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# Merino lamb and wool production from perennial lupin (*Lupinus polyphyllus*) on a high country farm in New Zealand

Alistair Black, **Gavin (Snow) Loxton**, Travis Ryan-Salter, Derrick Moot  
New Zealand's specialist land-based university



# Objectives

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- A photograph showing five men standing in a field of tall green lupin plants with purple flowers. They are looking towards a range of mountains in the distance under a cloudy sky. The men are dressed in casual outdoor clothing like shirts, sweaters, and a plaid shirt. One man is wearing a cap and sunglasses.
- Do merino ewes and lambs perform well on lupins?
  - How does lupin perform as a forage throughout the year?





New Zealand's specialist land-based university





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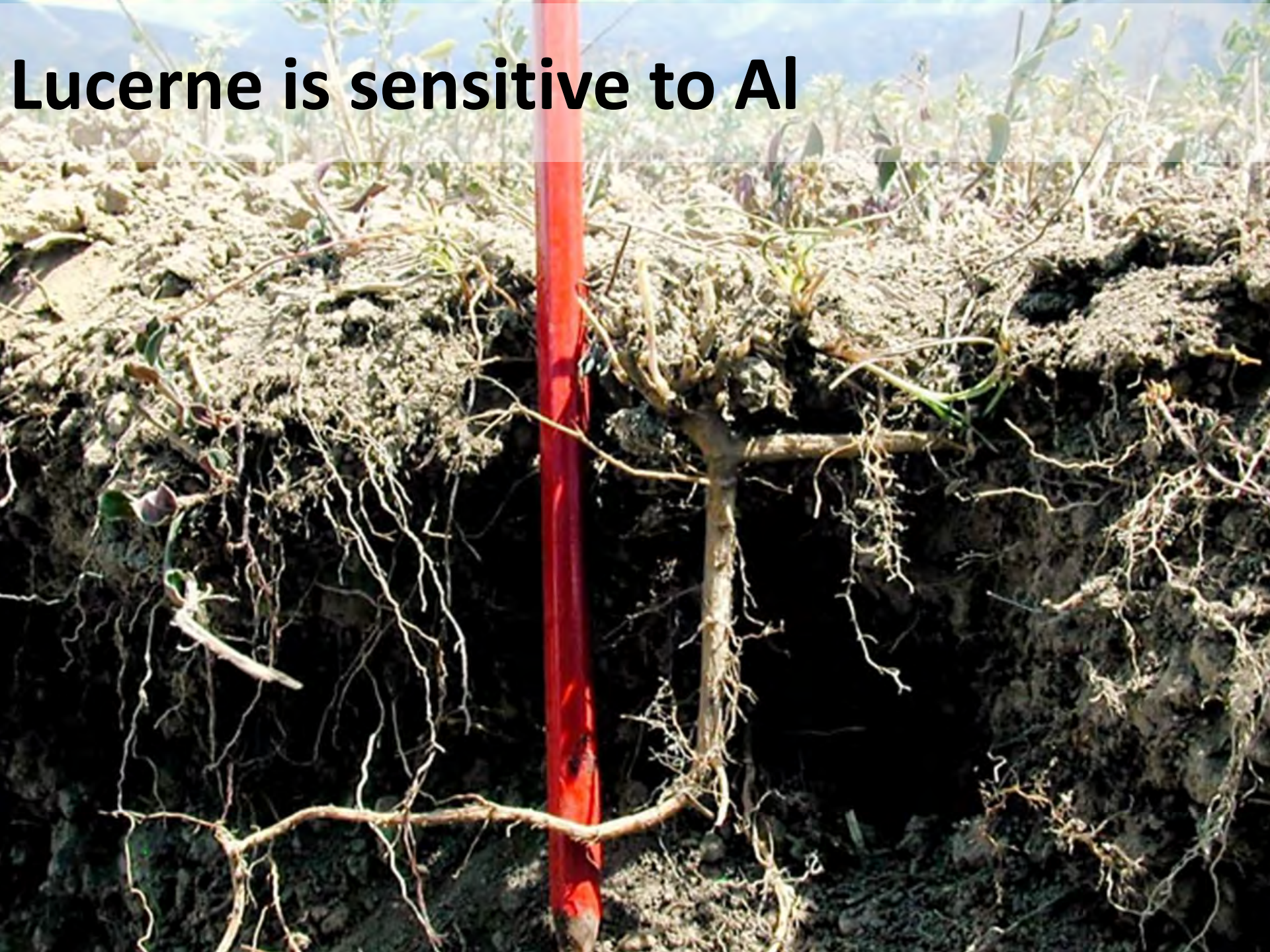




