TACE Getting Started



TACE is the genetic evaluation program adopted by Angus Australia for Angus and Angus infused beef cattle.

What is the TransTasman Cattle Evaluation (TACE)?

The TransTasman Angus Cattle Evaluation is the genetic evaluation program adopted by Angus Australia for Angus and Angus influenced beef cattle. The TransTasman Angus Cattle Evaluation uses Best Linear Unbiased Prediction (BLUP) technology to produce Estimated Breeding Values (EBVs) of recorded cattle for a range of important production traits (e.g. weight, carcase, fertility).

The TransTasman Angus Cattle Evaluation is an international genetic evaluation and includes pedigree, performance and genomic information from the Angus Australia and Angus New Zealand databases, along with selected information from the American and Canadian Angus Associations.

The TransTasman Angus Cattle Evaluation utilises a range of genetic evaluation software, including the internationally recognised BLUPF90 family of programs, and BREEDPLAN[®] beef genetic evaluation analytical software, as developed by the Animal Genetics and Breeding Unit (AGBU), a joint institute of NSW Agriculture and the University of New England, and Meat and Livestock Australia Limited (MLA).

What is an EBV?

While it is not possible to determine an animal's true breeding value (i.e. their genetic merit), it is possible to estimate it. These estimates of an animal's true breeding value are called EBVs (Estimated Breeding Values).

EBVs are expressed as the difference between an individual animal's genetics and the genetic base to which it is being compared. The genetic base can broadly be explained as an historic group of animals.

EBVs are reported in the units in which the measurements are taken (e.g. kilograms for the weight EBVs). Thus a value of +12 kg for 400 day weight means the animal is genetically superior by 12 kg at 400 days of age compared with the genetic base of the relevant cattle population. On average, half of this difference is passed on to the animal's progeny.

Pre-requisites for Recording with Angus TACE

In order to performance record your animals with TACE, there are generally three requirements:

- 1. You must be a member of Angus Australia
- 2. You must be enrolled in the Genetic Evaluation Service

 The calves which you wish to submit performance information/receive EBVs for, must be recorded with Angus Australia

Enrolling in TACE

In order to enrol in the TransTasman Angus Cattle Evaluation (TACE), please nominate the Genetic Evaluation Service when completing the "Membership Application" and return to the Angus Australia office. This will incur a genetic evaluation service fee of \$165 incl GST per calendar year.

What Can You Expect From TACE?

The benefits your herd will obtain from performance recording and being included in the TACE analysis are:

- Receive a TACE report for your herd which includes Estimated Breeding Values (EBVs) for your sires, dams, heifer progeny, bull progeny and steer progeny, plus genetic trends for your herd benchmarked against the Angus breed
- Monitor the genetic progress of your herd across a range of economically important traits. This allows you to identify how your selections are impacting on your herd's genetic progress for a range of traits.
- Access to other genetic tools that assist selection and genetic progress such as Mating Predictor and Internet Solutions EBV related functions (e.g. EBV enquiry or sale catalogues with EBVs displayed).

What costs are involved in TACE?

Fees for participating in TACE are billed by Angus Australia. The only fee is an annual enrolment fee of \$165.00, which is billed at the end of January each year.

Other costs also apply such as the cost of collecting the performance information for their animals. For example the labour and equipment required to take weights, employing an accredited ultrasound scan technician to take ultrasound carcase scan measurements etc.

How to Start Performance Recording with TACE

Once you have become enrolled in TACE, the next step you will need to take is to ensure that all of your calves are recorded with Angus Australia. The TACE genetic evaluation utilises the pedigree, performance and genomic information that is stored on the Angus Australia database, and as such individual animals are only eligible to be included in the TACE genetic analysis if they are first recorded with Angus Australia.

If you have been a member of Angus Australia for some time, and have been recording your animals, all you need to do is ensure that all of your calf registrations are up to date and continue to record all your calves with Angus Australia as you have done in the past.

If you are a new member to Angus Australia, you will need to record all of your sires, dams and calves. Also ensure that any animals you have purchased from other registered studs are transferred into your membership, as you are only able to submit performance for animals which are recorded with Angus Australia as being in your ownership at the time the performance was taken.

If you do not register or record a calf with Angus Australia, TACE will not be able to add any performance data for that calf to the database. Therefore, it is very important that this step is done and that it is done correctly. Once all of your calves have been recorded with Angus Australia, you can start submitting performance data to TACE.



important traits. The EBVs currently reported within TACE include:

In addition to the EBVs, TACE also produces ten Selection Indexes.

