Lucerne for Lambs

A Recipe for Success

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Field day Programme, May 30 2012

Prof Derrick Moot	**- Farming with lucerne**
Geoff Shaw	**- a farmers management of a dryland lucerne system**
Rob Phiskie	**- hills/downs development and the lime trial**
Dr David Stevens	**- Farmax analysis of two farms increasing lucerne grazing area and potential returns and challenges**

What the farmers say...

"Even in a drought, lucerne will recover if we hammer it"

"In a good season we can put it in a bale and still money"

"If we get the stocking rate right it will come away under the ewes in spring"

Lucerne Grazing systems

a working example: Geoff Shaw

Key messages from farmer practice

- Less sheep, better performance
- Think about next year based on the rainfall in autumn and winter
- Clean out the pastures with a winter grazing t make room for the lucerne in spring
- Protect spring cover by using crops / supplement right up to lambing
- Have the lucerne coming away under the set stocked ewes
- Set stock for a short time only (up to tailing)
- Make decisions early

Lucerne grazing systems - How do we get there?

What would a lucerne grazing system look like in the future?

- How much lucerne; what animal performance; how many animals?
- Where are the gaps in the system—feed supply, stock numbers

What steps does the farm/farmer need to take to get there?

- Changing ewe numbers; hogget numbers and/or cattle numbers
- Any interim crops/feed required
- What rate of change (area to be developed, how many years will it take)
- How do we change/ what methods could we choose

Is the new system feasible and robust?

- Pasture covers
- Cash flows
- How does the new system respond to year to year variation

Lucerne Grazing systems - Farmax modelling

Farmax modeling was used to look at lucerne in a range of farm systems; the impact of different % of lucerne area within the system and the process of transition to increasing amounts of grazing lucerne for example. Farmers find this valuable in determining the optimal practice for their farm.

Why model these systems? Modelling enables the farm system to be analysed in depth to anticipate where changing feed supply and animal demand may cause issues for the farmer as he goes through the development from dryland pasture to lucerne.

The range of farming operations in Central Otago is quite diverse and there is no easy one size fits all answer to how best to integrate a grazed lucerne model or the best use of a limited irrigation resource. Over the three years of the project the project team were repeatedly asked "how much lucerne do we need and what is the impact on winter management?"

The objective of the modelling with Farmax was to use the actual lucerne production and animal performance data that had been collected in the previous two years from the trial farms and then see what the long term impact on the farms profitability and productivity is likely to be.

To complete the modelling:

- Potential lucerne production (feed supply) had to be calculated and incorporated into Farmax
- 2 different farm systems were modelled over a 7 year period (5 years to increase lucerne grazing area plus 2 years establishment to a final steady state by year 7). These farms are almost the extremes of property types in the region. A large property with extensive areas of dry hill running merinos at a low stocking rate and a valley floor property with crossbred animals and a high stocking rate plus some irrigation.

The 2 case study farms chosen demonstrate the wide variability in property types in the region

Traditional merino hill property	**Valley floor property**
♦ Large integrated property across paddock and run country with limited irrigation	♦ Valley floor property with some irrigation (smaller)
♦ Merino	♦ Crossbred
♦ Low stocking rate	♦ High stocking rate and stock performance
5000ha	**522ha**
960ha undeveloped paddocks 163ha developed paddocks 73ha irrigation 104ha traditional lucerne 3700ha oversown hill	71ha border dyke irrigation 96ha kline irrigation 80ha lucerne 80ha irregular irrigation 195ha dryland
2.7su/ha—89% sheep; 11% cattle 110ha crop 870 big bales lucerne 10% of feed as supplementary crops	10.7su/ha—81% sheep; 19% cattle 68ha crop 450t lucerne silage; 400t whole crop silage 25% of feed as supplements/ crops

What would a lucerne grazing system look like in the future?

What were the parameters included in the Farmax model

How much lucerne?

- Traditional Merino - convert 70% of the undeveloped paddocks (700ha)
- Valley Floor—75% of the dryland pasture (150ha)

What animal performance?

- Traditional Merino—modelling based on on-farm measurements gathered as part of the Lucerne4Lambs project (modelled over 7 years)

How many animals?

- Now and in the future

		MA Ewes	2 Tooth Ewes
Mating weight (kg)	Start	50.5	39.6
	Finish	57.7	52
Lambing %	Start	90	83
	Finish	111	105
Lamb weaning wt (kg)	Start	22.2	19.5
	finish	33	25

Where are the gaps?

- Early spring is always the issue - this has been identified by farmers all through the Lucerne4Lambs project
- When we develop lucerne grazing systems we increase the spring and summer feed supply. This is the same outcome as adding irrigation.
- This means that the amount of crop or supplement needed in winter also increases.

Changes in stock numbers modelled - traditional Merino

	Start (2012)	Finish (2019)	Change
Ewes to the ram	8700	12200	40%
Winter lambs	3180	4970	64%
Summer lambs	1720	5620	226%
Hoggets	3100	2800	-10%
Cows	112	112	
Other cattle	218	318	46%

Changes in stock numbers modelled - Valley Floor

	Sheep			**Cattle**	
	Start	Finish	Change	Finish	Change
Ewes to the ram	3000	3550	18%	3300	10%
Winter lambs	250	650	160%	650	160%
Summer lambs	3640	4320	19%	3970	9%
Hoggets	850	920	8%	920	8%
Cows					
Other cattle	300	305	2%	335	12%

What are the steps needed to get there?

