A BREEDPLAN Guide to Animal Selection

TIP SHEET

The breeding decisions that a beef producer makes today will have a significant impact on the genetic progress and associated profitability of their herd into the future. Profitability of the herd will be influenced by the number of calves (fertility), the weight of the calves (growth) and the quality of the calves (carcase), less the cost of production. All of these components are influenced by genetics.

With the selection and purchase of an individual breeding animal being a long-term investment, it is important that beef producers take care to select the most profitable animals for their particular production system.

BREEDPLAN BEST PRACTICE GUIDE TO ANIMAL SELECTION

BREEDPLAN recommends using selection indexes (where available) as part of a selection strategy which also includes other selection tools (e.g. EBVs and visual assessment). By initially ranking animals using an appropriate selection index, beef producers ensure balanced selection for traits important to their production system.

The BREEDPLAN best practice guide to animal selection is to:

1. Identify the selection index of most relevance to you.

2. Rank animals using the chosen selection index.

3. Consider the individual BREEDPLAN EBVs of importance.

4. Consider other traits of importance.

1. IDENTIFY THE SELECTION INDEX OF MOST RELEVANCE

A number of breed societies publish selection index(es) for production systems in which their breed is commonly utilised. When deciding upon a selection index to use, beef producers should first consider which of the available selection indexes best represents their own production system. For seedstock producers, this may be the production system of their bull buying clients.

To assist beef producers in choosing the most relevant selection index for their production system, BREEDPLAN publishes a Using Selection Indexes tip sheet for each breed. These tip sheets contain an overview of each of the available Selection Index(es), and, for breeds with multiple indexes, may include a decision tree to help beef producers refine their selection index choice. All Selection Index tip sheets can be found in the Help Centre on the BREEDPLAN website.
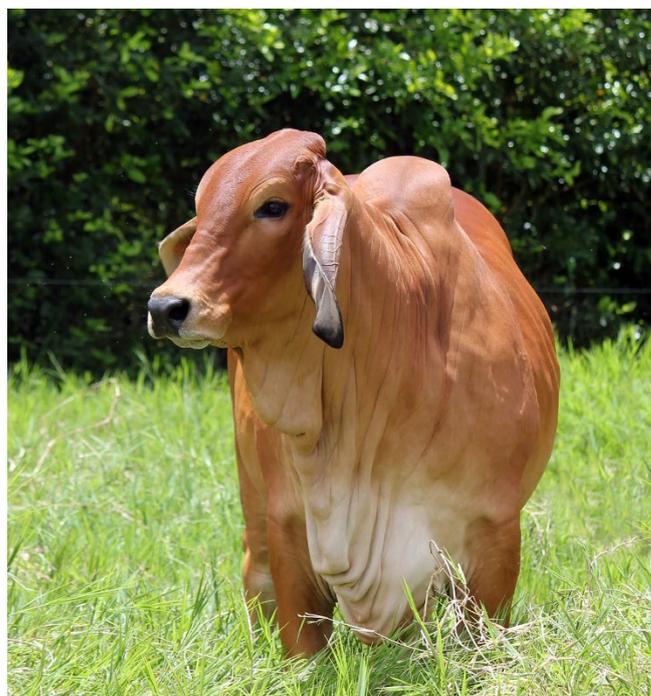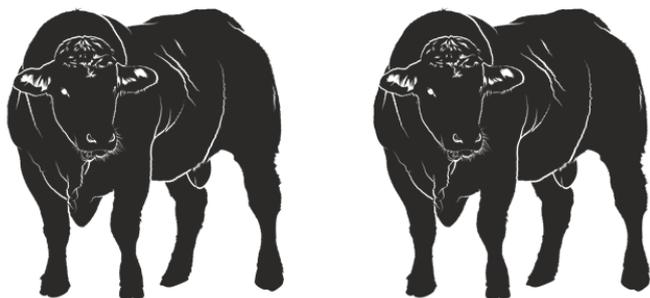
Bull 1

Index = $60

Bull 2

Index = $30

Difference in Net Profit Between Progeny of Bull 1 and 2

= ½ x difference in Selection Index value

= ½ x ($60-$30)

= $15 per cow mated

For those beef producers who are interested in further refining the selection index(es) using herd-specific production information and marketing goals, please see the information regarding the development of customized indexes on the [BreedObject website]. The BreedObject website can also be used to view international selection indexes and apply these to animals of the same breed in a different country (e.g. apply New Zealand Selection Indexes to Australian registered animals).

