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Relationships between liveweight production and dry matter yield for lucerne based pastures in spring

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New Zealand's specialist land-based university



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Introduction

- Spring = reliable plant and animal production in dryland systems.
- Flexible grazing management has increased the area of grazed lucerne in NZ over the last 20 years.
- Can lucerne/grass mixes fill the early spring feed deficit before lucerne monocultures kick in?
- How is animal production affected by grass in lucerne?

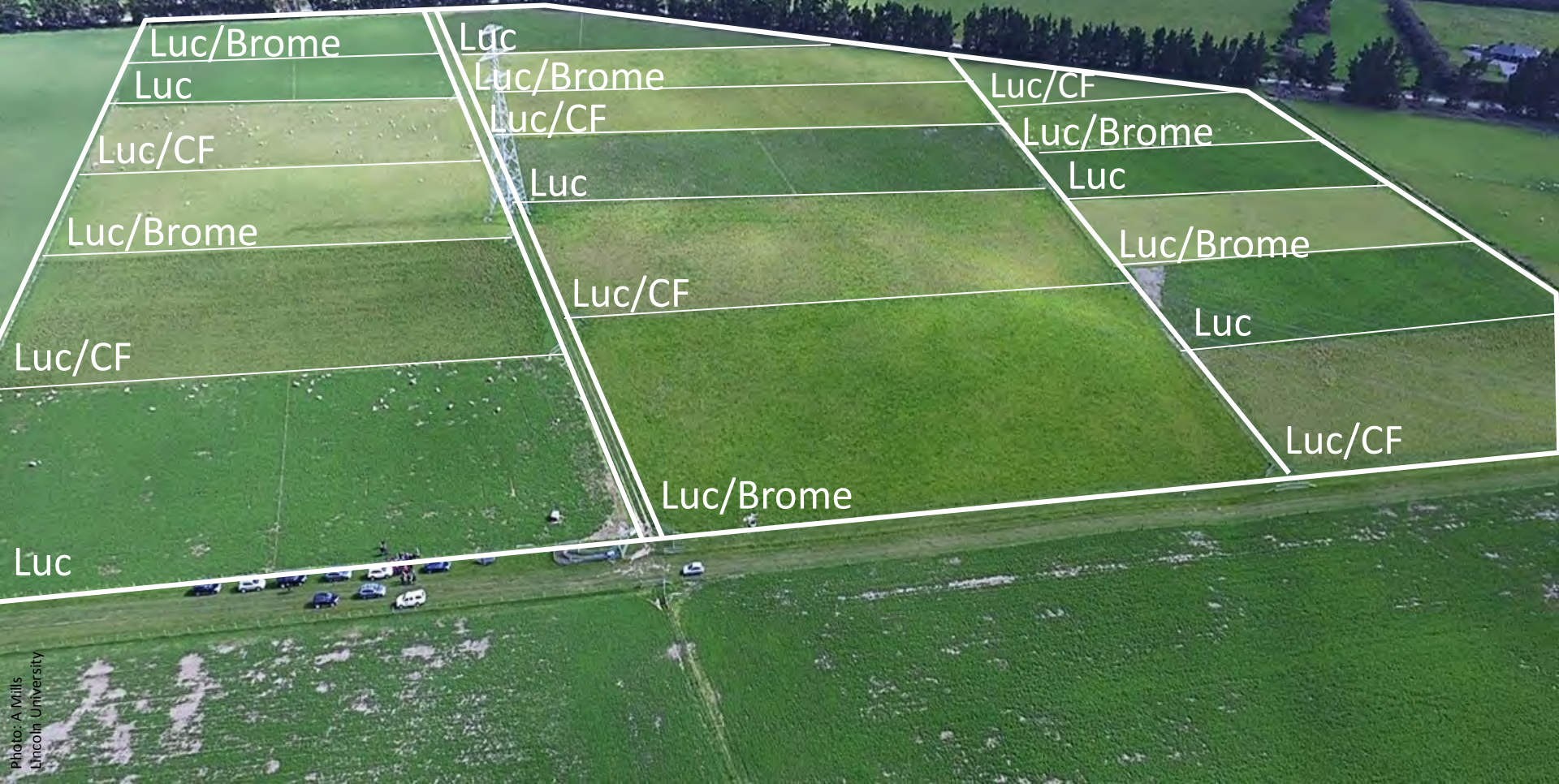
Materials & Methods

- Dryland lucerne (Luc), lucerne/brome (Luc/Brome) and lucerne/ cocksfoot (Luc/CF) pastures
- Established from Nov 2011 at Ashley Dene, Canterbury
- Replicated six times
- 17.7 ha site, individual paddocks 0.6 to 1.3 ha.
- Annual rainfall 422 (Year 3) to 830 mm (Year 2).
- Spring (Jul-Nov) rainfall 127 (Year 3) to 319 mm (Year 1). LTM 227 mm.

Materials & Methods

- Rotationally grazed until destocked due to lack of feed.
- Ewes & twin lambs in spring, weaned lambs in summer, hoggets in autumn.
- Spring grazing 14/8 (Year 3) to 10/9 (Year 5). Initial SR 10-14 ewes + twin lambs/ha.
- Weaning at 61 (Year 5) to 98 (Years 3) days.

