on this!

Rotation 4 Pre-graze
Plot 6 (28/2/08)
2.0 t DM/ha produced in 51 d

Case study – Bonavaree farm
Over grazed – high erosion risk

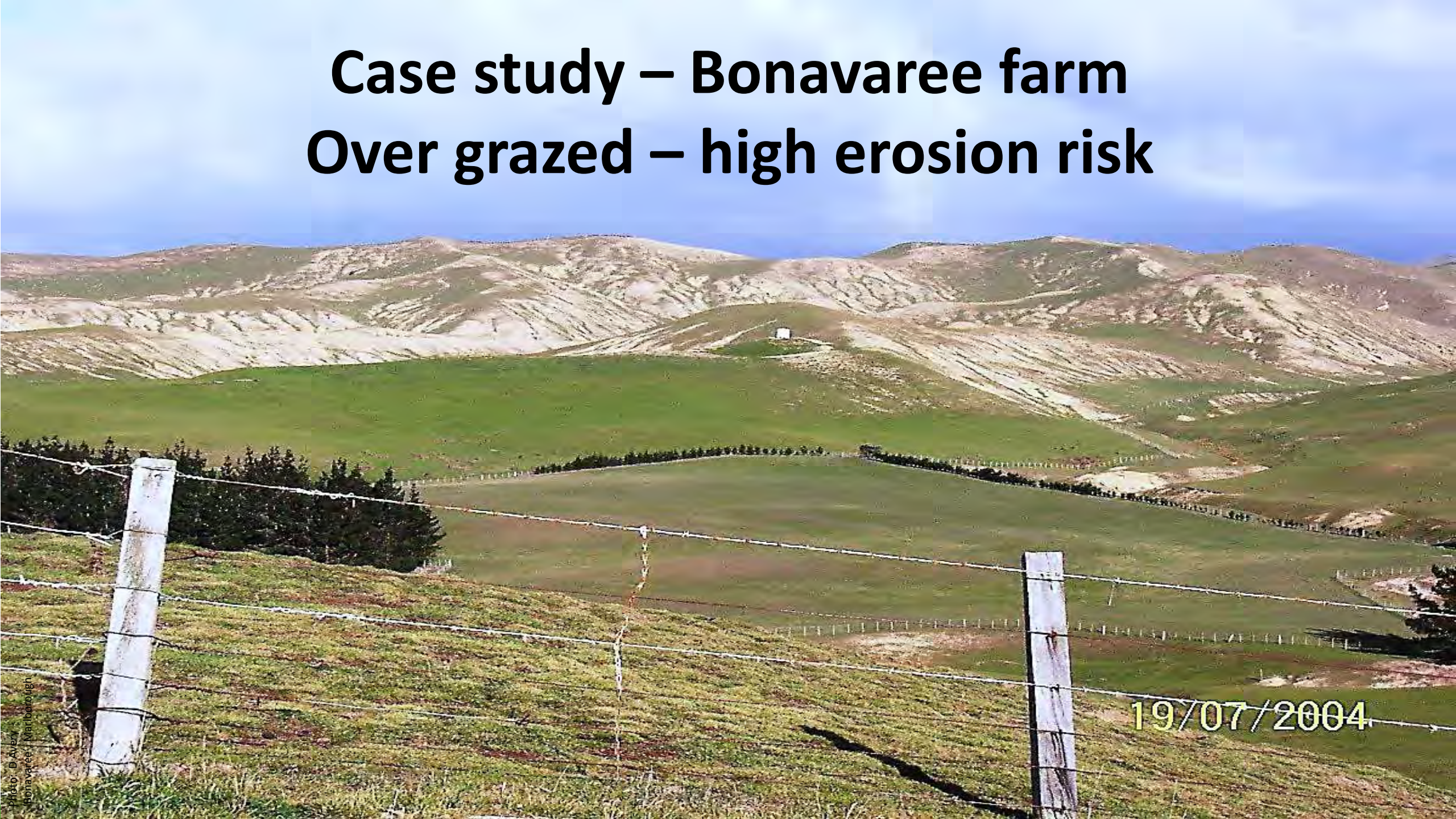
