LUCERNE

Farmer experiences

Dr Derrick Moot

Professor of Plant Science

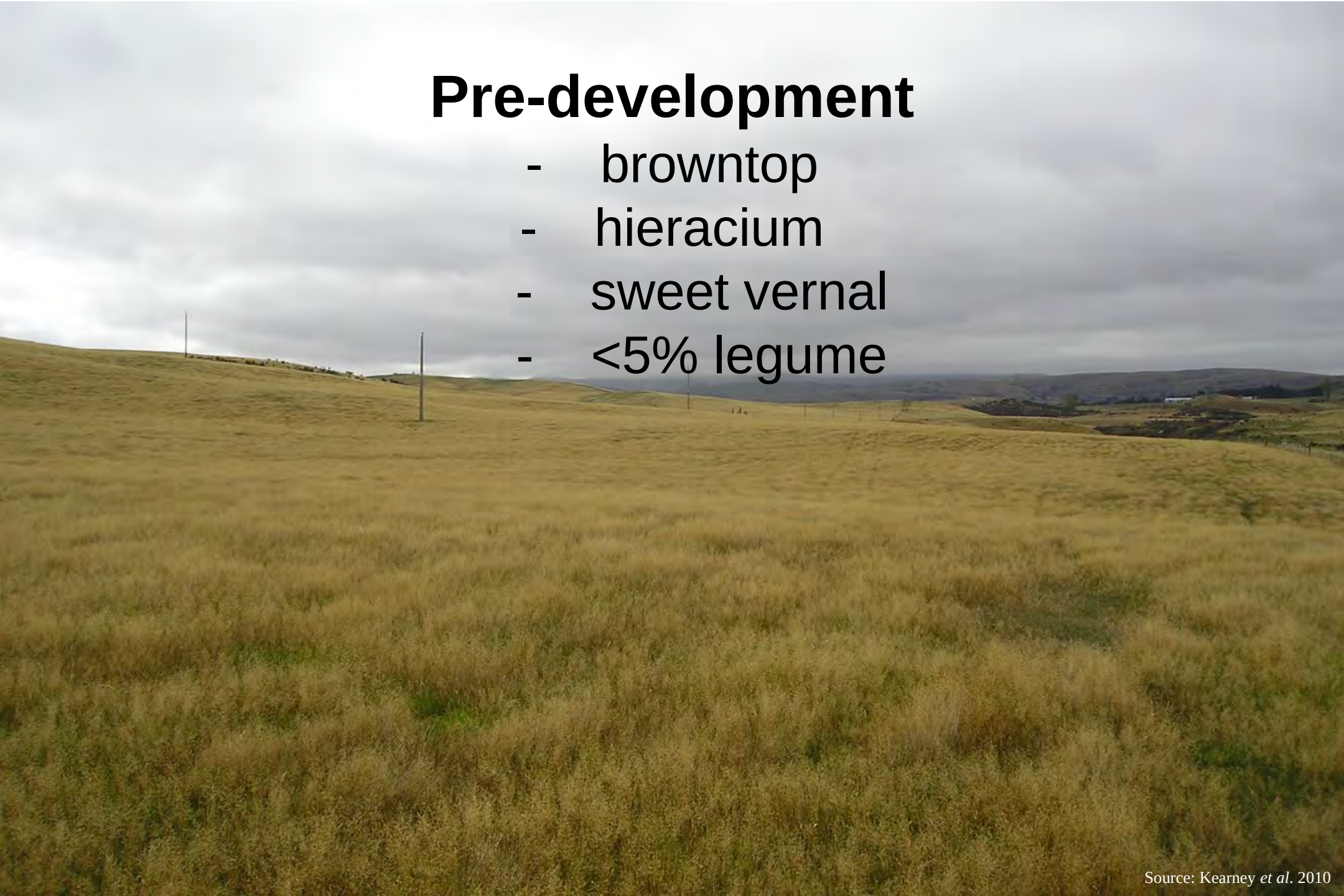
1. Lucerne establishment

Soils
- deep free draining
- pH 6.0 – 7.0
- RG/Wc fertility

Sowing
- inoculated (peat)
- 10-25 mm
- bare or coated 8-10 kg/ha
- spring or autumn (grass grub)
- cultivated or direct drilled
- after fallow?

Pre-development

- browntop
- hieracium
- sweet vernal
- <5% legume



Source: Kearney *et al*. 2010

Source: Kearney *et al*. 2010

Lime and Fertiliser Application

Lime 3-5 ton/ha

Fertiliser 250-500kg/ha

Source: Kearney *et al*. 2010

Typical 0.15 m soil test results for pre (2008) and post (2010) fertiliser applications from three Central Otago farms.

	pH	Olsen P (μg/ml)	Potassium (QTU)	Sulphur (μg/g)	Aluminium (μg/kg)
Pre-Development (2008)					
Hills Creek	5.2	10	5	14	2.6
Huntleigh	5.2	10	5	1	6.3
Styx	5.2	13	13	3	5.7
Post-Development (2010)					
Hills Creek	5.8	19	9	31	0.9
Huntleigh	6.0	18	4	25	1.5
Styx	6.1	29	13	23	1.1

