

# Northern Southland

## Northern Southland modelling methods

The Northern Southland group chose mitigations of extra feeding and spreading lambing equally over two mating cycles. Extra feeding is modelled as per the section 'Modelling feeding'. Currently approximately 85% of ewes are mated during the first mating cycle of 17 days after joining date, with 15% during the second cycle. This concentrates the number of lambs being born. The mitigation chosen here investigated whether shifting the spread of lambs being born to 50% in each cycle would alter potential survival by reducing the threat of single catastrophic weather events during lambing.

The diversity of geographic conditions again saw the use of two sites to represent Northern Southland, one on the flat and the other in steep hill country. Wind run (for 24h) was taken from the Gore automatic weather station (lat. -46.115, long. 168.887, alt. 123 masl) for the period 1998-2008 and repeated. This was compared to the less complete data from the Lumsden station (Lat -45.748, long. 168.448, alt. 187 masl) and found to be similar. The Gore data was applied directly to the Northern Southland Flat model, and was increased by 10% per 100 m increase in altitude as per Cossens (1987) to be applied to the Northern Southland Hill model, an increase in 23% for the 230m gain in altitude.

## Results

Improved feeding was recognised as a major mitigation that may help improve lamb survival in the Northern Southland region. The addition of 0.2 kg DM/ewe/d for a period of 3 weeks before lambing and through the first lambing cycle (another 17 days) did provide an extra 34 live lambs per 1000 ewes (Table 1). To provide this extra feed an extra 76 kg DM/ha would be required at the average district stocking rate of 10 ewes/ha. This higher pasture cover target would have to be factored in to winter feeding plans to ensure its availability for lambing ewes. Again the effect of reducing the number of lambs lost due to exposure of the ewes also resulted in a small increase in lamb loss due to the exposure of the lamb, because of the greater number of viable lambs born.

The split in ewes lambing the first and second cycle was one point of investigation for the Northern Southland sites. The current expected split of 85% of ewes conceiving in the first cycle and 15% conceiving in the second cycle was compared to having a 50/50 split. This shift was to investigate the opportunity to reduce the impacts of single storm events by having fewer lambs exposed on any single day. Small increases in live lamb numbers were present for the 50/50 split, being 8 and 7 lambs/1000 ewes for the Hill and Flat sites respectively. While this result is statistically significant, the practicality of creating a 50/50 split would probably require a labour input in excess of the benefits gained from the relatively few extra lambs.

**Table 1.** Northern Southland Hill

| <b>Site</b>                       |                    |                 |                 |                 |            |
|-----------------------------------|--------------------|-----------------|-----------------|-----------------|------------|
| <b>Northern Southland Hill</b>    |                    |                 |                 |                 |            |
| <b>Scanning percentage = 174%</b> | <b>Time</b>        |                 |                 |                 | <b>lsd</b> |
|                                   | <b>Present</b>     | <b>Future 1</b> | <b>Future 2</b> | <b>Future 3</b> |            |
| Lambs lost (exposure of the ewe)  | 320                | 314             | 311             | 307             | 4.9        |
| Lambs lost (exposure of the lamb) | 150                | 148             | 147             | 146             | 1.8        |
| Live lambs per 1000 ewes lambing  | 1268               | 1276            | 1280            | 1286            | 6.6        |
|                                   | <b>System</b>      |                 |                 |                 |            |
|                                   | <b>85/15</b>       | <b>50/50</b>    |                 |                 | <b>lsd</b> |
| Lambs lost (exposure of the ewe)  | 316                | 310             |                 |                 | 3.5        |
| Lambs lost (exposure of the lamb) | 149                | 146             |                 |                 | 1.3        |
| Live lambs per 1000 ewes lambing  | 1273               | 1281            |                 |                 | 4.7        |
|                                   | <b>Mating Date</b> |                 |                 |                 |            |
|                                   | <b>15-Apr</b>      | <b>22-Apr</b>   | <b>30-Apr</b>   |                 | <b>lsd</b> |
| Lambs lost (exposure of the ewe)  | 315                | 318             | 307             |                 | 4.3        |
| Lambs lost (exposure of the lamb) | 149                | 149             | 144             |                 | 1.6        |
| Live lambs per 1000 ewes lambing  | 1274               | 1271            | 1287            |                 | 5.7        |
|                                   | <b>Feeding</b>     |                 |                 |                 |            |
|                                   | <b>Plus 0.2 kg</b> |                 |                 |                 |            |
|                                   | <b>Standard</b>    | <b>DM</b>       |                 |                 | <b>lsd</b> |
| Lambs lost (exposure of the ewe)  | 350                | 276             |                 |                 | 3.5        |
| Lambs lost (exposure of the lamb) | 144                | 151             |                 |                 | 1.3        |
| Live lambs per 1000 ewes lambing  | 1244               | 1310            |                 |                 | 4.7        |

