

Capped Reproduction Index

SIL TECHNICAL NOTE

Relates to: Capped reproduction index, number of lambs born, non-linear reproduction, NZMW

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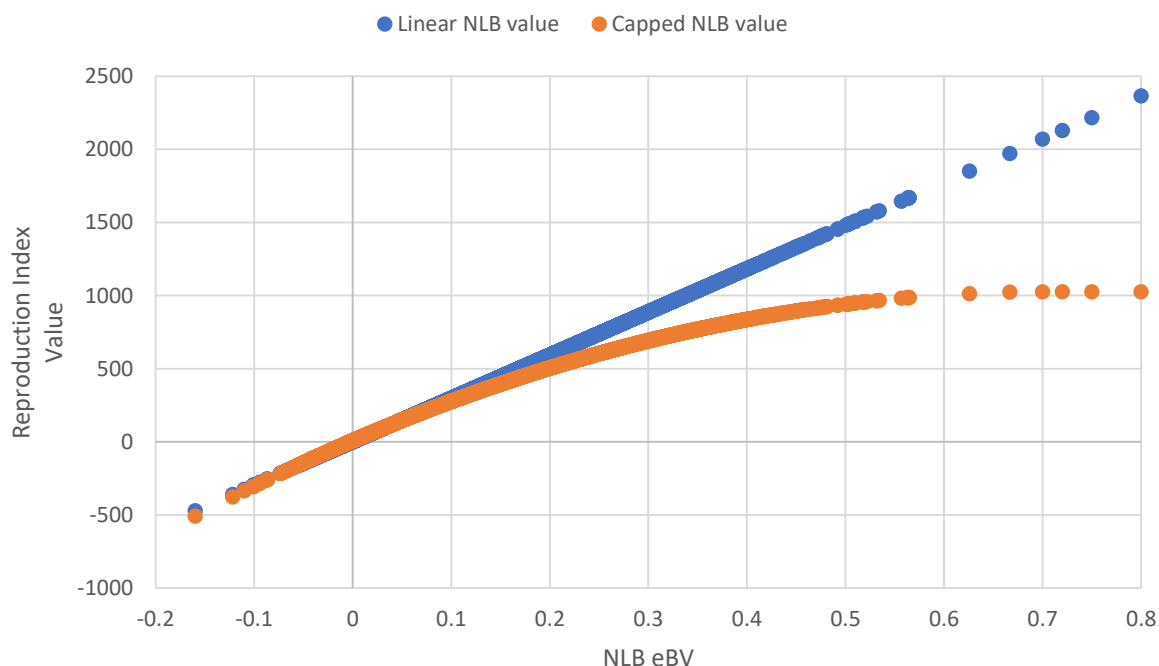
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Introduction

A new economic value to cap number of lambs born has been developed for implementation in the reproduction breeding objective. This addresses the concern that a constant linear economic value (reward) applied to all animals, regardless of the level of performance, over-valued NLB in highly prolific animals. While increasing the number of lambs born in less prolific flocks increases revenue per ewe, at high numbers of lambs born, ewe and lamb deaths may increase, ewes may not be able to rear all lambs and additional feed and labour are required. Therefore, in practice, profit per lamb per ewe decreases with increasing NLB and there is an optimum NLB above which increasing the number of lambs born becomes unprofitable. Economic analyses for 2016 found the optimum NLB in commercial flocks is approximately 2.13 lambs/ewe.

Capped reproduction sub-index

Capped Reproduction consists of a curved relationship between NLBeBV and the economic value at below optimum NLB levels, then a flat “capped” value above the optimum (see Figure 1). For each animal, the economic weighting applied to NLB depends on its NLBeBV, with the reward (economic value) decreasing until the optimum value is reached, where the economic value becomes constant regardless of the NLBeBV. Figure 1. Reproduction index values when calculated with linear NLB economic value or capped NLB economic value.



NZ Maternal Worth index (NZMW)

When incorporated into the New Zealand Standard Maternal Worth index (NZMW), the capped reproduction mitigates the risk of very prolific genetics driving individual's total index value. As individual NLBeBVs approach the optimum there is a decreasing reward for extra lambs born until NLBeBV exceeds the optimum at which point the contribution of Reproduction to the index becomes capped.

For average rams, there is little change in total index value going from a linear to capped economic value for reproduction. However, rams that were high ranking mainly due to an extremely high NLBeBV dropped in rank. With capped NLB, top rams for NZMW are better balanced for lamb growth, adult size, wool and survival.

NLBeBV reporting

The actual NLBeBV can also be reported indicating an individual's genetic merit for number of lambs born, to allow comparison of animals with the same capped reproduction index value.

NZGE and capped reproduction

Because different analyses based on different numbers of flocks result in different breeding values, determination of the optimum NLB level is analysis specific and the capped reproduction sub-index calculations are only relevant to the NZGE analysis. This means that the NZMW index will only be available for the NZGE analysis.