Source: Kearney *et al*. 2010

Autumn Spraying

- Timing is Critical
- Most important tool
- Glyphosate, granstar, penetrant

Key Results

- Conserve soil moisture
- Kill mass root systems

Source: Kearney *et al*. 2010


2nd Spray – Spring
Glyphosate, insecticide, penetrant
Result from Autumn spray, photo taken 1 November 2010
Source: Kearney *et al.* 2010

Source: Kearney *et al*. 2010

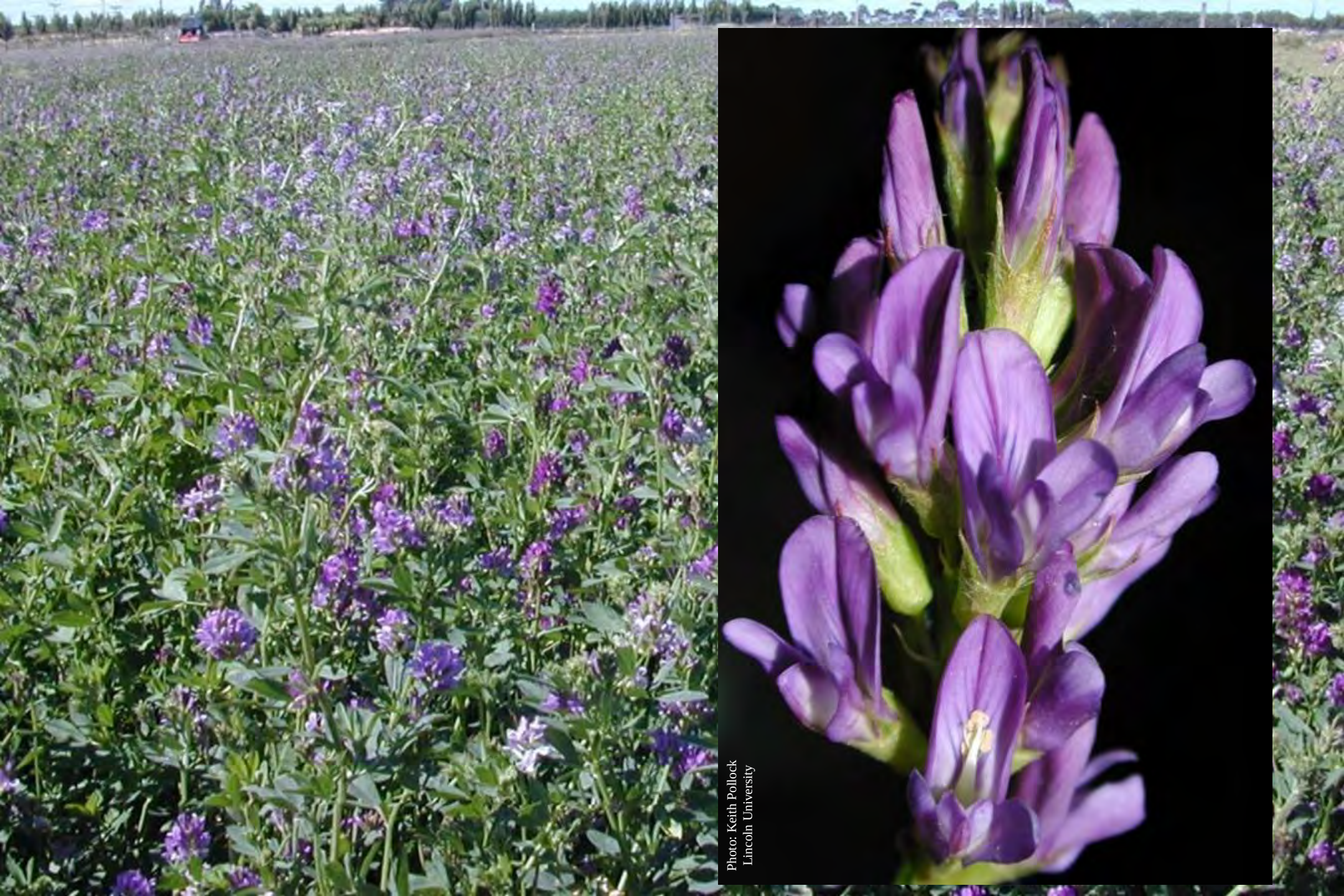


Photo: Keith Pollock
Lincoln University

Lucerne root

~8 months after sowing
> 1.5 m length

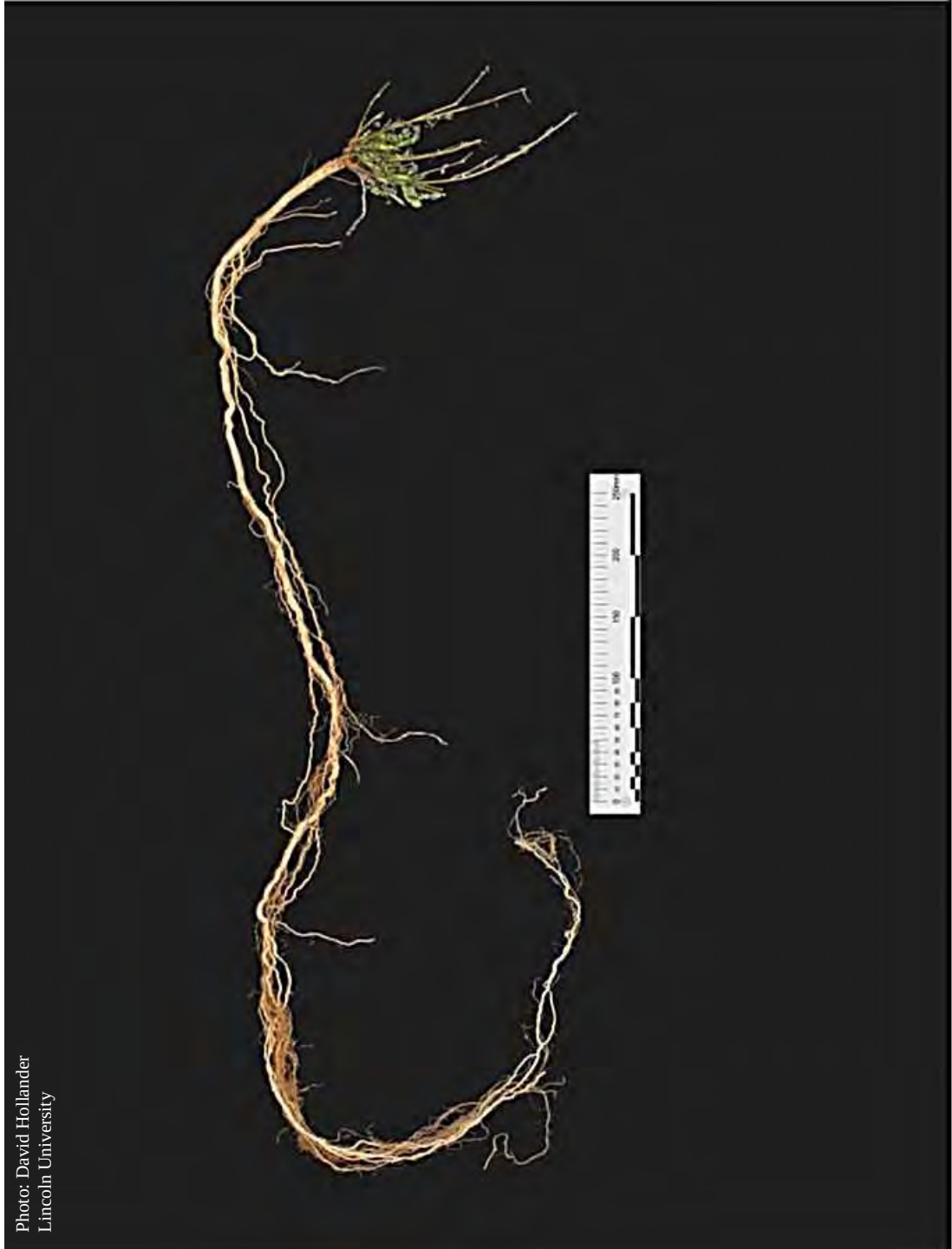
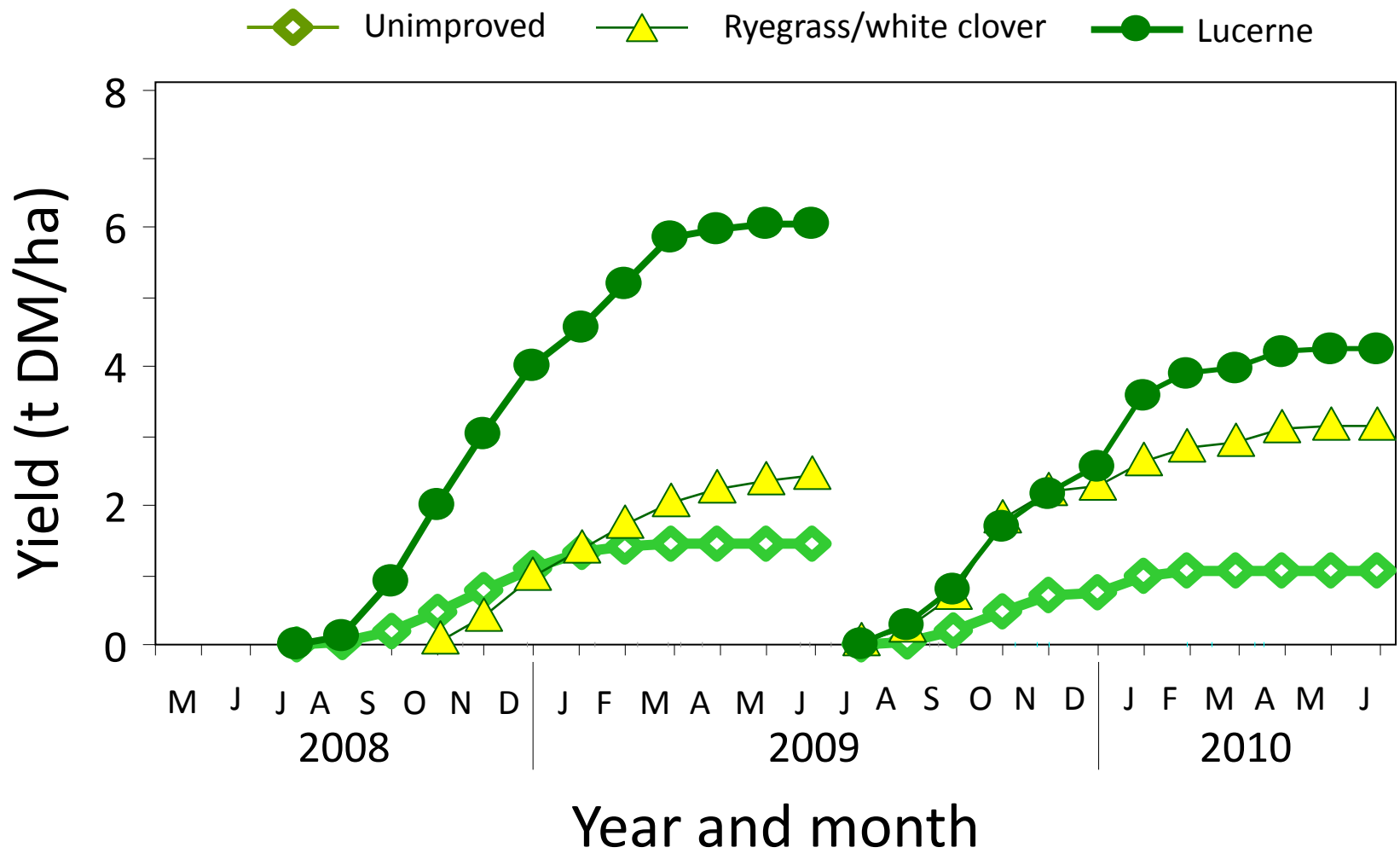


