Enhancements to Santa Gertrudis BREEDPLAN Analysis

July 2013

A number of significant enhancements will be applied to the BREEDPLAN software used to calculate EBVs for Santa Gertrudis animals. They will be applied first in the July 2013 Santa Gertrudis GROUP BREEDPLAN analysis, then in all subsequent analyses.

The enhancements include:

- **Upgrade to BREEDPLAN Version 6.2** – The latest version of the BREEDPLAN software has several enhancements including:
  - A revised method for the calculation of accuracy values for Days-to-Calving (DTC) EBVs. This results in an increase in accuracy of DTC EBVs for animals (i.e. dams, sires with daughters) that have multiple natural joining records analysed.
  - A change in the minimum age of first calving to 270 days for the Days to Calving analysis (originally 650 days) allowing animals that were joined as yearling to be included in the analysis.
  - The addition of Flight Time EBVs. Higher (i.e. Longer) Flight Time EBVs are more favourable and indicate a relatively longer time taken to exit the crush and hence better temperament. For example, a bull with an EBV of +0.80 would be expected to on average produce progeny that took 0.7 of a second longer to exit the crush than a bull with an EBV of -0.60.
  - A revised method for handling different groups of “base” animals (as outlined below) and the ability to “blend” genomic prediction information into the analysis will also be included. Note that genomic prediction information is not currently being included in the Santa Gertrudis analysis however the pathway is available through version 6.2 to allow this to happen when genomic predictions relevant to Australian Santa Gertrudis are available.

- **Transition to a full crossbred analysis model** - With the growing frequency of Santa Gertrudis-content crossbred animals being performance recorded and available for the Santa Gertrudis analysis, the model has been changed to better handle the performance records available on crossbred animals. Performance records are now pre-adjusted for both direct and maternal heterosis based on breed content of calf and cow. This change means that contemporary groups may now comprise both purebred and crossbred animals, allowing head-to-head comparisons where such breed types are being run together.

- **Revised method for handling different groups of “base” animals** – animals without complete pedigree in the BREEDPLAN analysis are referred to as “base” animals and the analysis must determine how to allocate a “solution” for the contribution from the unknown parent/s. In the current Santa Gertrudis analysis, base animals are grouped based on different periods of use (historic vs current) as well as imported genetics and different breeds (as used to create crossbred Santa Gertrudis genetics). A revised method for handling these different “genetic groups” of base animals has been implemented in the upgrade to BREEDPLAN v6.2 which results in an increased number of groups which better represent the source of the genetics. Animals within each group are assigned a starting value equivalent to the average EBVs of the group. As additional information becomes available for an individual animal (e.g. progeny performance) the EBVs will change to reflect this information, including an increase in EBV accuracy.

- **New Genetic Parameters** - The genetic parameters and adjustment factors utilised within the Santa Gertrudis GROUP BREEDPLAN analysis have been re-estimated by the Animal Genetics & Breeding Unit (AGBU). The genetic parameters include the heritability of each trait
and the correlations between the different traits. The adjustment factors are those required for 
the performance records to remove the non-genetic effects of age and age of dam. This 
included all traits apart from the direct abattoir carcase traits (as there was insufficient Santa 
Gertrudis data to allow estimation).

The re-estimation of genetic parameters is a standard practice that is undertaken periodically for all 
breeds. It ensures that the BREEDPLAN analysis is kept relevant for the given cattle population, in 
this case Santa Gertrudis.

**Please Note: The above enhancements will result in EBVs and Selection Indexes changing 
significantly for most animals. In some cases, the rankings of animals may also change.**

If you have any questions regarding the enhancements to Santa Gertrudis GROUP BREEDPLAN or 
changes in EBVs resulting from the enhancements please contact Paul Williams Santa Gertrudis TBTS 
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