



ANGUS

SteerSELECT™

An advanced genomic tool providing confidence in assessing the genetic potential of Angus steers, enabling more informed decisions across the beef supply chain



ANGUS
AUSTRALIA



zoetis

A product of Angus Australia, developed with CSIRO and delivered in collaboration with Zoetis and Neogen

NEOGEN
Australasia



WHAT IS ANGUS STEERSELECT?

Angus SteerSELECT is a genomic selection tool which identifies the genetic merit of Angus steers (87.5% Angus content or greater). It provides greater precision in sorting and/or marketing steers into lines suitable for the different paths in the beef supply chain.

Angus SteerSELECT provides:

- Genetic predictions for nine (9) growth, feedlot, carcass and resilience traits.
- An overall selection Index, the Angus Steer Value (ASV), with simplified star rating.
- Angus BreedCHECK – a genomic breed composition prediction.
- Sire verification - verification of potential sires who are registered with Angus Australia and have genomic profiles available.

Angus SteerSELECT complements other sources of information that may be used in sorting and marketing of Angus steers, such as age, weight and background information like past feedlot and carcass grading performance. Angus SteerSELECT provides valuable insight into the genetic potential of steers, particularly for traits that are difficult to assess visually (i.e. marbling potential).

Angus SteerSELECT is suitable for both Angus steers and heifers entering the beef supply chain. For breeding heifers, the companion product Angus HeiferSELECT is more suitable.

BENEFITS OF ANGUS STEERSELECT

Angus SteerSELECT facilitates more precise decision making when breeding and/or managing Angus steers entering the beef supply chain.

- **Identify genetic suitability**
Identify steers that have the genetic profile suitable for specific Angus beef supply chains (i.e. feedlots or beef brands).
- **Understand breed composition**
Utilise Angus BreedCHECK information to understand the breed composition of steers, particularly their Angus content.
- **Exploit marketing opportunities**
Provide objective data on Angus content and genetic potential for marketing Angus steers into the beef supply chain.
- **Inform bull purchasing decisions**
Better understand the genetic traits in commercial herds and identify the priorities for bull purchasing decision.

DEVELOPED SPECIFICALLY FOR AUSTRALIAN AND NEW ZEALAND ANGUS CATTLE AND PRODUCTION SYSTEMS

Through utilisation of Angus Australia's genomic and phenotypic database, Angus SteerSELECT provides the most accurate genetic predictions possible for Angus steers in Australian and New Zealand production systems.

Angus SteerSELECT genetic predictions are calculated based on analysis of Angus Australia's extensive genomic and phenotypic database. Collated over many years, this database combines the DNA profiles of Australian and New Zealand Angus animals with comprehensive performance measurements collected in respective beef production systems.

Modern scientific knowledge, developed by CSIRO, enables the association between the DNA profiles and performance measurements to be analysed, and genetic predictions to be calculated from the DNA profiles of the steers tested with Angus SteerSELECT.



UNDERSTANDING ANGUS STEERSELECT RESULTS

Angus SteerSELECT provides genetic predictions for nine (9) growth, feed intake, carcass and resilience traits, along with an overall selection Index, Angus Steer Value (with star rating).

The genetic predictions are reported using an intuitive 0 – 100 scoring system, with a score of 50 representing the average genetic merit of current-day commercial Angus animals.

Higher values identify steers carrying genetics that will produce “more” of a trait, which may or may not be preferred, subject to the production system. For example, a steer with an Average Daily Gain (ADG) prediction of 80 would be expected to have a higher daily gain (kg/day) than a steer, particularly from the same cohort, with an ADG genetic prediction of 30, all other things being equal. Similarly, higher MSA Marbling genetic predictions indicate the animal is expected to produce a carcass that is more likely to have a higher marbling score.

A description of each of the traits by group is listed in Table 1.

