

2000/V08



Producer Research Support

Ultra Sound Scanning for Beef Cattle

Australian Angus Alliance



This major investigation into the correlation between live carcase scanning and carcase measurements clearly shows that live scanning can give very good predictions of final carcase value and should therefore be of great value to the cattle industry - feedlotters in particular.

The project

The Australian Angus Alliance (AAA) was formed in 1995 to rank leading industry Angus sires for production, carcase and profitability (\$Index). This is the largest commercial progeny test for carcase traits in Australia, comprising the insemination of 1000 Angus females annually.

Objectives

1. using a structured progeny test comprising 300 Angus AI bred steers (including seven proven US reference sires), investigate the use of ultrasound scanning of steers and females to predict and improve marbling potential of Angus bulls;
2. ultrasound scan over 300 progeny test steers and 300 progeny test sibling heifers at various stages of production system, and establish:
 - the relationship between scanning and actual carcase measurements (MSA grading);
 - the relationship between sexes. Scan data and sire rankings can be analysed for steer and heifer progeny. These sires will also have scan data on bull progeny (not to be funded by this project);
 - the correlation in sire rankings when steers are scanned on 100-150 days on feed compared with just prior to slaughter (200-250 days on feed); and
 - correlation between ultrasound sire rankings and BreedPlan EBVs, US carcase EPDs and US ultrasound data.

What was done

In October 1997, 1500 commercial Angus females were randomly joined to 15 Angus sires, including both progeny test sires of interest and proven US and New Zealand reference sires.

Calves were tagged at birth, and calving ease, birth weight, dam identification and calf sex recorded. Progeny were managed in large contemporary groups prior to weaning to eliminate potential environmental bias. Progeny test steers and heifers were managed as one sex group post weaning. Heifer progeny were joined in November 1999 randomly to select AI sires to contribute to the continuation of the progeny test program.

Both heifers and steers were scanned with ultrasound at approximately 600 days of age. Steer progeny were then transported to Charlton feedlot, Victoria and fed for 200-225 days before slaughter. Carcase measurements (MSA grading) were collected on all steer progeny at slaughter.

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Key points

- The project has successfully demonstrated the benefit of ultrasound scanning to assist with identifying and ranking superior Angus carcass sires.
- It has also demonstrated that ultrasound scanning of progeny is useful in determining how sires will rank in abattoir measurements of carcass quality traits.

Data from livestock ultrasound scanning and carcass measurements were used to fulfil the objectives of this project. All ultrasound and carcass data was submitted to ABRI to be included in the Angus Group BreedPlan analysis to improve the EBV accuracy of the sires.

The methodology was repeated in 1998 allowing data to be collected from two separate progeny calving groups (1998 and 1999 drop).

What happened?

Figure 1. shows the correlation between ultrasound scanning IMF results taken before feedlot entry and average actual MSA marbling score results recorded at slaughter in 86 steer progeny from eight separate sires (as a ratio ranking amongst contemporaries).

Figure 1.

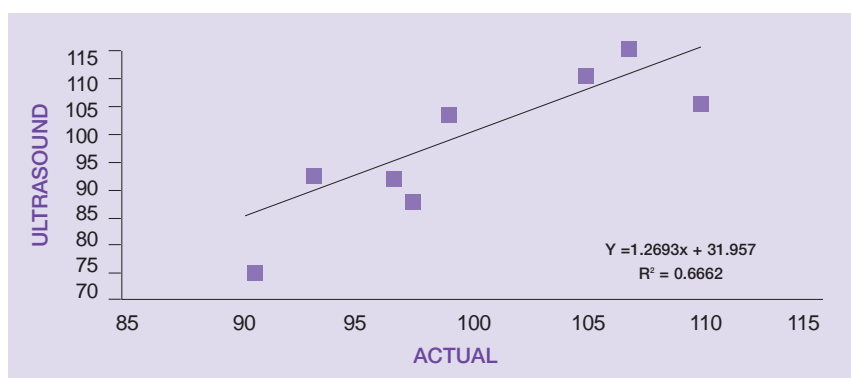
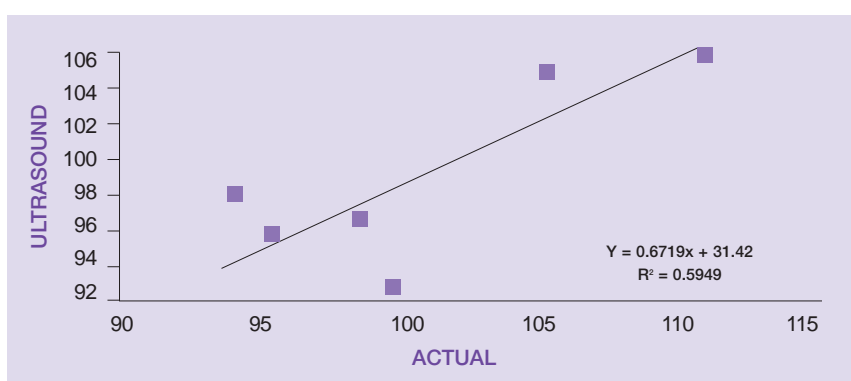


Figure 2. shows the correlation between average ultrasound scanning EMA results taken before feedlot entry and average actual MSA EMA score results recorded at slaughter in 82 progeny from six separate sires (as a ratio ranking amongst contemporaries).