Sept 2015 (Start Year 4)



Oct 2015 (Year 4)





Nov 2015 (Year 4)

**Jan 2016
(Year 4)**



Feb 2016
(Year 4)





March 2016 (Year 4)



Aug 2016 (Year 5)



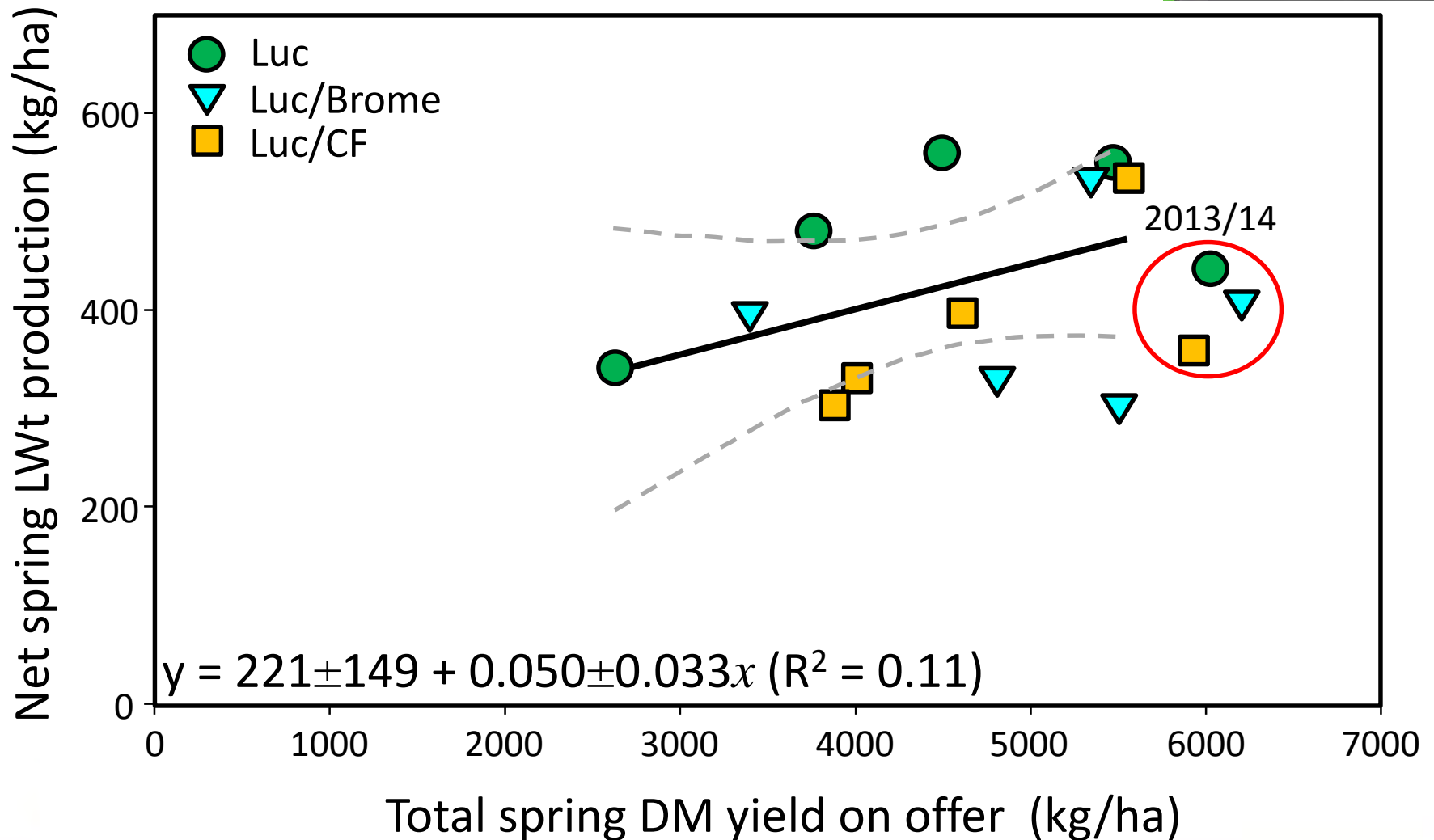
Field day 14/10/2016 (Year 5)

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Jan 2017 (Year 5) – experiment terminated

