Hogget Mating: The Key to Sheep Industry Growth

Kellogy Project

by Grant Massie

Hogget Mating - The Key to Sheep Industry Growth

Introduction

The introduction of Finn Cross sheep is leading to major changes and opportunities in the New Zealand sheep industry.

The ability of this breed to mate successfully as hoggets and achieve good lambing percentages has changed replacement breeding stock from being a cost to a breeding unit to making them a profitable option to farm.

This project investigates the opportunity that exists to create a business that purchases ewe lambs, grazes them out, mates them and returns 2Ts to the industry. Successfully doing this would allow farmers to specialise which will create efficiencies.

Changes in the Industry

Markets have changed and the emphasis has moved from wool production to lamb production. Farmers generally accept that high fertility sheep are more desirable and are moving their businesses in this direction. Through:

- ♦ Introduction of new genetics through sires
- ♦ Targeting higher fertility strains of existing breeds
- Use of drugs to increase ovulation (Androvax)
- Purchasing high fertility females.

Changes in the industry are gaining momentum. Things are happening more quickly.

Even a decision to change ram breed which once was seen as quite major is happening more quickly. Instead of buying your annual 10 rams of a new breed farmers are opting to change all their rams in one year. Even this is seen as slow as to get the new genetics into their flocks can take 5 years. Farmers are therefore opting in many cases to Androvax their remaining ewes as well as changing their whole ram batteries. Major increases in lambing percent require investment in fencing and fertiliser but once again these changes in the basic resource are being 'dealt to' with capital dressings of fertiliser and fencing programs being put in place from the start.

Genetics, fencing and fertiliser are being seen as investments and delays in implementing them means delay and reductions in financial gains.

The Market is there

The buying in of high fertility sheep has always been a good option if you can find them, but availability has always been the problem.

Demand is there for high fertility breeding stock from:

- 1. Farmers expanding and wanting high levels of production from year 1 especially as land values have risen.
- 2. Farmers wanting to specialise in lamb production. Wanting to terminally sire their whole flock and buy in replacements capable of achieving lambing % in excess of 140.
- 3. With leasing arrangements of breeding stock becoming commercial there is the opportunity for good operators with limited capital being able to lease land and livestock.

The sheep are there

As crossbreeding is becoming more common the numbers of 'suitable sheep' for this program are growing rapidly. Remembering that 'suitable sheep' must have a component of Finn genetics in the mix to be able to scan in excess of 80% conception rates as hoggets with 2Ts scanning in the range of 180-200%. This is the key to the concept being viable.

Even the most fertile of traditional breeds do not have the fertility and fecundity attributes in their hoggets to allow the hogget mating to be profitable.

Farms achieving 160% lambing and 100% hogget lambing is producing the same number of ewe lambs on the ground as ewes mated. Only 25% of the ewe lambs as need to be retained as replacements leaving 75% that could potential be utilized as replacements for other farmers.

Specialisation

Breeder

1

Finisher

 \downarrow

Terminal Breeder

Breeder

The Breeder is producing the type of ewe lamb required. These lambs can be easily sourced provided there is a premium sufficient to attract them.

The method to achieve this is to establish the lambs current store value at weaning schedule and then pay a premium above this.

The current practice for farmers presently culling their ewe lambs for replacements is to wait till the autumn, then cull on size. The problem with this policy is that their ewe lambs are often too small to breed from and therefore are sold store for finishing. They are lost to the industry and have lost any premium price because they are unsuitable to mate. The answer is to encourage farmers to cull at weaning to identify the surplus ewe lambs. These lambs can be sold for a premium and can then be fed on high quality feed to achieve acceptable mating weights..

Terminal Breeder

There is expanding demand for high fertility ewes for terminal sire programs. The price that these 2T ewes can be sold for will dictate the viability of the scheme.

The market doesn't currently differentiate greatly between sheep of varying fertility levels even though gross margins suggest that if currently you pay \$110 for a 2T that lambs at 100% and 120% as a MA ewe then you could pay up to \$160 for a 2T that will lamb at 145% and 155% as a MA ewe. (Reference Allan McRae Lochalsh Agriculture Ltd.)