It is important to note that selection indexes can only be used to rank animals within the same BREEDPLAN analysis (i.e. not across breeds). Furthermore, it is not appropriate to compare index values of different selection indexes, even within the same BREEDPLAN analysis, as they are based on different production model assumptions. This means that breeders should not compare Selection Index A values with Selection Index B values.

Remember, identifying the selection index of most relevance to the production system that the animals will be used in is of utmost importance. Using the wrong selection index will compromise any subsequent selection decisions that are made.

2. RANK ANIMALS USING THE CHOSEN SELECTION INDEX

Once a beef producer has decided which selection index is the most relevant to their situation (or that of their clients), animals being considered for selection should be ranked on the chosen selection index. Ranking animals on their selection index value sorts them based on their progeny's expected profitability for the targeted production system. Animals can be ranked by selection index using the web search facility available for the breed. Individual online sale and/or semen catalogues can also be sorted via the web search facility.

As is the case for EBVs, producers can use selection indexes to identify where an animal ranks compared to other animals of the same breed. This should be done by comparing the individual animal's selection index value to the current breed average value and to the percentile band table. The EBV Percentile Graph (shown below) provides a visual representation of where the individual animal sits relative to the rest of the breed. Current breed average and percentile information for each selection index should be available from sale catalogues and can also be accessed via the web search facility on the breed society website.

50th Percentile is the Breed Avg. EBVs
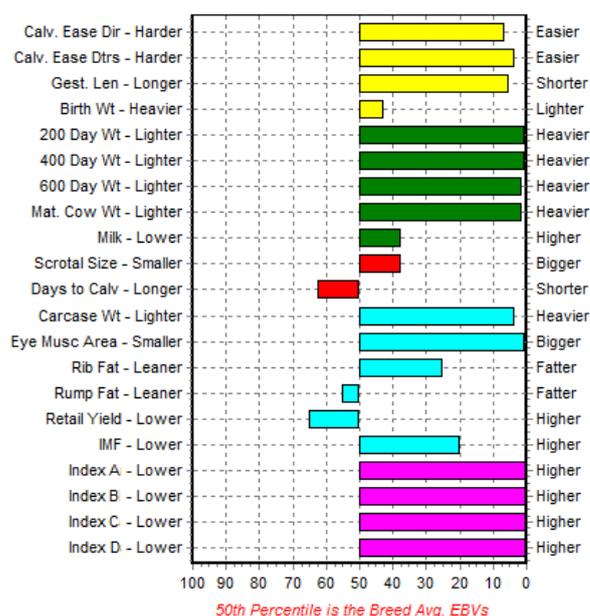
3. CONSIDER INDIVIDUAL BREEDPLAN EBVS OF IMPORTANCE

After ranking animals on the chosen selection index, beef producers are advised to consider the individual BREEDPLAN EBVs of importance to their herd. This is because a selection index is a weighted index, with multiple EBVs contributing to the final selection index value. Therefore, animals which have the same selection index value can have different EBVs for individual traits. For example, both Bull A and Bull B below have a selection index value of $63; however, they differ in their growth and calving ease values. Consequently, Bull A should be a better choice for those that are looking for a bull to use over heifers. Bull B will give more growth than Bull A but should only be considered for mature cows.

Some examples of EBVs of importance that beef producers may pay particular attention to include:

1. Calving Ease EBVs - these may be of particular importance for those beef producers looking to use a bull over heifers.

2. Milk EBVs – these may be of particular importance for beef producers in environments that will not readily support high milking cows.

3. IMF EBVs- these may be of particular importance for those beef producers interested in meeting MSA specifications.

One simple way in which a beef producer can consider individual EBVs is to set an acceptable range around all individual EBVs of particular importance. While animals are still initially ranked on the chosen selection index, any animal with individual EBVs that fall outside of the acceptable range would be excluded from selection.

Minimum and maximum values can be set for each EBV trait using the web search facility available for the breed.

It is also important to note that not all EBVs are currently included in the calculation of the selection index values. For example, while a topic of ongoing research, Docility, Flight Time, Structural Soundness and Shear Force EBVs (where available) are not currently utilised in selection indexes. In a similar manner to that outlined above, if these EBVs are of particular importance to an individual herd, then once animals have been ranked on the chosen selection index, any animal with an EBV that falls outside of an acceptable range for these traits should be excluded from selection.

4. CONSIDER OTHER TRAITS OF IMPORTANCE

While selection indexes take into account the available performance information on an animal, it is important to recognise that they do not consider all the traits of functional and economic importance. Consequently, when using selection indexes to assist with animal selection, it is important to also consider other information that may not be accounted for in the index.

