

**Meat and Wool New Zealand  
Manawatu Breeding and Finishing Monitor Farm  
Mid Pregnancy Shearing Trial 04FT159**

Ginny Dodunski BVSc MACVSc Trevor Cook BVSc MACVSc

## **Introduction**

The effect of mid pregnancy shearing with regard to improved lamb birthweights in multiple bearing ewes and in hoggets have been well defined in New Zealand in recent years by Kenyon and others.<sup>1,2</sup>

This most recent work has not specifically addressed the ewe – side benefits of the procedure. In particular reduced deaths from casting, vaginal prolapse<sup>3</sup> and metabolic disease are perceived benefits of mid – pregnancy shearing. These benefits may be more likely to be seen in flock with high potential reproductive rates.

Sumner and others in the late eighties and early nineties reported a series of field trials where mid pregnancy shearing was compared with other shearing treatments.<sup>4,5</sup> In these trials ewe losses were low (1 – 2%) and there was no significant difference between treatments with respect to ewe losses. It must be noted that the weaning percentage in these ewe groups ranged from 88% to 113%.

The intention of this trial was to measure any ewe – side benefits from mid pregnancy shearing in a flock with high reproductive potential. The mixed age ewe flock on this farm consistently scans at near 200% and has docked between 136% and 148% in recent years.

## **Trial Design**

In late July 2005 1000 twin – bearing mixed age composite ewes with approximately 7 months wool were randomly allocated to either a shorn or unshorn treatment group. There were 479 shorn ewes and 522 woolly ewes. The two groups were run together as one mob from shearing until weaning.

A random sample of 100 ewes from each group were Body Condition Scored at shearing, pre lamb vaccination time, docking and weaning, by the same operator on each occasion using a standardised method.

Accurate records of all ewe deaths and cause of death were recorded.

Within two weeks before the planned start of lambing, ten blood samples were taken at random from each of the treatment groups and tested for Beta Hydroxy Butyrate levels.

In addition to these measurements of ewe performance, two groups of 50 lambs were identified (eartagged) at birth as being born to either a shorn or unshorn mother. These lambs were weighed at docking and weaning, and survival to weaning was measured for each group of 50 lambs.

## **Results**

### **Ewe body condition**

Immediately after shearing, on 25/7/05, the average BCS of the woolly group was 2.7 and the average BCS of the shorn group was 2.9. This difference was not significant.

By 25/8/05 (Pre – lamb) the average of both groups was 2.5.

On 12/10/05 (docking) the shorn ewes had dropped to an average of 1.8, and the woolly ewes tended to be lighter at 1.3. This difference was not statistically significant however.

By weaning on 20/1/06, both groups had gained some weight; with the shorn ewes reaching 2.4 BCS and the woolly ewes reaching 2.2. Again this was not a statistically significant difference.

These BCS figures are lower than the recommended industry levels for composite ewes; a minimum BCS of 2.5 at mating is suggested for optimum performance over lambing and lactation.<sup>6</sup> The average BCS figures of 2.7 and 2.9 for the woolly and shorn groups respectively suggest that it is likely that a high percentage of ewes would have been below these minimum targets at mating, and BCS deteriorated from then on until a lift between docking and weaning.

### **Ewe BOH levels pre lamb**

The mean BOH of 10 samples from the woolly ewes on 25/8/05 was 0.78mmol/L.

The mean from the shorn ewes was 0.64mmol/L.

This difference was not significant.

### **Wet/dries**

There were 3.5% wet/dries in the shorn ewes and 4.5% in the woolly ewes. The difference was not significant.

## Ewe deaths

The death rate in the shorn ewes was 3.5%, with 3.8% in the woolly ewes. The distribution of cause of death was similar for both groups, with casts and bearings slightly more common for both groups than lambing death or unknown cause of death.

## Lamb survival to weaning

The 50 tagged lambs from each group of ewes were used for this calculation.

