

Scanning for Marbling - Its Role in Feedlots and for Genetic Evaluation

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- CRC research has greatly helped the development of scanning for marbling.
- Marbling scans are now widely used in the stud industry. BREEDPLAN EBVs are calculated over 90% from scans with a little abattoir data (see <http://breedplan.une.edu.au> for Breednotes on Scanning, Carcase EBVs and an accredited scanner list).
- Drafting feedlot steers on marble scan is not nearly as well proven, but offers potential if done at the right time (around 70 days). This paper mainly discusses issues in relation to feedlot scanning.

The merit of scanning for marbling is still controversial in some circles. Often the controversy is due to misunderstandings between different situations - whether it is being used on feedlot cattle or stud cattle, for example. The technology is now well accepted and widely used for **genetic evaluation** by the majority of studs and breed societies in Australia and North America. Some breeds/stud breeders remain sceptical, however. The situation is less clear for use in **feedlot drafting**. Here are a few thoughts to aid the debate.

For **genetic evaluation**, bulls and heifers in stud herds are scanned when they are in as good a condition as possible. By combining the scans with the pedigree links, only comparing like treated animals, and producing BREEDPLAN EBVs, good predictions of the ranking of sires are being obtained. If, for example, 10 daughters, and some

half brothers of a bull are scanned, it doesn't matter too much if a few of the scans are out a little - we still get a good picture of the sire. The American stud industry was a little slower to fully utilise scanning, but is now realising its value. US Angus recently published a 'white paper', suggesting they should consider dropping abattoir data, and rely mainly on scanning for their Sire Evaluation. This paper highlights that there are many potential errors in abattoir carcase measures and scores. The problems of smaller biased groups of steers finally being slaughtered together, and lack of full pedigrees on steers are also mentioned.

Scanning in feedlots to draft cattle is quite different, for two main reasons:

When using scans to draft, (a) accurate readings are needed on each individual; and (b) there is no back up from the pedigree and correlations.

Current scanning equipment is calibrated to work best below 8% intramuscular fat (Ausmeat score 3). This suits most seedstock cattle, but long fed steers generally go over this level of intramuscular fat. They also have thick surface fat (and very dirty coats) by this time, which makes imaging of the underlying muscle more difficult. Often, moderate scanning correlations with chiller assessments from such cattle are then used to criticise the whole technology. The accuracy of visual, chiller assessed, marble score is also of course rather variable. This contributes to the lower correlations, but is rarely blamed by those criticising scanning.

A CRC experiment at "Tullimba" research feedlot, cast some more light on the role of scanning in feedlots. Dr Hutton Oddy and several colleagues were involved. The main aim was to test different protein diets, but scanning was also evaluated.

Table 1. Relationships between scan and abattoir IMF%, at various stages of feeding.

Days on Feed at Scanning	CARCASE MEASURES			SCAN/ABATTOIR IMF%	
	Weight (kg)	Fat Depth (mm)	IMF%	Correlation	% Variation Explained
30 Head Slaughtered					
Day 70	287	13	5.6	0.78 ⁺	62
Remaining Cattle					
Slaughtered Day 184					
Day 70	(287)	(13)	(5.6)	0.60 ⁺⁺	36
Day 182	386	23	9	0.42 ⁺⁺	17

⁺ correlation to Day 70 slaughter results

⁺⁺ correlation to Day 184 slaughter results

Two hundred Angus and Shorthorn steers, with BREEDPLAN pedigree links, were fed for 184 days.

After a 70 day settling in period, all cattle were scanned, and 30 head were slaughtered as a benchmark. The remainder were divided into treatment groups for the remaining 114 days. They were scanned every 35 days during this time, culminating in a last scan 2 days pre slaughter.

The group of cattle scanned and slaughtered on day 70 had a scan

correlation of .78 with the abattoir IMF% test (intramuscular fat, by chemical extraction). These cattle averaged 287kg dressed, with 13mm P8 fat and 5.6% IMF. (Another way of expressing this correlation of .78, is that scanning explained 62% (0.78 squared) of the variation measured in the carcasses).

After 184 days, and the final slaughter, the scan/abattoir correlation had dropped to around 0.4 (17% of the variation). By then the carcasses weighed 386kg with 23mm fat depth and 9% IMF. The

scans taken on day 70 were a better predictor of final abattoir IMF%, than day 182 scans. (Correlation of 0.6 with the final abattoir IMF%; 36% of the variation).

The researchers concluded that scanning potential longfed steers after about 70 days feeding was a useful prediction of final ranking for marbling. This is also the experience of some of the scanning contractors who have tried this with feedlot trial cattle in recent years. It's not perfect, but seems well worth a try.

