

Profiling Some Performance Measures of Australian Simmental

Peter Speers

Chief Executive Officer, Simmental Australia
July 1996

- Polled vs Dehorned
- Simmental vs Black Simmental
- Influence of Frame Score

An examination of the 1996 Simmental Group Breedplan evaluation provides some interesting insights to the variation in genetic traits within the 4,152 sires analysed. Some of these are summarised below and may assist in defining benchmarks for the breed.

Trait Abbreviations

200W 200 day weight (kg) (Growth to 200days of age)
 400W 400 day Weight (kg) (Weight at 400 days of age)
 600W 600 day Weight (kg) (Weight at 600 days of age)
 BW Birth Weight (kg)
 CED Direct Calving Ease (%) (Sire's influence on his progeny's calving ease)
 CEM Maternal Calving Ease (%) (Sire's influence on his Daughters' calving ease)
 DC Days to Calving (days) (Interval from date bull put with cow to calving date - a Sire Trait)
 EMA Eye Muscle Area (sq cm) (Measured at 12/13 rib site)
 FS Frame Score (1 - 10 score based on hip height : age in months)
 GL Gestation Length (days) (using artificial insemination data only)
 Milk Milk (kg) (Allocation of weight gain to 200 days due to milk influence)
 RibF Fat depth (mm) at 12/13 rib
 RumpF Rump Fat depth (mm) at P8 site
 SS Scrotal Size (cm) (Scrotal circumference - lateral)

Polled versus Dehorned versus Black Simmental

Not all Sires have been recorded for horn status. Sires with recorded horn status included 462 Polled and 921 dehorned. There are 40 Black Simmental sires analysed.

Their average profiles are summarised relative to those of "All Sires":

Weight and Carcase

	No	Aver.	EMA	Rib	Rump	200W	400W	600W
	Sires	FS	EBV	EBV	EBV	EBV	EBV	EBW
All Sires	4,152	6.9	-0.3	0.0	0.0	4.6	7.2	6.8
Black SIM	40	N/A	1.3	0.2	0.4	9.6	18.1	16.3
Polled	462	6.4	0.0	0.0	0.0	6.9	11.8	10.1
Dehorned	921	7.0	0.0	0.0	-0.1	6.6	10.4	10.5

This analysis shows Polled bulls are smaller framed (by 0.5 FS), but similar in weight and carcase traits to dehorned sires. Black Simmental sires on average had higher breeding values for muscling and fat cover. Their EBVs for weight traits were also higher on average than both polled and dehorned Simmental sires.

Fertility

	SS	GL	DC	BW	CED	CEM
	EBV	EBV	EBV	EBV	EBV	EBV
ALL Sires	0.0	-0.1	0.6	0.7	-0.2	-0.3
Black SIM	0.8	-0.6	-0.2	1.0	-1.0	1.0
Polled	0.0	-0.1	1.1	1.0	-1.4	1.5
Dehorned	0.1	-0.1	0.1	1.0	-1.0	-0.4

Very little difference between these sire groups for the fertility traits. However, Black Simmentals' EBVs are a little better than polled and dehorned sires for SS, GL and DC. Little difference exists between Polled and Dehorned sires, with Dehorned sires producing a little easier calving daughters.

Profiling Influence of Frame Score

When selecting for desired traits it is important to consider the likely impact on other traits. In this paper, I have analysed one trait, *Frame Score*, for its effect on other traits. This trait was selected as it is one trait influencing "*maturity pattern*", an important current requirement in the Australian beef industry.

Selection to Reduce Frame Score

In the ASBA performance database, only 174 sires could be evaluated for Frame Score (FS).

Results indicate individual sire selection could improve both fat and muscling, while retaining selection intensity for growth and fertility traits. Sires "Within a Frame Score Range" are compared for some of these traits.

Numbers of Sires with Frame Scores and EBVs for Other Traits

FS Range	GL	CED	CEM	DC	SS	BW	200W	400W	600W	Milk	EMA
< 5.5	22	2	1	14	16	22	22	22	22	22	5
5.5 - 6.5	41	10	2	20	26	39	41	41	41	41	19
6.5 - 7.5	68	12	4	23	34	67	68	68	68	67	20
7.5 - 8.5	41	10	3	15	21	41	41	41	41	40	6
> 8.5	10	2	1	1	5	9	10	10	10	10	2
ALL	174	34	11	69	98	170	174	174	174	172	50

Weight Gain

While increases in Frame Score show corresponding increases in average EBVs for weight gain, there is plenty of variation in weight EBVs in sires from 5.5 to 7.5 Frame Score.

So it is possible to select lower frame size sires with moderate to high weight EBV.

Relationship of Sire Frame Score on 400 day Weight EBV (Number of sires in each Frame Score Range)

400WT	22	41	64	37	10	174
	< 5.5	5.5 - 6.5	6.5 - 7.5	7.5 - 8.5	> 8.5	All sires

Average	5.1	14.5	15.9	17.2	17.5	14.6
Maximum	18.0	36.0	45.0	46.0	34.0	46.0
Minimum	-22.0	-13.0	-21.0	-3.0	-2.0	-22.0

Milk

There is a tendency for average Milk EBV to increase slightly with increasing FS.

However this average is swamped by the large variation in all FS ranges for Milk EBV. Hence, if the aim is to increase Milk, this can be equally achieved in all FS sires.

Muscle

There is very little difference in average EMA EBV between frame sizes, although the smallest framed sires were less muscled. There appears to be more room to improve muscling in sires from FS 5.5 to 7.5 than in either smaller or larger FS sires.

Fat Depth

There is a tendency for average Fat Depth EBVs to decrease slightly with increasing FS. There is generally more scope to increase Fat Depth EBV in smaller framed sires.

Calving Ease

With limited records it is difficult to define a trend. However, both of the largest framed sires had poorer Direct Calving Ease EBVs, with average CED EBVs similar for other smaller framed sires. No clear trend was evident in Calving Ease (Daughters) EBV.

The best scope for improvement appears to lie with the FS 6.5 to 7.5 sires.

Gestation Length

This contributes to Calving Ease, and unlike Calving Ease EBVs, all sires had GL EBVs, improving the reliability of these trends.

As FS increases so does average GL EBV. Further, while there are shorter GL EBV sires in each FS group, there appears to be more scope for improvement in GL by using lower FS sires.

Birth Weight

Another contributor to Calving Ease. Increases in Frame Score show corresponding increases in average EBVs for Birth Weight, with FS 5.5 to 6.5 sires having an average BW EBV 1 kg lighter than FS 7.5 to 8.5 sires.

Again there are some shockers in each FS range, but fortunately there is more room to reduce BW EBV by using lower FS sires.

Days to Calving

A good indicator of fertility. Very little difference in average DC between FS groups. However, more scope to lower the days to calving by using sires under 7.5 FS.

Scrotal Size

Another good fertility indicator, and already a strength of the breed.. Little differences in average EBVs, although largest FS sires were the least exciting. All other FS groups had good variation and offer scope for genetic improvement.

SUMMARY re Frame Score

It appears from my analysis that lowering Frame Score in the breed from the current average of 6.9 by half to one FS will not adversely affect genetic performance levels in other traits. To the contrary, there is equal to more scope for genetic improvement in Weight Gain, Milk, Fertility, Calving Ease, Muscling and Fat Depth in sires with FS between **5.5 and 7.0**.