AGBU ANIMAL GENETICS AND BREEDING UNIT
A joint unit of NSW DPI and UNE

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Ultrasound Proficiency Testing

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Summary

Scanning of live beef cattle for the estimation of breeding values for carcase traits is an important facet of the selection of beef cattle through BREEDPLAN EBVs. Scans are collected by real time ultrasound contractors who must undergo a proficiency test prior to their data being accepted by the breed societies for analysis. May 97 and June 98 proficiency tests included scanning for intra-muscular fat as well as subcutaneous fat and eye muscle area. Proficiency testing of operators has led to confidence in the measurement technique and rapid adoption of the technology for genetic evaluation.

Results for scanners

Scanners are assessed for their ability to be repeatable and for their relationship to the carcase values. Repeatability is tested using the standard deviation of the difference between repeated scans on the same animals. The relationship to the carcase is tested using both as the standard deviation of the difference between live scan measurements and the carcase values as well as the correlation between live and carcase results.

Repeatability

The standard deviations between first and second scans on the same animal for PIMF in the June98 test were considerably smaller than for the May 97 test. Three of the more likely reasons being that the scanners were more experienced, scanners were advised to use the average of 5 scans rather than the 3, as in 97 and the cattle had higher mean PIMF values. Both the Aloka (ISU software) and the PIE systems appear to work best between about 2 and 8% PIMF.

Table 1: Standard deviations of the difference between first and seconds scans - May 97 and June 98 proficiency tests

		May 1997			June 1998		
Trait	Profic Level[a]	Mean	Min	Max	Mean	Min	Max
P8 mm	≤ 1.5	1.25	0.60	2.30	1.07	0.58	1.82
Rib fat mm	≤1 .0	0.96	0.60	1.80	0.93	0.55	1.34
EMA cm^2	≤ 6.0	3.61	1.50	6.40	3.71	1.59	6.42
PIMF	≤ 1.1	0.95	0.59	1.19	0.68	0.33	1.65

a Proficiency Level = acceptance level for proficient scanners

Accuracy with Carcase Measures

Correlations of scans with mean carcass measurements (average of six measures for each carcase: 3 abattoir measurers; left and right) are presented in Table 2 and the standard deviation of the difference between live and scan in Table 3.

Table 2: Correlations of scans with mean carcass measurements - May 97 and June 98

		May 1997			June 1998		
Trait	Profic Level[a]	Mean	Min	Max	Mean	Min	Max
P8 mm	> 0.90	0.87	0.80	0.92	0.87	0.75	0.90
Rib fat mm	> 0.90	0.84	0.81	0.92	0.88	0.73	0.96
EMA cm^2	> 0.80[b]	0.65	0.42	0.82	0.85	0.77	0.90
PIMF	> 0.70[b]	0.71	0.63	0.83	0.77	0.72	0.83

[a] Proficiency Level = acceptance level for proficient scanners

[b] Proficiency levels were adjusted in 1997 to 0.65 for EMA and 0.50 for PIMF due to lower mean and standard deviations

Table 3: Standard deviation of difference of (Scan-Carcass-Bias) - May 97 and June 98 tests

		May 1997			June 1998		
Trait	Profic Level[a]	Mean	Min	Max	Mean	Min	Max
P8 mm	≤ 1.5	2.01	1.60	2.40	1.51	1.17	2.09
Rib fat mm	≤1 .0	1.37	1.00	2.20	1.48	0.82	2.07
EMA cm^2	≤ 5.5	5.44	3.60	7.30	4.91	3.96	5.89
PIMF	≤ 1.0	1.07	0.77	1.32	0.93	0.82	1.41

[a] Proficiency Level = acceptance level for proficient scanners

The full paper is available in the Proceedings of the thirteenth conference of the Association for the Advancement of Animal Breeding and Genetics, pp 341 - 344.

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