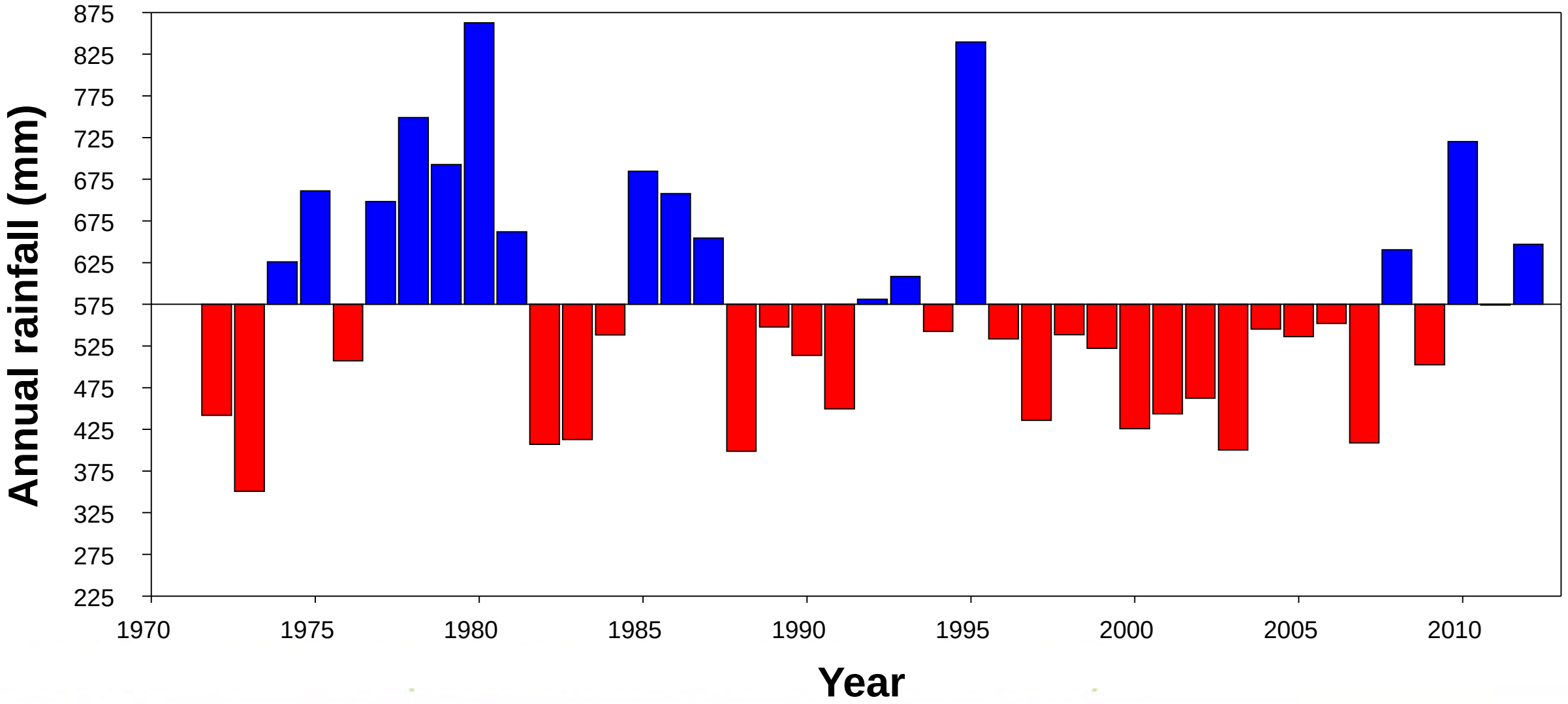
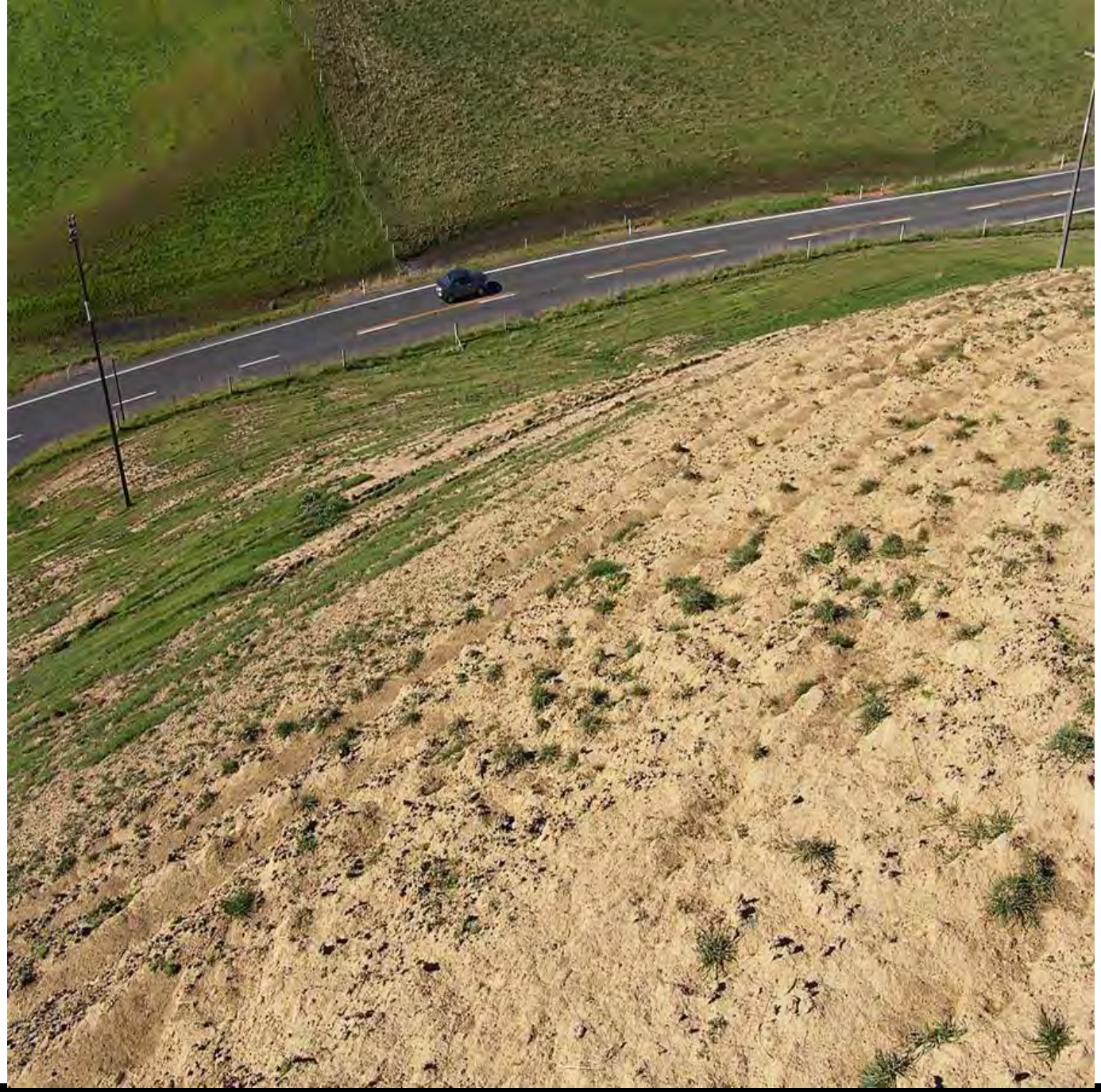