Another measure that confirms these pricing levels are gross margins that show buying a 2T that achieves these production levels allows you can pay twice the level currently paid for 5 year ewes

producing 125%. Given the current 5 year ewe price is around \$80 then using this example would allow farmers to pay up to \$160.

These gross margins are combined with feeding levels which take into account that a flock with 145% lambing eats more than one doing 120% lambing.

The timing of consuming this feed is not taken into account of though and it may be that this extra feed is consumed during spring when the feed is surplus then the price difference would widen allowing you to pay more for the high fertility sheep.

The Finisher

The key to this scheme is attracting finishers to grow these hoggets out and farm them for 12 months.

Presently a strong finishing sector has developed and therefore hogget grazing needs to be promoted as a profitable alternative to other finishing options.

Some of the advantages of adopting this system compared to other finishing options are listed below.

Advantages

1. Avoids falling summer schedules.

Often lamb finishers have to buy store lambs at a schedule that is higher than when they market their lambs. Despite good weight gains they may make little.

2. Uses less winter feed than winter lamb finishing.

The ideal scenario is to grow these lambs to 45kg plus at mating which is early May. The hoggets are then maintenance fed through till lambing – ie 5 months.

Popular feed budgets is 2% - 4% rule which means an animal fed maintenance consumes 2% of body weight in feed. A lamb fed ad-lib consumes 4% of bodyweight in feed allowing these animals to be stocked at twice the stocking rate of finishing lambs.

3. Utilises surplus spring feed.

As winter lambs are marketed large numbers of livestock need to be purchased to replace these numbers. These hoggets are on hand in the spring and their demand increases greatly once they lamb.

4. Reduces market risk to growers.

The weight gain payment is guaranteed regardless of market fluctuations in pricing. There will be variability in what the finishers receive for the lambs & wool they produce though.

5. Requires no cash outlay.

The stock are funded by sheeplink. This will be an attractive option for most farmers.

6. Provides timely cash flow.

The Finishers may opt for progress payments based on weight gains. The timing of these payments will be based around mutually agreed times such as tipping weight. This will allow for timely payments whilst reporting progress back to sheeplink as well.

7. Puts profit potential in grower's hands.

This is one of the keys to the program. Finishers know how to grow stock. The better they feed these animals the better the returns. The key production driver to this system is mating weight which I will demonstrate later in the report.

Potential Returns for the Finisher

The finisher will derive his income from the performance of the hoggets. The potential returns are expressed using the three examples.

1. Baker & Associates

From Baker & Associates, Farm Monitoring Bureau for the performance of their top 20% client's performances on hogget mating. These figures are from hill country farms and form the base figures for comparison.

2. Massie Partnership

Using actual data derived from Massie Partnerhip hogget mating data for 2002 mating. Achieved at 42kg mating weight.

3. William Findlay

Results from William Findlay of Dannevirke for hoggets mated in excess of 45kg liveweight.

The examples are standardized with the weight of the ewe lambs in January at 28kgs and the weight of 2T out in January at 58kg average.

The variables in the equation will be lambing percentage, scanning percentage and hogget lamb growth rates.

Revenue examples 2 & 3 are calculated using an 88% and 110% lambing and a higher weaning weight for the hoggets progeny.

Baker	& Associates	Massie Partnership	William Finlay	
Liveweights				
Ewe lb @ weaning	28	28	28	
Ewe lb @ mating	40	41	48	
Ewe lb @ lambing	48	50	55	
Conception rate		86%	95%	
Scanning %		129%	160%	
Lambing %	83%	88%	110%	
Grazing payment	31	33	33	
Lamb Value	42	54	67	
Wool	10	10	10	
Returns/hgt	\$83.00	\$97.00	\$110.00	
(Returns in cents/kg DM))			

How reliable are these results

To show that scanning percentage and therefore lambing percentage is **reliable and predictable** based on the weight of the hogget at mating. The table below of 9 years of mating ewe hoggets demonstrates this.