Table 1 - Angus SteerSELECT Genetic Predictions and Selection Index Descriptions

	Trait	Description
Growth	Yearling Weight	Higher yearling weight (YW) genetic predictions indicate the animal is expected to be heavier at 400 days of age.
	Average Daily Gain	Higher average daily gain (ADG) genetic predictions indicate an animal is expected to have higher rates of weight gain during feedlot finishing, due to superior growth potential.
Feedlot Traits	Daily Feed Intake	Higher daily feed intake (DFI) genetic predictions indicate an animal is expected to eat more during feedlot finishing and may be considered less efficient.
	Carcass Weight	Higher Carcass Weight (CW) genetic predictions indicate the animal is expected to have a heavier carcass weight.
Carcass Traits	Eye Muscle Area	Higher Eye Muscle Area (EMA) genetic predictions indicate the animal is expected to have more muscle and larger eye muscle area.
	Rib Fat	Higher Rib Fat (RIB) genetic predictions indicate the animal is expected to have a carcass with greater fat depth.
	MSA Marbling	Higher MSA Marbling (MBL) genetic predictions indicate the animal is expected to have a carcass with higher marbling scores and more intramuscular fat.
	Ossification	Higher Ossification (OSS) genetic predictions indicate the animal is expected to have higher levels of ossification, or physiological maturity, in the carcass which is antagonistic to eating quality.
	ImmuneDEX	Higher ImmuneDEX (IMM) genetic predictions indicate the animal is expected to have higher levels of general disease resilience, as measured by cell-mediated and antibody mediated immune response.
Selection Index	Angus Steer Value	Higher Angus Steer Value (ASV) genetic predictions identify animals that have a balance of genetic traits that are important to the majority of commercial, grain finishing beef production systems.
	ANGUS SteerSELECT Stars	Presents the Angus Steer Value as an easy to understand 0 – 5 star rating, with more stars representing animals with a higher Angus Steer Value.

ANGUS STEER VALUE – BALANCED SELECTION

Angus SteerSELECT provides an overall selection Index being Angus Steer Value (ASV). It balances 6 traits that have an impact on efficiency, production, and profitability in most beef supply chains, particularly those that include lot feeding.

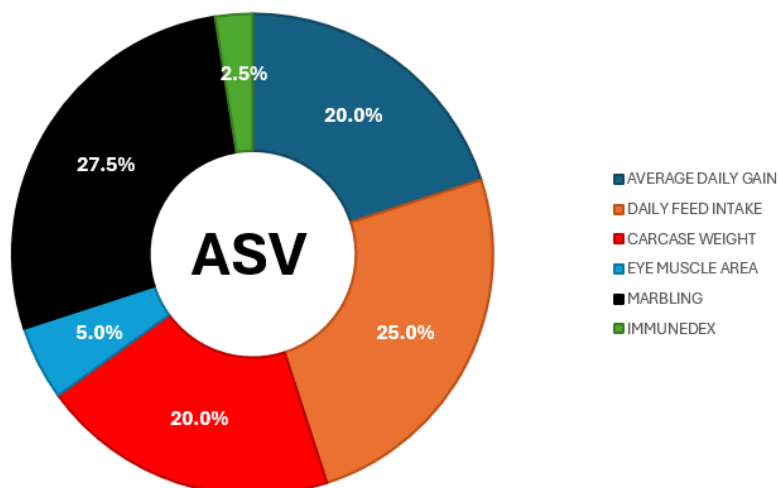


Figure 1. Trait Emphasis for the Angus Steer Value (ASV)

The ASV assists in making “balanced” selection decisions to identify animals that have the genetic potential to suit specific beef supply chains. Higher ASVs identify steers have a balanced genetic profile with focus on beef quantity and quality.

Angus SteerSELECT - Example of Performance by Genetic Prediction

The following tables show the average performance (or phenotypes) in long-fed (>200 days on feed) and short-fed (100-120 days on feed) systems, when ranked on genetic prediction for specific traits. The long-fed and short-fed groups include 3,336 steers and 498 steers respectively. Both groups are included in the Angus SteerSELECT reference population.

As an example for interpretation, for the long-fed scenario, the top 100 steers based on the MSA Marbling genetic prediction average 763 for MSA Marbling score, followed by 517 for the middle 100 and 395 for the bottom 100 steers.

Note - an MSA Marbling score of 700 aligns with an AUS-MEAT Marbling score of approximately 5, MSA Marbling of 500 with an AUS-MEAT score of 3 and MSA Marbling of 300 with an AUS-MEAT score of 1.