Photo: D Avery, Bonavaree, Marlborough

Annual rainfall at ‘Bonavaree’



NIWA, Cliflo database



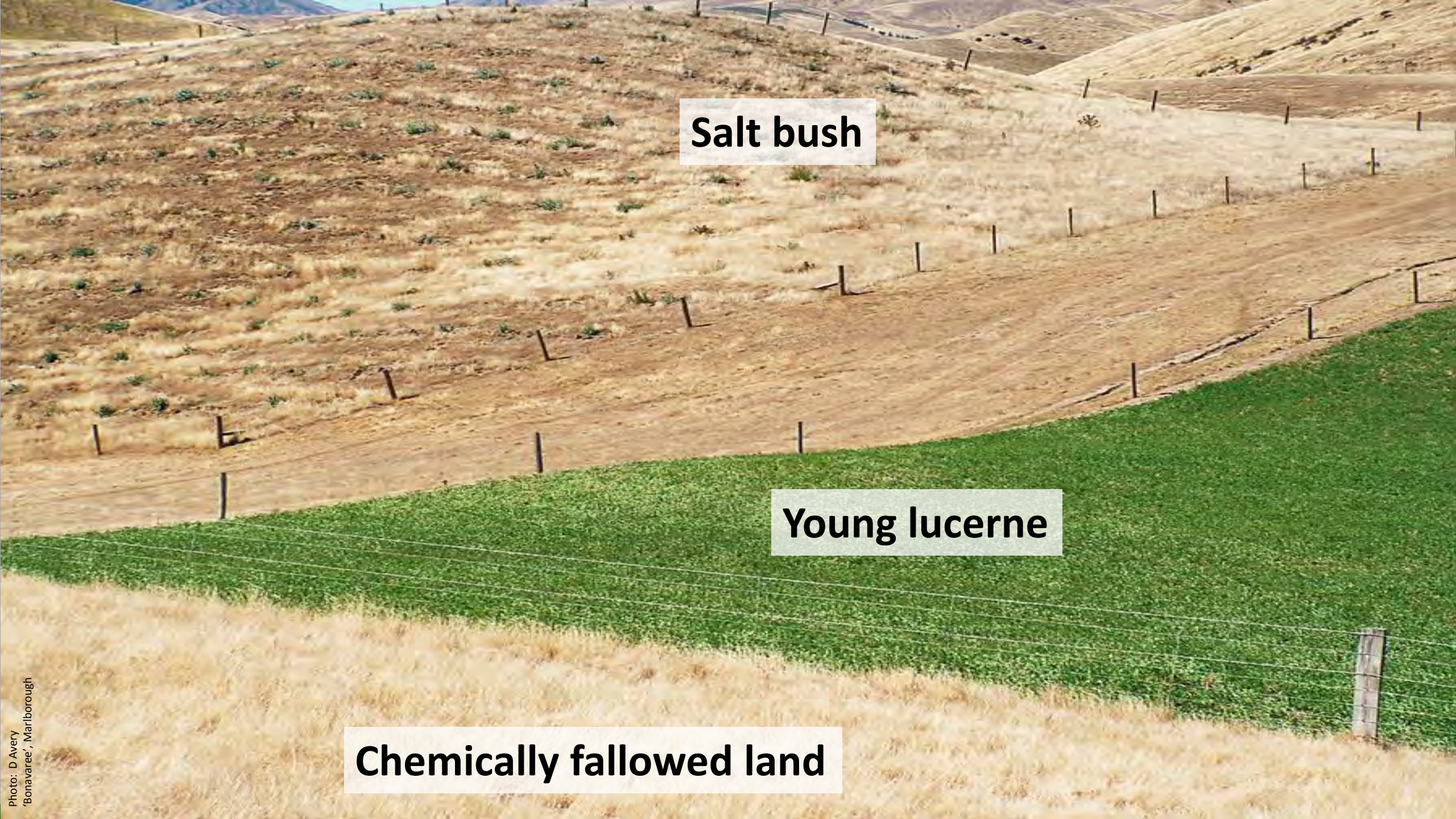


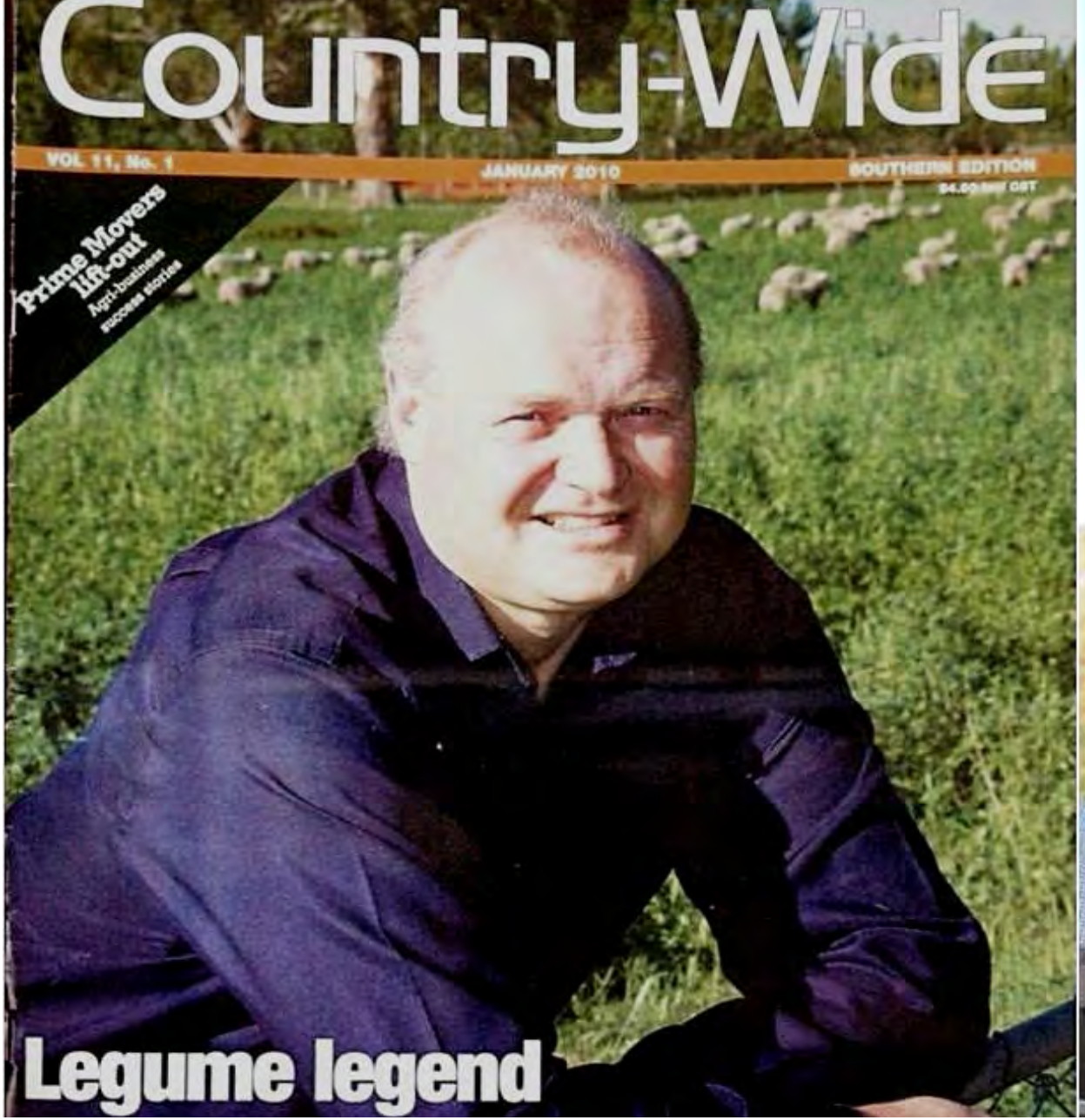
Photo: D Avery
'Bonavaree', Marlborough

‘Bonavaree’ production change over 10 years

	2002	2012	Change
Land area (ha)	1100	1800	↑ 64%
Sheep numbers	3724	4158	↑ 12%
Lambing (%)	117	145	↑ 24%
Lamb weights (kg)	13.3	19	↑ 43%
Lamb sold (kg)	38324	74460	↑ 94%
Wool (kg)	18317	20869	↑ 14%
Sheep:cattle	70:30	50:50	
Gross trading profit (ha)	$500	$1300	↑ 149%

Resilient drought-proofed landscape

SI Farmer of the Year 2010



Integrity & Trust

Ewes & lambs graze lucerne at ‘Bonavaree’, Marlborough
Lambs approx. 6 weeks old

Photo: D Avery

References & Links

Dryland Pastures Website: www.llncoln.ac.nz/dryland
Dryland Pastures Blog: http://www.lincoln.ac.nz/conversation/drylandpastures/
Lincoln University: www.lincoln.ac.nz

Brown, H. E. and Moot, D. J. 2004. Quality and quantity of chicory, lucerne and red clover production under irrigation. *Proceedings of the New Zealand Grassland Association*, **66**, 257-264. Online: http://www.grassland.org.nz/publications/nzgrassland_publication_446.pdf

Moot, D. J. 2012. An overview of dryland legume research in New Zealand. *Crop and Pasture Science*, **63**, 726–733. Online: http://www.publish.csiro.au/paper/CP12103.htm