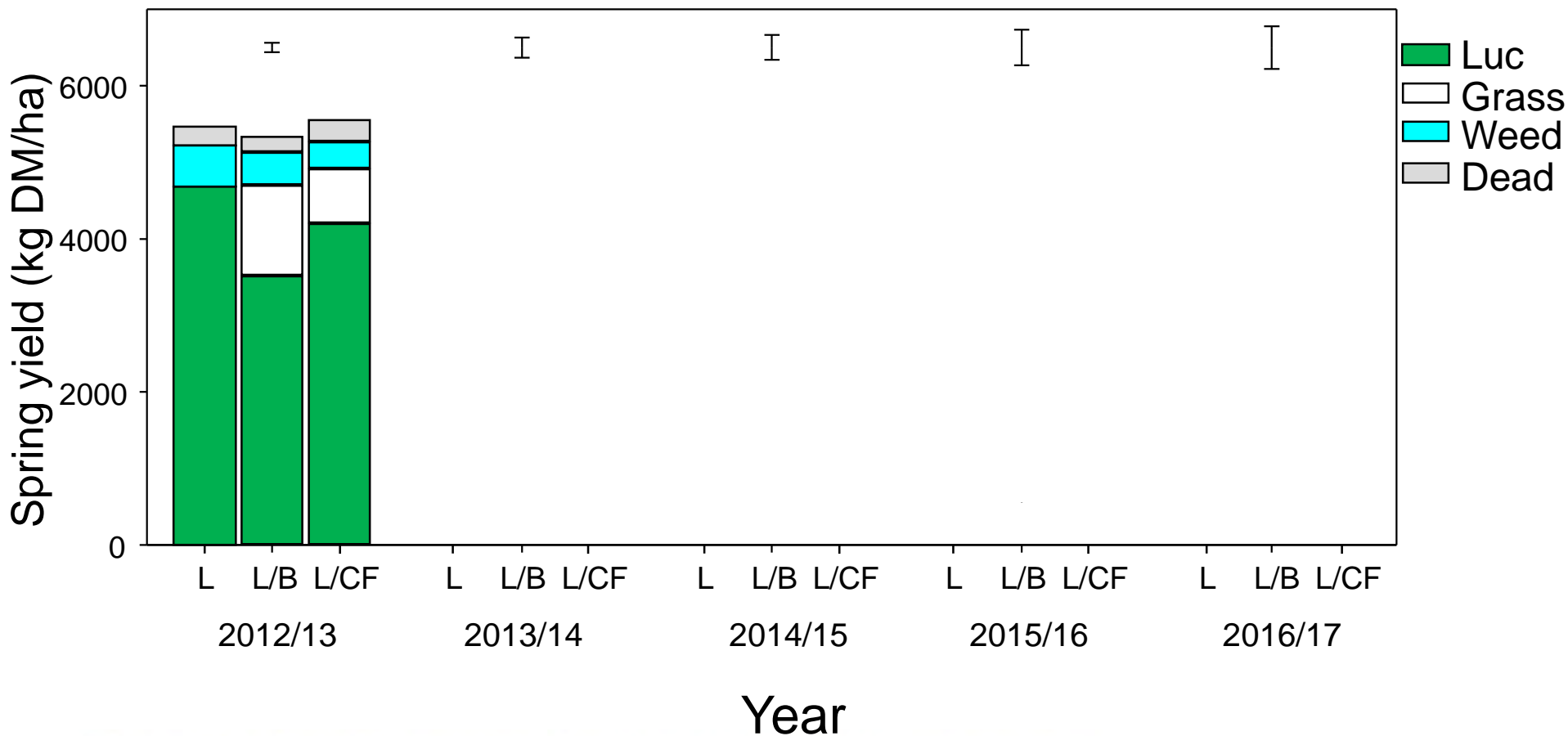


Spring LWt v Spring TDM at MaxLucerne



Why did TDM fail to explain LWt?