Table 1: TACE EBVs		
Birth	Calving Ease Direct Calving Ease Daughters Birth Weight Gestation Length	
Growth	200 Day Growth 400 Day Weight 600 Day Weight Mature Cow Weight Milk	
Fertility	Scrotal Size Days to Calving	
Carcase	Carcase Weight Eye Muscle Area Rib Fat Rump Fat Retail Beef Yield Intramuscular Fat	
Feed Efficiency	Net Feed Intake (Feedlot)	
Structural Soundness	Claw Set Foot Angle	
Other	Docility	

What performance information do I need to record on my animals?

What performance information you record is entirely up to you. There is no minimum or maximum requirement on how much performance data you can record, however generally speaking, an individual animal must have either its own performance, or the performance of its progeny, recorded with TACE in order to be eligible to receive EBVs.

It is recommended that you record performance information for the traits that are of relevance or importance to your breeding program and your client's needs, and consequently for which you would like EBVs calculated.

More information regarding how to record performance information for each individual trait is available from the TACE area of the Angus Australia website or by contacting staff at Angus Australia.

What Equipment is Needed?

The equipment required depends on which performance traits you wish to record. Some traits such as Calving Ease, Gestation Length and Days to Calving do not require any equipment but instead are based on information such as subjective scores or joining dates submitted to TACE. However most traits require at a minimum cattle yards and a cattle crush.

What about Genomic Information?

TACE also incorporates genomic information from several different genomic products in the calculation of EBVs.

Genomic information assesses the genetic makeup of an animal at thousands of locations across the animal's genome (known as SNPs or single nucleotide polymorphisms) to provide a genomic prediction of an animal's genetic merit. The genomic predictions are incorporated with any pedigree and performance information that has been recorded with TACE for an animal or its relatives to calculate EBVs of higher accuracy.

Further information regarding the genomic products that are available and the procedure for testing is available from the TACE area of the Angus Australia website, or by contacting staff at Angus Australia.

Joining	Birth	Weaning	Yearling	18 Months	Maturity
Mating Program Details	Date of Birth	200 Day Weight	400 Day Weight	600 Day Weight	Cow Disposal Code
AI Dates	Birth Weight	Mature Cow Weight (dams)	Scrotal Circumference		Mature Cow Weight
Preg Test Results	Calving Difficulty Scores	Docility Score	Scanning Measures (EMA, Fats, IMF %)		
	Recipient Dam Details	Flight Time	Structural Score		

	Traits	Equipment Required
Weights	 Birth Weight Milk 200, 400 & 600 Day Weight Mature Cow Weight 	Appropriate and accurate scales to record weights to the nearest kilogram. Note: While not essential, specialised birth weight scales are available which can be mounted to quad bikes or vehicles for ease of management
Fertility	Scrotal Size	Measuring tape (cm) and cattle crush. It is recommended that breeders use a Barth tape for accurate measurement of the scrotal circumference to the nearest cm. Barth tapes are available from the Australian Cattle Vets.
Carcase	 Eye Muscle Area Fat Depth Retail Beef Yield Intramuscular Fat 	Ultrasound carcass scanning must be undertaken by a BREEDPLAN accredited technician. A list of accredited technicians is available on the Angus Australia website.
Other	• Docility	Yards or crush for objective scoring of temperament
	Structural Soundness	Structural soundness assessments can be undertaken by the breeder or a BREEDPLAN accredited technician. A list of accredited scorers is available on the Angus Australia website.

Submission of Historic Data

If you have been recording performance information for your animals prior to enrolling in Angus Australia's genetic evaluation, then you may wish to submit this data for inclusion in TACE. For further advice, please contact staff at Angus Australia.

How do I submit my performance data to Angus Australia?

Once you have collected your animals' performance data, and the animals are recorded, you can submit performance data to Angus Australia. Please note that it is paramount that an animal's performance data be submitted with its full and correct Angus Australia identification, so the performance is attributed to the correct animal.