Moot, D. J. and Avery, D. 2013. Sustainable intensification of livestock grazing systems in low rainfall regions of New Zealand. *In*: First International Conference on Global Food Security, 29 September - 2 October 2013, Noordwijkerhout, The Netherlands. Elsevier Ltd. p O3.O3 (4 pgs).

Moot, D. J., Brown, H. E., Teixeira, E. I. and Pollock, K. M. 2003. Crop growth and development affect seasonal priorities for lucerne management. *In*: D.J Moot (Ed.). Legumes for Dryland Pastures. Proceedings of a New Zealand Grassland Association Symposium. 18-19 November 2003, Lincoln University, New Zealand. New Zealand Grassland Association. **Research & Practice Series Vol. 11**. p 201-208. Online: http://www.grassland.org.nz/publications/nzgrassland_publication_1654.pdf

Moot, D. J. and Smith, M. 2011. Practical Lucerne Management Guide. 9 pp. http://www.lincoln.ac.nz/Documents/Dryland-Pasture-Research/presentations/Lucerne-management-guide-Col.pdf.

NIWA. 2010. CliFlo Database - National Climate database. Date Accessed: 31/08/10. http://cliflo.niwa.co.nz/. Last Updated: Not Specified.

Teixeira, E. I. 2006. Understanding growth and development of lucerne (*Medicago sativa* L.) crops with contrasting levels of perennial reserves. Ph.D. thesis, Lincoln University, Lincoln, Canterbury. 274 pp. Online: http://hdl.handle.net/10182/1471