MASSIE EWE HO	GGET BREEDING	PERFORMANCE
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BREED	YEAR	SCANNED IN LAMB	SCANNING %	MATING WT.	LAMBING%
Rom / Coop	1995	63	-	42	54
Rom / Coop	1996	47		43	43
Finn / Texel	1997	95	134	45	83
Finn / Texel	1998	89	123	42	93
Finn / Texel	1999	75	100	39	75
Finn / Texel	2000	81	125	41	75
Highlander	2001	90	134	42	80
Highlander	2002	86	129	41	88
Highlander	2003	93	141	42	

Key Points

- 1. This data confirms that the traditional breeds are much lower and more variable conception rates. Poukawa Research Station trial data also confirms this.
- 2. The highest conception rate occurred at the highest mating weight in 1997 when the first cross ¼ Finn, ¼ Texel ewe hoggets came through.

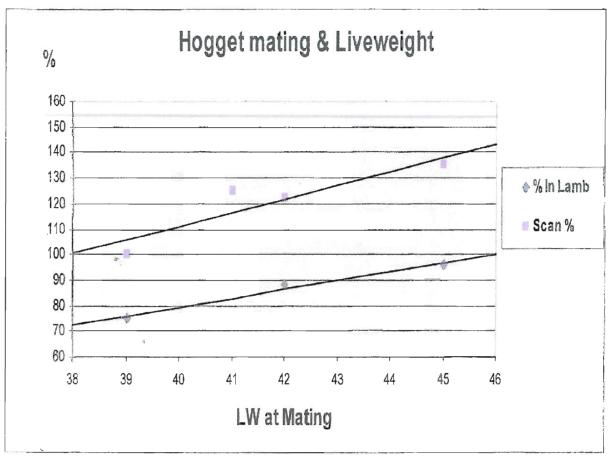
The second highest conception rate occurred this year in 2003 @ 93% on a 42 kg mating weight.

The scanning % in 2003 is higher than 1997 (134 vs 141). This is due to the higher Finn component in these sheep. In 1997 ¼ Finn, in 2003 approaching ½ Finn.

3. The lowest conception rate occurred in 1999 @ 75% when mating weight was the lowest at 39kg.

Conclusion

- Over 9 years of lambing, all sorts of weather has occurred at lambing good and bad.
- Despite this there is a consistency between scanning percent and lambing percent.
- Generally the higher the scanning percent the higher the lambing percent.
- There is a strong correlation between mating weight and conception rate as shown below



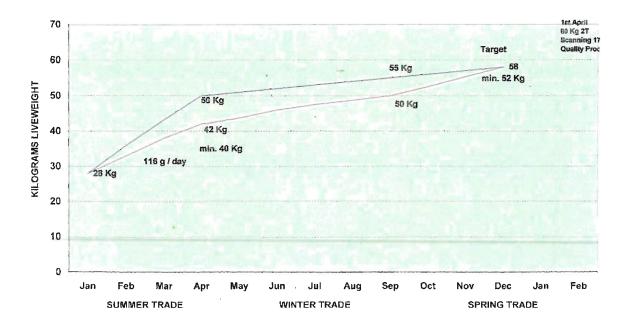
Prepared by Bruce Binnie, Agresearch, 2000.

The graph demonstrates:

- The heavier the hoggets the more in lamb (95% correlation).
- The heavier the hoggets the more multiples (83% correlation).

What is required to achieve these production levels?

The best way to describe the requirements is to graph the liveweight profile over the 12 month period.



Graphing the starting point of 28kg av – minimum 24kg and ending weight of 58kg – minimum 52kg. The graph shows two paths toward meeting the same target.

The critical weight on this graph is the mating weight.

The levels of production shown by the Massie data were achieved at the 42kg mating weight which would only required a growth rate of 116g/day if weaned at 29kg's.

To achieve top end performance then you should be aiming for the 50kg tupping weight target. To achieve this result would require 183gm/day liveweight gain from a weaning weight of 28kgs, which is easily achievable.

The benefits of achieving a 50kg mating weight are higher conception rates and high scanning percentages but also a lesser reliance of weight gain through the winter months when feed has its higher opportunity cost in a finishing system.

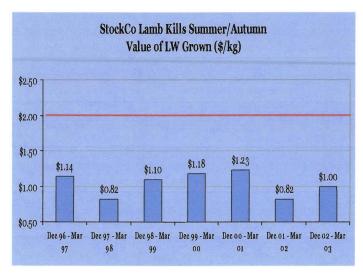
Hogget Rearing VS Lamb Finishing

The trend and hype has been that lamb finishing is very profitable. For farmers to view rearing of hoggets as a potential then the returns must be similar or better than other forms of finishing.