Table 2. Feedlot performance and Carcase grading differences between long-fed and short-fed based on Angus SteerSELECT genetic predictions.

Long Fed														
	MSA Marbling		Carcase Weight		Average Daily Gain		Daily Feed Intake		Eye Muscle Area		Ossification		Rib Fat	
	Av GP	Av Mbl Score	Av GP	Av CWT (kg)	Av GP	Av ADG (kg/day)	Av GP	Av DFI (kg/day)	Av GP	Av EMA (cm ²)	Av GP	Av Oss. Score	Av GP	Av Rib Fat (mm)
Top 100	90	763	89	521	72	2.1	87	18.0	90	111	90	184	89	28.9
Middle 100	50	517	50	457	50	1.6	50	14.8	50	93	50	149	50	18.4
Bottom 100	12	395	11	403	28	1.2	12	11.6	12	80	12	131	12	12.3
Short Fed														
	MSA Marbling		Carcase Weight		Average Daily Gain		Daily Feed Intake		Eye Muscle Area		Ossification		Rib Fat	
	Av GP	Av Mbl Score	Av GP	Av CWT (kg)	Av GP	Av ADG (kg/day)	Av GP	Av DFI (kg/day)	Av GP	Av EMA (cm ²)	Av GP	Av Oss. Score	Av GP	Av Rib Fat (mm)
Top 50	79	469	79	355	66	1.7	84	15.3	79	89	83	147	77	15.5
Middle 50	49	384	50	325	50	1.5	50	13.6	49	78	50	128	50	10.8
Bottom 50	22	344	20	295	34	1.3	17	10.5	21	70	18	112	24	8.1

Additionally, Table 3 exemplifies the percentage of animals that would meet marbling compliance specifications of greater than or equal to 500 MSA Marbling score (i.e. ~ 3 AUS-MEAT score) for long-fed animals and greater than or equal to 400 MSA Marbling score (i.e. ~ 2 AUS-MEAT score) for short-fed animals.

Table 3. Percentages of animals that meet marbling compliance specifications for Long-fed and short-fed, with example parameters.

Long Fed		MSA Marbling	
	Av GP	Av Mbl Score	Compliance
Top 100	90	763	100%
Middle 100	50	517	61%
Bottom 100	12	395	8%

Short Fed		MSA Marbling	
	Av GP	Av Mbl Score	Compliance
Top 50	79	469	84%
Middle 50	49	384	36%
Bottom 50	22	344	8%

Further, below are the performance outcomes when the same groups of steers are ranked on the Angus Steer Value (ASV). For example, this shows when ranked on ASV, in the long-fed system, the top 100 steers compared to the bottom 100 steers had on average:

- Heavier carcasses by 53kg
- More Marbling by 258 MSA marbling score points (or approx. 2.5 more AUS-MEAT marbling scores)
- More muscle with eye muscle areas 13 cm² larger
- More efficiency with 0.6 kg/day less feed eaten
- More gain with 0.1 kg/day additional average daily gain

Table 4. Feedlot and Carcase grading differences between long-fed and short-fed based on Angus Steer Value.

Long Fed						
	Av ASV	Av CWT (kg)	Av MBI Score	Av EMA (cm ²)	Av DFI (kg/day)	Av ADG (kg/day)
Top 100	80	490	689	100	14.8	1.7
Middle 100	50	457	537	92	14.9	1.6
Bottom 100	21	437	431	87	15.4	1.6

Short Fed						
	Av ASV	Av CWT (kg)	Av MBI Score	Av EMA (cm ²)	Av DFI (kg/day)	Av ADG (kg/day)
Top 50	71	332	434	81	12.2	1.6
Middle 50	50	317	389	78	13.3	1.5
Bottom 50	29	315	353	77	13.7	1.4



ANGUS BREEDCHECK

Angus BreedCHECK is a genomic (DNA) based system that estimates breed composition (from 11 breeds), with a particular focus on Angus content.



Steers that are 87.5% (or 7/8th) or greater Angus content receive the Angus BreedCHECK tick.



