



Final report

Australian Angus Reference Population

Project code: P.PSH.1172

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Date published: 30th April 2024

PUBLISHED BY
Meat and Livestock Australia Limited
PO Box 1961
NORTH SYDNEY NSW 2059

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

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Abstract

With genomic technology now an important additional source of information to enhance the rate of genetic improvement, Angus Australia extended a reference population project, known as the Angus Sire Benchmarking Program (ASBP), in 2019. This was preceded by the first phase of the ASBP that ran from 2010 to 2018 (P.PSH.0528).

Across four (4) Cohorts Angus bulls were joined through fixed time artificial insemination to 1,000 to 2,000 Angus females per year. Their progeny were measured for numerous commercially relevant traits, from birth to slaughter in the steers and birth to first parity in the heifers. Along with some novel traits like fatty acid composition and methane emissions (as part of Low Methane Beef Program, P.PSH.2012).

This phase of the ASBP successfully progeny tested 145 modern Angus bulls through 2,961 progeny, with the relevant data included in the Trans-Tasman Angus cattle Evaluations (TACE) to inform Estimated Breeding Value (EBVs). DNA samples were collected on all ASBP sires, and their progeny, with subsequent genomic profiles generated of sufficient density for inclusion in the single-step TACE analysis.

This project added to the confidence in genomic testing Angus cattle for inclusion in genetic evaluation programs. This is demonstrated through the exponential increase in genomic testing by Angus Australia members in recent calving years. Outcomes from this project have also contributed to increasing the rate of genetic gain in the Australian Angus population, resulting in an estimated \$74.7 million after 10 years to 2033, or \$707 million after 30 years to 2053 through additional genetic gain.

Executive summary

Background

With genomic technology now an important additional source of information to enhance the rate of genetic improvement, Angus Australia extended a reference population project, known as the Angus Sire Benchmarking Program (ASBP), in 2019. This was preceded by the first phase of the ASBP that ran from 2010 to 2018 (P.PSH.0528).

The results from this project will be used to inform the Trans-Tasman Angus Cattle Evaluation (TACE) and provide higher accuracy Estimated Breeding Values (EBVs) for breeding candidate (bulls and heifer) selection in seedstock and commercial herds. Subsequently this will deliver higher rates of genetic gain in the Australian Angus populations and production gains for the Australian beef supply chain.

Objectives

The project objectives were:

- Addition of at least 3,375 Angus progeny to the Australian Angus reference population from at least 120 sires.
- The progeny will be phenotyped for:
 - Calving traits – birth weight, calving difficulty, gestation length
 - Weight traits – 200, 400 and 600 day weights.
 - Docility
 - Immune competence in weaners (sample of herds only)
 - Live animal ultrasound scans for carcase traits
 - Rib fat
 - Rump fat
 - Intramuscular fat (IMF)
 - Eye muscle area (EMA)
 - Structural Assessment and type traits – feet, legs, coat
 - Feed intake on steers
 - MSA grade data on steers
 - Meat Image Japan camera carcase grade on steers.
 - Meat sample laboratory assay for IMF%, fatty acid profile, iron and zinc content on steers.
 - Pregnancy status, fertility and calving outcomes from heifers to first-parity.
- DNA samples will be collected on all sires and progeny with genomic profiles generated.
- Genotypes and relevant phenotypes promptly included in the Angus BREEDPLAN analysis for delivery to industry.

Increasing rate of genetic gain by 2.5% annually across the Angus influenced population.

Methodology

Across four (4) Cohorts, 145 Angus bulls were joined, primarily through fixed time artificial insemination to 1,000 to 2,000 Angus females per year. The resulting progeny were measured for numerous commercially relevant traits, from birth to slaughter in the steers and birth to first parity in the heifers. Along with some novel traits like fatty acid composition and methane emissions (as

part of Low Methane Beef Program, P.PSH.2012). All relevant ASBP data was added to the Angus Australia database and included in the Trans-Tasman Angus Cattle Evaluation (TACE) to contribute to the calculation of Estimated Breeding Values (EBVs) of the sires and their relatives.

Results/Key Findings

The ASBP has successfully added 145 sires and 2,961 progeny to Australian Angus Reference population that informs the Trans-Tasman Angus cattle Evaluations (TACE) to produce Estimated Breeding Value (EBVs). The phenotypes have resulted in moderate to high TACE EBV accuracies for the ASBP sires. Additionally, DNA samples were collected on all ASBP sires, and their progeny, with subsequent genomic profiles generated of sufficient density for inclusion in the single-step TACE analysis.

Benefits to industry

This project has provided confidence in genomic testing Angus cattle for inclusion in genetic evaluation programs. This is demonstrated through the exponential increase in genomic testing by Angus Australia members in recent years. Outcomes from this project have also contributed to increasing the rate of genetic gain in the Australian Angus population, resulting in an estimated \$74.7 million after 10 years to 2033, or \$707 million after 30 years to 2053 through additional genetic gain.

Future research and recommendations

Further work is recommended to maintain and grow this population, particularly for the hard-to-measure traits and to ensure that it remains contemporary. This is being addressed in the short-term with Angus Australia fully funding the core of the reference population program, and adding on overlay co-funded projects, like the Low Methane Beef programs (P.PSH.2012). Further work is also required to understand how lower-cost commercial, routinely collected data on genotyped animals could be harnessed to maintain reference populations.

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1. Background

Angus Australia members have been early adopters of breeding technologies and in-turn achieving world-leading rates of genetic improvement in beef production profitability traits. This has been primarily through the application of performance-based selection programs using the Trans-Tasman Angus Cattle Evaluation (TACE) using BREEDPLAN software (Parnell, 2015). With the emergence of genomic technology as a valuable additional source of information to enhance the rate of future genetic improvement, Angus Australia commenced the Angus Sire Benchmarking Program (ASBP) in 2010.

The overall objective of the ASBP is to establish a contemporary reference population of Australian Angus animals with phenotypes, particularly those which are hard-to-measure, and genotypes for the application of genomic technology for Australian beef producers. This program formed part of a portfolio of industry Beef Information Nucleus (BIN) projects initiated by various breeds with funding support from the Meat and Livestock Australia Donor Company (Banks, 2011).

The first phase of the ASBP, under project P.PSH.0528, included cohorts 1 to 8, spanning across 2010 to 2021. Cohorts 9 to 12 of the ASBP (this project P.PSH.1172) ran from 2019 to 2023 as a continuation of the same reference population program.

The results from this project are used primarily to inform the Trans-Tasman Angus Cattle Evaluation (TACE) and provide higher accuracy Estimated Breeding Values (EBVs) for breeding candidates (bulls and heifer) selection in seedstock and commercial herds. Subsequently this will deliver higher rates of genetic gain in the Australian Angus populations and production gains for the Australian beef supply chain.

2. Objectives

The project objectives were:

- Addition of at least 3,375 Angus progeny to the Australian Angus reference population from at least 120 sires.
- The progeny will be phenotyped for:
 - Calving traits – birth weight, calving difficulty, gestation length
 - Weight traits – 200, 400 and 600 day weights.
 - Docility
 - Immune competence in weaners (sample of herds only)
 - Live animal ultrasound scans for carcase traits
 - Rib fat
 - Rump fat
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 - Eye muscle area (EMA)
- Structural Assessment and type traits – feet, legs, coat.
- Feed intake on steers
- MSA grade data on steers

- Meat Image Japan camera carcase grade on steers.
- Meat sample laboratory assay for IMF%, fatty acid profile, iron and zinc content on steers.
- Pregnancy status, fertility and calving outcomes from heifers to first-parity.
- DNA samples will be collected on all sires and progeny with genomic profiles generated.
- Genotypes and relevant phenotypes promptly included in the Angus BREEDPLAN analysis for delivery to industry.
- Increasing rate of genetic gain by 2.5% annually across the Angus influenced population.

3. Methodology

This reported phase of the ASBP commenced in 2019 (Cohort 9), with 24 Angus bulls joined by one round of fixed-time artificial insemination (AI) to 1,640 cows across 5 (five) co-operator herds. In subsequent years, an additional 3 cohorts (to total 4 Cohorts) of between 24 and 35 bulls were joined to between 1,000 and 2,500 cows per year.

