High fertility sheep

W.J. WALLACE
Mangamutu, RD3, Pahiatua
bpwallace@xtra.co.nz

Introduction

My wife Pauline and I have two teenage children. We farm a property at Makuri, approximately 60 km east of Palmerston North.

The property comprises 311 effective ha and runs approximately 3000 stock units (SU). Ninety hectares of adjoining land has recently been added to the unit through a six-year lease.

The land at Makuri is medium hill on a belt of limestone that runs from Wairarapa through to Central Hawkes Bay. The belt of limestone has been tilted over to form a westerly facing dip slope running from 300 metres to 750 m above sea level (average approximately 550 m above sea level). Because of this, the farm is very exposed to the prevailing westerly wind.

Because the farm is situated east of the low area between the Tararua and Ruahine ranges, it is not in a rain shadow and therefore gets rain from the west as well as in easterly conditions. The environment is summer moist, with average rainfall between 1500 and 1800 mm per annum. Because of the altitude we experience long cold winters but tend to have good growthy summers and autumns.

Pauline and I also have a small block of 26 ha at Mangamutu on the outskirts of Pahiatua. This farm comprises flat to rolling country, with the majority mowable. The property carries approximately 390 SU.

Early days

Prior to 1992 we were farming by pretty traditional methods, with fairly large paddocks and livestock set-stocked during the winter. The only non-traditional feature of our farming system was that we were running Coopworths. This was the era before exotic-cross sheep and Romneys were the dominant breed. Interest rates were high and fertiliser use was low.

During 1992, Mount Penetubo erupted and the resulting ash cloud disrupted our climate, giving us a spring from hell. We docked 51% and although the spring was bad we knew the problem had been compounded by inadequate management. The necessity to upskill and improve our management practices became very apparent.

One of the strengths of our system is that we had always been buying the top genetics available and our ewe flock's fertility and fecundity background was reasonably high. However, the problem was that we weren't feeding our sheep to express that potential.

Progress to date

Over the last ten years we have more than doubled the weight of saleable lamb produced on our property:

1991/92* 113% docking
Produced 19760 kg lamb carcass weight

1996/97 136% docking
Produced 29505 kg lamb carcass weight

2001/02 158% docking
Produced 42840 kg lamb carcass weight

* The spring before Mount Pinatubo erupted

We now produce approximately 128 kg saleable lamb/ha from total meat and fibre production of 275 kg/ha.

These increases have been the result of higher stocking rates, higher lambing percentages, higher lamb weights and hogget lambing. It is no secret that we have made very rapid progress through the application of very basic, well proven and mainly old technologies.

As already stated we were fortunate that we already had good genetics in place. From their inception, Coopworth sheep have been performance recorded for economically important traits such as fecundity, growth rates and wool weights. We have always purchased the best genetics we could and still do.

Today the sheep industry is fortunate that there are now, with the introduction of some of the exotic sheep breeds, plenty of fecundity genes out there. Fecundity is the key driver behind high sheep performance, but we must also monitor the other economic traits and make sure our breeders are making genetic gain in these areas also.

Feeding the genetics

It is interesting, when looking back through the records, to note the cyclical nature of our lambing percentage prior to 1992. A good year (120%) was often followed by a low year (100%) with the next being high again. On reflection, this was probably due to the increased number of twin-rearing ewes

being too light at the following mating and only producing a single lamb the next year and vice versa.

Since then, subdivision has increased through the use of 3 wire electric fences but is still not high by many standards. Our 311 ha has 39 main paddocks, while the lease block gives us another 10. We plan to increase this by another 7 to 10 paddocks over the next year.

The main driver behind our increased performance has been to better match feed demand to supply and to increase the total feed produced. To increase feed supply a lot of phosphorus (P) has gone on over the last 10 years:

1992 – Olsen P averaged 11.5 at Makuri and 20 at Mangamutu.

2002 – Olsen P averaged 18.5 at Makuri and 33 at Mangamutu.

The anion storage capacity at Makuri is relatively high at around 85%, so the process of increasing the Olsen P level has been relatively slow.

The other tool to increase feed supply has been the use of nitrogen (N) to increase the shoulders of growth going into and coming out of the winter. Applications of N are made in autumn and spring. These have varied between 20 and 50 units of N/ha.

Autumn N has several benefits. Of course you get an extra bank of feed going into the winter, and the fast growing high quality green leaf is ideal for flushing ewes in order to get maximum ovulation. The benefit also carries through into the winter, enhancing pasture production during warmer periods when growth does occur. Spring N helps supply feed at a time of rapidly increasing demand.

Porina is another factor for us to keep a watchful eye on over winter. With our summer moist climate and free draining soils we provide an ideal environment for porina to survive. Even moderate numbers can cause considerable pasture loss over the critical winter months. Because of this, we monitor late summer/early autumn porina flights to try to determine when to start looking for them at the early burrowing stage. Assessing numbers at this stage is used to calculate the economics of spraying. Spraying has proved to be economic in most years.

As lambing percentages have increased we have delayed lambing dates to try to better match feed supply with demand and are now lambing 5 weeks later than we were 10 years ago. Lambing late onto low covers seems to be ideal for our country. To lamb on low covers (from 1000 to 1200 kg DM/ha) you must ensure the grass is growing rapidly under the ewes, hence the necessity for good background levels of P and N.

