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Livestock

Identifying causes for lamb losses in low rainfall mixed farming regions

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RESEARCH

Location: Minnipa Ag Centre
Rainfall
Av Annual: 325 mm
Av GSR: 241 mm
2012 Total: 253 mm
2012 GSR: 185 mm

Key messages

- **Ewes joined in late January 2012 scanned at 149% with 151% recorded at lambing and 118% at weaning.**
- **Autopsies found the majority of lamb deaths were due to the starvation, mismothering or exposure (SME) complex and premature or 'dead in utero' causes.**
- **Almost half of losses remained undiagnosed due to extensive predation prior to autopsy or disappearance of the lamb carcasses.**
- **Results suggest that managing ewe nutrition according to pregnancy scan results, controlling predator numbers and reducing mismothering issues through environmental factors are likely to increase lamb survival up until weaning.**

Why do the trial?

Survey data suggests that Merino weaning percentages in low rainfall regions vary from 80-90%. However pregnancy scanning indicates that percentages of around 130% are present in the uterus. This difference constitutes a loss of possibly 100,000 lambs annually on Eyre Peninsula (EP) alone. In most instances the failure is likely to be due to poor lamb survival which can occur due to a number of reasons involving the lamb itself, its genetics, the ewe and the environment.

Identifying the causes and timing of lamb losses may provide the opportunity to address these factors whereby a significant economic benefit accrues to the industry; however the first step is to establish where the issues are occurring in the reproductive cycle of the flock. The solutions to reduce lamb losses exist but there needs to be an accurate assessment of why the losses are occurring to implement the correct preventative strategies.

How was it done?

Research was carried out on Minnipa Agricultural Centre (MAC) through utilising the lambing program of an Australian Wool Innovation (AWI) and South Australian Research and Development Institute (SARDI) funded project 'Best Practice Wool Innovations on Eyre Peninsula'.

The 374 MAC flock ewes, ranging from 2006-2011 drop, were joined in 7 sire groups of approximately 50 ewes from 1 February until 12 March 2012. Sire group 7 consisted of 43 ewe lambs (2011 drop) that were 6-7 months old and heavier than 40 kg at joining.

The joined ewes were pregnancy scanned at 12 weeks on 27 April. Ewes were side-branded (for dam pedigree) and drafted into their sire groups for lambing on 8 June. Dry ewes were drafted from the flock and kept in a separate paddock over the lambing period. Seven sheltered paddocks ranging from 10-20 ha in size were chosen for lambing and ewes had a feed base including mallee scrub, saltbush, olive trees and wheat stubble with an understorey of medic, broadleaved weeds and annual grasses.

Lambing began on 28 June and finished on 9 August 2012. During this time daily observations were conducted and lambs were individually identified (for pedigree) at birth and tagged. To identify the cause of lamb losses from scanning until marking the following measurements were taken; birth weight (kg), birth type (single, twin, triplet or quadruplet), rectal temperature (°C), lamb vigour and dam maternal temperament (objective 1-5 score, with 1 being poor and 5 being excellent), and in the case of death prior to weaning, an autopsy to determine the cause (date of death and autopsy result).

This methodology provided the opportunity to identify the cause and timing of lamb deaths which were documented from the beginning of lambing on 28 June until weaning on 10 October 2012.

What happened?

The 2006-2010 (sire groups 1-6) drop ewes had a pregnancy scanning result of 162% equating to 538 lambs from 331 ewes with the ewe lambs (sire group 7) having a lower result of 48% equating to 21 lambs from 42 ewes.

Two ewes died of unknown causes in between scanning and lambing and 8 ewes died during lambing due to dystocia (abnormal or difficult birth) or other unknown causes. During lambing 563 lambs were tagged at birth (with a result of 151% for lambing) and 119 lambs died. One lamb died between marking and weaning, leaving 443 lambs surviving (with a result of 118% for weaning). The majority of lambs were born as twins (69%) and there were more ram lambs (53.2%) than ewe lambs (44.2%), with 2.2% of lambs born recorded as unknown sex due to predation and one lamb was born a hermaphrodite (0.2%).

Birth weight was measured from approximately 2-24 hours old and ranged from 2-8 kg, averaging 5 kg. The birth weights were also measured for lambs found deceased at the birth site. Rectal temperature was measured on living lambs only at the time of taking birth weight measurement and averaged 38.9°C (normal range 39-40°C, <37°C is critical, <35°C requires treatment). Maternal temperament averaged 3.6 for all ewes however was better in the 2006-2010 drop ewes compared to the 2011 drop dams and the average lamb vigour was 3.9.

The dams of the deceased lambs included 6 ewes that had died during the lambing period, 20 that had mastitis (which were hesitant to let their lambs feed) and 26 that were maidens. Due to predation, autopsies could not be conducted on 14% of lambs which were consequently recorded as 'undiagnosed' due to only finding parts of their bodies intact during daily observations (Figure 1). There were another 36% of lambs that existed and were tagged but were missing at marking time (the carcasses were most likely scavenged or predated before they could be recovered). These lamb deaths were recorded as 'not found' (Figure 1).