In each cohort, a genetically diverse range of bulls, were selected from those nominated by Angus breeders from all states of Australia and New Zealand. Sires from the USA were also included in some cohorts. Sires represented in each cohort were predominately young Angus bulls (2 – 3 years of age), with some older influential sires occasionally included. Table 1 shows the numbers of sires used and the total numbers of progeny produced from each cohort.

DNA samples, through frozen semen straws, were collected and stored on all ASBP bulls with genomic profiles generated of sufficient density for inclusion in genetic evaluation programs.

Birth and early growth performance traits were measured on all calves in the co-operator herds. Male progeny were castrated and grown to feedlot entry age prior to measurement of feed intake over a 70-day test period, followed by finishing in a commercial feedlot. Following slaughter, chilled carcasses were graded (Meat Standard Australia) and assessed for a range of meat quality traits. Additionally, meat samples were taken for meat science assessment, including intramuscular fat using soxhlet calibrated near-infrared spectrophotometry and fatty acid assay. Heifer progeny were grown out in the commercial co-operator herds and joined by natural service to obtain first-parity reproductive and calving performance.

Ultrasound scanning for carcase traits in the live animal was conducted on the majority of progeny, along with recording of temperament, coat scores and structural assessment. In addition, samples of progeny across various cohorts were measured for a range of novel traits, including immune competence, methane emissions, coat type, retail beef yield and carcase fatty acid profile.

All relevant ASBP data was added to the Angus Australia database and included in the Trans-Tasman Angus Cattle Evaluation (TACE) to contribute to the calculation of Estimated Breeding Values (EBVs) of the sires and their relatives.

The ASBP was managed by an experienced project team at Angus Australia, coupled with guidance from a consultative committee that met two to three times per year over the course of the program. This committee consisted of representatives covering cow herds, bull owners, feedlots, MLA and Angus Australia. Industry partners also contributed to the project's success such as Rangers Valley Feedlot, Stockyard Feedlot, John Dee Abattoir, Vetoquinol, Zoetis, Neogen and a range of genetic-semen providers (e.g. ABS, Genetic Australia, Agrigene, Semex).

4. Results

4.1 Bulls

4.1.1 Bull Statistics

Over the course of project, 2,961 progeny have been generated from 145 bulls (Table 1). Most bulls were bred in Australia (n=258), while a smaller number (n=13) were influential overseas bred sires (New Zealand or the United States of America).

Table 1. ASBP Bull Statistics and Progeny Numbers

Cohort	Joining year	Number of bulls				Total progeny	Progeny per sire average (min, max)
		Aust.	O'seas.	Total	Av ABI [†]		
9	2018	21	3	24	+\$213	460	18.4 (2, 27)
10	2019	39	1	40	+\$224	855	21.4 (2, 35)
11	2020	40	5	45	+\$240	925	20.6 (1, 34)
12	2021	32	4	36	+\$242	721	20.0 (1, 39)
All		232	13	145	+\$230	2,961	20.2 (1, 39)

[†]Angus Breeding Index BREEDOBJECT v6 from May 2024 TACE.

4.1.2 Bull Relevance

The high relevance of the bulls to the overall Angus Australia registered population, and the commercial industry using Angus genetics, has been determined through several methods:

- **Bull Origin:** The ASBP sires have originated from all major Angus bull breeding regions of Australia, particularly weighted heavily towards the main Angus provinces of NSW and VIC. The sires have been bred, on a state basis, in NSW (51%), Victoria (25%), Western Australia (6%), Tasmania (1%), Queensland (3%) and South Australia (2%). Several overseas bred bulls have also entered including New Zealand (5%) and USA (6%).
- **Number of registered progeny:** Across the bulls used in this phase of the ASBP they collectively have 55,353 progeny registered across 701 member herds. This is an average of 381 (ranging from 1 to 5,542) progeny per sire or an average of 78 (ranging from 1 to 2,898) per member herd.

4.1.3 Bull EBV Accuracy

The phenotypes generated from bull progeny in the ASBP have resulted in moderate to high TACE Estimated Breeding Value (EBV) accuracies (Table 2). This is particularly evident for the hard-to-measure traits from the ASBP being carcase (Cwt, EMA, Rib, P8 and IMF), feed intake (NFI) and days-to-calving (DC).

Table 2. Average Estimated Breeding Value Accuracy of ASBP Bull (May 2024 TACE)

Cohort	Traits*														
	CED	GL	Bwt	200	400	600	DC	DOC	NFI	Cwt	EMA	Rib	P8	RBY	IMF
9	80%	94%	95%	93%	93%	93%	62%	88%	81%	89%	88%	88%	89%	81%	90%
10	79%	95%	95%	94%	94%	94%	63%	91%	81%	90%	89%	88%	89%	81%	90%
11	78%	96%	95%	94%	94%	94%	59%	90%	81%	89%	88%	88%	88%	80%	90%
12	77%	95%	95%	93%	91%	91%	53%	89%	68%	81%	79%	80%	80%	74%	81%
ALL	78%	95%	95%	94%	93%	93%	60%	90%	78%	88%	86%	86%	87%	79%	88%

*CED = Calving Ease Direct, GL = Gestation Length, Bwt = Birth Weight, 200 = 200 Day Weight, 400 = 400 Day Weight, 600 = 600 Day Weight, DC = Days to Calving, DOC = Docility, NFI = Net feed Intake, Cwt = Carcase Weight, EMA = Eye Muscle Area, Rib = Rib Fat P8 = Rump Fat, RBY = Retail Beef Yield, IMF = Intramuscular Fat

4.2 Phenotypes

The number of effective phenotypes recorded on ASBP generated progeny and included in the May 2024 TACE analysis, by Cohort and total, are listed in Table 3. To benefit Angus breeders though higher EBV accuracy, the phenotypes were included in TACE promptly and as soon as practical after their collection. Animals are counted in Table 3. if they have the listed phenotype and a genotype available, providing the best reflection of the genotype and phenotype reference population developed in this phase of the ASBP.

Table 3. Effective ASBP Phenotypes included in TACE.

Cohort	9	10	11	12	
Calving Year	2019	2020	2021	2022	Total
Calving Ease Direct	460	233	352	151	1196
Birth Weight	450	846	901	713	2910
200 Day Weight	459	829	888	699	2875
Docility	459	829	888	699	2875
400 Day Weight	416	616	734	630	2396
600 Day Weight	278	190	718	215	1401
Days-to-Calving	151	369	246	149	915
Scan Intramuscular Fat	439	789	715	629	2572
Scan Eye Muscle Area	439	789	715	629	2572
Scan Rib Fat	439	789	714	629	2571
Scan Rump Fat	439	789	715	629	2572
Carcase Weight	201	362	354	293	1210
Carcase Eye Muscle Area	204	362	354	293	1213
Carcase Rump Fat	202	360	354	293	1209
Carcase Rib Fat	202	360	354	293	1209
Carcase Intramuscular Fat	202	361	352	293	1208
MSA Marbling Score	204	362	354	293	1213
Net Feed Intake	202	356	365	297	1220

Additionally, several novel phenotypes, not listed in table 3, have been recorded on ASBP progeny for R&D and future genetic evaluation including:

- Immune Competence: Cell and antibody mediated. (n = 1,656)
- Coat type score (n = 1,057)
- Structural soundness scores (n = 2,330)
- Muscle scores (n = 1,028)
- Meat Standards Australia (MSA) grade data (n = 1,213)
- Fatty acid profiles (n = 1,345)
- Methane emissions (n = 528). Note collected as part of P.PSH.2012.
- Camera Assessed Carcase Data – MIJ (1,267). Note collected as part of ALMTech.

4.3 Genotypes

DNA samples have been collected, mostly in the form of semen straws stored in liquid nitrogen, on all ASBP sires and from hair, blood or TSU samples on the progeny. All genotypes are of sufficient density for inclusion in the single-step TACE analysis (Table 4). Of note is the higher density SNP profiles becoming available and utilised for Cohort 10 progeny onwards.

Table 4. Average number of Single Nucleotide Polymorphism (SNP) for Genotypes of ASBP Bulls and Progeny.

