

THE 2008 WINTER AMERICAN MURRAY GREY ASSOCIATION GENETIC EVALUATION REPORT

Introduction

This report contains a summary of the Estimated Progeny Differences (EPDs) calculated in the 2008 Summer GROUP BREEDPLAN analysis of the Murray Grey breed. This analysis evaluated the integrated pedigree and performance databases of Murray Grey animals in Australia, New Zealand, America and Canada. Coupled with these databases was data from several UK herds.

The 2008 Summer Murray Grey International GROUP BREEDPLAN genetic evaluation analysed performance records from 22,775 sires and 122,468 dams in the calculation of these EPDs. The number of performance records analysed continues to increase, indicating the continuing commitment of Murray Grey breeders worldwide to breed improvement.

GROUP BREEDPLAN estimates the progeny differences for individual animals (EPDs) using all available information on the animal as well as its progeny and close relatives. The calculation of EPDs takes into account the influence of management, environmental effects and non-genetic effects. GROUP EPDs provide the best figures available on the relative performance of animals for several important traits.

This report **DOES NOT** attempt to identify the best animals for use in **YOUR** breeding program. To select an animal for your breeding program you should consider the animal's performance overall, take all its EPDs into consideration and use these figures to predict how that animal will improve your herd. GROUP EPDs used in conjunction with assessment for structural soundness, fertility, mature size and muscling will help take a lot of the guess-work out of cattle breeding.

The Analysis

The EPDs published in this Genetic Evaluation Report were produced using the latest version (version 4.3) of GROUP BREEDPLAN software. This model is an advanced implementation of the Best Linear Unbiased Prediction (BLUP) technology for across-herd genetic evaluation of beef cattle and was developed at the Animal Genetics and Breeding Unit (AGBU) at the University of New England in Australia.

This evaluation is based on a wide range of information including the performance of the individual and its relatives for a number of traits, the genetic relationships between the traits and the pedigree links between animals and between herds. EPDs are reported relative to a base of zero set for each trait using historic performance records for the Murray Grey breed.

GROUP EPDs - Traits Reported

Calving Ease EPDs: are based on calving ease (CE) scores, birth weights and gestation length information. Calving Ease EPDs indicate how this animal influences the birth of its progeny. More positive EPDs are favourable and indicate easier calving.

Birth Weight EPD: indicates the genetic potential for birth weight. The lower the birth weight EPD of a sire the lighter is the birth weight potential of his progeny.

Scrotal Size EPD: is an indicator of fertility in males, which passes on in part to female relatives. Increased scrotal size is associated with increased fertility in male progeny and with earlier age at puberty of male and female progeny.

Milk EPD: reflects extra calf weight which is due to the genetic influence a sire has on his daughters' milking and mothering ability. Bulls with above average Milk EPDs are expected to sire daughters with above average milking potential. To improve milk in your female herd, select bulls with well above the current breed average EPD and with high accuracy. An animal's Milk EPD is usually less accurate than its growth EPDs because of the lower heritability of the trait and the time lag before the performance of the daughter's calves becomes available.

Weaning Weight EPD: is an estimate of an animal's genetic potential for growth to weaning. This trait should be emphasised if you are selecting cattle to finish for the lightweight domestic trade. It is also important to consider the maturity patterns required for this trade.

Yearling Weight EPD: is an estimate of an animal's genetic potential for yearling weight. This trait should be emphasised where you are targeting the domestic and/or yearling trade, or where you require increased weights of your vealers.

Comparing Animals on Performance Using EPDs

EPDs are a tool that will help you to make more "educated" decisions when you are choosing breeding stock. However, **always** remember to consider the many other important traits such as structural soundness.

1. Use the EPDs of a sire and dam to predict the outcome of the mating

It is easy to do. Take a bull with an EPD of +30 for WW for example. The dam will also contribute to half of the calf's genetics. If the dam's EPD for WW weight is +10 then the calf would be expected to have an EPD of +20.

2. Compare EPDs to estimate the difference in output from two sires

Sire 1 has an EPD for WW of +40 and Sire 2 has an EPD of +20 for the same trait. The difference is 20 lbs. That is, calves from Sire 1 would be expected to be +20 lbs on average heavier than those from Sire 2 at weaning if used on dams of similar genetic value and breed, run under similar conditions. Over a single year's drop of 30 calves this difference amounts to a potential production increase of 600 lbs live weight.

3. Compare Sires with the Current Murray Grey Genetic Level

The current genetic level for the breed can be determined from the average EPDs for all calves born in 2006. These average EPDs are shown in Table 3.

Table 3: Average GROUP EPDs for the 2006-drop calves analysed in the 2008 Summer Murray Grey GROUP BREEDPLAN

CE-Direct	Birth Weight	Milk	Weaning Weight	Yearling Weight	Scrotal Size
-0.22	+2.8	+3	+17	+26	+0.33

If you are interested in using a sire with a Weaning Weight EPD of +20 then comparison to the above averages will show you that the sire is above the current average genetic level for the breed for growth to weaning.