What rate of change?

- The rate of change depends on the finance available, whether it can be doen oit of cash flow or borrowings
- In the model we chose to develop 20% of the potential area each year
- It takes 7 years to stabilise the farm stock numbers

Changing ewe numbers

- Slow to start as need to build up performance and balance holding hogget's (to increase ewe numbers) vs increasing sales
- The result is extra feed in year 2 and 3 so you may need to consider making more supplement or buying trading stock, depending on the season

Changing hogget numbers

- Again need to increase ewe production before there are enough hoggets

Changing cattle numbers

- Cattle may be changed to accommodate the lower production due to establishing lucerne in year 1
- Cattle are a flexible option - to eat extra feed during the mid years of the development, either in the paddock or as winter supplement, or where labour is tight

Any interim crops / feed required?

What do we learn from modelling the changes to the farm system over the 7 years

- In the model the crops are built in to the improvement programme and are essential in the first 2-3 years
- Some carry over lucerne supplement is needed if we need to carry over large numbers of hogget's to build the flock (to retain genetics). This is easily made in the 2nd and 3rd years before ewe numbers go up dramatically

How do we change - what methods could we choose?

- In the model—a mix of direct drilling, after a double spray and double cropping has been chosen
- These methods generally depend on which weeds are an issue and which part of the development cycle the property is in
- The more lucerne in production, the less crop required

Is the new system feasible and robust?

What does modelling show us at the end of 7 years farm development in to a greater percentage of grazed lucerne.

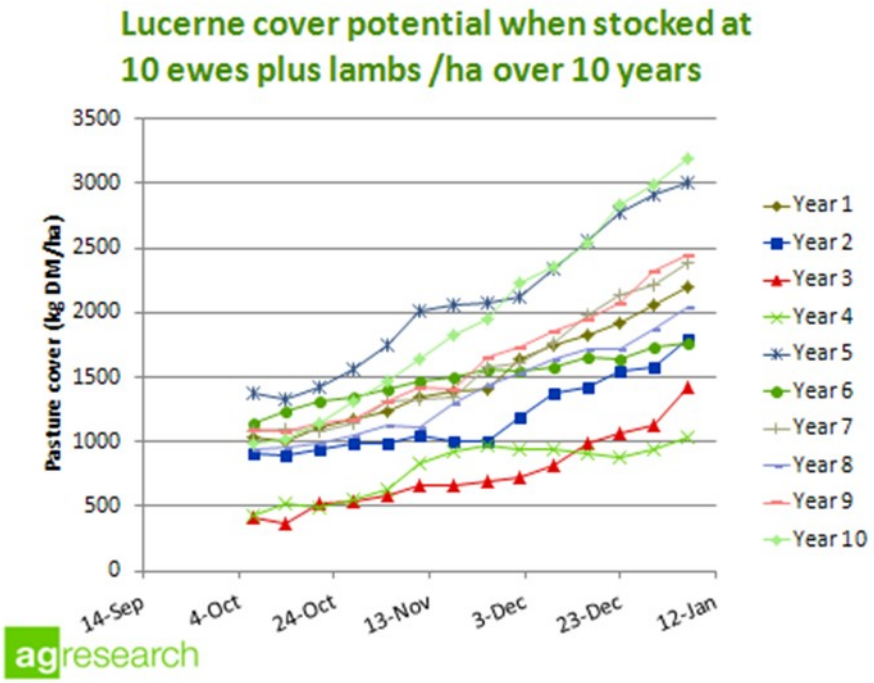
Pasture cover?

- The models have been balanced to keep a relatively constant cover from year to year. This means that some reductions in stocking rate may be required in the first year of lucerne conversion

Cash flows?

- Cash flows drop in the first year (due to cost of sowing out large area of lucerne and potential slight drop in stocking rate)
- After this cash flows increase significantly

How does the new system respond to year to year variation



The 10 years shown here are modelled on real climate data for Ranfurly (2001 2010)-showing the growth from October to January each year.

Conclusions

Key outcomes

- The response of the two properties to increased lucerne area was very different
- Increasing lucerne area for grazing increased the difference between summer and winter as more stock was required in summer.
- Lucerne would be available for grazing into June/July which covers some of the winter feed requirement
- Good winter crops are important to the system and any irrigation water should be prioritized to secure crop yield
- Ryecorn fits the system well in the establishment (transition) stage
- In most years the lucerne would still provide some of the supplement required for winter
- On the large property the extensive hill area buffered changes on the flat while the valley floor property was more sensitive to the changes, especially in winter feed supply
- Both increased per ha profitability and this was much greater on the extensive property
- The smaller valley floor property needed more flexibility in stock type ie additional stock units as cows increased the ability to destock quickly and reduced labour requirement

Take Home Messages

- Systems with lucerne instead of dryland pasture appear to be more robust (with higher covers)
- Need to use lucerne in autumn/early winter - for extra feed, plus this fits with autumn clean up graze
- More lucerne makes the system easier
- Need to defer crop use to late winter—more swedes
- May need to set stock the lucerne in spring (target north facing paddocks that get away earliest in spring)
- Potentially a better fit if the dryland areas are grazed earlier
- Higher covers mean a better fit for cattle—lower labour