



Reproductive Trait EBVs

What They Do:

Estimated breeding values (EBVs) based on reproductive performance evaluate the genetic potential for prolificacy (the number of lambs a ewe is expected to produce per lambing), and her ability to raise those lambs to weaning. The Number of Lambs Born (NLB) EBV reflects the genetic effects of prolificacy separate from environmental factors. The Number of Lambs Weaned (NLW) EBV is calculated independently of NLB and evaluates the number of lambs a ewe actually weans. This EBV credits ewes that not only have multiple births, but keep their lambs alive until weaning. Reproductive traits have low heritability with most variation due to management and environment.

How to Measure:

Measurement for reproductive traits consists of simply recording the birth type and rearing type (single, twin, triplet, etc.) of each lamb. When entering data, there are specific instructions for how to code lambs based on birth type and rear type, including those that are stillborn or that die any time between birth and weaning, including accidental deaths and orphaned lambs that are grafted or artificially reared.

How They Are Applied:

Reproductive Trait EBVs are expressed as a percentage above (+) or below (-) the breed average. Each Reproductive Trait EBV is simply added to that base average to estimate an animal's breeding value. Although lowly heritable, a ewe with an NLB EBV of 0.10 means that she has the genetic potential to give birth to an average of 10% more lambs than the breed average (210%) in her lifetime, so a 220% lifetime lambing percentage. Because her daughters inherit half that genetic potential from their dam, an average of 0.05 (5%) more lambs are expected compared to the breed average. The significance of reproductive trait EBVs may be more easily understood at the flock level. For example, a flock of 100 ewes who averages 0.12 NLB EBV has the genetic potential to produce 12% more lambs annually compared to an average flock.

Things to Consider:

Selecting for higher NLB EBVs will increase the number of triplet births and reduce the number of single births over time. With appropriate management and nutrition this could mean more lambs to sell and higher revenue. A low input system may prefer NLB EBVs closer to the breed average, yielding mostly twin births. The NLW EBV is the most important predictor of gross income, especially in commercial flocks, and the most heavily weighted trait in the USA Hair Index. The relationship between the NLB and NLW EBVs needs careful consideration. Highly prolific ewes (e.g., NLB > 0.30) are not expected to have NLW EBVs much above that level because only the most exceptional ewes can repeatedly birth large litters and successfully raise every lamb to weaning year after year. In contrast, a ewe with a more moderate NLB EBV (e.g., 0.02) is likely to birth twins consistently and is expected to raise them without fail annually, resulting in an NLW EBV several times higher (e.g., 0.06). The NLW EBV can sometimes be unfairly punitive because it does not take into account lamb losses that occur outside a ewe's control such as accidents, predators, or mismanagement. Unlike other EBVs which are the result of direct measurements of a lamb's performance, NLB and NLW are predictions of a lamb's future reproductive performance. It is important to note that a ram's reproductive trait EBVs will have no influence on the NLB of ewes he is bred to, instead only on the future productivity of their offspring.