Grass at expense of Luc

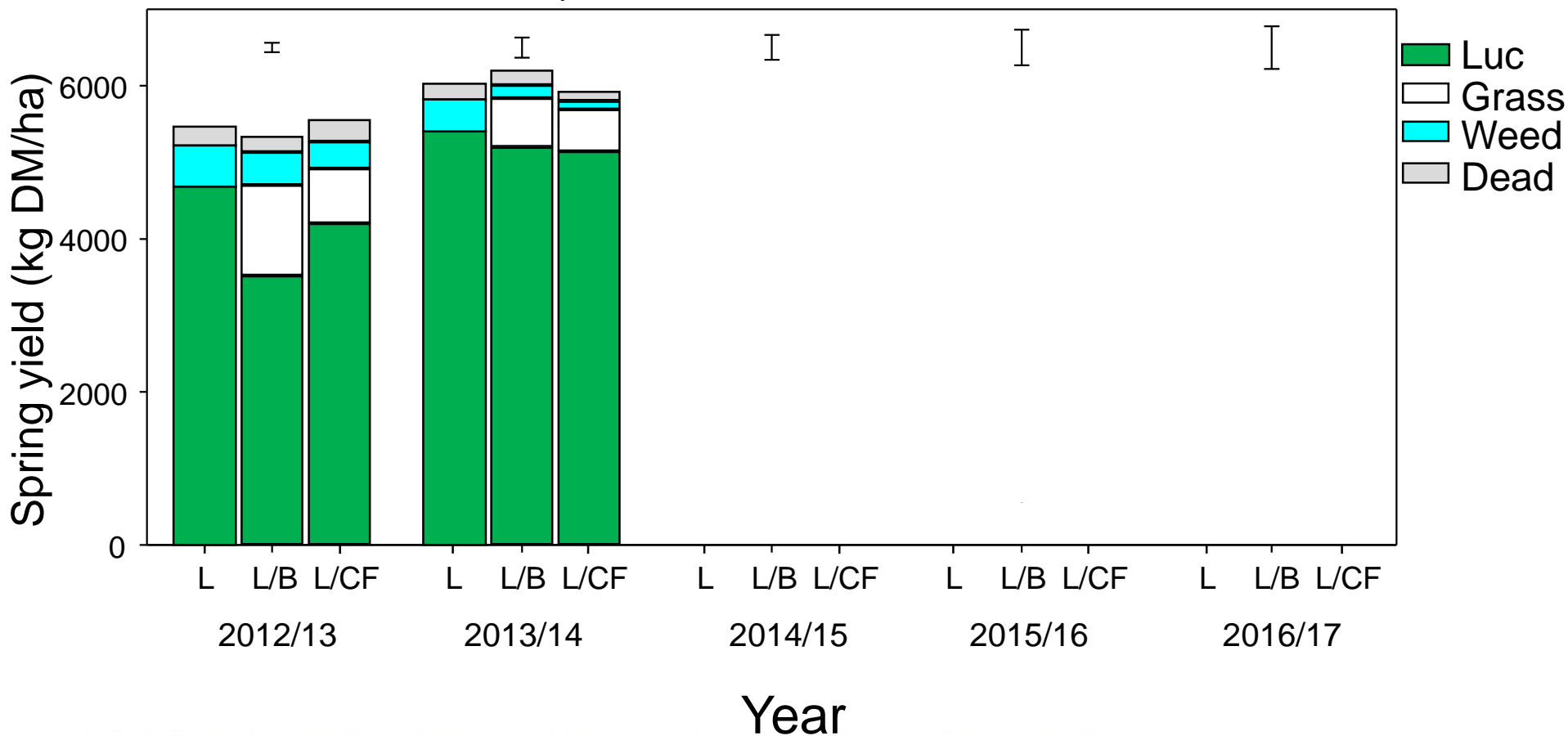


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Why did TDM fail to explain LWt?

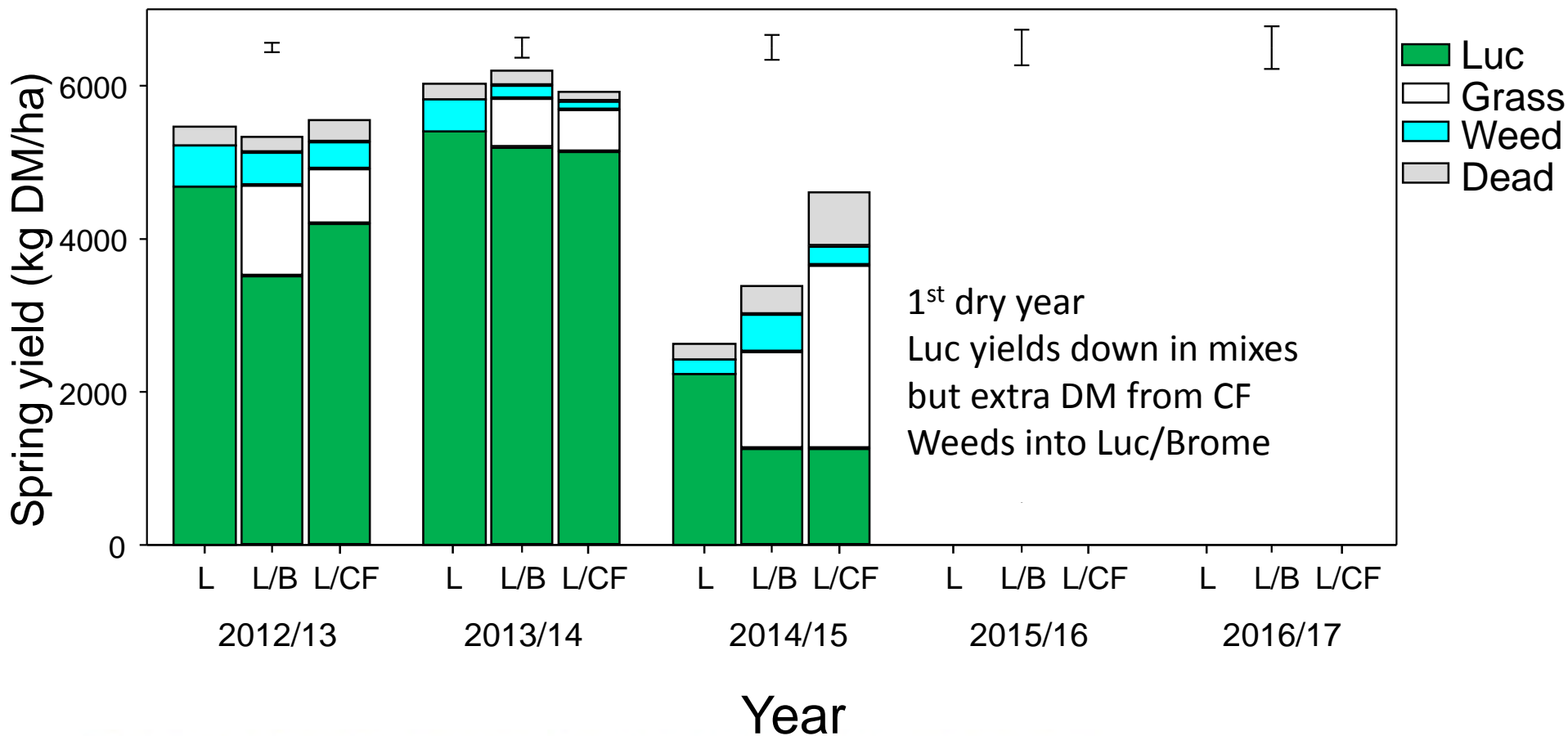
Wettest year:

Luc not compromised



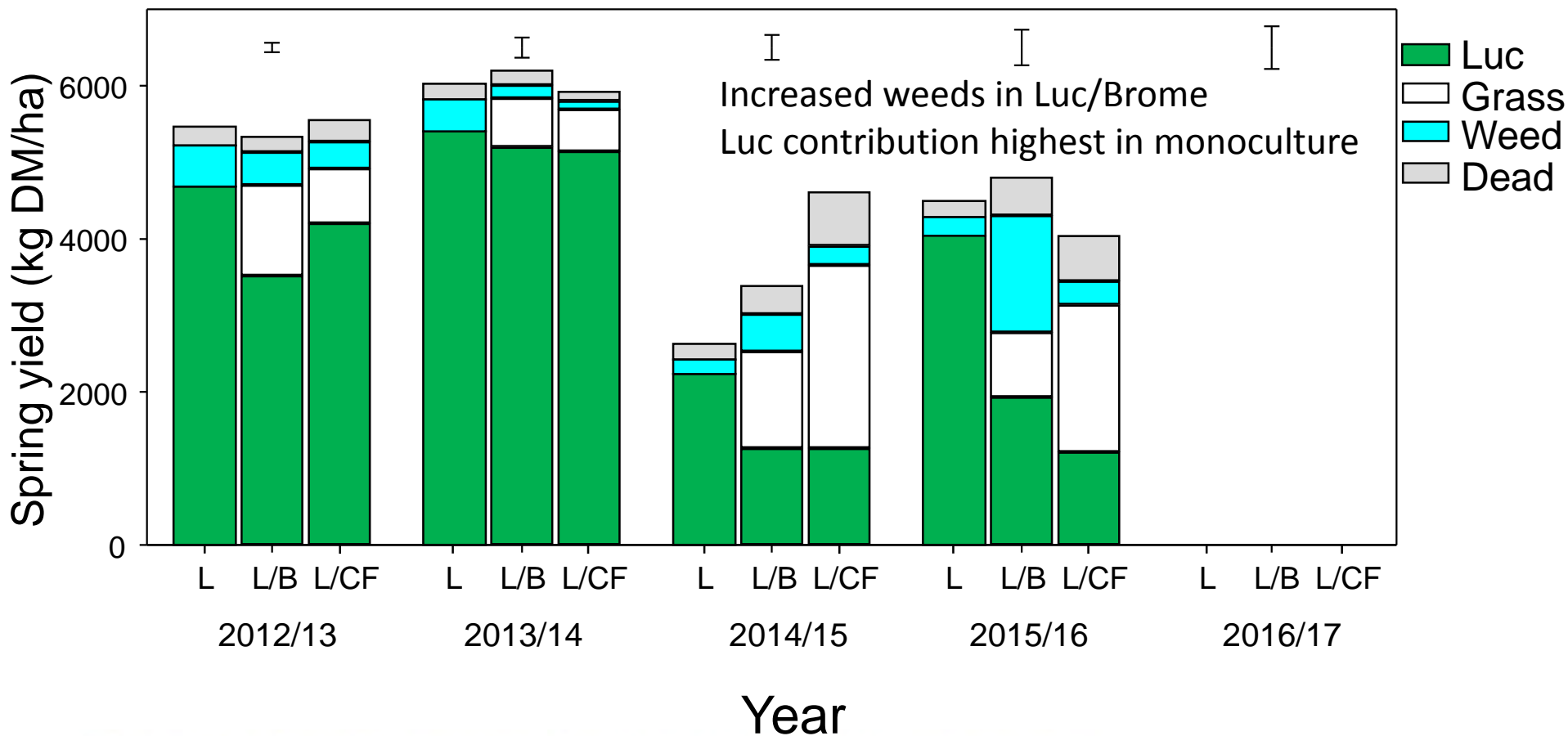
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Why did TDM fail to explain LWt?



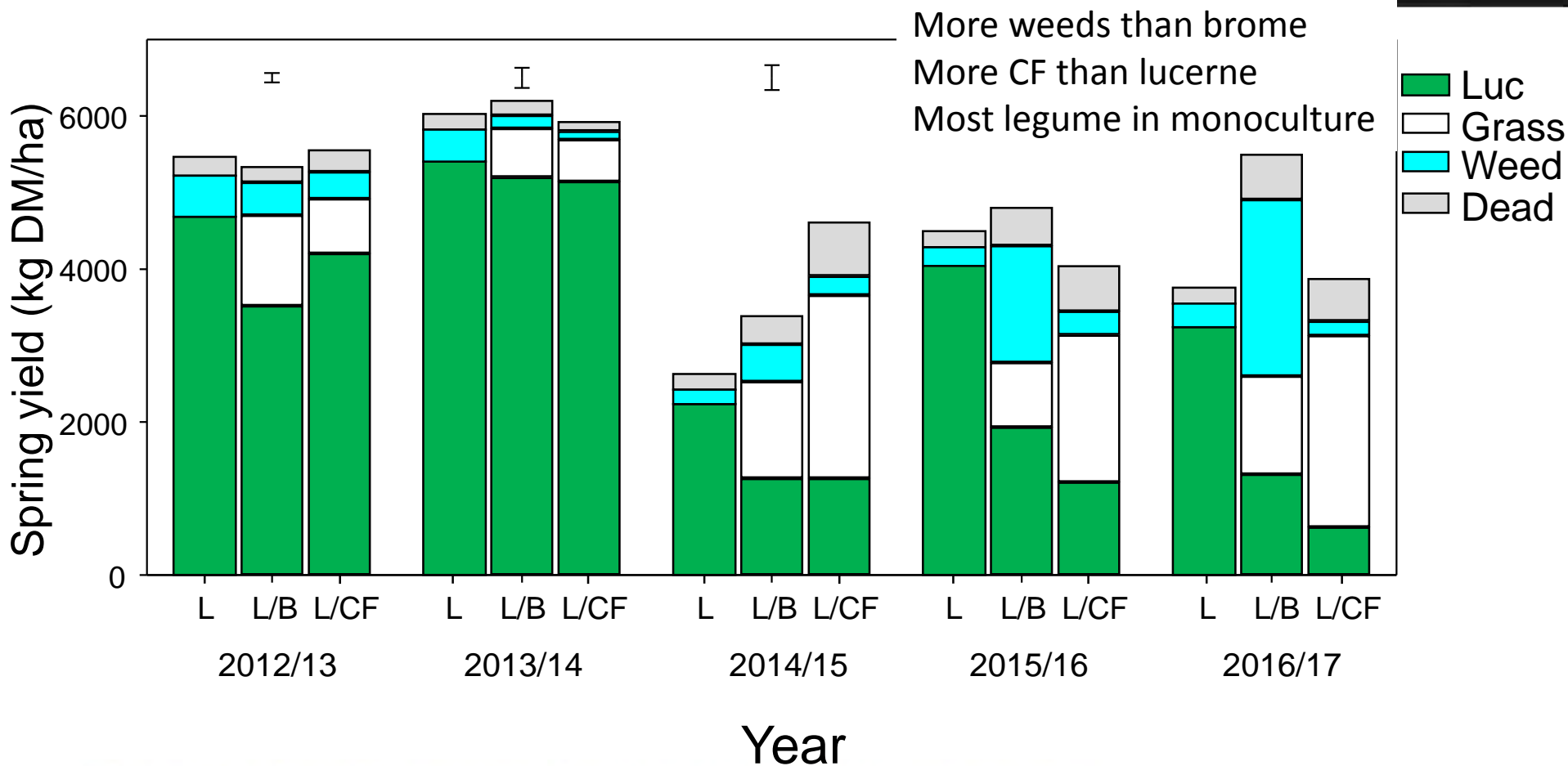
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Why did TDM fail to explain LWt?