Cohort	# Bulls	Av. SNP	# Prog	Av. SNP
9	24	43,039	460	48,373
10	40	40,912	855	70,704
11	45	60,649	925	70,637
12	36	56,599	721	70,940
All	145	50,519	2,961	67,258

4.4 Progeny Performance Reports

For standardised reporting to Angus Australia members and industry, Sire Progeny Performance Reports were produced and updated regularly for each Cohort. The reports include TACE EBVs and average progeny performance within the ASBP, for numerous traits generally adjusted for herd, contemporary group, age of dam and progeny recording age. An example for Cohort 10 is included in Appendix 8.1.

5. Conclusion

The ASBP is an important industry focused project to develop an effective reference population, particularly for hard-to-measure traits, underpinning current and future genetic evaluation of Australian Angus cattle. In addition, the project has provided an important industry resource for the validation of contemporary genetic evaluation models, demonstration of the effectiveness of EBVs and the development of novel phenotypes for traits of commercial significance.

5.1 Key findings

- The ASBP has successfully added to the Australian Angus reference population with 145 highly relevant Angus sires with 2,961 progeny.
- Numerous commercially relevant phenotypes have been collected and included in TACE to inform EBVs. This includes hard-to-measure traits such as carcase quality and quantity phenotypes, heifer fertility and feed efficiency measures. Several novel phenotypes have also been measured such as immune competence, coat type and fatty acid profiles.
- The phenotypes have resulted in moderate to high TACE Estimated Breeding Values (EBV) accuracies for the ASBP bulls.
- DNA samples have been collected on all ASBP sires and their progeny with genomic profiles generated of sufficient density for inclusion in the single-step TACE analysis.

5.2 Benefits to industry

5.2.1 Enhancements to TACE

The ASBP has provided the required data to develop and implement several enhancements to TACE, including the BREEDPLAN genetic evaluation component. Several examples of the enhancements are:

- New Variance Components (adjustment factors, heritabilities, genetic correlations) in December 2022.
- Publication of ImmuneDEX RBVs for genotyped animals in December 2022.
- Increase to genomic relationship weighting December 2023.
- Docility EBVs transitioned to single-step model in December 2023.
- Coat Type RBVs model enhanced in December 2023.
- Publication of MSA Marbling and Shear Force RBVs in December 2023.

More of the 2022 and 2023 TACE Enhancements can be found at:

- [TACE Enhancements December 2022](#)
- [TACE Enhancements December 2023](#)

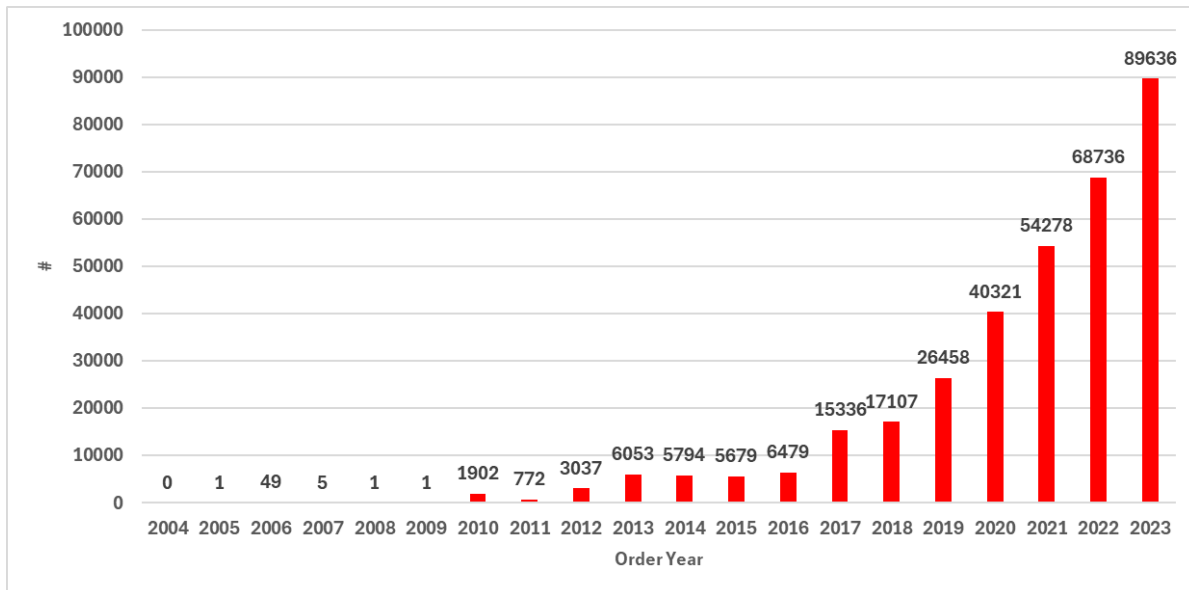
5.2.2 Increase in Genotyping

Angus Australia members have embraced genomic testing animals in their herds, particularly in recent calving years. There has been an exponential growth in animals with genotypes being ordered for Genetic Evaluation purposes from Australian Angus breeders (Figure 3). This is a result of the introduction of the single-step model (Johnston et al, 2018) during December 2017 to include genomic data more effectively in TACE, coupled with the confidence provided by the Angus Australia reference population which is underpinned by data from the ASBP.

Showing the value of the growing reference population, Johnston et al (2023) reports from TACE, a 24% increase in population level accuracy estimates averaged across 25 EBV traits, comparing single-step genomic evaluation to pedigree-only based genetic evaluation. A similar outcome was also observed for specific EBVs related to the hard-to-measure traits recorded in this project, and its

predecessor. For example, for carcass IMF, MSA marbling score, days-to-calving and net feed intake (Finishing) the study observed a 23%, 22%, 7% and 18% increase in population accuracy respectively.

Figure 1 – Number of Angus genotypes ordered for genetic evaluation (as of 30th April 2024)



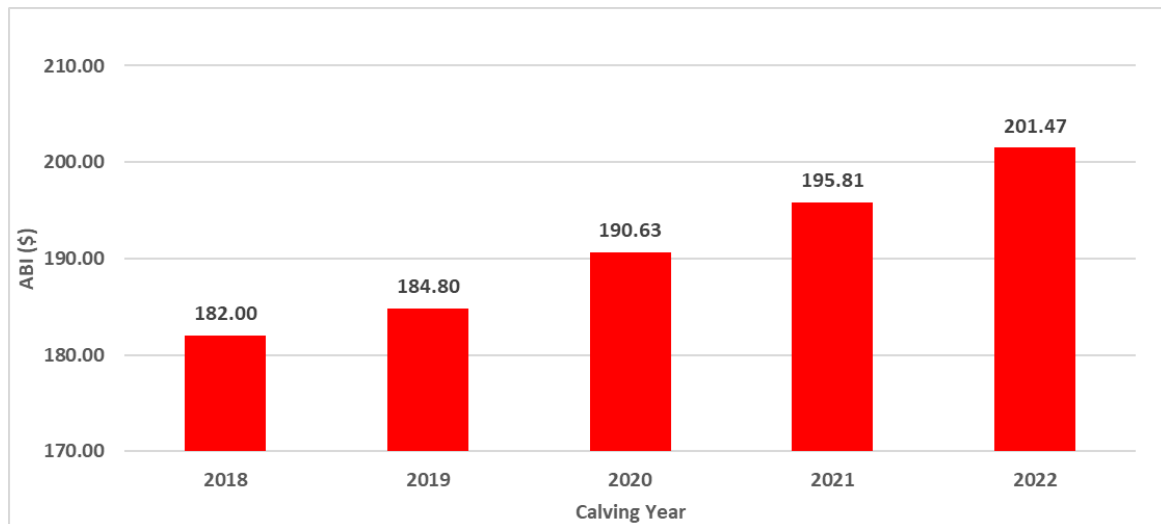
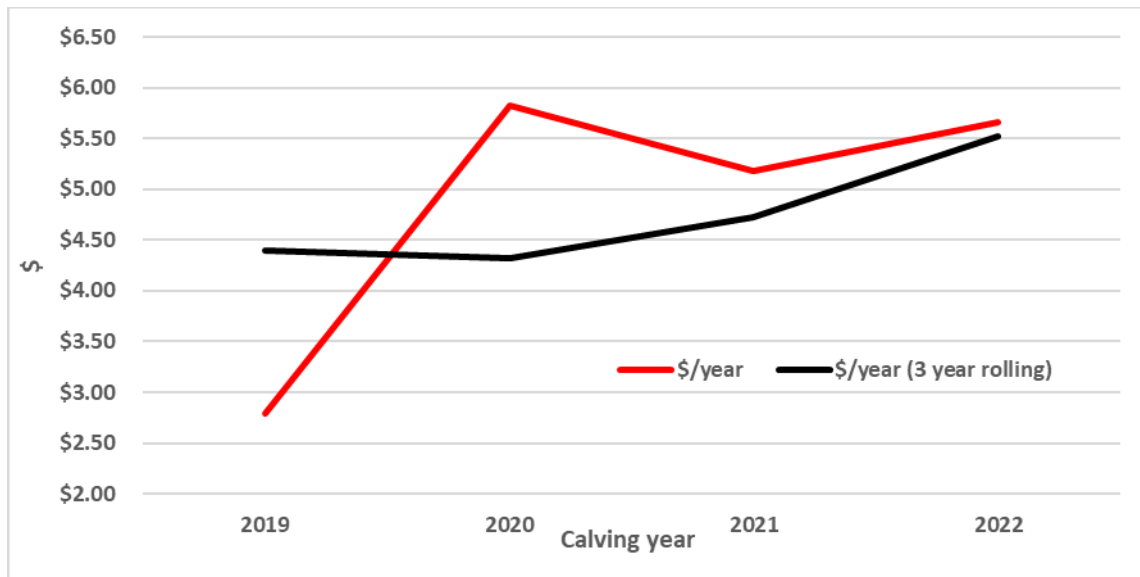
5.2.3 Increase in Genetic Gain

