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Performance recording of NZ Corriedales

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Introduction

Personal photo archives (W.R.E Booker) dated from 1926, showed early Corriedale ewe lambs were phenotypically similar to a cross between Ryeland and Southdown sheep. Since then both phenotypic and productive traits have been dramatically improved. This paper will review the history of the breed improvement in NZ Corriedales from the perspective of a sheep breeder.

Prior to 1970 very little performance recording took place in the Corriedale breed. There was however a huge importance placed on phenotype with show ribbons and certificates being highly sought after not only for prestige among the breeder society but as they usually led to sales of rams to commercial breeders.

1970s: merit ewe scheme

In the early 1970s the Breed Council established the novel Merit Ewe Scheme concept. Stud flocks were screened for fertility and ewes that produced more than 150% lambing were included, subject to passing a visual inspection on breed type. Progeny of these ewes that had twins as a maiden automatically qualified. A “Merit Sire” was of above average quality, from a good fertility background. The scheme provided the basis of the first show production class where points were allocated based on assessment of the ewe and her offspring, including lamb weight.

Breeders could also send ewes for natural mating to another merit sire, which provided affordable access to high-merit rams for small breeders. The Breed Committee had started a very worthwhile initiative, but like many schemes, support dwindled as time progressed and the opportunity to establish full performance recording was missed. However, anecdotally, many merit-sires contributed to the pedigrees of future top-performing sheep.

1980s: the raw data era

In this period, farmers became more focussed on increased production as commercial awareness of the government subsidy programmes increased, notably, Supplementary Minimum Prices (SMP) and Land Development Encouragement Loans (LDEL). Wool and lamb production and livestock numbers increased considerably.

1980s Wool

Commercial ram buyers began to ask questions of their breeders; how much wool did their rams produce and how many lambs had their dams produced. Hogget fleece

weighing was adopted by many Corriedale stud breeders as it was easily measured by either simply weighing the skirted fleece or including every scrap of wool including the belly and crutch. Growers greasy fleece weights increased rapidly as did the micron of their clips. As a consequence, by the mid-1980s, Corriedale breeders began to take mid-side samples of hogget fleeces to test for yield and micron at the Lincoln University lab run by Jenny Nicol. Both sets of raw data were then presented to ram buyers who had to interpret for themselves the value of the fleece weight versus micron attributes of a sale ram.

1980s Lamb

Processors dealing with increased lamb numbers responded by reducing payments for smaller carcasses. Where previously a 13 to 14 kg carcass was the norm, suddenly better returns were available for larger lambs. This resulted in farmers keeping lambs longer to grow them bigger and worked so well that the processors started to penalise excess fat on these larger carcasses.

The hunt to find the right genetics to deliver heavy, lean lambs began. Weighing ram lambs in autumn became popular and lamb drafters would supply a grade of fat for each lamb (1 = very lean, 2 = medium, and 3 = fat). Biometric evaluation at Invermay Agricultural centre produced a simple regression equation with live weight adjusted for fat score. The penalties for over-fat lambs were so great that commercial ram buyers were quick to use this information. But they still had to reconcile this data with the wool data for a dual purpose sire.

1990s: move to performance recording

More traction for performance recording was gained when initial progeny tests were run in the 1990s. One of the first progeny tests was conducted at Lincoln University and managed by Denis Elvidge and Phil Beatson. Further progeny tests, led by David Cottle from WRONZ, were conducted on a breeder’s property using sires mated with randomly selected commercial ewes. This new concept for Corriedale breeders was received with great interest and high-performance sires were subsequently used by more breeders, especially if the ram’s progeny in the trial had ‘show type’ phenotypes.

2000s: Corriedale Gold Mark Scheme – the giant leap forward

This establishment of the Goldmark and Silvermark grading system was the turning point for improved genetics and financial returns for the Corriedale breed. It arose from a

meeting of breeders chaired by George Cruickshank of SIL in November 1999. A group of 16 performance-recording Corriedale breeders joined together in an across-flock analysis and used common link sires across their flocks. The breed aims were higher lambing percentage, greater milking performance and weaning weights, increased meat production and quality wool production.

Traits such as number of lambs born (NLB), weaning weight (WWT), and live weight at eight months of age (LW8) were measured as well as eye muscle area determined by ultrasound scanning of at least 50% of the male lambs born. Fleece weights of both male and female progeny at 12 months of age were also recorded.