Photo: David Hollander
Lincoln University

Source: Kearney *et al*. 2010

Pasture growth



Source: Kearney *et al*. 2010

Seasonal grazing management

Spring

- 1st rotation = high quality vegetative.

- graze before flowers (~15-20 cm).

- 10-14 ewes plus twins per hectare –
  20 ha = 240 ewes + twins in one mob
  on 4 hectares.

5th September 2011 – Cave Sth Canterbury

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 (7-10 days on)
- allowance 2.5-4 kg DM/hd/d – increase later in season

‘Bonaveree’ Marlborough
July 2010

Maximize reliable spring growth – high priority stock

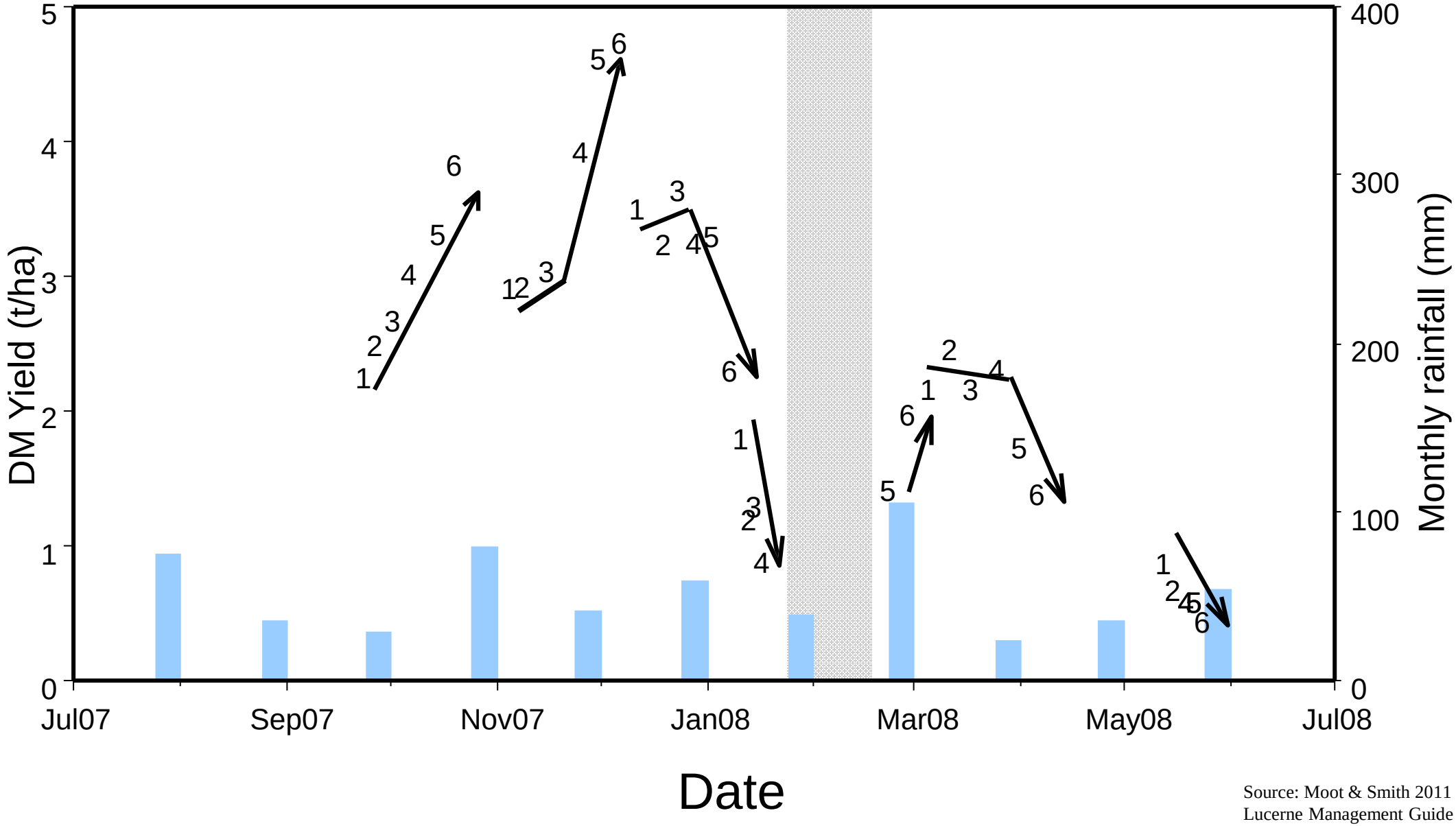
Rotation 1 Pre-graze
Plot 1 (21/9/07)
2.3 t DM/ha
20-25 cm tall