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Why did TDM fail to explain LWt?



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Year 2 (2013/14)

Lucerne: Rotation 1 pre-graze



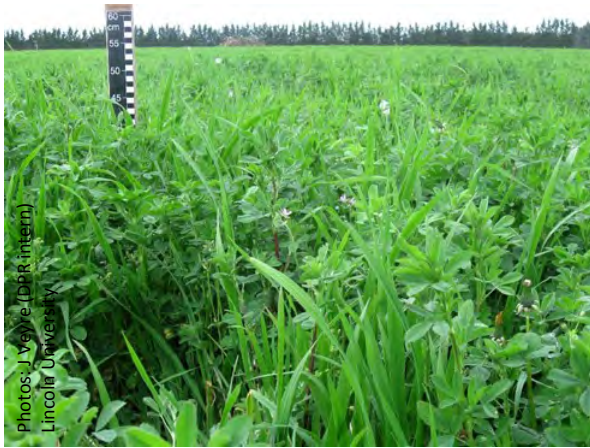
Plot 5: 7/10/2013

New stand 98% lucerne at this harvest for this plot

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Year 2 (2013/14)

Luc/Brome: Rotation 1 pre-graze



Plot 6: 07/10/2013

87% Luc, 8% grass for this plot 37 cm = 4.1 t DM/ha

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Year 2 (2013/14)