Steers that are below 87.5% Angus content are flagged with an Angus BreedCHECK cross and provided with additional information to further understand their breed background.

This includes the percentage (%) content value estimate for:

- Angus
- Non-Angus
- British (including Angus, Hereford, Shorthorn and Murray Grey)
- Indicus (including Brahman and Santa Gertrudis)
- European (including Charolais, Simmental and Limousin)
- Dairy (including Holstein)
- Wagyu

Angus SteerSELECT genetic predictions are provided on all animals that are greater than 50% Angus content. Caution should be applied when using the Genetic Predictions for animals less than 87.5% Angus as the associated reference population is based on straight bred Angus animals.



POWERFUL ONLINE REPORT CENTRE

Angus SteerSELECT results are made available via a powerful reporting facility on the Angus Australia website.

The Angus SteerSELECT reporting facility enables you to view, search, sort, and analyse the Angus SteerSELECT results for your steers. Results can also be exported in csv format for upload into programs such as Microsoft Excel or downloaded in a series of print friendly pdf reports.

ID	Year	Sire ID	Angus BreedCHECK	YW	ADG	DFI	CWT	EMA	RIB	MBL	OSS	IMM	ASV	SteerSELECT Stars
SZZQ6401	2019	Unknown		29	30	41	68	63	39	56	41	25	57	★★★★☆
SZZQ35434	2019	Unknown		42	54	50	60	51	67	37	54	51	49	★★★★☆
SZZQ35484	2019	Unknown		40	42	27	70	34	53	26	55	46	51	★★★★☆
SZZQ35580	2019	Unknown		13	44	47	72	57	83	72	53	41	70	★★★★☆
SZZQ35775	2019	Unknown		86	54	42	95	35	52	36	32	45	64	★★★★☆
SZZQ2138720	2019	Unknown		36	73	73	48	28	78	50	48	72	46	★★★★☆

Angus SteerSELECT results are displayed in a user friendly, easy to read format

Steers with superior genetic potential can be easily identified using interactive slider bars to set desired selection criteria

Delve deeper into the genetic breed composition of animals with Angus BreedCHECK.

Generate PDF and csv reports and analyse results further via the Angus SteerSELECT report centre.





ORDERING ANGUS STEERSELECT

Angus SteerSELECT is available direct from Angus Australia or via two collaborators:

Angus Australia

angusaustralia.com.au

Phone: (02) 6773 4600

Email: office@angusaustralia.com.au

Zoetis Animal Genetics

[PRODUCTS | Zoetis GENETICS](#)

Phone: 1300 768 400

Email: genetics.au@zoetis.com

Neogen Australasia

neogenaustralasia.com.au

Phone: (07) 3736 2134

Email: naa-lab@neogen.com

The below details the ordering process when ordering Angus SteerSELECT directly from Angus Australia. If you have any questions regarding this process, please do not hesitate to contact our office. The ordering process via Zoetis and Neogen may vary to the Angus Australia process.

GETTING READY

Before ordering Angus SteerSELECT tests, you should:

- Determine when results will be required by, noting that there is a 6–8-week turnaround time from when samples are received.
- Ensure that you are a current, financial member of Angus Australia and have nominated that you wish to utilise Angus Australia's genetic evaluation services.

Membership application forms are available from the [Angus](#)

[Australia website](#), or by contacting staff at Angus Australia on +61 2 6773 4600.

- Obtain an Angus SteerSELECT Order Form. Order forms can be downloaded from the [Angus Australia website](#).
- Obtain DNA sample collection kits from either Angus Australia, Zoetis Animal Genetics or Neogen Australasia.

DNA samples can be provided as either tail hair, or tissue using the Allflex Tissue Sampling Unit (TSU) technology.

- Ensure that a DNA profile is recorded with Angus Australia for the sires of any steers for which you wish to obtain DNA sire verification.

ANIMALS FOR WHICH ANGUS STEERSELECT CAN BE ORDERED

Angus SteerSELECT tests can be ordered for straight-bred, Angus steers (recommended for steers that are 87.5% or greater Angus content).