The lamb age at time of death ranged from less than 1 day to 47 days with an average age of 2.5 days, however the age at death of 43 deceased lambs was undermined due to predation. Of the deceased lambs there were 47 females, 60 males and 13 unknown (due to predation). Over two-thirds (82%) of deceased lambs were multiples. In the 'undiagnosed' and 'not found' categories, all lambs with a known birth type were multiples with the majority recorded as twins (63%).

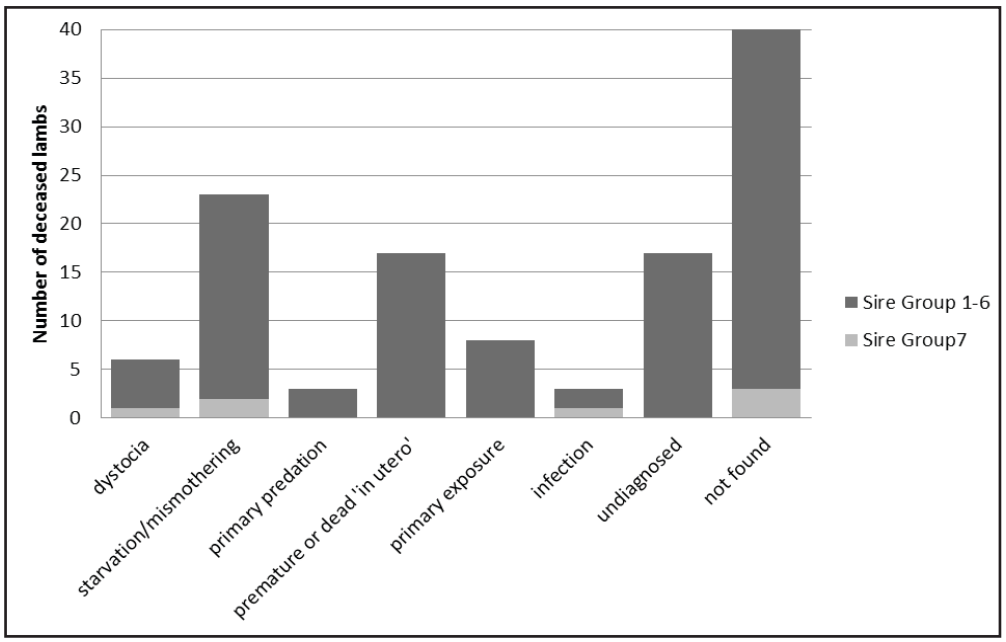

Figure 1 Autopsy results for the deceased lambs in the Minnipa Agricultural Centre flock 2012 drop from birth until weaning

Dystocia = abnormal or difficult birth

What does this mean?

The majority (72%) of known lamb deaths in the study were attributed to or associated with the complexity of issues involving starvation, mismothering and exposure (referred to as the SME complex), which is similar to industry records. It was suspected that the major cause of lamb deaths in the 'not found' and 'undiagnosed' categories could not be determined due to secondary rather than primary predation. These lambs were vulnerable and more likely to die in the absence of predation due to the relationship with multiple birth types and the SME complex, as well as other factors including maternal temperament, rectal temperature, birth weight and lamb vigour.

Nearly half of all pre-weaning deaths occur on the day of birth, therefore reducing the likelihood of lamb deaths within the first 24 hours will have a significant impact on lamb survival to weaning.

Recommendations to come out of the study include:

- Actively managing ewe nutrition during pregnancy according to scanning results, targeting a minimum body condition score of 3. Maintaining ewes in this condition will minimise the risk of dystocia and provide extra nutrition for multiple-bearing ewes, which will assist in increased lamb vigour and likelihood of survival past the 24 hour period.
- Using lick feeders for supplementary feed over the lambing period as opposed to trailing out feed will reduce the incidence of mismothering and will reduce flock stress during this time.
- Adequate paddock size for the number of lambs expected to be born and well planned placement of feed and watering points will also reduce mismothering issues, especially if interference during lambing time is a possibility (e.g. if mothering-up lambs). Suitable paddock shelter also plays a vital role in lamb survival (to reduce exposure risk).
- Managing future reproductive efficiency can be achieved by removing poor mothers from the flock as well as selecting ewes using Australian Sheep Breeding Vales (ASBVs) that are higher for number of lambs weaned. Traits can also be selected relating to birth weights if this is an issue and cannot be manipulated through ewe nutrition.
- Although predation is generally a secondary issue, predators and scavengers need to be controlled to avoid flock stress and predation on weak or abandoned lambs. A refined program needs to be in place at least a month before lambing to ensure pest numbers are controlled before lambing begins. Anecdotal evidence has indicated that alpacas and guardian dogs have an effect on reducing the losses caused by predators when placed within sheep flocks and could be used as part of the pest control program.

Opportunities arising from the results of this study are currently being assessed to minimise losses through management or genetic strategies. Identifying lamb losses will assist producers to recognise issues associated with lambing and subsequently improve sheep welfare conditions and enterprise profit.

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