Luc/CF: Rotation 1 pre-graze



Plot 4: 07/10/2013

95% lucerne and 4% CF - 47 cm = 4.5 t DM/ha

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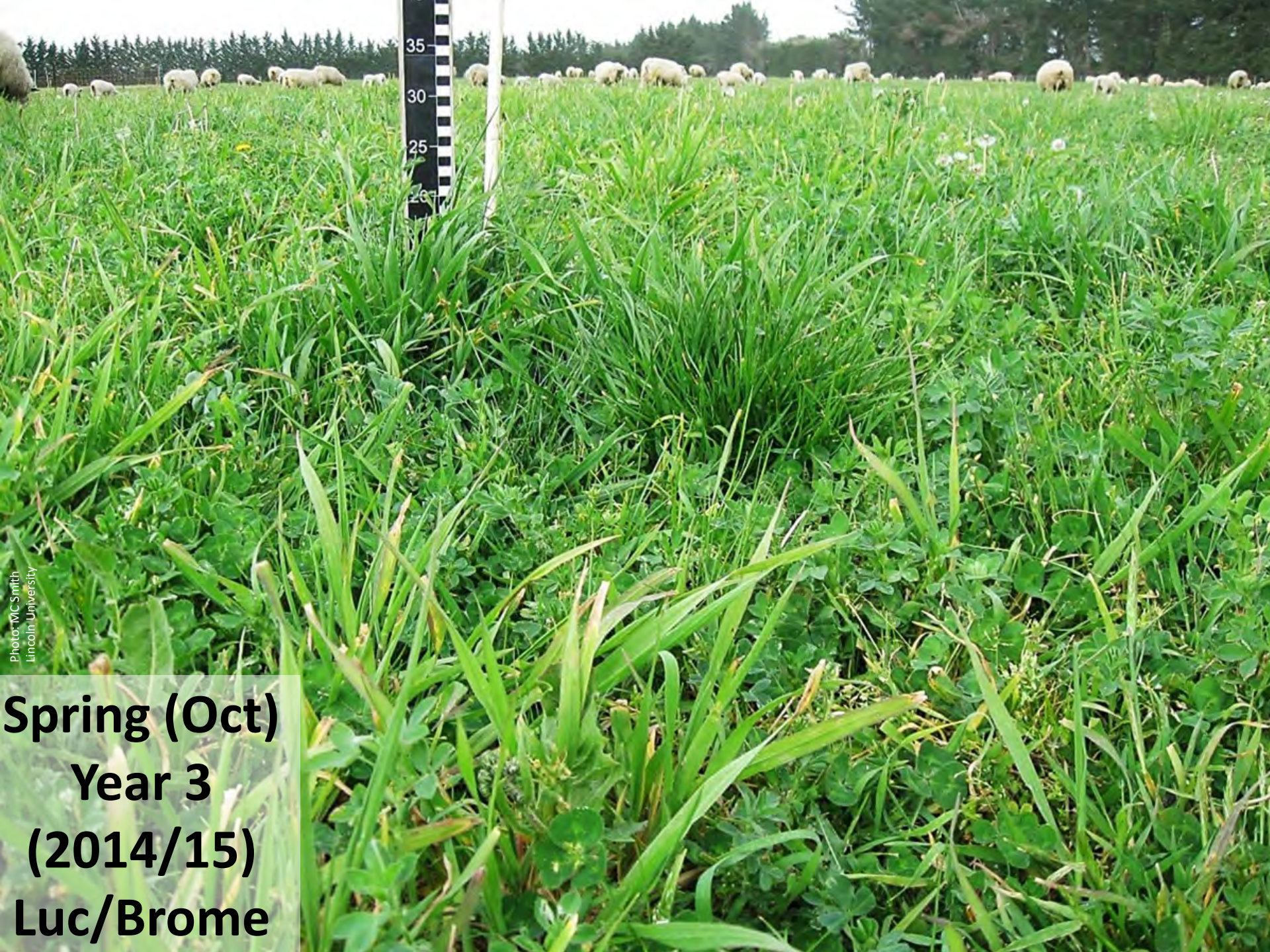
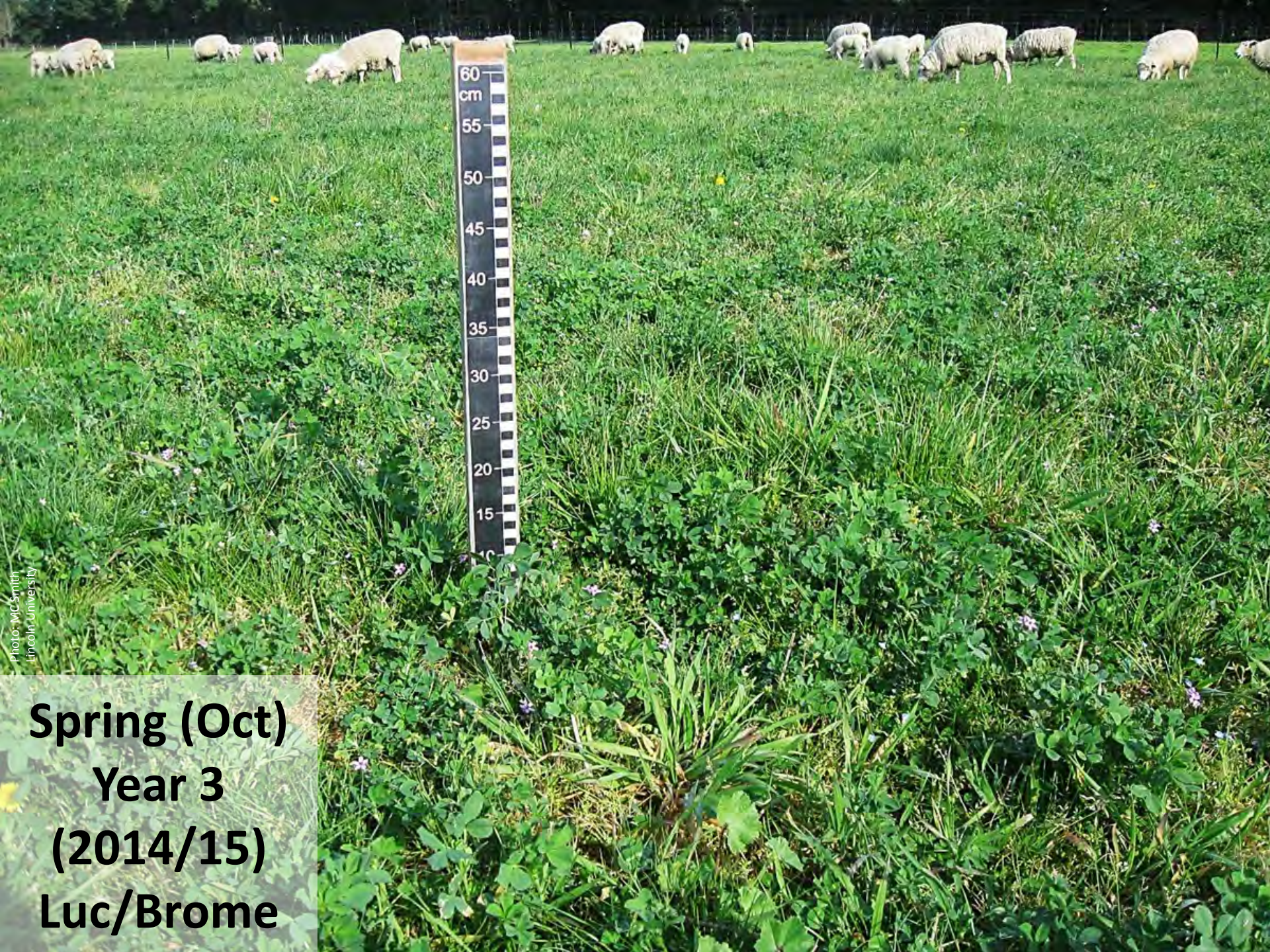