Genetic gain on a dollar (\$) basis can be determined in the Australia Angus population by the trend in the Angus Breeding Index (Angus Australia, 2020) from BREEDOBJECT v6.

Over the period of this project, the Angus Breeding Index (ABI) has increased from \$182.00 per cow joined for the 2018 born calves to \$201.47 per cow joined for the 2022 born calves. This is an increase of \$19.47 overall or average change of \$4.86 per calving year.

Importantly, a 25.5 % increase to the rate of genetic gain has also been observed. On a 3-year rolling average basis, at the commencement of the project (i.e. 2017 to 2019 calving years) the ABI change was \$4.40 per cow mated per year compared to \$5.52 per cow mated per year at the end of the project (i.e. 2020 to 2022 calving years). This equates to a 6.4% increase in the rate of genetic gain per year of the project, which is beyond the project objective to increase the rate of genetic gain by 2.5% annually across the Angus influenced population.

While there are many factors contributing to the increase to the rate of genetic gain in the Australian Angus population, a significant portion, particularly in recent calving years, can be attributed to the recent availability of genomic selection underpinned by the ASBP reference population data and the single-step TACE analysis.

Figure 2. Genetic Trend based on average Angus Breeding Index (Mid-April TACE 2024)**Figure 3. Genetic trend based on rate of change of Angus Breeding Index (Mid-April TACE 2024)**

5.2.4 Industry Economic Value

The outcomes generated from this project have contributed substantially to the 25.5% increase in the rate of genetic gain across the Angus genetic improvement pipeline between 2020-2022 compared to the gain achieved at the commencement of the project (i.e. as measured by the increase in Angus Breeding Index, ABI). This comes as the result of the facilitated implementation of single-step genomic assisted genetic evaluation and the strong focus on genetic improvement generated by the publicity around the project. The economic value of this outcome can be estimated

by modelling the transmission of this increased genetic improvement through the value chain and comparing this with the predicted genetic gains achieved without this project.

“Without project” case: In the absence of this project, it is anticipated that only 50% of the achieved increase in the rate of genetic gain in ABI between 2017-2019 to 2020-2022 would have been realised and would continue to be achieved in Angus seedstock herds into the future. This would result in an overall net present value of \$3.95 billion across the Angus-influenced value chain over the 10 years following the project to 2033, or 10.41 billion over 30 years to 2053 (though it could be argued that rates of genetic improvement may decline without continued inputs of RD&A).

“With project” case: Assuming that 50% of the increase in the rate of genetic improvement observed in the ABI from the commencement of the project to 2020-2023 can be attributed to the outputs of the project (i.e. extra \$1.47 per year, the rate of gain will be increased to \$5.52 per cow per year in Angus seedstock herds (considering a benefit lag of 2 years), resulting in a net present value of \$4.03 billion across the Angus-influenced value chain in the 10 years following the project to 2033, or \$11.11 billion over 30 years to 2053. The net present value of this additional gain beyond the “Without project” case is \$74 million after 10 years to 2033, or \$707 million after 30 years to 2053.

Additional assumptions used in this analysis are listed in Appendix 8.3.

5.2.5 Collaborative R&D

As a member-based organisation, Angus Australia is continually looking at opportunities to add value to the businesses of its members and the overall Australian beef industry. Consistent with this approach, the ASBP has allowed Angus Australia to increase its involvement in applied, industry focussed collaborative research, development and adoption (RD&A) activities.

The increased involvement in RD&A represents a significant transition from traditional breed society activities and is consistent with Angus Australia’s vision of being a member-based, not-for-profit, innovation company, underpinned by collaborative R&D focusing on genetic improvement technologies.

The ASBP itself is a good example of collaborative RD&A between Angus Australia and industry through MLA and the MLA Donor company co-funding program.

As an example of R&D collaboration, listed below are several recent published studies that have capitalised on the ASBP cattle resources and reference population data:

- N. Kamprasert, H. Aliloo, J. van der Werf, C. Duff and S. Clark (2023). **Genomic prediction using imputed whole-genome sequence in Australian Angus cattle**, Proceedings of the Association for the Advancement Animal Breeding and Genetics, 25, 150-153.
- B.N. Maslen, B.C. Hine, C. Duff, P.A. Alexandre, S.A. Clark, J.H.J van der Werf, J.D. White and S.D. Pant (2023). **Faecal microbiota of Angus cattle with divergent immune competence**, Proceedings of the Association for the Advancement Animal Breeding and Genetics, 25, 266-269.
- A.M. Samaraweera, H. Aliloo, A. Byrne, C.J. Duff and S.A. Clark (2023). **Genetic evaluation of coat type for Australian Angus**, Proceedings of the Association for the Advancement Animal Breeding and Genetics, 25, 290-293.

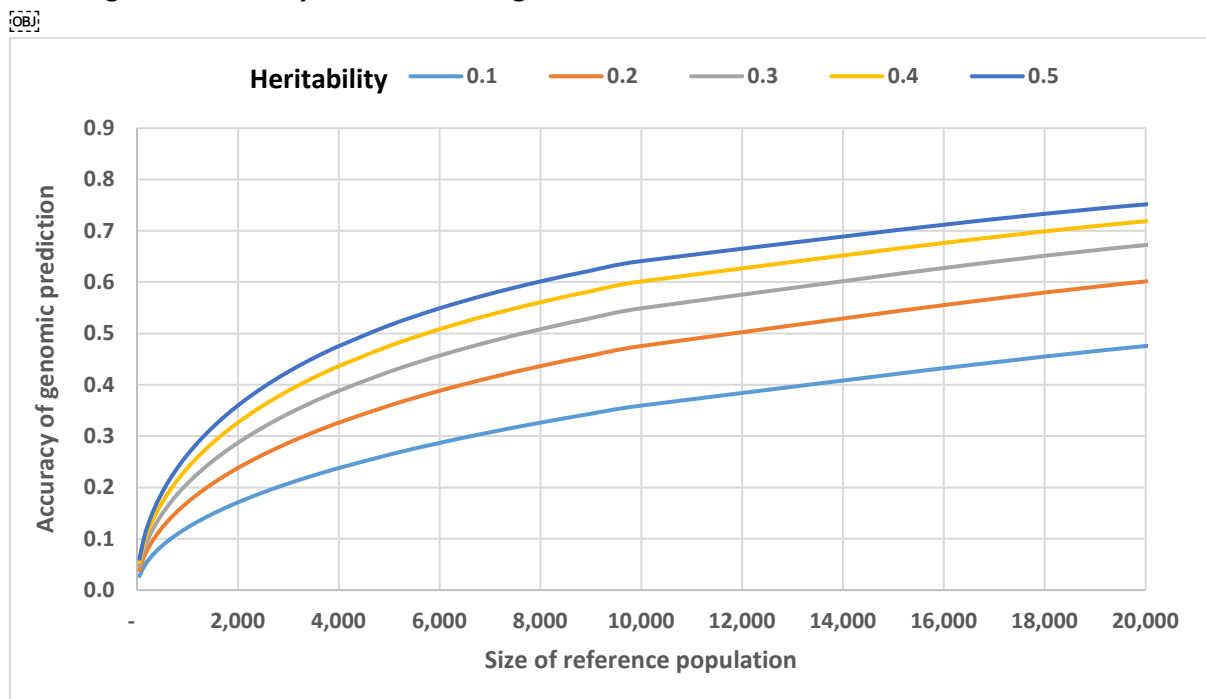
- S.F. Walkom, C.J. Duff, C.J. Girard and K.L. Moore (2023). **Longevity of reference populations in a trans-Tasman genetic evaluation: Review of the Angus Sire Benchmarking Program**, Proceedings of the Association for the Advancement Animal Breeding and Genetics, 25, 322-325.
- A.M. Samaraweera, A. Byrne and C.J. Duff (2023). **Appropriateness of combining carcass data from Angus sire benchmarking program and breeder herds in a single genetic evaluation**, Proceedings of the Association for the Advancement Animal Breeding and Genetics, 25, 370-373.
- Kamprasert, N., Aliloo, H., van der Werf, J. H. J., & Clark, S. A. (2024). **Accuracy of whole-genome sequence imputation in Angus cattle using within-breed and multi breed reference populations**. animal, 18(3), 101087.
- Madsen, M. D., van der Werf, J. H. J., & Clark, S. (2024). **Macro-and micro-genetic environmental sensitivity of yearling weight in Angus beef cattle**. animal, 18(2), 101068.