Using data from the Hastings based company of Stockco a livestock financing company. Stockco have analysed their data of 1 million lambs finished over 7 years.

This data has been used to produce 3 graphs showing the 'Value of Liveweight Grown' in \$/kg for:

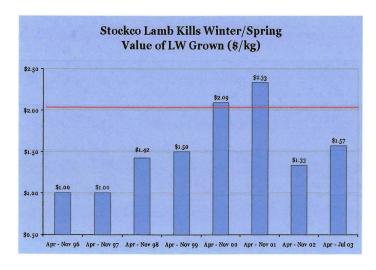
- 1) Summer/Autumn trade
- 2) Winter/Spring trade
- 3) Combining the two to give an annual average.



1. Summer/Autumn trade

This data shows a high of 1.23 per kg of Liveweight grown in 2000 - 2001 and a low of 2000 - 2001 and 2

The average of these 7 years is \$1.04/kg LW grown.

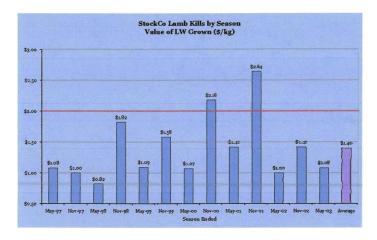


2. Winter/Spring trade.

This data shows a high of \$2.64/kg LW in 2001 and a low of \$1.00 in 1996 & in 1997.

The average of these 8 years is \$1.68/kg LW grown.

3. Combining the data into an annual result shows an average of \$1.40/kg Liveweight grown.



Conclusion

It is difficult still to draw any comparisons between the profitability of hogget rearing and lamb finishing. The reason for this is that income from hogget rearing is derived from 3 sources:

- 1. Liveweight gain in the hogget 38% of income.
- 2. Production of a saleable lamb 50% of income.
- 3. Wool production.

It makes it difficult for finishers to do direct comparisons between the two options.

To aid this Farm Management Consultant Allan McRae of Lochalsh Agriculture Ltd has developed a model that allows you to break up the production periods.

To do this you can compare with other finishing options over the Summer/Autumn period on a cents per kilo Liveweight basis by inputting a figure for this period. It could be \$1.04 as the average of Stockco figures was or \$1.10 which is the sheeplink base liveweight payment or a higher figure to match other available options.

The model will then calculate the rest of the year on a cents per kg of dry matter consumed which is a commonly used measure of profitability by finishers.

The model can also break the winter period (May – Sept) and spring period (Oct – Dec) up to help with comparing profitability.

Using a hogget rearing grazing figure of \$1.10/kg liveweight and then requiring 20c/kg DM return on winter feed eaten, then the model calculates the spring return to be 12-14c/kg DM depending on what the mating weight achieved was.

The model also calculates the average return of 13-14c/kg DM eaten which is calculated by predicting the level of performance and then adjusting for the amount of feed eaten. This will provide a useful tool for finishers evaluating the hogget rearing option.

Hogget LWG's and FRQ"s and Returns

Fast Summer Growth

	Jan-Apr	May-Sep	Oct-Dec	
Days	120	150	90	
Open LW	28	50	55	
Med LW	39	52.5	56.5	
Close LW	50	55	58	
LWG gms/day	183	33	33	
FRQ/day	1.9	1.4	3.3	
Total FRQ	228	210	297	735 kg DM
				\$101 margin \$0.14 avg return over year
\$/kg LWG	\$1.10			
c/kg DM used		\$0.20		
\$/hgt/week		\$2.00		
c/kg DM used			\$0.12	
Margin	\$24.20	\$42.00	\$34.80	\$101 check
Normal Summer				
	Jan-Apr	May-Sep	Oct-Dec	
Days	120	150	90	

	Jan-Apr	May-Sep	Oct-Dec		
Days	120	150	90		
Open LW	28	42	50		
Med LW	35	46	54		
Close LW	42	50	58		
LWG gms/day	117	53	89		
FRQ/day	1.7	1.2	3.0		
Total FRQ	204	180	270	654 kg DM	
			•	\$88 margin	\$0.13 avg return over year
\$/kg LWG	\$1.10				
c/kg DM used		\$0.20			
\$/hgt/week		\$1.71			
c/kg DM used			\$0.14		
Margin	\$15.40	\$36.00	\$36.60	\$88 check	

What are 2T's worth?