By then comparing the sire's EPDs to the full set of percentile bands shown in Table 4, you can determine that for weaning weight the sire is in fact in the **top 35%** of the current genetic level of the 2005-born calves.

Table 4:

Percentile Band	Calv. Ease (%)	Birth Wt. (lbs)	205 Day Wt. (lbs)	365 Day Wt. (lbs)
Top 30%	-0.55	+1.98	+21	+33
Top 35%	-0.66	+2.20	+20	+31
Top 40%	-0.77	+2.42	+19	+30
Top 45%	-0.99	+2.64	+18	+28
Top 50%	-1.10	+2.86	+16	+26

Statistics of the 2008 Summer Analysis

The continued increase in submission of data for evaluation in the Murray Grey International GROUP BREEDPLAN analysis reflects the support of Murray Grey breeders world wide to objective measurement of their cattle as a means of genetic improvement.

Table 5: Basic data from the Murray Grey analysis

	2006 Winter	2007 Summer	2007 Winter	2008 Summer
No of Sires	21,931	22,323	22,539	22,775
No of Dams	118,955	120,263	121,294	122,468
Birth Weight	143,885	147,715	150,565	153,662
200 Day Wt	122,103	124,134	127,125	129,223
400 Day Wt	79,877	81,648	83,264	85,197
600 Day Wt	51,784	53,174	54,298	55,692
Mature Wt	11,762	12,142	12,609	13,058
Scrotal Size	10,800	11,407	11,619	12,084
Scan	24,594	25,645	26,214	27,207
Carcase	763	775	775	777
Gestation Length	11,996	12,471	12,684	13,051
Days to Calving	35,230	36,025	36,684	37,363

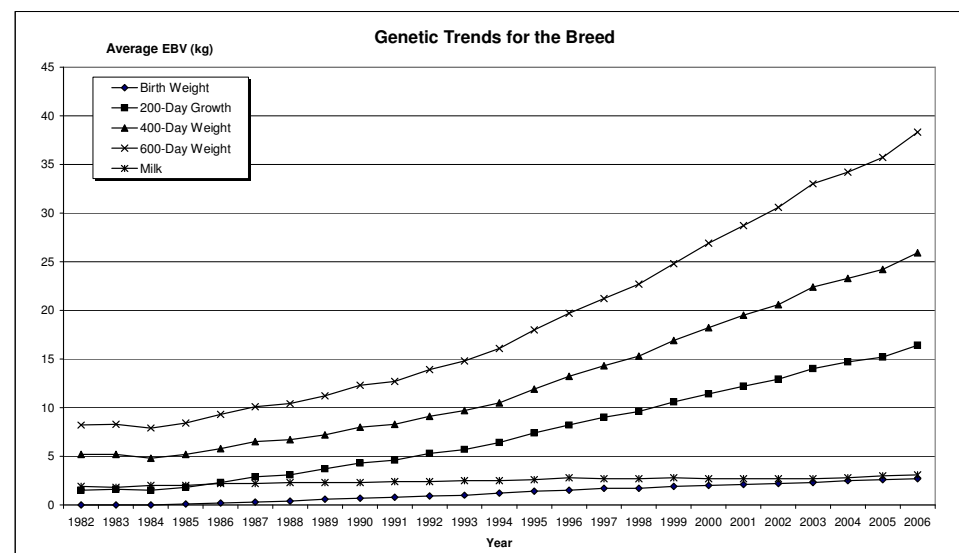
Table 6: Average American Murray Grey Performance Values

Year	Females			Males		
	BW Num Wt	WW Num Wt	YW Num Wt	BW Num Wt	WW Num Wt	YW Num Wt
2001	236 70.9	161 548.1	59 772.7	155 75.4	114 568.6	27 972.0
2002	183 70.5	101 528.2	45 794.5	158 76.0	90 596.4	25 969.2
2003	184 71.3	111 524.7	37 804.3	111 77.2	46 637.4	17 1030.7
2004	157 73.7	108 546.0	51 809.8	101 79.6	69 613.2	33 967.6
2005	140 75.7	85 556.2	20 805.6	128 78.8	58 638.4	20 1049.8
2006	109 74.5	71 563.5	22 721.9	80 79.6	54 633.7	20 992.5

Genetic Trends 1982-2006

The GROUP BREEDPLAN analysis allows for the production of genetic trends, an indication of the genetic progress in participating herds. In Figure 1, the average Estimated Breeding Values for calves in each year are shown as an estimate of genetic trends for the growth and milk traits.

The breed has made significant genetic progress since 1982. Over these years there has been a slight increase in the average EPDs for birth weight and milk, while significant gains have been made in growth.



Note: Murray Grey BREEDPLAN results are calculated using software developed by the Animal Genetics & Breeding Unit, a joint venture of NSW Agriculture and the University of New England.