Angus SteerSELECT tests cannot be ordered for animals that have been previously recorded with Angus Australia, such as animals recorded on the HBR, APR, ACR or MBR registers.

COLLECTING DNA SAMPLES

DNA samples can be provided for Angus SteerSELECT testing as either tail hair, or tissue using the Allflex Tissue Sampling Unit (TSU). All samples must be provided in the appropriate DNA sample collector kits.

DNA sample collector kits are available from Angus Australia (tail hair only), Zoetis (TSU and tail hair) and Neogen (TSU only).

Further information regarding the collection of DNA Samples can be found in the [Angus Education Centre](#).

ORDERING ANGUS STEERSELECT TESTS

Once you have collected DNA samples and completed the Angus SteerSELECT Order Form:

- A copy of the order form should be emailed to dna@angusaustralia.com.au
- A printed copy of the order form, and the DNA samples should be mailed to:

Angus Australia
Locked Bag 11
ARMIDALE NSW 2350

Angus SteerSELECT results will be available approximately 6 – 8 weeks after the order form is received at Angus Australia.

NOMINATING THE DNA TESTING LABORATORY

The DNA testing required for Angus SteerSELECT can be conducted by either Zoetis Animal Genetics or Neogen Australasia. A designated Angus SteerSELECT Order Form for both laboratories are available for download from the [Angus Australia website](#).

Fees and turnaround time for Angus SteerSELECT may vary subject to the DNA laboratory that is utilised.

For a listing of the latest fees, refer to fee schedule available on the [Angus Australia website](#).

SIRE VERIFICATION

DNA sire verification is available as part of Angus SteerSELECT providing the sires are registered with Angus Australia and have a genomic profile available.

In many cases, a genomic (DNA) profile will have previously been recorded with Angus Australia for your sires (by the breeder or a previous owner) and can be used to conduct the DNA sire identification component of the Angus SteerSELECT testing.

Details of whether a DNA profile is stored for each registered sire can be viewed on the Angus Database Search facility on the [Angus Australia website](#).

If a genomic profile has not previously been recorded, you can collect a DNA sample for the sire and request a genomic profile from Angus Australia. DNA test request forms are available from the [Angus Australia website](#).

DNA tests can only be ordered for animals that you own, and so you will need to ensure that all registered bulls have been transferred into your ownership on the Angus Australia database prior to requesting the genomic profile.

ADD ON TESTING – BVDV

BVDV testing can be conducted in association with Angus SteerSELECT as an optional add-on from both Zoetis (TSU samples only) and Neogen (TSU and tail hair samples).

If BVDV testing is required, this should be nominated on the order form. Angus SteerSELECT and BVDV testing can be conducted from the same DNA sample.

RECEIVING ANGUS STEERSELECT RESULTS

Angus SteerSELECT results are reported via a powerful online reporting facility on the [Angus.Tech platform](#).

To access results for your herd, you need to sign into the [Angus.Tech platform](#) using a username, usually your mobile phone number, email address or Angus Australia member ID, and a password.

If you do not have an existing username linked to your Angus Australia Member ID, a username and password will be forwarded to you shortly after your Angus SteerSELECT order is received.

The Angus SteerSELECT reporting facility enables you to view, search, sort, and analyse the Angus SteerSELECT results for your females. Results can also be exported in csv format for upload into programs such as Microsoft Excel or downloaded in a series of print friendly pdf reports.

Angus SteerSELECT results are generated every night.

INVOICING FOR ANGUS STEERSELECT TESTING

Invoices will be generated for Angus SteerSELECT tests shortly after the order form and samples are received at Angus Australia. Invoices are generated based on the number Angus SteerSELECT tests requested, and still apply if results cannot be generated for an individual steer. For example, if the DNA result for a steer reveals that he is 50% or less Angus content.





FURTHER INFORMATION

For more information on how Angus SteerSELECT can enhance your beef production enterprise, and how to get started visit the Angus SteerSELECT Education Centre or contact:

- Angus Australia: (02) 6773 4600
- Zoetis Animal Genetics: 1300 768 400
- Neogen Australasia: (07) 3736 2134

Embrace the future of genetic selection and optimize your Angus beef production with Angus SteerSELECT.



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