The lambs from shorn ewes had a 93% survival to docking and an 82% survival to weaning. The lambs from the woolly ewes had an 87% survival to docking and a 76% survival to weaning.

The overall difference between the two groups was a 5% advantage to docking and a 6% advantage to weaning. However this difference was not statistically significant.

## Lamb Birthweight

Lambs from the shorn ewes were heavier at birth, docking, and weaning.

<b>Group</b>	<b>LW* birth</b>	<b>LW docking</b>	<b>LW weaning</b>	<b>ADG** birth dock</b>	<b>-</b>	<b>ADG birth wean</b>	<b>-</b>
<b>Shorn</b>	6.2	14.8	31.3	226		175	
<b>Woolly</b>	5.2	13.3	28.3	214		159	

There was a 3kg difference in LW by weaning. This was significant at the  $p=0.003$  level.

The 1.5kg difference at docking was a tendency only, being significant at the  $p = .09$  level.

## Discussion

The main aim of this trial had been to determine if there was any direct benefit to ewes by shearing them in mid pregnancy.

There was no apparent difference in ewe survival between the shorn and unshorn treatments, and the lack of any difference in cause of death between the two groups lends weight to this observation.

There was also no significant difference in body condition score between the two groups, although the finding of excessively light BCS in both groups highlighted two things:

1. The value of the procedure, particularly once ewes are carrying more than a couple of months' wool. These ewes had been visually assessed in the preceding months as being in adequate condition, but the finding of an average BCS of 2.5 at pre-lamb time meant that for both groups, 25% of the ewes were BCS 2 or below, which must at least limit lactational performance. The drop to BCS 1.3 and 1.8 (for the woolly and shorn groups respectively) at docking meant it was impossible for ewes to gain weight fast enough to achieve an acceptable weaning BCS. This is likely to impact on next the season's performance.
2. That any impact on ewe survival more likely to be seen in well conditioned ewes (BCS 3+) (e.g. a reduced incidence of clinical or subclinical sleepy sickness) would have been difficult to demonstrate with these sheep.

The mean Beta Hydroxy Butyrate level of the woolly ewes pre-lamb was 0.78mmol/L and the shorn ewes had a mean of 0.64mmol/L. While this was not statistically significant, there was a tendency for the woolly ewes to have higher values. Had the trial been performed on better conditioned sheep, would we have seen a bigger difference? These BOH levels, although within the laboratory reference range, are higher than those reported in fully fed sheep – in the case of the woolly ewes, almost double.<sup>8</sup> This suggests that excessive tissue breakdown was occurring in both groups, which fits with the declining BCS seen up to docking.

The lamb birthweights seem quite heavy. The lambs were tagged in groups within a day or two of birth, while they were still catchable, but not every day within hours of birth as would be the normal practice on farms where birthweight is recorded. This may have had some minor influence on the birthweights recorded.

The lamb survival response was not statistically significant with the numbers used. With a 5% improvement in survival and a lamb mortality rate of 15% (close to what was seen at docking in the shorn group in this trial) 726 lambs per trial group would be necessary to show a statistically valid difference<sup>7</sup>.

The significant increase in lamb weaning weight seen in the shorn group lambs made mid pregnancy shearing profitable for this farm. At a p level of 0.003 it is probably safe to assume that the effect existed across all the lambs in the group.

Over 1000 shorn twin bearing ewes, and ignoring the small improvement in survival, the net benefit of shearing can be calculated:

2000 potential lambs @ 76% survival:

Gives 1520 lambs at weaning

1520 lambs at an extra 3kg LW:

Gives an extra \$7980.00 income at \$1.75/kg LW,

Or an extra \$7524.00 at \$1.65/kg LW.

**At this lower store price, with a ewe shearing cost of \$3.00/head, the net benefit is still \$4524.00**

Any real or possible increase in lamb survival is extra 'icing on the cake', but the greatest sensitivity is in the lamb weaning weight, as any increase is multiplied across a large number of animals.

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