6. Future research and recommendations

One of the main factors influencing the effectiveness of a genomics reference population is its size, being the number of animals that are both genotyped and phenotyped.

The size of the reference population for a specific trait, coupled with its heritability, allows estimation of genomic breeding value accuracy, a significant driver of genetic gain, that can be achieved. Figure 5. shows this relationship for Australian Angus which, in this case, is modelled on Goddard et al (2011), with the effective number of chromosome segments calculated according to Daetwyler et al (2008) and an assumed effective population size for Angus of 90 (Clark et al, 2019).

Figure 5. Relationship between reference population size and trait heritability to Genomic Breeding Value Accuracy in Australian Angus cattle.



While this project has greatly assisted in the development of a reference population of effective size and relevance for Australian Angus cattle, further work is recommended to maintain and grow this population, particularly for the hard-to-measure traits and to ensure that it remains contemporary. This is being addressed in the short-term with Angus Australia fully funding the core of the reference population program, and adding on overlay confounded projects, like the Low Methane Beef program (P.PSH.2012). Further work is also required to understand how lower-cost commercial, routinely collected data on genotyped animals could be harnessed to maintain reference populations.

7. References

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8. Appendix

8.1 ASBP Progeny Performance Report – Cohort 10 (Example)



PROGENY PERFORMANCE REPORT



Angus Australia thanks the following organisations for their support of the Angus Sire Benchmarking Program (ASBP):

Co-Funding Partner

Meat and Livestock Australia

Industry Partners

Rangers Valley

Stockyard Beef - Kerwee Lot Feeders

John Dee Abattoir University of New England (UNE)

Vetoquinol

Zoetis Animal Genetics Neogen Australasia

Co-operator Cow Herds

Brad and Marg Gilmour, Boorcan, VIC.

Rob and Sally Bulle, Ardrossan, Holbrook, NSW. Hugh Munro, Glenroy, Gravesend, NSW.

Roger and Geralyn Flower, Myola, Black Mountain, NSW.

John O'Brien & Trevor Nash, Stradbroke Pastoral, Yarralee, Coolah, NSW. Rob Dugdale and Jeff Richie, Springmount, Black Mountain, NSW. Richard and Ruth Puddicombe, Burindi, Barraba, NSW.

Shaun Uebergang, Pearsby Hall, Delungra, NSW. Stephen and Amity Chase, Waitara, Trangie, NSW.

NSW DPI, Trangie Agricultural Research Centre, Trangie, NSW. NSW DPI, Glen Innes Research Station, Glen Innes, NSW. University of Sydney, Nowley, Spring Ridge, NSW.

David and Pia Butcher, Woorak, Bundarra, NSW.

James Stephens, Charles Sturt University, Wagga Wagga, NSW. Douglas Lithgow, Swanpool, VIC.

Bruce and Anna Allworth, Taloooby, Holbrook, NSW.

Bull Owners and Nominators

Angus Australia thanks the numerous bull owner and nominators that have entered the ASBP. For sire ownership details please refer to the Angus Australia website (www.angusaustralia.com.au).

Data Analysis Support

Animal Genetics and Breeding Unit (AGBU), University of New England, Armidale, NSW. Agricultural Business Research Institute (ABRI-BREEDPLAN), Armidale, NSW.



Angus Sire Benchmarking Program

The Angus Sire Benchmarking Program (ASBP) is a major initiative of Angus Australia with support from Meat & Livestock Australia (MLA) and industry partners such as Vetoquinol, Rangers Valley Feedlot and John Dee Abattoir.

The major objective of the ASBP is to:

“Grow the phenotype and genotype reference population with contemporary Australian Angus animals, particularly on hard-to-measure traits, for enhanced genetic evaluation, collaborative research and innovative development.”

To meet the project objectives Angus Australia aims to join an average of 25-35 sires a year to approximately 1,800 Angus cows to achieve a minimum of 25 progeny (50:50 steers and heifers) per sire using a fixed time AI program. The Angus cows are located across several commercial co-operator herds located in New South Wales and Victoria.

The Angus sires that enter the ASBP are nominated by Angus Australia members. Before entering the program the sires are assessed for a range of factors such as genetic diversity, genetic condition status, EBVs and selection index values. Once the progeny are born they are comprehensively performance recorded for calving ease, growth, temperament, heifer reproduction, structure, feed efficiency, abattoir carcase and beef quality attributes.

ASBP Progeny Performance Report

The ASBP Progeny Performance report includes two sections to assist with assessment of the genetic merit of the ASBP sires, being:

1. **Trans-Tasman Angus Cattle Evaluation (TACE) Sire Listing** – The first section includes the Angus EBVs and Selection Indexes from the noted monthly analysis. ***For selection purposes it is strongly advised that the EBVs and selection indexes be used primarily. They are the highest accuracy information to use in selection as they take into account all available industry data including the data generated from the ASBP. They also account for information from all known relatives and genetic correlations between traits as well as being able to be compared across cohorts and the Angus population.***
2. **ASBP Progeny Performance Listing** – The second section includes progeny average values and rankings for a range of traits recorded within the ASBP. This listing provides an indication on how the sire's are performing within the ASBP. ***The values listed can only be validly used to compare sires within each cohort of the ASBP.***

Each section includes introductory notes to assist with the interpretation of the information listed.

