Selecting Animals with Selection Indexes

The Selection Index value for an animal is effectively an EBV of the animal's profitability in a defined commercial production system and market. Ranking seedstock animals on their Selection Index value sorts them based on their progeny's expected profitability for the targeted production system.

As a guide to using Selection Indexes, it is recommended that producers complete the following steps:

(i)   Identify the Selection Index of most relevance
(ii)   Rank animals on the Selection Index
(iii)   Consider the individual EBVs of importance
(iv)   Consider other traits of importance

1. Identify the Selection Index

As mentioned above, a Selection Index value for an animal is effectively an EBV of the animal's profitability in a particular commercial production scenario and market. Consequently, before using Selection Indexes, producers should identify the index that is of most relevance to their particular production system. For seedstock producers, this may be the production system of their bull buying clients.

In order to identify the most relevant Selection Index for use, it is recommended that producers:

❑   consider the description of the Selection Index
❑   take into account the main profit drivers within the production system that the Selection Index is describing
❑   evaluate the weightings that are being put on each EBV within the Selection Index

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 potentially compromise any subsequent selection decisions that are made.
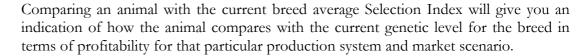
2. Rank Animals on Selection Index

Once the Selection Index of most relevance has been identified, the animals available for selection should then be ranked on that particular Selection Index.

When ranking animals on the Selection Index, producers should take into account the following points.

❑   Selection Indexes can not be used to rank animals across breeds. As with EBVs, the Selection Indexes for animals of different breeds are calculated within different BREEDPLAN evaluations. Consequently, Selection Indexes can only be used to compare animals with other animals of the same breed.

❑   Producers can use Selection Indexes to see where an animal ranks compared to other animals of the same breed by comparing its Selection Index value to the current breed average value and to the percentile table.

Comparing an animal with the current breed average Selection Index will give you an indication of how the animal compares with the current genetic level for the breed in terms of profitability for that particular production system and market scenario.

A set of breed average Selection Index values should be enclosed in all BREEDPLAN reports, sale catalogues etc. and will look similar to the table below.

Breed Average Index Values for 2006 Born Calves		
Supermarket	Long Fed	EU
+46	+46	+51

If we consider an example where an animal has a Supermarket Selection Index value of +52, comparison to the above breed average value indicates that the animal is expected to have genetics that are more profitable than the current genetic level of the breed if the animal is used within this production scenario.

While comparison to the breed average allows us to assess whether an animal is expected to have genetics that are more or less profitable than the current genetic level of the breed, this can be taken further by comparing the animal's Selection Index to the Percentile Table. Comparison to the Percentile Table allows us to assess exactly where the animal ranks within the breed for each particular Selection Index.

If we consider the animal in the above example with the Supermarket Selection Index value of +52, comparison with the Percentile Table below indicates that the animal is in fact ranked in the top 20% of the breed for that particular production scenario and market endpoint (see circled information).

Example Percentile Table

	Supermarket ($)	Long-fed ($)	EU ($)
Top 5%	+58	+64	+68
Top 10%	+55	+59	+64
Top 20%	+52	+54	+59
Top 30%	+49	+51	+56
Top 40%	+48	+48	+54
Top 50%	+46	+46	+51
Top 60%	+44	+44	+49
Top 70%	+43	+42	+47
Top 80%	+41	+39	+44
Top 90%	+38	+36	+41
Top 95%	+36	+34	+38

As with the breed average EBVs, a Percentile Table should be enclosed in all BREEDPLAN reports, sale catalogues etc.

3. Consider Individual EBVs of Importance

While Selection Indexes combine all the available EBV information to provide an indication of an animal's overall genetic merit, it may still be important to pay attention to the animal's individual EBVs for traits of particular importance.

For example, producers may pay attention to:
- Calving Ease EBVs if they are planning to use the bull over heifers
- Milk EBVs if they are looking to turn some calves off as vealers
- IMF EBVs if they are want to specifically improve the marbling in their herd

In order to consider the animal's individual EBVs, it is recommended that producers set maximum/minimum EBV ranges for the individual traits of particular importance. Animals should firstly be ranked on the Selection Index of relevance but then any animals whose individual EBVs fall outside of the acceptable range be excluded from selection.

For example, in the situation stated above where a bull is being selected for use over heifers, animals should be ranked on a particular Selection Index but then any animal that has a Calving Ease Direct EBV below a certain level be excluded from selection. If Calving Ease Direct EBVs are not available, then excluding animals with a Birth Weight EBV above a certain level might be a suitable alternative.

4. Consider Other Traits of Importance

While Selection Indexes take into account all the available performance information on an animal, they do not consider all the traits of functional and economic importance. Consequently, Selection Indexes should be used in association with visual assessment for other traits of importance that may not be accounted for in the EBVs (eg. structural soundness, temperament).

For more information regarding the use of Selection Indexes or simply Selection Indexes in general, please contact staff at BREEDPLAN