20 Years of studying

Lamb survival - A tribute to Kevin Gerard Haughey

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Background
A major investigation was launched during 1987-1988 to obtain a clearer picture of the levels and causes of lamb mortality on Western Cape farms. The study was undertaken by the late Dr KG Haughey (at that stage recently retired from the University of Sydney) during a research fellowship of one year. Lamb mortality on individual properties ranged from approximately 10% to more than 40%. The bulk of deaths were associated with an incompatibility between dam and offspring. The two major classifications involved were deaths during birth, and lambs that succumbed due to poor maternal care. These classifications accounted for 84% of all lambs autopsied. Infection, congenital malformation, deaths before birth and predation accounted for the remainder of lambs, making these classifications of minor importance. Recommendations in the final report by Dr Haughey (dated 1989) stimulated further studies resulting in the following outcomes:

Levels and causes of reproduction failure in commercial sheep flocks (1990 – 1993)
Levels of reproduction failure were high to very high in the high potential district of Bredasdorp. Studies indicated that rearing failure was repeatable, and that selection progress in the current flock is likely. Results from experimental flocks accorded with contentions by Dr Haughey, namely that deaths during birth and lambs succumbing because of poor maternal care largely contributed to overall lamb deaths.

Radiographic pelvimetry methods were adapted for South African breeds. Repeated rearing failure of ewes was related to one or more pelvic dimensions in 3 out of 4 experimental flocks. However, relationships between pelvic dimensions, length of parturition and rearing failure was not strong enough to allow accurate predictions on an individual basis. Pelvic dimensions could thus not be used as an accurate indirect selection criterion for rearing failure.

Known management factors could not conclusively be related to reproductive failure in industry flocks. The exception was size of the breeding flock. This result could possibly be related to the findings pertaining to the impact of density of lambed ewes on the frequency of separation of ewes from one or more lambs. Separation of ewes from their lambs was also related to the period ewes spent on or near the birth site. These results led to recommendations that ewes should not be lambed in large mobs, and not be concentrated in small paddocks. The nature of lambing paddocks should not impair the bonding process between ewe and lamb, which could be facilitated by not forcing ewes to leave the birth site soon after birth in search of food or water.

Behavioural studies (1989 – present)
It was confirmed that aspects of maternal and neonatal behaviour were heritable. It also appeared to be related to lamb survival on a genetic basis, as reflected by the differences in predicted breeding values of lambs that survived compared to those that died. In contrast to the existing literature, selection progress in lamb survival – and the behaviour processes supporting it – seems attainable.

Breeding studies to investigate the improvement of rearing ability (1987 – present)
Genetic progress comparable to that achieved in other production traits were realised for number of lambs weaned and weight of lamb weaned per ewe joined. Selection for the ability of ewes to rear multiples resulted in behavioural adaptations conducive to lamb survival, reflected in an improved survival of multiple lambs in particular. These responses in lamb survival were supported by divergent genetic trends in behaviour traits that were derived for both ewes and lambs.

Responses in reproduction and behaviour were achieved with minimal unfavourable genetic changes in other traits of economic importance. The higher reproduction rate achieved by mature ewes selected for multiple rearing ability resulted in live weight and wool traits being compromised somewhat. This was not unexpected - the impact of bearing and rearing lambs on the performance of ewes is well known.

The visit by the late Dr Haughey stimulated all the aforementioned studies. It is therefore an honour to pay a tribute to his contribution to studies on lamb mortality and ewe rearing ability in the Western Cape. We can now confirm that the phenomenon is now much better understood than 20 years ago, primarily because of his inputs and ideas.