RELATIONSHIPS BETWEEN CARCASE MEASURES AND ESTIMATES OF MEAT QUALITY TRAITS IN STEERS WITH DIVERSE GENOTYPES AND HAVING DIFFERENT PRE-FEEDLOT GROWTH TREATMENTS

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Eating quality is predicted from carcase measurements in the model developed by Meat Standards Australia (Thompson 2002). Laboratory measures are also useful to describe meat quality (Perry *et al.* 2001). In this paper we examined the relationships between model predictions and various carcase and laboratory measurements in steers with varying genetic potential for carcase traits, and grown at different rates before feedlot finishing. The design of the large Beef CRC study generating the current data was reported by McKiernan *et al.* (2005). Data were analysed for treatment effects using a linear mixed model procedure (Gilmour *et al.* 2002).

Table 1. Meat quality traits in steers with diverse genetic potential for retail beef yield (RBY%) and intramuscular fat (IMF%), grown slow (S) or fast (F) before feedlot finishing

	Sire carcase type								Growth	
	High RBY%			High RBY/IMF		High IMF%			S	F
Sire source[1]	**Char**	**Lim**	**Ang**	**Ang**	**WagR**	**Ang**	**WagB**			
Numbers of prog.	48	54	106	101	63	103	64		249	290
Trait								**s.e.d**[2]		
Shear force (N)[3]	40.6	42.7	38.8	38.3	42.5	39.9	37.9	n.s.	39.8	39.9
IMF (%)	2.96	3.20	3.67	4.49	4.15	4.24	4.75	0.33	3.75	4.17*
USmarble score[4]	320	306	351	375	355	375	381	14	357	356
AUSmarble score	1.16	0.98	1.43	1.62	1.40	1.60	1.65	0.13	1.45	1.45
Strip. PEQ (%)[5]	57.4	56.7	57.9	58.6	57.4	58.5	58.5	0.4	58.0	58.0

[1] Sires were chosen to establish diverse genetic potential in their progeny based on available EBVs or on likely potential as assumed breed characteristics - from Charolais, Limousin, Angus and Wagyu (Black and Red) – restricted numbers of sires precludes breed comparisons.
[2] (mean) *s.e.d.* shown for traits with significant effects of sire carcase type ($P<0.05$); * F > S ($P<0.05$).
[3] Warner-Bratzler shear force expressed as Newtons (= kg force x 9.81).
[4] MSA chiller assessment data for US and AUS-MEAT marble scores.
[5] Predicted eating quality (PEQ) for the striploin cut (MSA - STRO45aGRL) - data from MSA model, given as sensory scores, equivalent to taste panel palatability assessment (CMQ4 - %).

IMF% was the only trait significantly affected by growth path (Table 1). The carcase types performed largely as expected in the ranking of IMF% and marble scores. Shear force was well related (negatively) to predicted eating quality (from the MSA model), and both were highly associated with intramuscular fat as assessed by either laboratory assay or visual marble scores, supporting the effect of fat measures in the MSA model. These results also provide good evidence that high yielding genotypes can produce meat of acceptable eating quality, although it is likely to be lower than that from genotypes with higher potential for fat deposition.

There was little variation in the predictions of palatability from the MSA model. Thus, small differences in predicted means for eating quality were statistically significant. If such (or larger) differences are detectable at the consumer level remains to be seen - this will be examined by sensory test data yet to come.

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