Photo: Malcolm Smith
Lincoln University

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

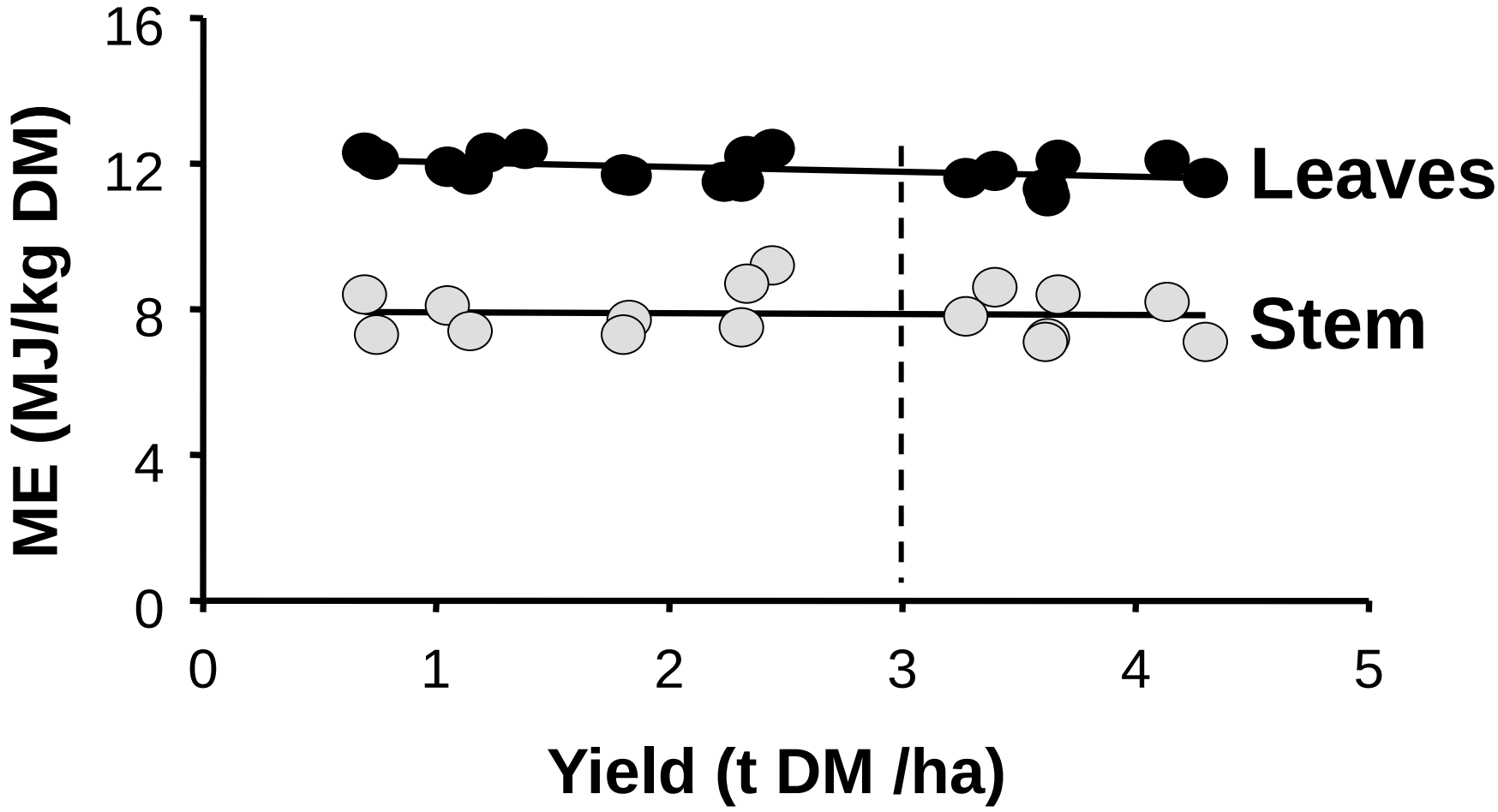
Photo: Malcolm Smith
Lincoln University

Grazing Rotations at Lincoln University



Source: Moot & Smith 2011
Lucerne Management Guide

Metabolisable energy of lucerne



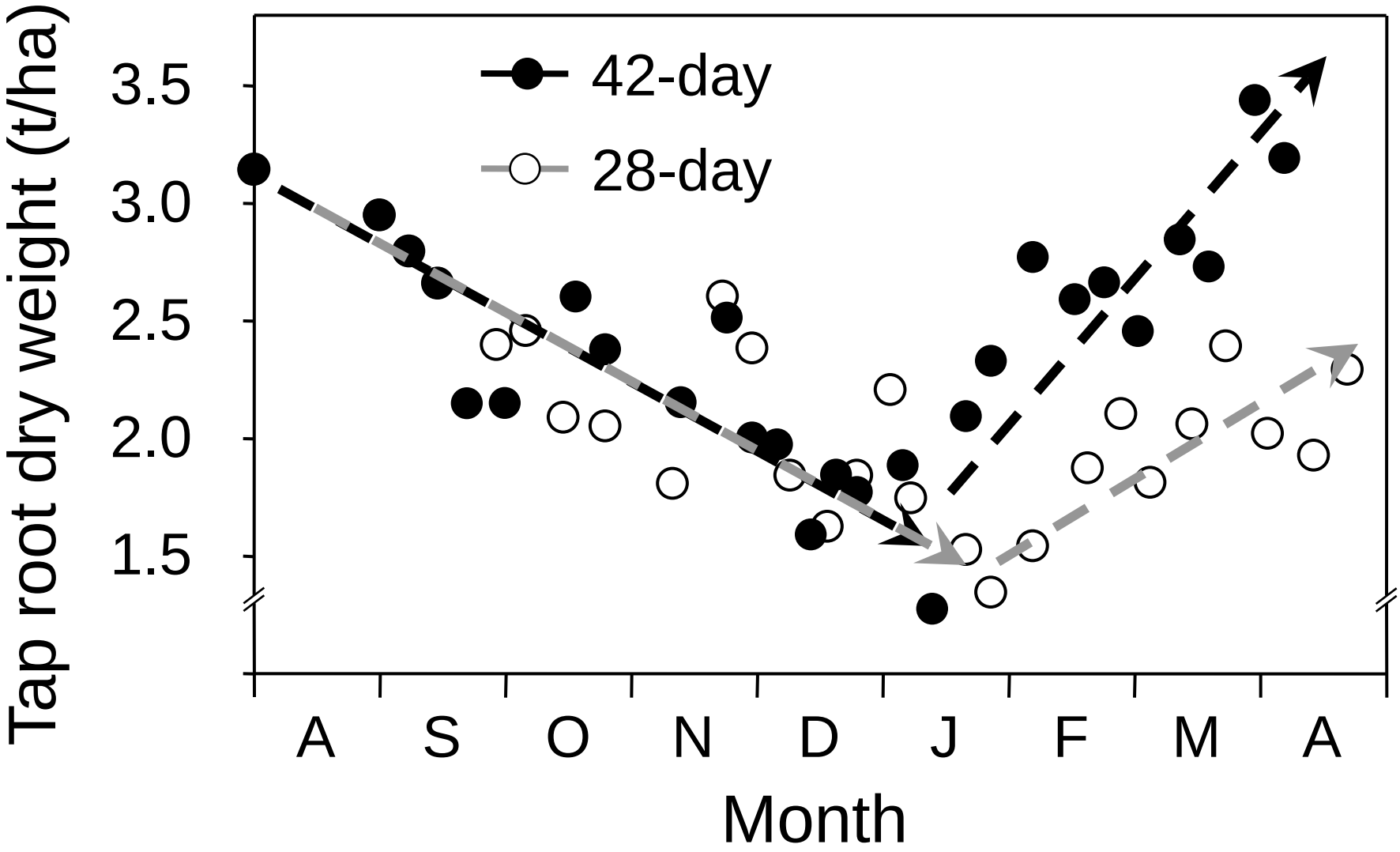
Source: Brown & Moot 2004

Photo: Derrick Moot
Lincoln University

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

Post-graze (4/3/08) **0.6 t DM/ha**
UTILISATION = **70%**

Partitioning to roots



Source: Moot *et al*. 2003


04.03.2009

Seasonal grazing management

Late autumn/winter (*May-July*)

- hard grazing once growth stops (frost)
  $\Rightarrow$ decrease aphid population

- spray for weeds 10-14 days after winter graze

  - grazing/spraying early July
  - nodes developing at low temperatures

3. 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 (13%)

3. Animal health (cont'd)

- **Clostridial bacteria:** appropriate vaccination
- **Cobalt:** vitamin B12 injection
- **Worm haven:** Camping on small area – river edge?
- **Leaf spot in autumn:** avoid flushing on older lucerne
  - new regrowth or tops only are O.K.

