

7. IMPROVING LAMB SURVIVAL

Introduction

It is widely accepted that there is a large amount of lamb wastage in Merino flocks. Fertility rates, as measured by the number of lambs present at scanning are often 120-40 per cent to ewes joined, yet most flocks end up marking in the order of 75-90 per cent of lambs. This lamb wastage which often accounts for 20-40 per cent of lambs is the major cause of reduced fertility in merino flocks and is much more important than ewes failing to lamb, which accounts for only 5-8 per cent of ewes in most flocks.

The loss of lambs around the time of lambing is expensive, in that ewes have been managed for pregnancy and the ewes have incurred the cost of the pregnancy in terms of reduced fleece weight. Of the 20 per cent reduction in productivity associated with lambing and lactation, approximately half occurs due to the pregnancy and the other half is due to lactation. Therefore, all the ewes that lamb but fail to rear their lambs, are suffering a penalty in terms of reduced fleece weight but not providing any extra return via the extra lambs.

So what can be done to try to address this problem in a cost-effective method? The starting point is to understand the reason for the high level of lamb losses that occur in Merino flocks.

The factors that we know influence lamb survival include:

The weather

Cold wet weather increases lamb mortality substantially, particularly those lambs that have low live weight. There are a number of options to manage this problem. The first is to lamb at a time of year that reduces the likelihood of adverse weather. This would be appropriate if lambing time could be decided on weather factors alone, but in all flocks, it is a compromise between a number of important factors, including pasture growth patterns, timing of marking, mulesing, weaning, shearing and cropping activities etc.

The difficulty is that for many districts, lambing time would have to move substantially from the current optimums in order to get a substantial benefit from reduced lamb loss due to adverse weather. The effect of the weather is as much about luck as anything else. In some years you will strike good weather through lambing, despite it normally coinciding with bad weather, and in other years you may have a week of cold, wet weather just at the peak of lambing. It is basically outside anyone's control.

SECTION KEY MESSAGES

Simple management tips can greatly increase lamb survival rate.

These include lambing in sheltered paddocks, and ensuring ewes are in condition score 3 or better for the last weeks of lambing.

Where feed and shelter are limited post-drought, scanning to identify and segregate twin-bearing ewes may be useful.

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Because there is limited scope to manipulate lambing time in order to minimize lamb losses due to bad weather, the next best option is to manage lambing ewes to minimise the effects of bad weather on lamb survival. Provision of shelter is the only way to overcome bad weather. At the end of the day, shelter is about increasing the time available for the lamb to dry out, feed, and generate its own heat, before it uses up its own fat reserves.

The key factors affecting survival are time, temperature, rainfall and wind speed, all of which combine to provide chill factor. Of these factors, wind speed is the only one that you can influence. The ideal solution is shelterbelts and that can provide a long-term solution but won't make much difference at the next lambing. Therefore short term strategies that can be considered if you don't have shelterbelts include:

- Choose paddocks with the most sheltered aspect
- Shelter need not be just in the form of trees – shrubs, tussocks and standing dry feed can all contribute to lamb survival by reducing wind speed at ground level.
- Consider paddock layout and sheep behaviour - some paddocks force sheep into exposed areas by the way they are fenced or watered. Watch sheep behaviour as a guide to any paddocks where this may happen.

The effect on flock fertility of providing shelter can be seen in Table 7.1. The effect is most pronounced with twin lambs which have a 12 per cent increase in lamb survival compared to eight per cent for singles. Therefore, if you have limited amounts of sheltered country, give preference to the ewes that are likely to have the highest twinning rates. These will include older age groups or mobs that were in very good condition at joining.