Pasture quality a key

The benefit of low pasture covers at lambing is the maintenance of pasture quality in late spring/early summer. Around 70% of a lamb's energy from birth to weaning comes from grass, so pasture quality is paramount. When we have lambed on higher covers we have found it difficult to maintain quality. In a summer moist, browntop dominant situation like ours the pasture growth spike in late spring can be very significant and hard to control especially if covers are high early on. Of course, one of the great advantages of a high lambing percentages is the high late spring feed demand and the ability to capture more of the benefit of that cheap grass in the late spring. If this does not occur then the extra grass becomes a liability for the rest of the season with its low quality and the necessity to work stock, taking off liveweight, to make them clean it up.

In late spring it is very important to manipulate supply and demand to maintain pasture quality. One of our strategies is to spread calving cows throughout the ewes and lambs. We constantly adjust paddock numbers of ewes and lambs to try to maintain even pasture covers and stop paddocks sneaking ahead. In those paddocks that do get away a little we move younger cattle through to bring pasture covers back down. Extra cattle may be purchased to enable this.

The use of chemical topping with glyphosate has proved to be a useful tool on our farm. Along with the increased P and N inputs, it has transformed pasture composition in what was a very browntop dominant belt between 700 and 750 m above sea level. This high altitude belt of browntop, with its late and sudden growth spurt to flowering, had always proved difficult to control. But two years of chemical topping in November at rates of 500 ml/ha coupled with applications of autumn N has seen it go from rank winter feed with low ME values to green, leafy growing grass. Even if it is growing somewhat slowly over winter due to its browntop dominance the area still supports a respectable ME value. Chemical topping at lower rates has also proved successful on shady faces and areas of high Californian thistle infestation.

Being able to maintain pasture quality during the late spring/early summer period makes our farming system that much easier to manage. With high lambing percentages it is important to grow lambs quickly to get them off the property as you move through summer. If surplus lambs have not been not sold by the autumn you have too many priority classes of stock, insufficient flushing feed and insufficient feed to take into winter.

Higher quality feed means higher animal growth

rates and more dollars. Terminal sires are also used over 30% of the ewes, including the 2th ewes and the ewe hoggets, to increase lamb growth rates. We enter a number of lamb contracts for approximately half of our sale lambs. Contracts keep you focussed on growing the lambs and delivering them on time. We finish the majority of our lambs, but those not contracted will certainly be sold store if conditions dictate.

A few final feeding notes

When handling ewes after weaning and through winter we take off the lighter ewes and preferentially feed them. While ideally it would be better to sell them, because we have always been increasing numbers, it has never happened.

Pregnancy scanning has also been of great benefit. We scan for singles, twins and triplets, and also embryo-age the twins and triplets into two groups (0-20 days and 21-34 days). Our few singles get the highest, coldest country, while the early multiples have the lower warmer country and the later ones have higher altitude country that starts growing later. This helps to try and optimise the feed demand and supply over the whole property.

The future

Our aim is to increase production per hectare further and there are a number of avenues to achieve this. There is considerable opportunity to increase the survivability of our potential lamb crop. Over the 2001 and 2002 years the average ewe scanning in our flock was 203% and the average docking was 154%. This meant that 24% of the potential lamb crop was lost. Even with our exposed environment this is far too high and inefficient. Too much valuable winter feed is used that is not producing the potential lambs which can then utilise that cheap spring grass to grow into dollars. In order to address this opportunity we are trying to buy rams with better survival backgrounds. This is not always easy when trying to improve other economic traits as well. We are also applying selenium prills with our fertiliser and supplementing ewes with iodine over pregnancy in an attempt to improve lamb survival.

Increasing fecundity results in an increase in the number of triplet bearing ewes, and this can be a major source of lost potential. We separate our triplet bearing ewes at lambing, not only to give them more sheltered lambing paddocks and more feed after lambing but also to learn how to enhance triplet lamb survival. If the triplet bearing ewes are not separated from the twins we won't learn. It appears that we still have a lot of learning to do yet. We do know that shelter over lambing is critical but with an increasing proportion of triplets it becomes harder to give them all the most sheltered paddocks. Improving the management and survivability of triplets is one of the keys to improving the production of already high producing sheep.

Increasing hogget lambing performance is another key. At present we are achieving a 75% conception rate with approximately 100% lambing potential and a 75% docking rate from our hoggets. We have to increase this to at least 100% docking as the evidence is clear that as long as you feed it properly, a hogget that rears a lamb will have greater production as a mature ewe than one that doesn't. Genetics may play a part in improving our hogget mating and lambing performance, but again we have to improve our management techniques.

Of course the simplest way of improving production per hectare is to just run more stock while maintaining per head performance. This is why we plan to increase total stock numbers to 4800 stock units over the next two years, with further increases possible. In order to do this, feed supply and utilisation will have to increase. More subdivision is planned but the key is probably greater use of N to further increase the shoulders of growth each side of the winter. This will enable us to achieve a production lift by increasing ewe numbers, even if we slightly reduce body weight and potential per head, while grappling with the problems of triplet lamb survival etc. As the management techniques associated with these issues are improved, a further lift may come from increasing per head performance again.

Finally, we must further improve lamb growth rates both before and after weaning. This means making sure that our ram breeders are achieving genetic gain in this area, making maximum use of terminal sires and using more spring N.