MateSel
Optimised Mating Allocation

Deciding which bull is mated to which cow has a major impact on the rate of genetic improvement, inbreeding levels and overall profitability being achieved by a herd.

MateSel enables breeders to optimise breeding outcomes by creating a suggested mating list based on a list of candidate sires and dams.

MateSel is a valuable addition to the BREEDPLAN suite of tools and provides beef cattle seedstock producers with a guide for objectively optimising mating allocations to reflect their breeding goals and creating long term, sustainable genetic gains. The genetic gains are based on a nominated selection index, while constraints are applied on inbreeding to ensure genetic diversity is maintained or improved.

Developed by Brian Kinghorn at the University of New England, MateSel has been implemented in the American pig industry to great effect with sustainable genetic gains being achieved whilst maintaining diversity, all resulting in improved profits.

What does MateSel do?

MateSel creates a list of optimal matings for a group of candidate animals limited by parameters as set by the individual breeder. Using the MateSel software a breeder can:

- Set parameters and constraints for the MateSel analysis such as the desired breeding objective (i.e. a target selection index) and the breeding strategy being targeted including "Diversity", "Balanced" or "High Gain".

- Nominate a list of candidate sires and dams for the breeding program. This can range from a specific list of animals that are known to be available, to a broad list of potential animals for the breeding program.

- Select a list of candidate females available for mating based on inventory lists, age groups, last calving and registration status.

- Specify mating groups to suit their joining program including such things as heifer versus mature cow matings, and natural versus AI matings.

- Set maximum usages for sires and minimum cow mob sizes for natural matings.

Once the MateSel analysis is completed based on the breeder specified parameters, a MateSel report and suggested mating allocation list will be provided (in csv format).

The MateSel report consists of several sections including:

1. Mating list sorted by sires.

2. Mating list sorted by dams.

3. Summary outcome statistics comparing dams, sires and progeny.

4. Graphs showing effect of MateSel strategy on BREEDPLAN EBVs and Indexes.

5. Graphs showing effect on inbreeding and age structure.

What Benefits does MateSel have for Individual Breeders

MateSel enables individual breeders to:

- Maximise the rate of genetic gain in their herd and manage inbreeding at the same time.

- Add significant value to their business by way of additional genetic gain and management of inbreeding to offset the cost of pedigree and performance recording.

- Save significant time previously spent compiling mating lists.

- Make informed decisions about semen purchases, which bulls to use, animal selection or culling, mating group formation and mate allocations.

- Include objectivity and proven science in their mating decisions.

How do Breeders Access MateSel?

There are 2 simple steps involved in the MateSel analysis:

1. The breeder nominates a list of candidate sires and dams.

2. The breeder outlines the MateSel parameters including the "target" selection index, maximum number of matings for each sire, minimum cow mob size for natural matings, and selects from one of three breeding strategies ranging from "High Gain", "Balanced" and "Diversity".

The above information is provided to a BREEDPLAN MateSel operator via an Microsoft Excel template available on the BREEDPLAN website.

Development is underway so that BREEDPLAN members will be able to access the MateSel software through a web-interface via a secure login and undertake the MateSel analysis on their own herd, in their own time, without the need for a consultant or BREEDPLAN MateSel operator.

Can MateSel be utilised by all Seedstock Herds?

As MateSel optimises the rate of genetic progress based on a Selection Index, MateSel can only be utilised by herds that are:

■ A current member of BREEDPLAN.

■ A member of a Breed Society that has at least one selection index published.

■ A member of a Breed Society that has an ILR2 pedigree and performance database system.

Example MateSel Reports

Figure 1. Example MateSel mating list sorted by candidate dam
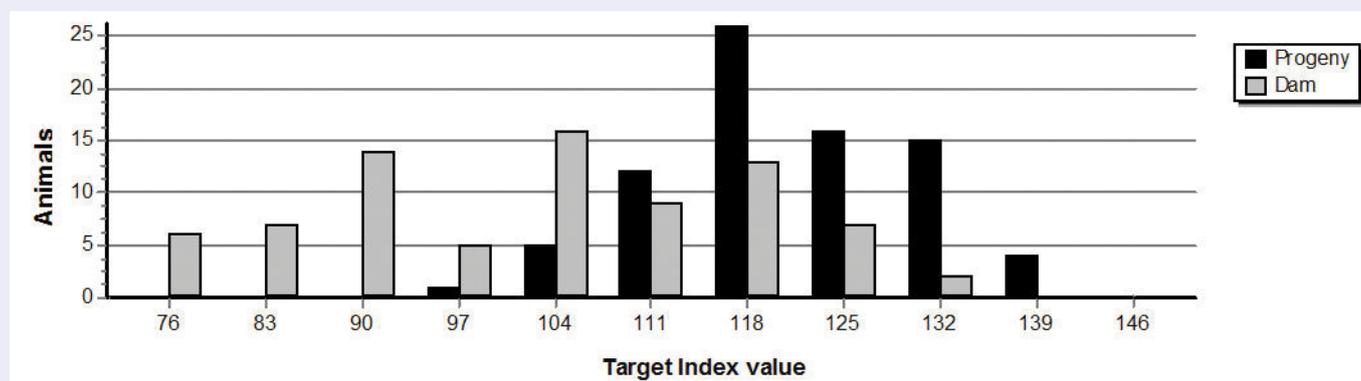
Figure 2. Selection index distribution of potential progeny compared to candidate dams