Contact – For further questions on the ASBP contact Christian Duff, General Manager - Genetic Improvement, Angus Australia on phone: (02) 6773 4620, mobile: 0457 457 141 or email: christian@angusaustralia.com.au. Further information on the ASBP is listed on the Angus Australia website www.angusaustralia.com.au

READING THE ASBP SIRE LISTING - TACE EBVs and SELECTION INDEXES

Ident	Name	Statistics			Estimated Breeding Values																							
Sire Dam	Reg.	Num Herd	Prog	Prog 2Yr.	Calv-Ease		Birth		Growth					Fert		Carcase					Feed	Temp	Structural			Selection Index		
					Dir	Dtrs	GL	BW	200	400	600	MCW	Milk	SS	DC	CW	EMA	Rib	P8	RBY	IMF	NFI-F	Doc	Claw	Angle	Leg	\$A	\$A-L
USA17960722	BALDRIDGE BEAST MODE B074				+6.6	+8.2	-3.6	+3.6	+77	+123	+149	+131	+9	+2.8	-4.4	+82	+3.2	-2.5	-4.5	-0.3	+2.6	-0.23	+34	+0.54	+0.54	+0.78	\$277	\$452
USA16295688	HBR	234	5069	1679	95%	82%	99%	99%	99%	99%	99%	97%	96%	98%	65%	94%	92%	92%	92%	88%	91%	77%	98%	98%	98%	97%		
USA17149410					17	5	66	36	1	1	4	9	92	21	44	13	87	89	96	75	32	16	7	4	1	2	2	1

Animal Details

Ident: Animal ident
 Name: Animal name
 Sire: Ident of animal's sire
 Dam: Ident of animal's dam
 Reg.: Registration status
 Num Herd: Number of herds in which the animal has progeny recorded with Angus Australia
 Prog: Number of progeny recorded with Angus Australia
 Prog 2Yr: Number of progeny recorded with Angus Australia that are born in the past 2 years

EBVs & Selection Indexes

Dir	Calving Ease Direct	P8	Rump Fat
Dtrs	Calving Ease Daughters	RBY	Retail Beef Yield
GL	Gestation Length	IMF	Intramuscular Fat
BW	Birth Weight	NFI-F	Net Feed Intake (Feedlot)
200	200 Day Growth	DOC	Docility
400	400 Day Weight	Claw	Claw Set
600	600 Day Weight	Angle	Foot Angle
MCW	Mature Cow Weight	Leg	Leg Angle
Milk	Milk	\$A	Angus Breeding Index
SS	Scrotal Size	\$A-L	Angus Breeding Low Feed Cost Index
DC	Days to Calving		
CW	Carcase Weight		
EMA	Eye Muscle Area		
RIB	Rib Fat		

For each EBV, the EBV is published on the top row, followed by the accuracy of the EBV on the second row, followed by the percentile band in which the EBV ranks on the bottom row. For each selection index, the selection index is published on the top row, with the percentile band in which the selection index ranks on the bottom row. Accuracy values are not published for selection indexes.



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Ident	Name	Statistics			Estimated Breeding Values																										
		Sire Dam	Reg.	Num Herd	Prog	Prog 2Yr.	Calv-Ease		Birth		Growth					Fert		Carcase						Feed		Temp	Structural			Selection Index	
							Dir	Dtrs	GL	BW	200	400	600	MCW	Milk	SS	DC	CW	EMA	Rib	P8	RBV	IMF	NFI-F	Doc		Claw	Angle	Leg	\$A	\$A-L
NAQN329		ARDROSSAN HOLBROOK N329 ^{PV}			-2.6	-1.1	-3.0	+2.9	+48	+89	+113	+82	+22	+2.8	-7.0	+70	+5.4	+2.5	+2.3	-0.9	+4.1	+1.04	+14	+0.82	+1.00	+0.96	\$211	\$340			
NAQH318	HBR	8	235	61	75%	64%	96%	94%	95%	94%	93%	88%	83%	85%	56%	90%	88%	88%	89%	80%	90%	82%	88%	81%	87%	83%					
NAQK30					85	85	73	26	63	59	63	79	15	26	8	43	63	8	12	98	12	99	75	44	56	27	43	60			
NAQM101		ARDROSSAN MAGISTRATE M101 ^{PV}			+0.9	+1.0	-7.2	+4.2	+49	+89	+119	+99	+19	+1.6	-2.5	+68	+9.4	-0.7	-2.1	+1.2	+1.2	+0.78	+18	+0.52	+0.84	+1.10	\$178	\$307			
NAQH255	HBR	8	199	0	86%	71%	97%	97%	96%	96%	95%	95%	92%	95%	67%	92%	89%	90%	90%	84%	91%	83%	90%	90%	91%	85%					
NAQH230					64	71	13	56	59	58	49	53	37	70	90	48	19	65	80	12	78	94	62	4	19	71	78	81			
NBBN47		BALD BLAIR NELSON N47 ^{PV}			+2.9	-1.9	-4.9	+4.3	+55	+103	+150	+154	+15	+1.0	-5.2	+83	+4.1	-1.2	-0.9	+1.0	+0.6	-0.22	+29	+1.00	+1.14	+1.18	\$187	\$369			
HIOG18	HBR	10	88	6	78%	66%	95%	95%	93%	93%	93%	89%	84%	90%	60%	88%	87%	87%	88%	79%	89%	81%	89%	85%	85%	82%					
NBBL83					46	89	42	58	31	20	5	3	63	87	36	12	78	76	60	19	89	10	19	79	84	88	69	35			
ECMN187		BANNABY REALITY N187 ^{SV}			+7.1	+6.5	-6.7	+4.2	+54	+88	+104	+95	+11	+4.0	-5.1	+65	+7.7	+1.9	+3.5	+0.0	+3.2	+0.21	+17	+0.84	+1.20	+1.38	\$234	\$395			
NZE14647008839	HBR	6	60	0	78%	69%	94%	93%	92%	92%	92%	88%	80%	88%	66%	88%	88%	87%	88%	80%	90%	81%	86%	88%	88%	84%					
