

# Angus BREEDPLAN

## GETTING STARTED



### What is Angus BREEDPLAN?

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

Angus BREEDPLAN includes pedigree, performance and genomic information from the Angus Australia and New Zealand Angus Association databases to evaluate the genetics of animals across Australia and New Zealand.

Angus BREEDPLAN analyses are conducted by the Agricultural Business Research Institute (ABRI), using software developed by the Animal Genetics and Breeding Unit (AGBU), a joint institute of NSW Agriculture and the University of New England. Ongoing BREEDPLAN research and development is supported by Meat and Livestock Australia.

### 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 BREEDPLAN

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

- I. You must be a member of Angus Australia
- II. You must be enrolled in Angus BREEDPLAN
- III. The calves which you wish to submit performance information/receive EBVs for, must be recorded with Angus Australia

### Enrolling in Angus BREEDPLAN

To enrol in Angus BREEDPLAN, you will need to complete an enrolment form and pay an enrolment fee of \$195.00.

If you require an enrolment form, please contact Angus Australia or download a BREEDPLAN enrolment form from the Angus Australia website.

Once you have an enrolment form, you then need to enter your details and return the form to Angus Australia. Upon receipt of your completed enrolment form and enrolment fee, Angus Australia will enrol you in Angus BREEDPLAN and send back an enrolment kit which includes everything you'll need to get you started on performance recording with Angus BREEDPLAN.

### What Can You Expect From Angus BREEDPLAN?

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

- Receive a BREEDPLAN 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 Angus BREEDPLAN?

Fees for participating in Angus BREEDPLAN 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 BREEDPLAN

Once you have become enrolled in Angus BREEDPLAN, the next step you will need to take is to ensure that all of your calves are recorded with Angus Australia.

The BREEDPLAN 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 Angus BREEDPLAN 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, BREEDPLAN 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 BREEDPLAN.

### What EBVs are Available?

BREEDPLAN produces EBVs for a range of economically important traits. The EBVs currently reported within Angus BREEDPLAN include:

| Table 1 : Angus BREEDPLAN EBVs |  |
|--------------------------------|--|
| <b>Birth</b>                   | Calving Ease Direct<br>Calving Ease Daughters<br>Birth Weight<br>Gestation Length                      |
| <b>Growth</b>                  | 200 Day Growth<br>400 Day Weight<br>600 Day Weight<br>Mature Cow Weight<br>Milk                        |
| <b>Fertility</b>               | Scrotal Size<br>Days to Calving  |
| <b>Carcase</b>                 | Carcase Weight<br>Eye Muscle Area<br>Rib Fat<br>Rump Fat<br>Retail Beef Yield<br>Intramuscular Fat     |
| <b>Feed Efficiency</b>         | Net Feed Intake (Post Weaning)<br>Net Feed Intake (Feedlot)  |
| <b>Structural Soundness*</b>   | Front Feet Angle<br>Front Feet Claw Set<br>Rear Feet Angle<br>Rear Leg Hind View<br>Rear Leg Side View |
| <b>Other</b>                   | Docility   |

In addition to the EBVs, Angus BREEDPLAN also produces four Selection Indexes – Angus Breeding Index (ABI), Domestic Index (DOM), Heavy Grain Index (GRN) and Heavy Grass Index (GRS).

## 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 BREEDPLAN 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.

The table below details the performance information that currently contributes to the calculation of

BREEDPLAN EBVs and outlines the stage of production cycle that each set of information should be recorded.

More information regarding how to record performance information for each individual trait is available from the BREEDPLAN 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 BREEDPLAN. However most traits require at a minimum cattle yards and a cattle crush.

| 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  |
|------------------|--|---|
| <b>Weights</b>   | <ul style="list-style-type: none"> <li>• Birth Weight</li> <li>• Milk</li> <li>• 200, 400 &amp; 600 Day Weight</li> <li>• Mature Cow Weight</li> </ul> | <p>Appropriate and accurate scales to record weights to the nearest kilogram.</p> <p>Note: While not essential, specialised birth weight scales are available which can be mounted to quad bikes or vehicles for ease of management</p> |
| <b>Fertility</b> | <ul style="list-style-type: none"> <li>• Scrotal Size</li> </ul>   | <p>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.</p>       |
| <b>Carcase</b>   | <ul style="list-style-type: none"> <li>• Eye Muscle Area</li> <li>• Fat Depth</li> <li>• Retail Beef Yield</li> <li>• Intramuscular Fat</li> </ul>     | <p>Ultrasound carcass scanning must be undertaken by a BREEDPLAN accredited technician. A list of accredited technicians is available on the Angus Australia website.</p>   |
| <b>Other</b>     | <ul style="list-style-type: none"> <li>• Docility</li> </ul>   | <p>Yards or crush for objective scoring of temperament</p>  |
|                  | <ul style="list-style-type: none"> <li>• Structural Soundness</li> </ul>   | <p>Structural soundness assessment must be undertaken by a BREEDPLAN accredited structural scorer. A list of accredited scorers is available on the Angus Australia website.</p>  |

## What about Genomic Information?

Angus BREEDPLAN 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 Angus BREEDPLAN 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 BREEDPLAN area of the Angus Australia website, or by contacting staff at Angus Australia.

## Submission of Historic Data

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

## How do I submit my performance data to BREEDPLAN?

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](http://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 BREEDPLAN. 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 BREEDPLAN results?

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

- I. A BREEDPLAN Herd Report will be produced for all herds that have submitted performance data since the previous analysis. The BREEDPLAN 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 BREEDPLAN 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 BREEDPLAN?

Angus BREEDPLAN analyses are conducted monthly between January and August, and bi-monthly (i.e. twice per month) between September and December. The BREEDPLAN 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 Angus BREEDPLAN analyses, including the submission deadlines is available from the BREEDPLAN area on the Angus Australia website.

### **What is the Minimum Recommended Herd Size?**

There is no minimum herd size requirement for herds to join BREEDPLAN. 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 BREEDPLAN analysis. A fact sheet containing a number of recommendations for small herds is available from the BREEDPLAN area of the Angus Australia website.

### **Making Performance Data More Effective**

Although the BREEDPLAN 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. BREEDPLAN 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.

- I. 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.
- II. 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 BREEDPLAN 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 BREEDPLAN 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 BREEDPLAN analysis does this automatically.

### **Creating Genetic Linkage**

- I. Use more than one sire – BREEDPLAN 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 AI 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 BREEDPLAN, be used alongside home bred sires.

## Contact Details

For further enquiries regarding Angus BREEDPLAN, please contact

### Angus BREEDPLAN

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