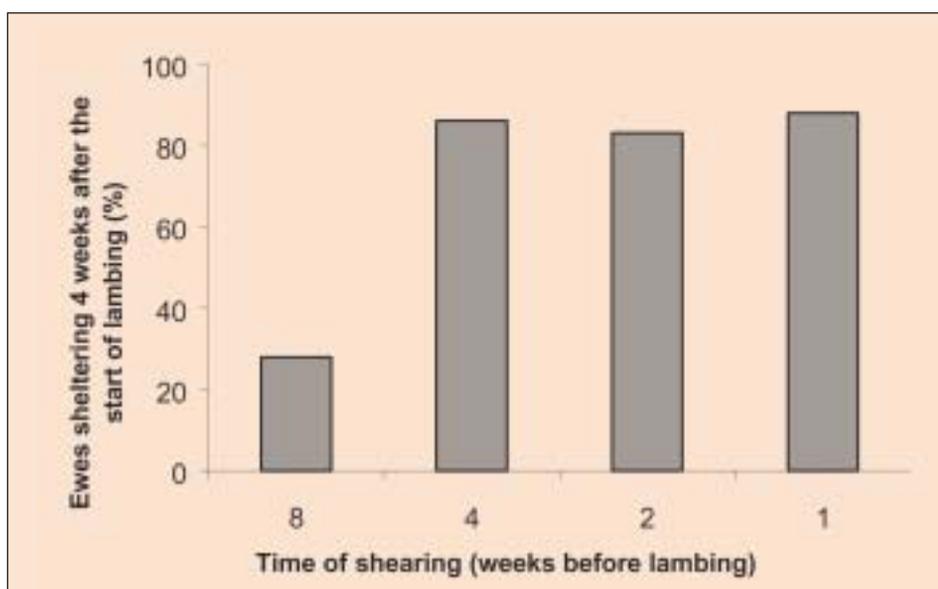
Table 7.1: Effect of shelter on lamb mortality

	LAMB MORTALITY (%)	
	SHELTERED	UNSHELTERED
Single births	8.9	17.5
Multiple births	38.8	51.3

Source: Ralph (1981)

Shearing pre-lambing will increase the tendency of ewes to seek shelter. This can also have a dramatic effect on the tendency of ewes to seek shelter while they are lambing, but ewes must be shorn within four weeks of lambing which does have its complications in many flocks (Graph 7.1). For most flocks, changing shearing time for a benefit in lamb survival is a long-term strategic decision that needs to take into account a whole range of factors, only one of which is lamb survival.

Graph 7.1: Time of shearing (weeks before lambing)



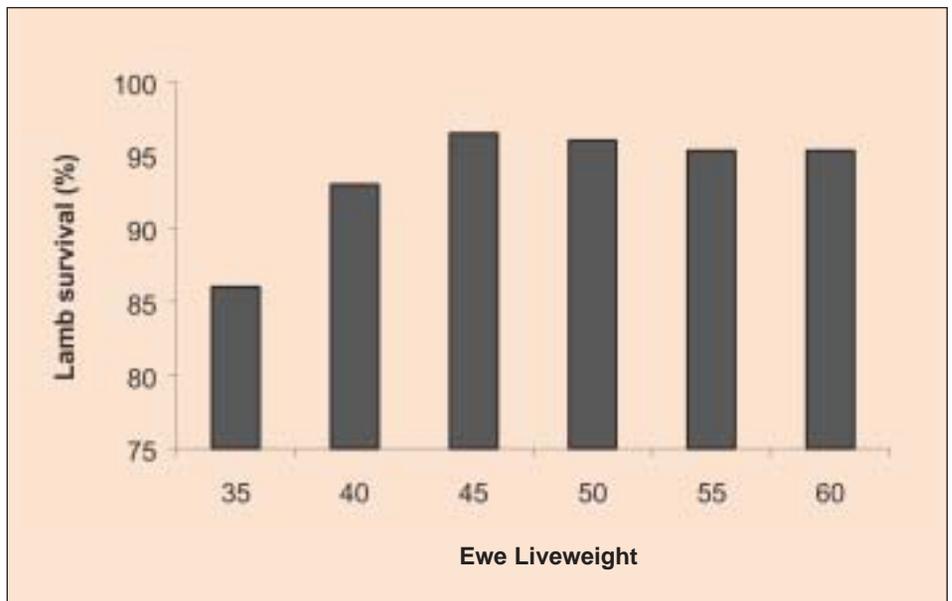
Source: Ralph (1981)

Ewe liveweight during pregnancy

Ewe liveweight during pregnancy can have a major influence on lamb birth weight.

This can have a major influence on lamb birth weight. By mid-pregnancy (day 80) the placenta has reached its maximum size and if placental size is seriously restricted, lamb nutrition will be constrained in late pregnancy when it would normally be growing rapidly. A high plane of nutrition during late pregnancy will not compensate for this because the placenta simply lacks the capacity to transfer nutrients across to the lamb (Graph 7.2).

Graph 7.2: Ewe body weight and lamb survival



Source: *Graham Lean & Associates*

As a guide, some weight loss is tolerable if the ewes are heavy to start with. In this case there was no effect until ewes fell below 45 kilograms liveweight. The reality of this situation is that if a reduced ewe liveweight is likely to constrain lamb survival, the conditions are likely to be such that ewes will need supplementary feeding in order to maintain acceptable liveweight for the benefit of ewe survival. Therefore, feed only if the situation is serious, with rapid weight loss in ewes, or ewes in very poor condition. Feeding to increase ewe liveweight from, for example, 55 to 60 kilograms during mid-pregnancy will not provide any benefit in lamb survival.