ECMF113					12	16	18	56	34	62	80	60	89	6	38	58	35	13	5	77	27	49	66	48	91	99	19	17			
HCAN20		BOONAROO KASBAH N20 ^{SV}			+3.9	+2.4	-5.2	+5.5	+47	+88	+116	+109	+18	+3.7	-5.7	+56	+6.2	-0.4	-1.6	+1.0	+1.9	+0.71	+15	+0.88	+0.98	+1.04	\$194	\$349			
VTMK338	HBR	6	134	59	74%	61%	93%	95%	94%	94%	90%	87%	79%	89%	54%	90%	88%	88%	89%	79%	91%	83%	93%	91%	91%	85%					
HCAL54					37	58	37	82	67	60	57	37	43	9	25	80	53	58	73	19	59	91	75	57	51	53	63	52			
NGMN418		BOOROOMOOKA JACKPOT N418 ^{PV}			+2.0	+7.1	-8.6	+5.4	+61	+108	+135	+128	+7	+3.4	-6.6	+79	+9.6	-0.5	+0.1	+1.0	+2.4	+0.32	+28	+1.32	+1.08	+1.00	\$264	\$450			
WWEL3	HBR	9	187	49	70%	64%	95%	96%	95%	95%	95%	92%	84%	94%	60%	88%	86%	86%	79%	88%	79%	95%	92%	92%	85%						
NGML471					55	12	5	80	10	10	17	14	98	13	12	18	18	60	42	19	45	62	20	99	74	39	4	2			
NGMN213		BOOROOMOOKA NORMANDY N213			+11.1	+10.7	-7.4	+1.3	+40	+72	+102	+76	+24	+3.2	-9.5	+51	+3.8	-2.5	-3.2	+0.8	+3.3	+0.95	+31	+0.80	+0.68	+1.06	\$229	\$386			
NGML201	HBR	5	168	41	76%	64%	94%	96%	95%	95%	95%	92%	83%	93%	54%	88%	87%	86%	87%	78%	89%	78%	95%	92%	92%	84%					
NGML45					1	1	12	7	90	94	83	86	7	17	1	90	81	93	91	29	25	97	14	39	3	59	23	23			
AMQN9		BROOKLANA GENESIS N9 ^{PV}			+0.1	+5.5	-4.4	+6.9	+61	+110	+146	+122	+28	+6.0	-6.1	+95	+20.3	-2.2	-3.2	+2.7	+0.0	+0.81	+10	+1.04	+1.06	+0.82	\$263	\$437			
SMPG357	HBR	7	44	0	77%	67%	93%	92%	91%	90%	90%	86%	80%	83%	64%	90%	89%	89%	90%	81%	91%	84%	87%	85%	85%	81%					
AMQL11					70	25	50	96	10	8	7	20	2	1	19	3	1	91	91	1	96	94	87	84	70	4	4	3			
GTNP9		CHILTERN PARK PICASSO P9 ^{PV}			+7.9	+8.2	-3.1	+1.2	+57	+105	+135	+94	+23	+3.6	-8.2	+94	+6.9	-0.6	+0.8	-0.4	+4.2	+0.62	+31	+0.76	+0.68	+0.86	\$285	\$466			
HKFJ5	HBR	36	509	338	77%	67%	98%	97%	94%	95%	94%	88%	81%	91%	60%	87%	86%	86%	86%	79%	88%	76%	86%	89%	89%	83%					
GTNK26					8	6	71	6	23	15	17	61	10	10	3	3	45	63	30	90	11	87	15	31	3	8	1	1			
QMUM13		CLUNES CROSSING DUSTY M13 ^{PV}			+0.1	+4.2	-7.0	+5.4	+65	+101	+119	+62	+15	+0.9	-7.0	+73	+12.9	-2.2	-3.3	+1.1	+1.9	+0.08	+10	+0.90	+0.86	+1.00	\$294	\$422			
USA16295688	HBR	88	1582	142	85%	80%	99%	99%	98%	98%	98%	97%	97%	98%	73%	95%	94%	94%	90%	94%	87%	98%	97%	97%	95%						
QMUG1					70	39	15	80	4	23	49	94	69	89	8	33	4	91	92	15	59	34	89	61	23	39	1	6			
NGCN208		DULVERTON NEW APPROACH N208			-1.5	+1.5	-5.8	+4.1	+51	+88	+114	+112	+13	+1.5	-4.8	+74	+11.6	-1.9	-1.6	+2.1	+1.0	+0.06	+24	+1.02	+1.12	+1.04	\$206	\$349			
WWEL3	HBR	9	245	42	70%	65%	95%	94%	95%	95%	95%	89%	87%	92%	61%	90%	89%	88%	89%	81%	90%	81%	87%	85%	85%	82%					
NGCG037					80	67	28	53	48	61	61	31	81	73	45	30	7	87	73	1	82	32	36	82	81	53	48	52			
QBGK112		GLENDOCH KALLANGUR K112 ^{PV}			-8.1	-2.9	-3.6	+6.6	+56	+98	+126	+104	+15	+1.6	-7.0	+90	+12.3	+1.0	+3.3	+0.6	+2.7	+0.40	+23	+0.72	+0.76	+0.70	\$242	\$374			
NAQA241	HBR	5	141	4	79%	70%	93%	95%	94%	94%	94%	88%	87%	92%	65%	90%	89%	89%	90%	82%	91%	84%	84%	91%	92%	88%					
QBGG72					97	92	63	94	26	31	34	45	64	70	8	5	5	26	6	41	38	70	39	24	9	1	13	31			
EETN1		GVA NEWSWORTHY N1 ^{PV}			+8.0	+4.4	-9.3	+1.7	+51	+89	+113	+90	+22	+2.3	-7.3	+69	+5.6	-0.1	-3.0	+0.4	+1.9	+0.29	+18	+1.08	+0.88	+0.90	\$219	\$375			
USA17031465	HBR	7	42	5	73%	62%	92%	90%	89%	88%	88%	84%	77%	81%	56%	86%	86%	85%	86%	77%	88%	79%	85%	85%	85%	80%					
VSNL24					7	36	3	10	49	59	64	68	16	43	6	45	61	50	89	53	59	59	61	89	27	13	33	30			
DKKN43		HARDHAT K522 NEBRASKA F143			+8.3	+7.4	-9.9	+1.8	+60	+101	+138	+134	+13	+5.2	-6.1	+75	+2.7	+0.2	+0.2	-0.3	+0.2	+0.16	+12	+0.76	+0.86	+0.90	\$193	\$387			
NORK522	HBR	7	110	12	75%	66%	94%	95%	93%	92%	91%	87%	82%	88%	57%	89%	87%	86%	88%	79%	89%	81%	91%	90%	90%	85%					
NKLF143					6	10	2	11	14	24	14	10	79	1	19	28	89	43	40	88	94	43	83	31	23	13	64	21			
NHZM586		HAZELDEAN M586 ^{SV}			+6.4	+9.4	-8.3	+2.4	+49	+86	+115	+102	+18	+4.1	-11.5	+69	+5.1	+0.0	+0.1	+0.0	+4.4	+0.79	+34	+0.48	+0.92	+1.18	\$270	\$458			
NHZJ140	APR	7	295	47	86%	69%	98%	98%	97%	97%	96%	95%	92%	96%	70%	94%	92%	92%	93%	86%	93%	87%	94%	94%	94%	90%					
NHZH356					16	2	6	18	57	66	60	48	39	5	1	46	67	48	42	77	9	94	9	2	36	88	3	1			