Additional information that beef producers should consider during animal selection includes:

- **Pedigree**
  An important consideration for beef producers seeking to avoid inbreeding in their herds (and the associated heightened risk of genetic conditions being expressed). Pedigree information should be available in the sale catalogue and/or via the breed society website.

Ident	CE Dir	CE Dtrs	GL	BWt	200	400	600	MCW	Milk	SS	CWt	EMA	Rib	Rump	RBY	IMF	Docility	Index A
Bull A	+3.0	+1.2	-3.5	+1.1	+13	+28	+45	+62	+9	+1.1	+27	+1.8	+0.3	+0.5	-0.6	+1.3	+4	$63
Bull B	-2.8	-3.2	-2.1	+2.1	+24	+42	+66	+68	+2	+0.6	+41	+1.9	+0.8	+0.9	-0.8	+1.2	+20	$63
Breed Avg. EBVs	+0.5	+0.8	-2.0	+1.5	+20	+33	+45	+47	+7	+1	+29	+1.6	+0.1	+0.2	+0.7	+0.2	+18	$51

- **Bull fertility (e.g. BULLCHECK™/Bull Breeding Soundness Evaluation)**
  Fertility is crucial for the bull to be functional in the herd. While a bull might have BREEDPLAN EBVs in the Top 1% of the breed, unless he is fertile and able to successfully serve cows and produce calves, then his EBVs are irrelevant. Many producers are now including bull fertility information in their sale catalogues.

- **DNA test results for genetic conditions and/or qualitative traits (e.g. horn/poll, coat colour)**
  To assist beef produers in managing genetic conditions and qualitative traits in their herds, all available DNA test results should be considered. These may include DNA test results for horn/poll status, coat colour and/or any genetic condition(s) prevelant in the particular breed.

- **Visual assessment (e.g. structure, temperament)**
  All animals being considered for selection should be visually assessed to ensure that they are structurally sound. While traditionally assessed in person on sale day, many vendors are now including structural assessment scores in their sale catalogues. These, along with any photos and videos, allow potential purchasers to evaluate each animal's structure prior to sale day. **An animal that has poor structure should not be used in a breeding program**, no matter how good its BREEDPLAN EBVs or Selection Index values are. Similarly, each animal should be assessed to ensure it has good temperament.

PRE-SALE PREPARATION FOR BULL BUYERS

With BREEDPLAN EBVs and Selection Indexes, pedigree information, DNA test results and BULLCHECK™ information readily available (online via the web search facility for the individual breed and/or in sale catalogues), beef producers should be able to complete the majority of the steps outlined in the BREEDPLAN Best Practice Guide to Animal Selection prior to sale day. The advantage of doing so is that a shortlist of suitable bulls can be prioritised for inspection on sale day.

With this done, all that remains on sale day is for the bull buyer to do a final pre-sale check on each of the shortlisted bulls. Any bull that does not meet structural and/or temperament assessments should be taken off the shortlist. With a final list of prospective bulls, it is time to bid, hopefully successfully, on one or more of the shortlisted bulls. By following this system, the bull buyer is able to purchase a bull (or bulls) that meets all of their requirements, including genetic merit.

Additional considerations:

- Developing a **secondary list** of potential bulls to purchase is worthwhile, in case those bulls on your primary shortlist do not pass your visual assessment and/or sell above your budgeted price. This second-tier group may require you to relax some of your BREEDPLAN EBV or Selection Index thresholds. For example, if you initially wanted a bull in the Top 20% of the breed for a particular trait, you may consider dropping this to the Top 25% or Top 30% of the breed for your secondary list.

- BREEDPLAN analyses are run on a regular basis (i.e. fortnightly or monthly basis for most breeds). If you have created a shortlist of bulls several months in advance of the sale, consider **reconfirming your shortlist of bulls** in the days ahead of the sale.

SUMMARY

Beef producers should use BREEDPLAN information (e.g. EBVs and Selection Indexes) in conjunction with other information (e.g. visual assessment) when making animal selection decisions. This guide describes a strategy where both of these sources of information can be combined to select the most suitable animals for your (or your clients) production systems.

Most of the steps outlined in this guide can be completed ahead of sale day. This allows buyers to generate a shortlist of animals for purchase that have suitable genetics for their production system. On sale day, buyers are then able to concentrate on doing final assessments (including visual appraisal) of their shortlisted animals prior to auction.

For more information regarding the BREEDPLAN guide to animal selection, please contact staff at your BREEDPLAN processing centre.