

# Planned breeding using new technologies

Identifying breeding objectives is fundamental to planned cattle breeding. So who sets breeding objectives? If we are honest with ourselves we will answer 'I do', though, may be not, under that heading. Breeding objectives are the combination of various selection criteria with their respective "weightings" or emphasis that we choose to place on each criteria. We must get it right as they frequently directly affect our herd and profitability for the next 13-16 years. Furthermore, as we understand the issues surrounding 'setting breeding objectives' we appreciate that there may be several "best" bulls at an individual sale. So; don't just bid on a bull because someone of industry renown is bidding on that animal; they may not understand or may have very different objectives to you.

The decision made when choosing a bull/s for the herd this year will influence the enterprise profitability for the next 10 to 15 years. When buying bulls, or selecting a bull/s to use in the herd, producers make their choice by 'weighing up' many factors, including their current herd performance, the environment under which the herd is grazed and the market specifications for the turn-off animals. The selection decision is based on identifying which bull/s, from those available with relevant information, will meet the needs of the herd and enterprise, while balancing the incremental differences in one trait relative to another.

Recently, beef producers have had increased opportunity to use new technologies additional to BREEDPLAN and a Bull Breeding Soundness Evaluation in their selection decisions. Selection is frequently based on intuitive 'feelings' about the relative value of a range of traits, including fertility, growth, structure, carcase and temperament, with the producer comparing all the relative traits in all the animals on offer to come to the choice of one, or a few, bull/s or heifers as the case may be. Whilst genetic progress is greater when focusing on individual traits, in selection, the greatest overall and profitable progress in any herd is when all traits are progressed, with varying degrees of emphasis, at the same time.

The process of combining a number of attributes or traits into a single breeding decision is setting a breeding objective. The breeding objective should be comprised of all the traits that affect profit plus some indication of the relative emphasis each trait should receive. Hence, there is no single bull in a 'multi vendor sale' that meets the needs of all producers and all markets.

With respect to bull selection, the bull for your herd must FIRST be fertile in order to pass on the desirable traits to the progeny. Too often I am told by beef producers that they want fertile bulls; yet they pay top \$ for the fattest bull on offer.

Reasoning and beauty can get confused! Therefore, the number one criteria must be for a bull to have passed a Bull Breeding Soundness Evaluation as evidenced by an Australian Association of Cattle Veterinarian certificate. The certificate is your passport for greater confidence that he can pass on his desirable genetic traits to produce adequate progeny. The development of structural soundness genetic differences (EBVs) for leg and hoof conformation (in some breeds) will provide marginal benefits in a fertility trait largely influenced by semen quality and mating ability.

Many beef producers have experienced the definite benefits afforded the bull buyer using the various growth EBVs in addition to carcase EBVs. With increased attention to meat quality, more recently, genetic differences have been developed for temperament from either flight speed measures, crush or yard test scores. These are used similar to the regular EBVs with a positive larger docility EBV being more desirable (available by limited breeds). Since animal temperament is an important component of meat quality, the docility EBV is incorporated with the DNA markers for tenderness to produce a Tenderness EBV. Likewise for marbling, the ultrasound scan measures for % intramuscular fat have been available for some years. However, the introduction of DNA markers for Marbling will enable the combination of the ultrasound measure with the DNA result to produce a single EBV for percent intramuscular fat.

To establish the selection criteria, start planning by identifying the relative impact of the various traits affecting your herd's production requirements alongside the market specifications. An example could be to list these listed criteria across the top of a page with objectives like "increase calving rate by 10%", "decrease calving difficulty by 5%", increase weaning weight by 20kg, "decrease P8 fat depth by 5mm" and so on. Down the left of the page, list the various selection traits with all honesty and identify which on-farm and market traits are met by your selection criteria. Then across each selection criteria identify how each contributes to your breeding herd performance by satisfying either on-farm or market specifications.

A more definitive method for this process is to objectively link :

- the current herd performance for a range of economically important traits,
- the costs of production in the current herd,
- the target market specifications,
- the returns for the traits affecting market specifications, and
- the alternative sires / dams with relevant information to achieve these selection decisions.

Many breed societies have produced \$Indexes for target markets such as “Domestic”, “Jap Ox” and in other cases high marbling markets. These indexes rank available animals with genetic productivity criteria as the critical components and are appropriate to balanced selection decision. A computer program called ‘BreedObject’ enables an output as a \$Index combining various weightings applied to a range of traits. The single \$Index is reported as a genetic difference between the animals to which it is applied and quoted as an Estimated Breeding Value (EBV). A herd or region specific \$ Index can be considered using this facility on the web.

Never before has cattle breeding had so many positive opportunities for selection. However, the basic criteria remain the same with the need for beef producers to remain objective and focussed on traits that are measurable, heritable and economically important to their business.

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