The lamb weaning percentage can be reduced by up to 18 per cent if ewes are in a condition score of less than three at lambing.

Late in the pregnancy, ewe liveweight can have an important effect on lamb growth rate and subsequent weaning percentage. Ewes below condition score 3 at lambing will have reduced milk production and poor lamb growth rates (Table 7.2). In this situation, the lamb weaning percentage is reduced by 18 per cent due to low ewe condition score.

Table 7.2: Effect of ewe condition score at lambing on growth weight and weaning

	CONDITION SCORE OF EWE			
	2	2+	3-	3
Lamb growth rate g/hd/day	150	160	180	190
Weaning %	61	70	79	79

Source: *Graham Lean & Associates*

If ewe condition is a regular problem at lambing time in your flock, you need to consider a range of strategies. Supplementary feeding is the most obvious tool to address the problem but it comes at a cost. An alternative approach is to try to better align feed supply and demand so that ewe condition is normally 3 score or better at lambing time (see section 3 for further discussion on this topic). If ewe condition score targets cannot be met when lambing time aligns with periods of sufficient pasture growth, the problem is simple - you have too many sheep and should reduce your stocking rate, or alternatively, grow more pasture in order to meet the requirements of the ewes (this is discussed in section 3).

Predation

The two main predators of young lambs are foxes and wild pigs. In many instances, foxes only clean up weak or mis-mothered lambs but there are numerous reports of improved lambing percentages following fox baiting programs, for example, an increase of 20 - 40 per cent in South Australia. Fox baiting programs should be a regular management process unless foxes are not a problem.

Feral pigs can have a dramatic effect on lamb survival with some paddocks recording as little as 20 per cent lamb marking percentages where pigs have been a problem. The only management strategies are pig control and paddock choice to try to minimize the risk of predation by pigs.

Selection for rearing ability

During the last twenty years, it has been widely recommended to include rearing performance as a selection criteria for flock ewes. This was based on identifying and culling ewes that lambed but failed to rear their lamb, because these ewes are more likely to fail to rear their lamb in subsequent years.

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There are a number of points which need to be kept in mind when deciding whether or not to implement this strategy.

- The gains will come from improved fertility of the ewe over its lifetime and potentially from better fertility in the ewe lambs born to ewes more successful at rearing lambs. The gain from the latter is only substantial if your ram source is working toward the same objective. If they aren't, you will make no long-term impact on flock fertility.
- Of the ewes that fail to rear a lamb in any one year, a high proportion will rear a lamb the following year largely because a substantial proportion of lamb losses are due to the environment and not the fault of the ewe.

Table 7.3: Average rearing efficiency of three Merino flocks

	Percent of Ewes
Always reared lambs	45%
Reared on three occasions	31%
Reared on two occasions	16%
Reared on one occasions	6%
Failed to rear on all occasions	1%

Table 7.3 shows that even those ewes with a poor track record of rearing lambs have a reasonable chance of rearing a lamb in any one year. When attempting to recover flock numbers after a drought, ewes with lower fertility will still make a worthwhile contribution to the bottom line. If you are concerned that it may undo previous gains in flock fertility you can still run ewes that fail to rear but identify them and their progeny with a view to selling as a priority when numbers are back to optimum.

In terms of drought recovery, you will be better off with a slightly less fertile ewe than no ewe at all so be prepared to adjust your long-term strategy for the benefits provided in the short-term.

Scanning

There are two possible uses of uses of ultrasound. Firstly, it can be used to identify ewes into pregnant and empty groups. The benefit of this is that the dry ewes can be managed like a wether while the pregnant ewes can be given preference for feed quality and quantity.

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Most mobs of mixed-age ewes will only have 5-8 per cent of its ewes empty so it wouldn't pay to scan to identify such a small proportion of the mob – it would be cheaper to feed the dry ewes in the mob unless feeding for extremely long periods at high rates.

Mobs which have a high proportion of empty ewes are most likely to comprise maiden ewes and those which had low bodyweight at joining. If unsure, scan a sample of 100 in the mob to provide an estimate of dry ewe percentages and then decide whether or not it would be economic to do the whole mob.

Table 7.4 provides a guide to the likely benefits for different feeding rates and dry ewe rates.

