NZ Forage Systems Fact Sheet

Lucerne - on-farm returns

Key Points

1. A Farmax model was developed for an East Coast summer dry hill country farm using B+LNZ Economic Service data from 18 farms. The hypothetical farm comprised 495 ha of which 50 ha was cultivatable.
2. Data collected across 5 East Coast farms was used to model seasonal yields and animal growth rates. The figures used in the model are conservative and longer stand life and animal performance are achievable.
3. Lucerne increased gross margins by $144/ha over the base model.
4. Lucerne requires specialist management around establishment, grazing and weed and pest control.

Summer dry farm model

A Farmax model was developed using data collected by the B+LNZ Economic Service for a typical summer dry hill block. The data is collected from 18 farms and represent 975 Class 4 farms on the East Coast of the North Island. The hypothetical farm is 495 ha, 50 ha of which is flat and used for silage and/or winter crop. Average DM produced from the flats is 9.4 t DM/ha. The farm carries 2800 breeding ewes and 860 hoggets. No hoggets are mated, Only 8% of lambs are drafted at weaning and remaining lambs are finished through summer and at average carcass weights of 16.1 kg. Cattle make up 40% of the stock units with 90 breeding cows and steers finished at 2.5 - 3 years. 108 weaner bulls are purchased in summer and autumn and sold at 2.5 years. The base model shows a gross margin of $347,916 or $703/ha.

Modelling lucerne - assumptions

The lucerne model assumes a status quo situation, with the 50 ha of flats assigned to lucerne with an assumed 7 year life span. Lucerne stands were followed by annual ryegrass in autumn followed by spring sown lucerne. Thus the farm has 6.25 ha in new lucerne, 37.5 ha in established lucerne and 6.25 ha in annual ryegrass. Assumptions around yield and animal performance are as measured across a number of East Coast properties. Lucerne was only grazed by sheep and had no impact on cattle policy or returns.

- Lucerne is spring sown and produces 9.8 t DM in the establishment year and 12.9 t DM in subsequent years with a drop-off to 10.3 t DM in year 7.
- 610 one year ewes and their lambs are rotationally grazed on lucerne between docking and weaning.
- Compared to the pasture in the base model, lambs grow 15% faster on lucerne during lactation and 117% faster over the summer.
- The model assumes a ewe death rate of 6%, increasing to 6.5% in the lucerne model. Lamb death rate of 2% increases to 4% when grazing lucerne.

Results

- Higher DM production and higher growth rates combine to increase gross margins by $144/ha by having a 50 ha lucerne block (10% of farm). This can add $71,400 to the bottom line when well managed lucerne is incorporated to this type of farm.
- The extra feed available from the lucerne block means that it acts as a force multiplier across the rest of the farm. With more feed available to other ewes

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on the farm their liveweights increase from 60 kg to 68 kg over time. This results in lambing percentage increasing from 123% in the base model to 135% in the status quo lucerne model.

- Lambs are heavier at weaning and more lambs are drafted FOM (from 8% in base model to 14% in the status quo farm with lucerne). The heavier lamb weaning weights enables 440 hoggets to be mated (60% lambs weaned). The combination of heavier ewes, a higher lambing % and hogget mating means 334 more lambs are available for sale.
- Spring sown lucerne gives the best establishment but there is a risk of failure with spring sown lucerne in an early and extended summer dry.
- Lucerne is expensive to establish and maintain so needs to be grazed with the highest returning class of stock - ewes with twins or hoggets rearing lambs.
- Success with lucerne requires a change in thinking and specialised management around establishment, weed and pest control and stock management.

Assumptions	Base model	Lucerne
Ewe liveweight (kg)	60	68
Ewes wintered	2800	2600
Hoggets mated	0	440
Lambing %	123%	135%
Lambs drafted FOM at weaning	8%	14%
Number of lambs sold	2585	2919
Average lamb carcass weight (kg)	16.1	17.9

Financial results	Base model	Plus 50 ha lucerne
Sheep (Sales - Purchases)	232,347	302,420
Wool	70,285	69,451
Beef (Sales - Purchases)	212,860	212,875
Total Revenue	515,492	590,746
Conservation	6,000	4,500
Forage crops	9,619	5,625
Lucerne establishment/spray etc	0	11,250
Lucerne extra fertiliser	0	1,567
Re-grassing	4,800	0
Nitrogen	12,281	9,946
Total crop, feed, N & extra fert	32,700	32,888
Stock costs—animal health	24,419	23,164
- shearing	33,043	30,799
Interest on capital (livestock & feed)	77,414	78,594
Total variable expenses	167,576	165,425
Gross margin	347,916	419,320
Gross margin per ha	**703**	**847**