When comparing mating dates at this site, later dates than the current standard of 15 April were chosen. This was to check the alignment with future predictions of increased rainfall in this region. The current 15 April date relates to the lowest temperatures at lambing of any region (). This is a strategy that farmers in this region have chosen to attempt to have lambs ready for sale before the onset of dry summer conditions restricts feed availability. With a predicted increase in rainfall this requirement may be eased. The movement of lambing date 7 days later provided no improvement in lamb survival at either site. A fifteen day later lambing did significantly improve live lamb numbers (13 at both sites per 1000 ewes). This statistically significant result may provide no net benefit unless feed supply was improved as a result.

**Table 1.** Northern Southland Flat

| <b>Site</b>                       |                 |                       |                 |                 |            |
|-----------------------------------|-----------------|-----------------------|-----------------|-----------------|------------|
| <b>Northern Southland Flat</b>    |                 |                       |                 |                 |            |
| <b>Scanning percentage = 174%</b> | <b>Time</b>     |                       |                 |                 | <b>lsd</b> |
|                                   | <b>Present</b>  | <b>Future 1</b>       | <b>Future 2</b> | <b>Future 3</b> |            |
| Lambs lost (exposure of the ewe)  | 279             | 272                   | 269             | 264             | 4.<br>2    |
| Lambs lost (exposure of the lamb) | 136             | 134                   | 133             | 132             | 1.<br>6    |
| Live lambs per 1000 ewes lambing  | 1323            | 1331                  | 1336            | 1342            | 5.<br>7    |
| <b>System</b>                     |                 |                       |                 |                 |            |
|                                   | <b>85/15</b>    | <b>50/50</b>          |                 |                 | <b>lsd</b> |
| Lambs lost (exposure of the ewe)  | 273             | 269                   |                 |                 | 3.<br>0    |
| Lambs lost (exposure of the lamb) | 135             | 133                   |                 |                 | 1.<br>2    |
| Live lambs per 1000 ewes lambing  | 1329            | 1336                  |                 |                 | 4.<br>0    |
| <b>Mating Date</b>                |                 |                       |                 |                 |            |
|                                   | <b>15-Apr</b>   | <b>22-Apr</b>         | <b>30-Apr</b>   |                 | <b>lsd</b> |
| Lambs lost (exposure of the ewe)  | 273             | 275                   | 265             |                 | 3.<br>6    |
| Lambs lost (exposure of the lamb) | 136             | 135                   | 131             |                 | 1.<br>4    |
| Live lambs per 1000 ewes lambing  | 1329            | 1328                  | 1342            |                 | 5.<br>0    |
| <b>Feeding</b>                    |                 |                       |                 |                 |            |
|                                   | <b>Standard</b> | <b>Plus 0.2 kg DM</b> |                 |                 | <b>lsd</b> |
| Lambs lost (exposure of the ewe)  | 308             | 234                   |                 |                 | 3.<br>0    |
| Lambs lost (exposure of the lamb) | 131             | 137                   |                 |                 | 1.<br>2    |
| Live lambs per 1000 ewes lambing  | 1299            | 1367                  |                 |                 | 4.<br>0    |