Table 7.4: The value of feed saved per 100 ewes from scanning to remove dry ewes (\$ per 100 ewes)

		EXPECTED FEED/EWE (KG)		
		10	20	30
DRY EWE RATE	5%	-\$25	-\$10	\$5
	10%	-\$10	\$20	\$50
	15%	\$5	\$50	\$95
	20%	\$20	\$80	\$140
	25%	\$35	\$110	\$185
	30%	\$50	\$140	\$230
	35%	\$65	\$170	\$275

* Grains \$150 per tonne

Scanning to identify multiple pregnancies and managing twin and single bearing ewes differently was initially widely advocated but is now not widely practised. The main reason was that it was not easy to manage the twin bearing ewes in order to improve lamb marking percentages.

Situations where identifications of multiples may be worthwhile include:

- Where very high rates of feeding may be required through lactation.
- Where identification of twins aids in the accuracy of selection, specifically ram breeding flocks.
- Where a limited amount of good quality shelter is available.

In these situations, multiple lamb identification may pay. In most others it will not.

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Case Study - Improving lamb survival

Fred's flock had a long-term lamb marking percentage of 67 per cent. The three, four and five year olds usually averaged around 75 per cent while the maidens were usually around 55-60 per cent. Until now, the whole issue of fertility had not been a major concern to Fred - he saw himself as a wool producer and as long as he could breed enough replacements to keep the flock at the required numbers, the fertility was acceptable. Sure, there were not as many surplus sheep to sell but the higher the flock fertility, the more weaners he had to keep alive over summer and the few he had kept created enough headaches. He also remembered hearing somewhere that a lamb costs you about 20 per cent in the fleece weight of the ewe so the lambs were not without cost. Overall, he believed his system worked pretty well, all things considered.

Then came the 2002 drought. Fred had made the decision to cut numbers back from 6,000 down to 3,500 - the core of the ewe flock (2000) and 1,500 of the healthiest looking weaners. That was fine during the drought, in fact all too often, at \$1 per week to feed sheep, it was too many, but now things were looking pretty ordinary - a wool cheque cut by about half and no surplus sheep sales for the next 2-3 years while the flock is being rebuilt.

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One easy strategy to get the numbers back up as quickly as possible was to keep as many lambs as possible alive - after all, that would give the quickest result with lambing due to start at the end of July.

Fred had always known that the poor fertility of his flock was primarily due to lambing issues at, or soon after, birth. Any time he had wet-dried ewes there were very few, around 5-8 per cent that had not lambed, so the problem was that most of the ewes were lambing but failing to rear their lambs.

So what were the options?

There were a number of strategies that Fred could implement. He had heard about identifying the 'lambled and lost' ewes and culling them from his flock. This sounded like a pretty good idea, but looking a bit further it might not work as a drought recovery strategy if the main aim was to build up numbers. The results from three flocks that had followed this strategy are shown in Table 7.5.

Table 7.5: Average rearing efficiency of three Merino flocks

	Percent of Ewes
Always reared lambs	45%
Reared on three occasions	31%
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This meant that there were plenty of ewes in the flock which, even though they didn't rear lambs last year, were quite likely to next year. Even if they had lost a lamb in previous years, there were only one per cent of ewes that never actually reared a lamb. Therefore, it would be best to keep the lot and get whatever extra lambs were on offer to help rebuild numbers. Plus any strategy to get rid of ewes which failed to rear was going to take at least a few years to pay off and the problem was more urgent than that.

That left some other possible strategies. The two that seemed likely to provide a quick benefit were fox control and shelter at lambing. People talk about foxes and you see plenty of them, but you were never sure what effect they actually had on lambing percentages. Recent trials have shown 20 per cent improvement in lambing percentage after the baiting programs, so it seemed like it was worth a shot. A program was only going to cost around \$100 in baits and the time to put them out and then check them. As long as none of the sheep dogs took the baits.

The second strategy was shelter. Only two paddocks on the property had any worthwhile shelter so only two of the five mobs of ewes could use the shelter. Up until now, the decisions on which mobs got the sheltered paddocks was ad hoc. There were probably a few things that could be done.

One mob of ewes were in particularly good condition at joining, so were likely to have quite a few twins. This mob would get priority for shelter in preference to ewes that are likely to have fewer twins.

The second sheltered paddock would be used by the oldest ewes - also likely to have the most twins compared to the other mobs.

Both of these strategies were very low cost and simple but may well translate into additional lambs to provide a boost to numbers out of the drought.

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