

The NZ Sheep Genetic Evaluation - Reproduction and Meat

S.McIntyre¹, S A Newman²

¹Beef + Lamb Genetics, Dunedin, New Zealand

²AgResearch, Dunedin, New Zealand

Sheep Improvement Limited (SIL) is run and supported by Beef+Lamb Genetics, a wholly owned subsidiary of the industry good levy funded Beef+Lamb New Zealand organisation. The national New Zealand Genetic Evaluation (NZGE) is run weekly with all flocks and all data included, producing 84 million BVs. The evaluation system allows custom evaluations but the majority of breeders use the breeding values and indexes generated by the national weekly evaluation. Currently genomic and phenotypic integration is a two step process reporting gBV's within the weekly NZGE.

Annually about 340,000 lambs are added from 615 performance recording flocks, of which approximately 80% are from maternal flocks and 20% from terminal sire flocks. The median maternal flock size is 625 lambs, with 84 flocks over 1000 lambs and 11 flocks over 3000 lambs per year. The largest maternal flock has 8750 new lambs added per year. The median terminal flock size is 225 lambs, with 38 flocks over 500 lambs and 7 over 1000 lambs per year.

Reproduction: In 2016, 61 flocks used DNA parentage but most of flocks single sire mate and tag at birth. The majority of animals in the evaluation have full parentage. The NZGE evaluates reproduction and survival (both direct lamb survival and maternal survival) as separate traits. Yearling fertility and litter size (number of lambs born per hogget mated) are analysed and reported as separate traits to adult reproduction. Since 2000 the average number of lambs born has increased by 13.5 lambs per 100 ewes. Survival has improved by 1.5 lambs per 100, even with a greater proportion of multiple births. In 2016 a non-linear approach to reproduction was introduced for the maternal reproduction sub-index. The relative economic weighting reduces as the number of lambs born (NLB BV) approaches 0.7 (equivalent to 2.13 lambs per ewe) reflecting the reduced value of increased numbers of triplet and quads in an outdoor, grass fed system. Values above 0.7 have a capped reproduction sub-index value of 1024c per ewe mated.

Growth and Meat: Weaning weight and weight at 6-8 months is recorded in maternal and terminal flocks, maternal flocks are also encouraged to record adult ewe liveweight at mating. The majority of terminal and many maternal flocks record an ultra-sound muscle scan of eye muscle depth, width and fat depth at 6-8 months. Approximately 60 flocks use this data to screen candidates for advanced meat measurement using computer tomography (CT). Progeny test flocks and some breeders use Viascan (video scan of lamb carcasses at processing) to capture meat information at slaughter. The meat module is currently being updated to include a wider range of data, including processor cutting/yield data, Dexa (x-ray) and meat quality information from live and carcass measurements.

The NZGE evaluation also has a strong focus on welfare/health traits, including facial eczema tolerance, internal parasite resistance and resilience, dag score, body condition score and wool bareness around the crutch and belly.

Current SIL developments include integration of genomic and phenotypic information in a single step evaluation, as well as further traits, including meat quality traits such as intramuscular fat (IMF), pH and tenderness.

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