4. Fertilizer

- Higher requirement from cutting than grazing
  - 2% K = 20 kg/ha/t DM removed

- 50% K super = 80 kg/ha/t DM removed

  Or
- KCL = 40kg/ha/t DM removed + P and S from super

Photo: Derrick Moot
Lincoln University


‘Bonaveree’ Marlborough
July 2010
Waterlogged


Redrill poorly established areas

Close up of a prairie grass and lucerne mixture

‘Bonaveree’ Marlborough
July 2010

‘Tama’ annual ryegrass overdrilled into runout lucerne (12 yrs)

Lucerne + cocksfoot – Haka Valley

Lyndon Mathews – Deer Nth Canterbury – ‘Bareno’ Brome

Phillip Peter - Hinds and stags on lucerne – no bloat 10-15 kg heavier

Diverse drought-proofed landscape

SI Farmer of the Year 2010

Merino forage projects

Lake Heron

Sawdon

Glenmore

Simon's Hill

Bog Roy

Omarama

Mt Grand

Large variation- lucerne

Bog Roy – Lisa, Gundy Anderson

Quantify benefits of lucerne over resident

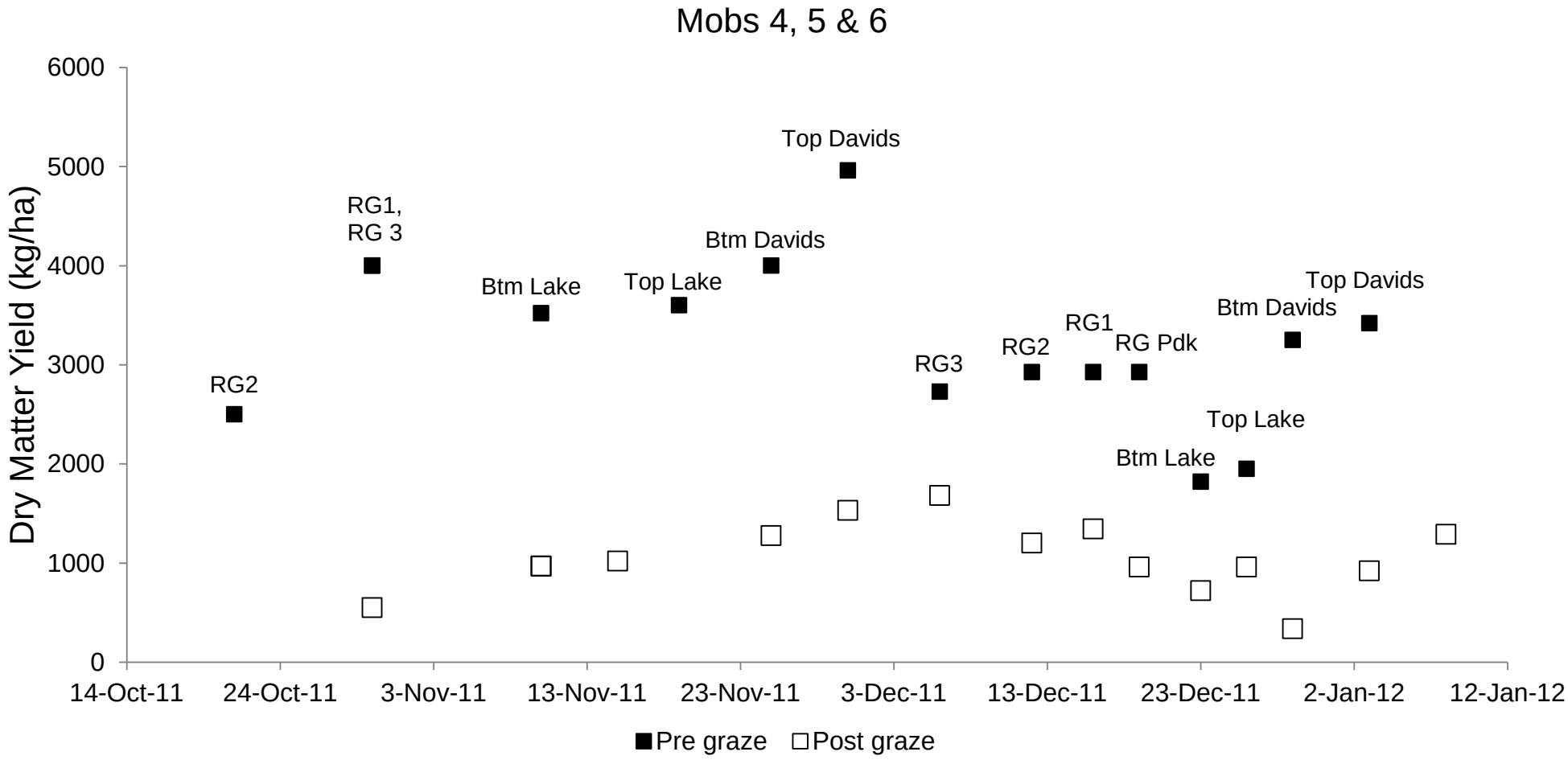
- Monitoring lucerne growth in paired samples vs. unimproved.
- Experimental oversowing of annual legumes