Figure 2.



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Producer Research Support

MLA Producer Research Support offers support funding of up to \$15,000 over three years for groups of producers keen to be active in on-farm research and demonstration trials.

These activities include:

- Producer Initiated Research and Development
- More Beef from Pastures demonstration trials
- Prime Time Wean More Lambs demonstration trials
- Sustainable and productive grazing grants.

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Figure 3. shows the correlation between average ultrasound scanning rib fat results taken before feedlot entry and average actual MSA rib fat score results recorded at slaughter in 82 progeny from six separate sires (as a ratio ranking amongst contemporaries).

Figure 3.

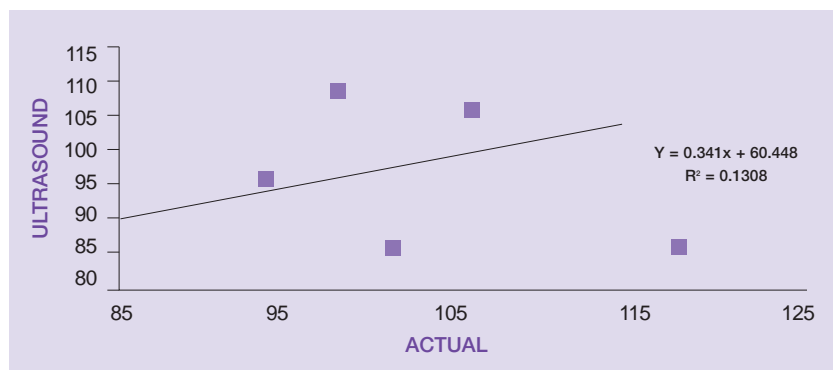
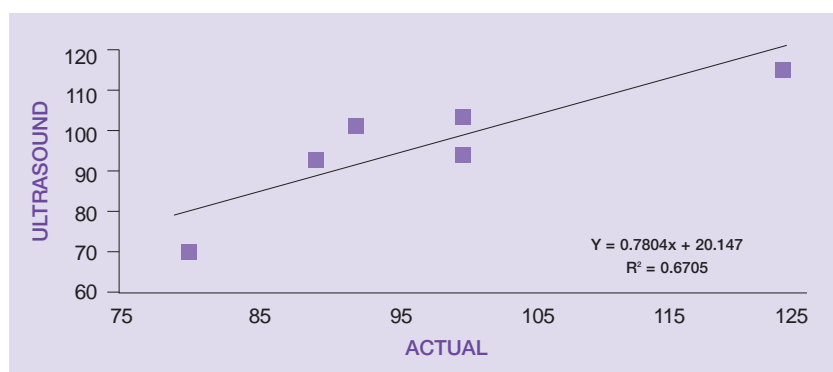


Figure 4. shows the correlation between average ultrasound scanning rump fat results taken before feedlot entry and average actual MSA rib fat score results recorded at slaughter in 82 progeny from six separate sires (as a ratio amongst contemporaries).

Figure 4.



The correlations between the carcase traits measured using ultrasound of the steer progeny before feedlot entry and directly at the abattoir were moderately positive suggesting that ranking and selecting steers using ultrasound scanning should result in predictable abattoir carcase characteristics.

Table 1. Sire Rank Correlation between Heifer Ultrasound Scanning and Steer Ultrasound Scanning in 600 day-old Progeny.

Carcase Trait	Correlation (%)
EMA	45
Rib	57
P8	62
IMF	20

The correlations in Table 1. are moderately positive suggesting that ultrasound scanning of heifers for ranking sires should result in predictable ranking of steer progeny for carcase characteristics in the abattoir.



MLA also recommends BeefPlan

BeefPlan is a non-traditional approach to learning. Groups of like-minded beef producers, work together as a management team to focus on property management. Importantly the learning agenda is set and controlled by the group.

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Discussion

Knowledge of the correlations between live animal ultrasound and abattoir measurements of carcass quality traits is required for accurate EBV calculations for BreedPlan. Live animal ultrasound measurements of seed stock and progeny, together with actual abattoir carcass measurements of steer progeny are included in the analysis of carcass EBVs of sires.

This project has been successful in demonstrating the benefit of ultrasound scanning in assisting in the identification and ranking of superior Angus carcass sires through measuring both heifer and steer progeny. Project results have highlighted that live animal ultrasound measurements of carcass quality traits before feedlot entry in steers and heifer progeny, are accurate in predictors of abattoir carcass performance post feedlot. Progeny ultrasound scanning is also useful to determine how sires will rank in abattoir measurements of carcass quality traits.

The high cost and difficulty of performing properly structured progeny test programs can be eased by scanning heifer and steer progeny at approximately 600 days of age and before feedlot entry. Feedlotter and processors can identify progeny and genetics that will reach particular beef markets. The industry can also be confident of the reliability of carcass quality EBVs calculated by Breedplan, as accurate predictors of progeny carcass performance.

Next steps

The AAA is committed to ongoing research and development, and detailed analysis of findings. This project, together with other collaborative research programs involved with the AAA Progeny Test program, will be published in the AAA newsletters and website, and distributed to seed stock producers, commercial beef producers, feedlotter and processing plants.

Since completing this project the AAA has found that feedlotter and processors are interested in the performance and ranking of the progeny based on live animal ultrasound measurements, together with the genetics and management of the progeny.