There are a number of options for submitting performance data to Angus Australia:

- I. Paper Forms these forms are mailed to you by staff at Angus Australia. Completed forms are then returned by post.
- II. Excel Spreadsheet A formatted Excel spreadsheet is available from staff at Angus Australia or from the Angus Australia website (www.angusaustralia.com.au). To submit your performance, fill out the spreadsheet and simply send it as an email attachment to the Angus Australia office.
- III. Compatible Herd Recording Program (e.g. HerdMaster, StockBook, CattleLink) – contact your Herd Recording Program support team for instructions on how to extract performance data for TACE. Once extracted, this information can then be emailed to Angus Australia as an email attachment.
- IV. Internet Solutions Online Submission Facility – Angus Australia offers members an online registration and performance submission service through the Angus Australia website's member login area. Members can choose to create a "Submission Batch" of performance data, which is then sent directly to the Angus office for processing. For more information about using the Online Submission Facility, contact Angus Australia.

How will I receive my TACE results?

Following each TACE Analysis, updated TACE EBVs are provided in a number of formats.

- I. A TACE Herd Report will be produced for all herds that have submitted performance data since the previous analysis. The TACE reports will contain updated EBVs for sires, dams and calves as well as some information about the genetic progress being made by the particular herd for each trait. The TACE reports will be provided in electronic form (as .PDF files) from the file download area on the Angus Australia website. Hard copies can also be mailed to you on request
- II. A file containing updated EBVs for downloading into compatible herd recording programs (e.g. HerdMaster, StockBook, CattleLink) will be made available from the file download area of the Angus Australia website
- III. Updated EBVs will be displayed on the online EBV Search facility on the Angus Australia website

When Will I Receive Results from TACE?

TACE analyses are conducted monthly between January and August, and bi-monthly (i.e. twice per month) between September and December. The TACE analysis makes use of all available pedigree and performance information on the Angus Australia and New Zealand Angus database to derive EBVs for individual animals. It is an across-herd analysis in which all calves and their parents have their EBVs calculated.

An up to date schedule for the TACE analyses, including the submission deadlines is available from the TACE area on the Angus Australia website.

What is the Minimum Recommended Herd Size?

There is no minimum herd size requirement for herds to join TACE. There are however some management considerations that small herds need to make when recording performance to ensure their data is as effective as possible in the TACE analysis. A fact sheet containing a number of recommendations for small herds is available from the TACE area of the Angus Australia website.

Making Performance Data More Effective

Although the TACE analysis is a very complex analytical model, the basic mechanism by which it works is to directly compare the performance of an animal with the performance of other "similar" animals within the same contemporary group.

Put simply a contemporary group can be described as animals of the same sex, of the same birth type, from the same herd, of a similar age, run under the same conditions i.e. animals that have had the same opportunity to perform. TACE then uses genetic linkage to compare the animals in different contemporary groups both within the individual herd and across the breed. It is therefore important that breeders manage their herds to maximise contemporary group size and create genetic linkage both within the herd and with other herds in the breed.

Creating Effective Contemporary Groups

There are a number of ways breeders can manage their herd to create effective contemporary groups.

- 1 Restricted calving periods – as calves are only included in the same contemporary group if they are born within 45 or 60 days of one another, the effectiveness of a herd's performance data will be increased if the herd has a restricted calving period. A calving period of 6 to 8 weeks is ideal.
- 11. Run all calves under the same management conditions - where possible all calves should be run under the same management conditions. If calves need to be split, attempt to use the same criteria that will be used in TACE to split mobs. For example divide animals by sex of calf, by age of calf, by ET calves vs non-ET calves or by prior management groups. Where calves are to be split into different groups e.g. male calves into steers and bulls, weigh the whole group before it is split.

- III. Weigh all animals on the same day as TACE only directly compares the performance of animals that has been recorded on the same day, it is important to weigh all animals within a contemporary group on the same day e.g. weighing all heifers on the same day.
- IV. Breeder Defined Management Groups Animals should be assigned into different management groups in any situation when either individually or as a group, they have not had equal opportunity to perform. Submit management groups for non-genetic factors such as sickness, different management conditions (e.g. show vs. paddock animals), yearling bulls used as sires, paddocks with different feed nutritional value, etc. There is no need to create different management groups for different sexes, birth types or age groups as the TACE analysis does this automatically.

Creating Genetic Linkage

- 1 Use more than one sire - TACE requires that at least 2 sires be represented in each contemporary group if the performance of the progeny is going to contribute to the calculation of the EBVs of their sire. Where Al programs are used they should be timed so that AI sired calves are born at the same time as calves sired by natural joining's.
- II. Use a range of sires common sires link contemporary groups within a herd, across herds and across years. In order to create genetic linkage across herds, it is recommended that where possible sires bred or used by other herds that are performance recording with TACE, be used alongside home bred sires.



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