Photos: Keith Pollock
Lincoln University

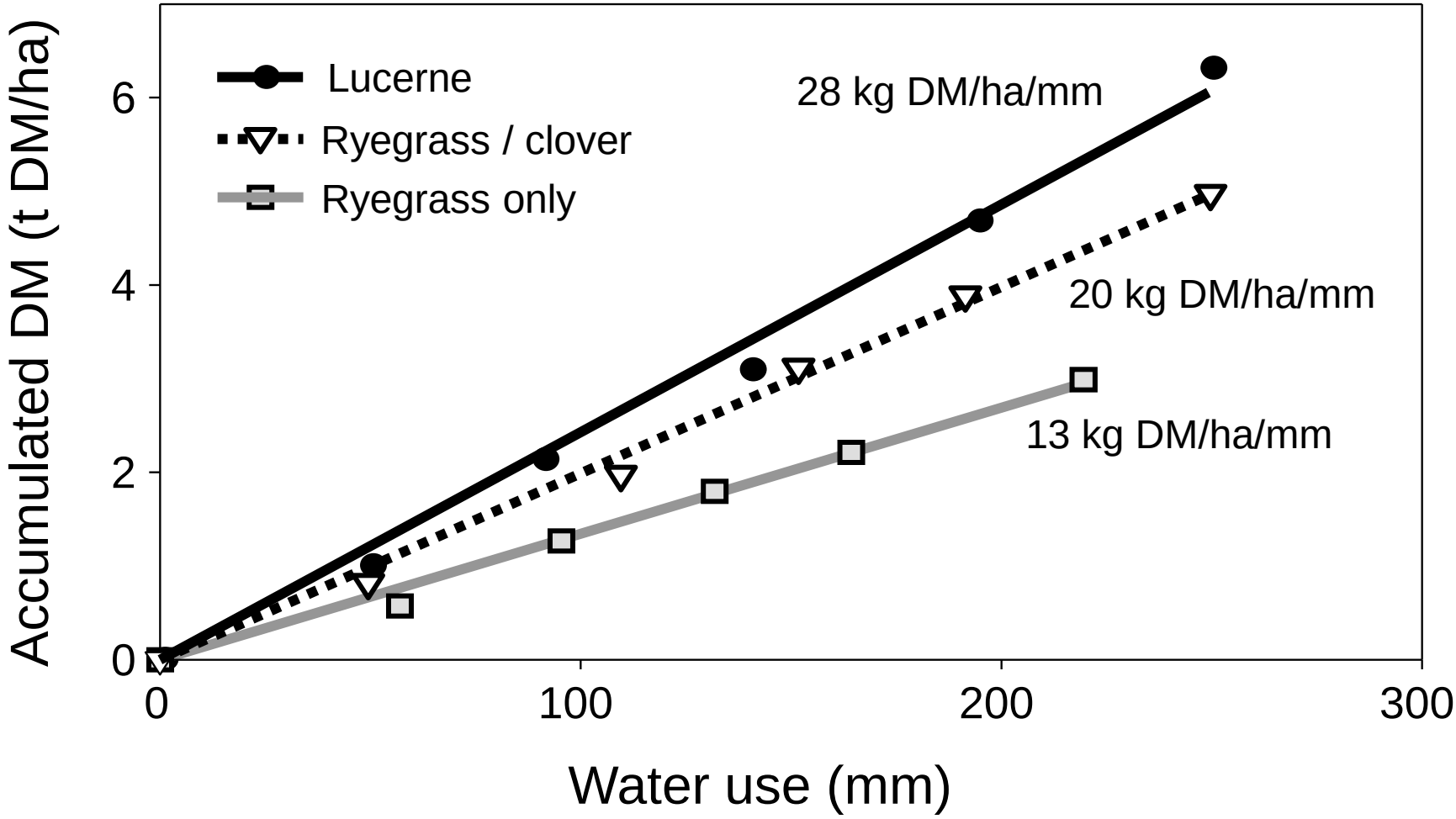

2011 10 16

Bog Roy- Lucerne paddock rotation

On-farm paddock yields and utilization.



Spring WUE: legume = (nitrogen)



Source: Moot *et al*. 2008

Conclusions

- ***Lucerne establishment - similar to pastures***
- ***Lucerne grazing mgmt – rotational***
- ***Success on Deer, sheep and beef farms***
- ***Lucerne grass mixes – to suit the soil type and environment***
- ***Farmers redefining the limits of lucerne use***

Acknowledgements

- Beef & Lamb NZ Ltd/ Pastoral21
- Lincoln University
- MAF Sustainable Farming Fund

References

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.

Kearney, J. K., Moot, D. J. and Pollock, K. M. 2010. Dryland lucerne production in Central Otago. *Proceedings of the New Zealand Grassland Association*, **72**, 121-126.

Moot, D. J., Brown, H. E., Pollock, K. and Mills, A. 2008. Yield and water use of temperate pastures in summer dry environments. *Proceedings of the New Zealand Grassland Association*, **70**, 51-57.

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 Inc Symposium held at Lincoln University, 18-19 November, 2003, 201-208.

Moot, D.J. and Smith, M.C. Practical Lucerne Management Guide. 9 pp. Online: www.lincoln.ac.nz/dryland

Lucerne – farmer experiences

Professor Moot gave this presentation at:

Oturehua, Central Otago

On:

30 May 2012

For/In association with:

L4L (Lucerne 4 Lambs)