Allan McRae Lochalsh Agriculture has a model that helps to establish the price that can be paid for 2T's.

		lbing %		
ewe hgts	523			
2T's	492	120%	590	
MA ewes	1508	140%	2111	
Total ewes	2000			
lambs born		135%	2702	
Sales				
cuit ewe highs	16	\$75.00	\$1,200	
dry/w dry	97	\$55,00	\$5,335	
cull/cfa	335	\$45.00	\$15,075	
deaths	75			
male lambs	1351	\$65.00	\$87,802	
ewe lambs	628	\$60.00	\$49,668	
		_	\$159,080	
Bury				
Rems	6	\$750.00	\$4,500	
Net income		_	\$154,580	
Wool	12092	\$3.00	\$36,276	
Total Income		_	\$190.856	

Gyr Flock, buy Z			
Annual feed, 785	kg ⊔wi pe		amos)
		©ing %	
ewe hats			
2T's	547	145%	793
MA ewes	1765	155%	2736
Total ewes	2312		
lambs born		153%	3529
Sales			
cull ewe tigts		\$0,00	\$0
dry/w dry	98	\$55.00	\$5,390
cull/cfa	380	\$45.00	\$17,100
deaths	69		
(ambs	3529	\$65.00	\$229,379
			\$251,869
Buy			
2T's	547	\$165.00	\$20,255
Rams	7	\$750.00	\$5,250
Net Income		_	\$156,364
Wool	11910	\$3.00	\$35,730
Total Income		_	\$192,094

AAQ05	11910	\$3,00	\$35,730
Total Income		_	\$192,094
Gyr Flock, buy 5 Annual feed, 740		er aus (and l	and at
Asimual recu, 740	va nierbe	aewe (anui ≰binα %	surius)
ewe hots		MAINE AC	
ewenges 21's			ε
MA ewes Total ewes	2453 2453	125%	3066
lambs born	2.00	125%	3066
Sales			
cull ewe hgts			\$0
dry/w dry	107	\$55.00	\$5,885
cull/cfa	1470	\$45.00	\$66,150
deaths	80		
lambs	3066	\$65.00	\$199,300
			\$271,341
Buy			
5 yr ewes	1657	S67.00	S111.019
Rams	8	\$750.00	\$6,000
Net Income			\$154,322
VVool	12265	\$3.00_	\$36,795
Total Income			\$191.117

byt riock, buy	LY Lebu	5	
Annual feed, 7	24 kg DN	1 per ewe (and lambs)
		lbing %	
ewe hats			
2T's	593	125%	741
MA ewes	1913	138%	2640
Total ewes	2506		
lambs born		135%	3381
Sales			
cull ewe hgts		\$0.00	\$0
dry/w dry	106	\$55,00	\$5,830
cull/cfa	412	\$45,00	\$18,540
deaths	75		
lambs	3381	\$65,00	\$219,777
			\$244.147
Buy			
2T's	593	\$140.00	\$83,020
Rams	7	\$750.00	\$5,250
Net Income			\$155.877
Wool	11910	\$3,00	\$35,730
Total Income		+4.44	\$191.607
, Gray Michelle			- 1.0ui

Gyr Flack, buy Annual feed, 6			and lambs)
	-	iping %	-
ewe hgts		_	
2T's	652	100%	652
MA ewes	2102	120%	2522
Total ewes	2754		
tambs born		115%	3174
Sales			
cult ewe hgts		\$0.00	\$0
dry/w dry	117	\$55.00	\$6,435
cull/cfa	453	\$45,00	\$20,385
deaths	83		
lambs	3174	\$65,00	\$206,336
		100110000	\$233,156
Buy			
27's	652	\$110.00	\$71,720
Rams	7	\$750.00	\$5,250
Net income			\$156,186
Wool	11910	\$3.00	\$35,730
Total Income			\$191.916

The model adjusts for feed consumed given that a flock performing at 150% will consume more feed than a flock performing at 120% lambing. This may not be necessary as that extra feed is largely consumed during spring and the opportunity cost of that feed may be low if that feed had previously not been utilised well. However for comparison sake this model is extremely useful to establish the value of a 2T ewe.