This coincided with the establishment of SIL – Sheep Improvement Limited, a new genetic engine that utilised BLUP analysis. Each breeder participant received three reports during the year. In February, a report of the lambing data and weaning weight for the lambs born in the previous spring with a sire summary included. In July, a report of the LW8 and eye muscle ultrasound area. In November, a report on the final analysis was calculated using all the measurements of the large group of young sheep. The top 10% of both the rams and ewes were accorded Goldmark status (about 275 to 300 animals each year) following a visual inspection to ensure they were also of a good quality and of breed standard. The next 15% of two-tooth rams were labelled Silvermark rams.

This has been an unqualified success, with discerning ram buyers targeting the Goldmark rams from each flock. These rams give them a guarantee of genetic quality. Most importantly, a SIL Sire Summary report is produced, which compares all the sires used in the 16 stud farms. It is the progeny of one of those original Goldmark rams that are now setting the benchmark for top Corriedale sires today.

In 2005, a trans-Tasman Corriedale sheep recording project was explored and initiated involving SIL, Lamb Plan as well as one Australian and one New Zealand breeder. The result of this was that data sets from both breeding systems appeared to have quite a lot in common and, though some animals ranked differently, this was mainly due to the economic weighting assigned to each trait (Young et al. 2009).

Today, breeders exchange data three times per year for analysis and reports are generated in each country. Because of co-operation by a few key passionate breeders, the genetic pool of Corriedales has now greatly increased.

Results

Mid-micron overall index shows the Corriedale group is increasing in Index (50 cents per ewe lambing annually). There is room for additional gains as the top Corriedale flock is increasing at a similar rate but at a higher index, currently 100 cents more per ewe lambing than the group average (Figure 1).

Survival and NLB traits have increased in the Corriedale breed and have more room to improve as indicated by the High Ranking Flock. Wean Weight and

Figure 1 Mid Micron Overall Index. From 2003 onwards, the Mid-Micron Overall Index rate of increase per year is similar for both the Corriedale Group Average (CGA) and the High Rank Flock (HRF). The HRF has started from a higher genetic merit base and had an early rise in merit between 2000 and 2003.

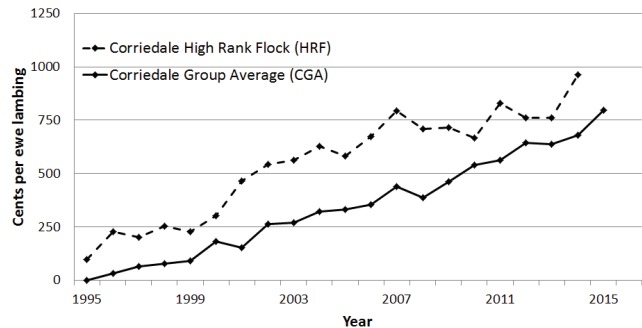
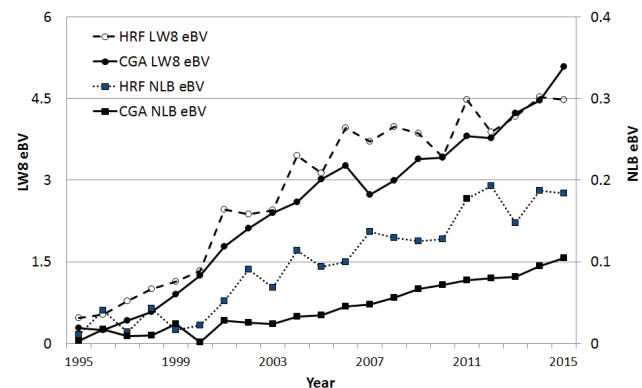


Figure 2 Liveweight at 8 months of age and numbers of lambs born eBV. A steady and similar rise in liveweight at 8 months (LW8) eBV has been observed in both the CGA and HRF flocks. NLB eBV has increased in both flock groups but is markedly higher in the HRF flock indicating there is room for the CGA group to improve within the NZ Corriedale group flocks.



LW8 continue to increase, but there is less difference between the groups for those traits (Figure 2). HRF = High Rank Flock, CGA = Corriedale Group Average.

Summary

The first steps to breed genetically superior Corriedale sheep started 40 years ago. From a basis of selection on phenotype, gradually a number of traits were measured. Results were reported initially in raw data form. Some early adoptees of performance recording still remain and many influential breeders joined over the decade from the mid-1980s. At present there are over 20 dedicated breeders in Australasia contributing to an across-Tasman analysis.

The potential exists to make significant gains by improving accuracy of data recorded, especially for contemporary management groups and less reliance on the age-old bias towards phenotype and show performance.

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