Photo: M.C. Smith
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**Spring (Oct)
Year 3
(2014/15)
Luc/Brome**

**Spring (Oct)
Year 3
(2014/15)
Luc/Brome**



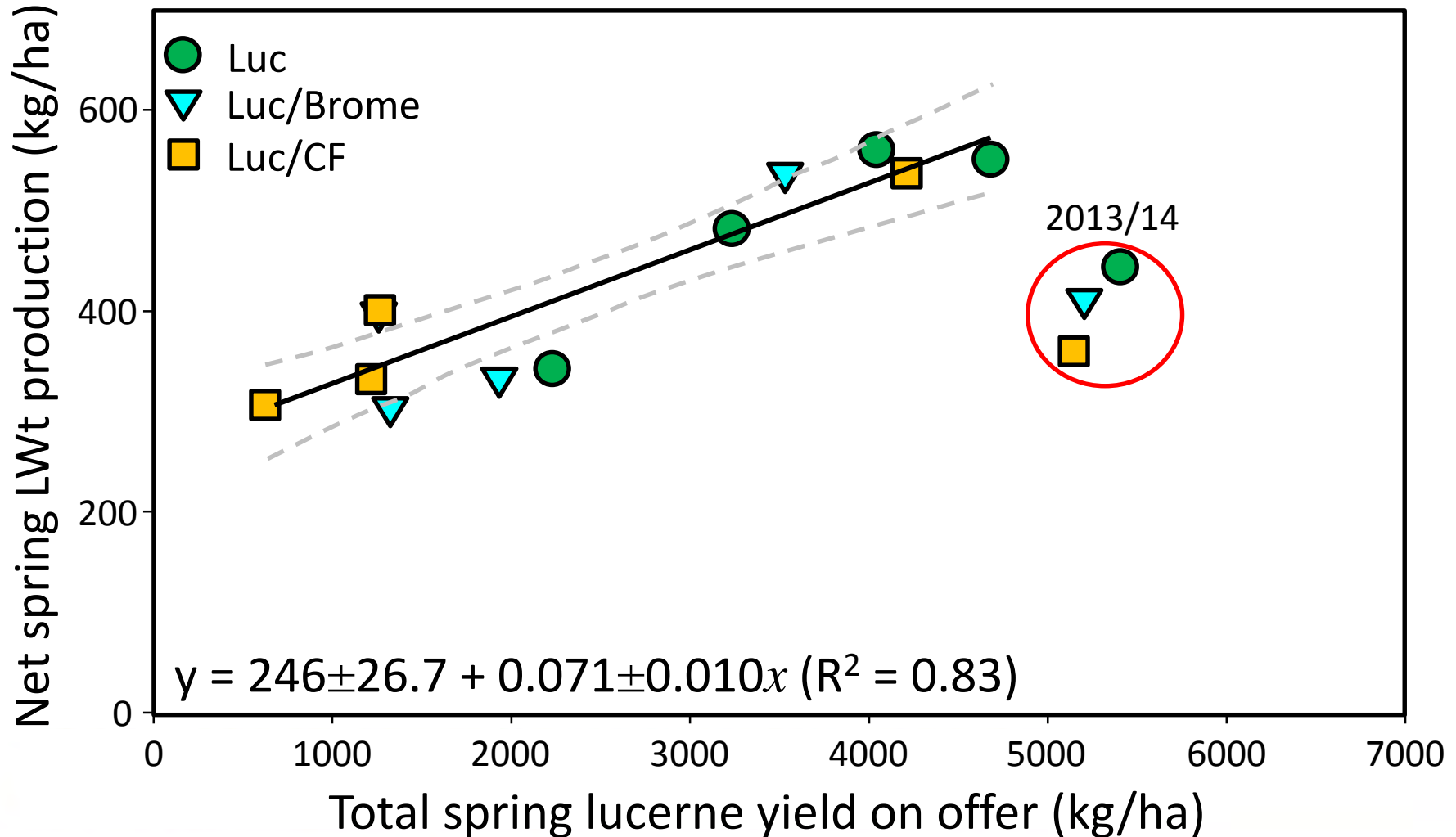
13/10/2014



Photo: MC Smith
Lincoln University

**Spring (Oct)
Year 3
(2014/15)
Luc/Brome**

Spring LWt v Spring lucerne DM at MaxLucerne



Conclusions

- Spring feed on offer (FOO) did not explain LWt production during lactation ($R^2 = 0.11$).
- Spring FOO ranged from 3.0 to 6.0 t DM/ha - only differed among pastures in Year 3.
- Lucerne declined from Year 3 in the Luc/grass mixes.
- Brome weed content reached 41% of spring FOO by Year 5.
- Weeds did not invade the cocksfoot-based mixes.
- Liveweight production was $246 + 71$ kg LWt per tonne of lucerne FOO in spring.

Learn to graze lucerne monocultures – include grasses strategically