**Lucerne is successful but not suited to all soils**



**Lucerne is sensitive to Al**









# Mt John Research Centre, Tekapo



Photo: Kate Wilson



# Lupin persistence

Change in species dominance over 25 years in response to five rates of superphosphate (1 = 0, 2 = 50, 3 = 100, 4 = 250 and 5 = 500 kg/ha/year) and grazing management (H = high stocking rate, M = moderate, L = low, and s = set stocking and m = mob stocking). A = alsike clover, C = chewings fescue, D = cocksfoot, H = hawkweed, K = Caucasian clover, L = Russell lupin, O = tall oat grass, W = white clover, and Z = fescue tussock (adapted from Scott, 2008).

Grazing	Year 2 - 4					Year 5 - 8					Year 9 - 12					Year 13 - 16					Year 17 - 20					Year 21 - 24				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Hs	L	A	A	L	A	H	A	A	H	W	H	L	K	K	C	H	K	K	K	C	H	K	K	K	C	H	K	K	K	C
Hm	L	L	L	L	W	L	L	L	L	D	H	L	L	L	K	L	K	K	L	K	L	K	K	K	K	L	K	K	K	K
Ms	L	L	A	L	A	H	L	L	A	W	H	L	L	K	C	H	L	L	K	C	H	L	L	K	C	H	L	L	K	C
Mm	L	L	L	L	A	H	L	L	L	D	H	L	L	L	D	H	L	L	L	C	H	K	K	K	K	H	O	O	K	C
Ls	L	L	L	L	A	H	L	L	L	D	H	L	L	L	C	H	L	L	L	C	Z	K	K	K	K	Z	O	O	K	C
Lm	L	L	A	L	A	H	L	L	L	L	H	L	L	L	L	Z	L	L	L	C	Z	O	O	O	K	Z	O	O	O	C



# Sawdon Farm Lupin Trial Site













# Lambing and weaning results for lupins

Year	No. Lambs weaned	Av weaning Wt (kg)	LWG (kg/ha)
2011/12	114	28	319
2012/13	124	28	347
2013/14	115	30	343
2014/15	160	23	368



# Lambing results averaged over 4 years

	Lupin	Control (Lucerne)
Lambing %	112	105
Lamb LWG (g/day)	145	187
Lamb LWG (kg/ha)	344	~300







# Tupping performance

	Lupin	Control (Lucerne)
	<b>Liveweight gain (g/day)</b>	
<b>20 Mar - 20 May</b>	<b>125</b>	<b>160</b>
	<b>Scanning (%)</b>	
<b>15 August</b>	<b>129</b>	<b>130</b>







# Wool production

	Lupin	Control (Lucerne)
<b>Fleece weight (kg)</b>	<b>4.62</b>	<b>4.92</b>
<b>Staple length (mm)</b>	<b>79</b>	<b>80</b>
<b>Mean micron (μm)</b>	<b>18.6</b>	<b>18.5</b>







# JULY 2012



## Winter survival



# NOVEMBER 2012



**Cover during lambing – 6.1 t DM/ha**



# DECEMBER 2012



**Pre-grazing cover – 8.4 t DM/ha**





# DECEMBER 2012

Sheep ate the flowers first – 6.6 t DM/ha



# JANUARY 2013



Post-grazing cover – 4.6 t DM/ha



**MAY 2013**



**Pre-grazing cover – 4.9 t DM/ha**



# Summary

- Merino ewes and lambs performed satisfactorily on Perennial lupin.
- *Lupinus polyphyllus* is a very successful forage for both plant quality and quantity.





