November, 2001 saw the implementation of BREEDPLAN Version 4.2. EBVs from Version 4.2 analyses will be a more accurate prediction of the animal's genetic merit for carcase traits. The primary reason for the upgrade was to permit incorporation of new genetic parameters for abattoir carcase traits based on the final estimates from the Beef CRC1 straightbreeding project. The main changes were increases in the heritabilities for intramuscular fat % (IMF) and retail beef yield % (RBY). These increases resulted in changes to both EBVs, with the main effect being a spreading of the EBVs and the re-ranking of some animals. Alterations to the genetic correlations among the abattoir carcase traits and between these traits and scanning traits also resulted in changes to the EBVs of some animals. Also included in the new V4.2 analysis was a negative genetic correlation (-0.20) between the fatness traits and the female fertility trait of days to calving. That is, genetically leaner females tend to have higher (ie. longer) days to calving. Another feature included in Version 4.2 is its ability to use MSA marble score records from designed progeny tests as an important source of data for computing the IMF EBV.

Additional analyses of the Beef CRC data were used to establish the magnitude of the genetic relationship between each of the abattoir carcase traits (rib and P8 fat, IMF, RBY%) when cattle were finished on either grass or grain or to domestic versus export market weights. Estimates of the genetic correlations were very high (close to one) between grass versus grain and between domestic market weight compared to export market weights. The genetic expression of these traits (ie. the magnitude of the additive genetic variances) increased for grain feeding and at heavier weight. These were extremely important results for BREEDPLAN. The near unity correlations across finishing regimes and across market weights suggests little or no-re-ranking of sires for their progeny’s performance for each of the carcase traits. These results justify the earlier decision to publish only a single set of carcase trait EBVs in BREEDPLAN and help ensure simplified breeding programs (ie. only need one EBV for each trait). The increased genetic variation resulting from different production and market weights regimes can be considered when deriving breeding objectives in BreedObject.

**Flight time to aid tenderness selection**

As part of AGBU’s cooperation in the Beef CRC, researchers have estimated a significant genetic relationship between temperament and meat quality in tropically adapted breeds of cattle using Beef CRC data. The research used records of flight time, a temperament measure based on the time an animal takes to move a specified distance after exit from a crush, and shear force of a sample of the striploin taken on Brahman, Belmont Red and Santa Gertrudis cattle. Flight time is heritable (h² = 29%) but more importantly the results of this research indicate that flight time can be used to select cattle with more tender beef. Animals with higher flight times (ie. slower exit, and thus quieter temperament) have a genetic tendency towards more tender meat (rg = -0.53). These results have inspired further research within the new Beef CRC project. Industry trials are also underway assessing the use of flight time as an objective measure of temperament in temperate breeds. Flight time is simple to record, requiring little additional equipment that can be quickly added to most existing yard setups. The equipment includes two light beams 1.7m apart with results fed to a display monitor or directly into a computer. This equipment is now commercially available through Ruddweigh International Scale Company, Guyra, NSW.

Flight time should be measured at weaning and again at yearling on all calves and the records submitted to BREEDPLAN. This information will be used for future development of a flight time EBV. A new flight time EBV could be used by breeders of tropically adapted cattle to select for improved meat tenderness, in addition to improving flight time itself. For further information regarding flight time and its measurement, contact AGBU or the Beef CRC.