1. The model shows that a flock performing at 135% and breeding own replacements could afford to pay \$165 per 2T that performs at a level of 145% lambing and 155% as a mixed age ewe to give a flock average of 153%.

- 2. The model shows that if a flock performing at an average of 153% and paying \$165 for their 2T ewes competes with a flock buying 5 year old replacements at \$65/head and lambing at 125%.
 - ➤ Can pay almost 2 ½ times the 5 year old ewe price.
- 3. The model also can compare the price that can be paid for 2T's at varying production levels.

Flock Performan	ice	2T Price	
153%	=	\$165/hd	
135%	=	\$140	
115%	=	\$110	

This data highlights a problem the industry has had retaining 2T's in the past few years. 2T's have been trading for around \$100 - \$110 head.

Based on these figures all they are worth if they are of medium fertility (2T's 100%, MA $120\% \rightarrow$ flock av. 115%) but these animals had a slaughter value of \$100 in the spring so they were not retained for breeding.

New Zealand Sheep Numbers

World sheep numbers have been declining over the last few years for varying reasons, mostly competition from other land uses.

New Zealand sheep numbers mirror this world decline from a peak of 70 million in 1982 to 39.15 million in 2003. (Meat & Wool Innovation figures).

Current predictions are for a halt in this decline in New Zealand due to an increase in profitability in sheep farming brought about by production increases and good market performance which has been aided by the world decline in sheep numbers therefore less competition.

This decline in NZ sheep numbers of 30 million over 22 years equates to an average drop of 1.36 million head per year.

With sheep numbers stabilising this will put pressure on some of our breeding units that are based around purchasing ewes and using terminal sires for lamb production.

To maintain ewe numbers, ewes are going to have to produce for another year or more young sheep will need to be retained for breeding. The economics of producing 2T's for sale have not been there as explained previously due to those animals having high slaughter values.

With less supply of breeding ewes available this will put upward pressure on prices for these animals. With current 5 year ewe prices around \$80 per head there may not be much upside in this pricing. This would suggest that farmers are going to have to pay more for 2T's so that they are retained for breeding but this is not economic unless they are higher fertility animals that have been able to produce a lamb as a hogget to fund their retention into the breeding flock.

Summary

This project has highlighted an opportunity that exists within the New Zealand sheep industry.

That opportunity exists because of the increase in numbers of Finn Cross sheep with their higher fecundity and fertility which enables them to be mated as a ewe lamb and give good lambing performances as a hogget.

Currently too many ewe lambs are being lost to the industry because they have not attained sufficient weight to be mated in the autumn.

The project outlines how surplus ewe lambs can be sourced from breeders and placed onto finishing farms where they can be grown out and lambed which helps to fund their retention as breeding 2T ewes. These 2T ewes are in demand from breeders who want to concentrate on lamb production using terminal sires.

The scheme is a win/win/win situation where all sectors in the chain are highly profitable and therefore a business facilitating this scheme could be very successful provided margins are reasonable and sufficient scale can be achieved to create efficiencies.

This scheme creates value by utilising surplus ewe lambs that would otherwise have been lost to the industry. It also creates value by allowing each link to specialise and therefore creates efficiencies.

A scheme that facilitated this process would also be a catalyst for the industry by

- 1. Creating value for higher fertility stock.
 - Create a base price for ewe lambs in the first place and the value 2T's at their true commercial value.
- 2. Demonstrate a pathway for profitably replacing the national flock.
 - ♦ As finishers become more comfortable with mating and growing out ewe lambs then people would become more comfortable with what is a new venture.
- 3. Promote specialisation.
 - ♦ Farmers can concentrate on growing their businesses knowing that markets exist for their ewe lambs or that they can reliably source the genetics they want.
 - ♦ Imagine expanding and being able to source these genetics in year one. This would create real value.

In conclusion my investigation into this scheme has put me in contact with people who share the same enthusiasm for this concept.

A company has been formed called SheepLink with the role of creating links between breeders and finishers. SheepLink has a target of 50,000 ewe lambs contracted out to finishers in the first year and at the time of writing this, this target looks achievable.