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Ident _____

Name		Statistics			Estimated Breeding Values																								
Sire Dam	Reg.	Num Herd	Prog	Prog 2Yr.	Calv-Ease		Birth		Growth					Fert		Carcase					Feed		Temp		Structural			Selection Index	
					Dir	Dtrs	GL	BW	200	400	600	MCW	Milk	SS	DC	CW	EMA	Rib	P8	RBY	IMF	NFI-F	Doc	Claw	Angle	Leg	\$A	\$A-L	
DYFN6 NZE14647008839 DYFL18	INGLEBRAE FARMS NOBLEMAN N6 HBR	11	137	3	+8.9 78% 4	+10.8 68% 1	-7.4 95% 12	+2.0 95% 13	+58 95% 19	+91 95% 53	+110 94% 70	+95 89% 60	+12 83% 84	+3.4 92% 13	-2.0 63% 94	+64 89% 62	+10.2 87% 14	+0.9 87% 28	+1.3 88% 22	+0.1 80% 72	+2.3 89% 48	-0.27 92% 8	+25 90% 31	+0.86 89% 53	+1.12 88% 81	+1.18 85% 88	\$214 39	\$370 34	
WKHN33 USA17577916 WKHL10	KOOJAN HILLS PATRIOT N33 ^{SV} HBR	6	64	0	+6.3 73% 17	+6.6 61% 15	-2.4 93% 80	+3.9 94% 48	+54 92% 34	+98 92% 31	+125 91% 37	+133 86% 10	+9 80% 83	+2.1 83% 20	-6.0 56% 33	+73 87% 90	+2.4 86% 74	-1.1 87% 89	-2.9 78% 41	+0.6 89% 33	+2.9 78% 33	+0.02 88% 28	+9 88% 90	+0.82 86% 44	+1.02 86% 61	+0.96 80% 27	\$210 44	\$396 16	
VLN131 USA16295688 VLYL710	LAWSONS CHARLIE N131 ^{SV} HBR	6	156	38	-4.0 77% 90	-2.1 71% 90	-3.9 95% 59	+5.4 96% 80	+71 95% 1	+127 94% 1	+159 92% 2	+127 88% 15	+21 84% 20	+2.8 91% 64%	-4.4 87% 55	+79 86% 19	+5.7 86% 60	-1.5 87% 81	-1.7 79% 77	+0.0 88% 80	+1.1 88% 66	+0.36 80% 12	+32 94% 66	+0.88 92% 57	+0.74 92% 7	+0.86 88% 8	\$226 8	\$385 23	
VRTP6 USA18219911 VRTJ2	MERRIBROOK PROGRESSION OF HBR	6	21	0	+8.9 75% 4	+2.7 64% 55	-11.7 92% 1	+1.1 90% 6	+54 89% 35	+92 88% 48	+115 88% 58	+94 84% 62	+16 78% 60	-0.3 82% 99	-3.8 56% 70	+19 85% 31	+8.2 85% 30	+0.1 84% 46	-3.2 75% 91	+1.4 76% 7	+1.0 87% 82	+0.08 76% 34	+22 84% 43	+0.90 81% 61	+0.98 81% 51	+1.04 77% 53	\$214 39	\$358 44	
NMMM308 NZE14647008839 NMMH331	MILLAH MURRAH MILESTONE M308 HBR	18	331	47	+6.2 82% 17	+5.4 72% 26	-7.4 97% 12	+4.6 97% 65	+43 96% 82	+79 96% 85	+92 95% 94	+81 93% 81	+18 90% 40	+2.7 95% 29	-5.3 67% 33	+44 89% 96	+4.7 88% 72	+2.4 88% 8	+4.9 89% 2	-0.3 82% 88	+2.0 90% 56	+0.11 79% 38	+21 95% 50	+0.84 83% 48	+0.98 84% 51	+1.22 81% 93	\$194 62	\$337 62	
CSWP036 USA17236055 CSWL123	MURDEDUKE BLACK PEARL P036 ^{PV} HBR	6	119	0	+1.9 78% 56	+3.7 68% 44	-9.0 95% 4	+4.9 95% 71	+49 94% 60	+91 94% 51	+130 92% 25	+114 89% 29	+19 82% 31	+3.3 89% 15	-7.0 67% 91	+58 91% 77	+1.2 90% 95	+0.4 89% 39	-1.1 91% 64	-1.0 82% 98	+6.3 92% 1	+0.63 85% 87	+13 93% 82	+0.82 92% 44	+1.12 93% 81	+1.22 89% 93	\$214 39	\$377 28	
NURN70 NORK522 NURJ53	MURRAY KODAK N70 ^{PV} HBR	17	272	152	+1.8 79% 57	+5.3 66% 27	-6.6 98% 19	+4.0 97% 51	+56 96% 24	+102 96% 21	+133 95% 21	+136 89% 8	+14 81% 75	+5.2 96% 1	-5.9 61% 22	+79 90% 19	+9.4 89% 19	-1.2 88% 76	-1.5 89% 71	+0.9 81% 24	+3.7 90% 18	-0.31 83% 7	+15 93% 73	+0.94 91% 69	+0.90 91% 31	+0.92 87% 17	\$232 20	\$417 7	
NURP54 USA16350631 NURM13	MURRAY TWINHEARTS P54 ^{PV} HBR	6	36	6	-0.2 74% 72	+3.8 64% 43	-6.1 93% 24	+6.4 91% 92	+69 90% 2	+124 89% 1	+165 89% 1	+158 86% 2	+25 79% 6	+1.9 82% 58	-4.7 58% 48	+103 85% 1	+8.6 85% 26	-2.1 85% 1	-4.1 86% 96	+1.0 77% 19	+3.1 87% 29	+0.19 78% 47	+17 86% 65	+0.88 87% 57	+1.24 87% 94	+0.90 82% 13	\$250 8	\$443 2	
SMPN56 HIOG18 SMPL179	PATHFINDER NUCLEUS N56 ^{SV} HBR	13	214	32	+3.4 78% 42	+2.4 67% 58	-3.2 96% 70	+5.3 97% 79	+60 95% 12	+107 95% 12	+139 95% 13	+133 90% 10	+15 87% 65	+4.6 93% 3	-7.2 62% 7	+76 91% 24	+13.2 90% 3	+0.6 89% 34	+0.5 90% 34	+1.2 82% 12	+1.6 92% 67	+0.34 85% 64	+9 89% 90	+0.70 85% 21	+0.80 85% 13	+0.80 81% 3	\$259 5	\$449 2	
NORL508 USA17366506 NORH414	RENNYLEA L508 ^{PV} HBR	39	1402	97	+0.3 84% 69	+8.4 77% 5	-6.0 99% 26	+2.6 99% 12	+46 98% 72	+86 98% 68	+117 98% 54	+92 97% 65	+26 98% 4	+1.4 97% 76	-6.7 79% 11	+57 96% 79	+5.1 95% 67	+1.2 95% 22	+0.1 95% 42	-0.2 93% 85	+5.1 95% 4	+0.80 88% 94	+17 99% 66	+0.68 98% 18	+0.86 98% 23	+0.86 97% 8	\$228 24	\$374 31	
NORM1078 NORH708 NORF563	RENNYLEA M1078 ^{SV} APR	7	143	12	-4.8 77% 92	-0.6 68% 83	-1.8 97% 86	+3.3 96% 34	+42 95% 87	+83 95% 75	+102 95% 83	+102 93% 47	+11 87% 91	+1.8 93% 62	-5.2 63% 36	+59 91% 75	+10.2 90% 14	-1.8 90% 86	-5.2 91% 99	+1.0 83% 19	+7.9 92% 1	+0.72 84% 91	+10 94% 87	+0.96 91% 72	+1.02 92% 61	+1.14 89% 81	\$210 44	\$339 60	
JCAN4 USA16295688 AHWG93	STELLAR NEUTRON N4 ^{PV} HBR	6	42	0	+4.3 77% 33	+2.0 68% 62	-7.6 92% 10	+2.8 92% 24	+62 90% 9	+106 90% 13	+130 89% 25	+70 86% 91	+29 81% 1	+0.7 86% 92	-6.4 63% 14	+85 86% 10	+1.4 86% 95	-1.9 85% 87	-2.7 79% 87	-0.2 88% 85	+1.7 79% 65	+0.42 79% 72	+22 86% 45	+1.08 89% 89	+0.72 89% 5	+0.92 84% 17	\$251 8	\$386 22	
SYAN340 SYAL178 SGMK250	STONEY POINT NOLTE N340 ^{SV} HBR	8	231	119	-1.5 74% 80	-5.5 65% 97	-5.8 96% 28	+6.3 96% 91	+71 95% 1	+129 96% 1	+164 95% 1	+160 90% 1	+20 82% 2	+3.5 92% 29	-2.7 57% 11	+109 88% 88	+5.7 86% 1	-3.2 86% 60	-5.4 87% 97	+0.8 78% 29	+2.8 88% 35	-0.16 76% 13	+6 88% 94	+0.94 87% 69	+0.88 87% 27	+1.22 83% 93	\$211 43	\$388 21	
VTMN424 VTMJ89 VTMJ214	TE MANIA NEBO N424 ^{PV} HBR	21	858	104	+9.6 86% 2	-0.6 81% 83	-6.6 98% 19	+4.0 98% 51	+52 98% 45	+99 98% 29	+126 98% 33	+106 96% 42	+31 94% 3	+4.5 97% 3	-4.4 66% 55	+53 94% 86	+7.3 94% 40	-0.7 91% 65	-3.6 94% 93	+0.4 87% 53	+4.1 93% 12	-0.12 83% 16	+46 98% 1	+1.00 98% 79	+0.92 98% 36	+0.94 97% 21	\$207 47	\$362 41	
VTMN181 VTML135 VTML1251	TE MANIA NERO N181 ^{PV} HBR	18	462	0	-12.2 79% 99	-7.7 72% 99	-2.7 98% 77	+5.7 97% 85	+59 97% 15	+100 97% 26	+134 97% 30	+112 95% 31	+26 90% 4	+4.2 93% 5	-4.5 64% 53	+68 93% 47	+6.4 92% 51	-3.7 90% 90	-4.1 93% 96	+0.5 85% 47	+5.7 92% 2	+0.11 80% 38	+29 94% 18	+0.94 94% 69	+1.00 94% 56	+1.30 92% 98	\$194 62	\$306 81	



Angus Australia - Sire Benchmarking Program - Cohort 10 January
2024 TransTasman Angus Cattle Evaluation

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Ident	Name	Statistics			Estimated Breeding Values																							
Sire Dam	Reg.	Num Herd	Prog	Prog 2Yr.	Calv-Ease		Birth		Growth					Fert		Carcase					Feed		Temp	Structural			Selection Index	
					Dir	Dtrs	GL	BW	200	400	600	MCW	Milk	SS	DC	CW	EMA	Rib	P8	RBV	IMF	NFI-F	Doc	Claw	Angle	Leg	\$A	\$A-L
DXTM100	TEXAS MT KAPUTAR M100 ^{PV}				+6.3	+6.8	-10.1	+4.5	+61	+106	+145	+137	+15	+3.6	-4.0	+85	+5.5	-2.8	-3.8	+0.4	+2.0	+0.15	+32	+1.00	+1.14	+1.04	\$205	\$390
USA15848590	HBR	9	171	1	80%	69%	97%	96%	94%	94%	94%	89%	89%	92%	62%	89%	88%	87%	88%	82%	89%	80%	93%	85%	85%	81%		
DXTZ183					17	14	2	63	10	14	8	8	65	10	65	9	62	95	94	53	56	42	12	79	84	53	50	20
USA18066037	V A R LEGEND 5019 ^{SV}				-2.8	+5.5	-6.2	+5.2	+69	+122	+148	+160	+8	+2.7	-3.6	+87	+10.2	-4.0	-6.3	+1.4	+2.2	-0.27	+20	+1.04	+0.68	+0.90	\$218	\$404
USA17262835	HBR	32	152	3	79%	67%	96%	96%	94%	94%	93%	90%	87%	89%	61%	90%	88%	87%	87%	80%	90%	79%	89%	97%	96%	81%		
USA16924432					86	25	23	77	2	2	6	2	97	29	74	8	14	99	99	7	51	8	54	84	3	13	35	12
QKBP29	WARRAWEE PATROL P29 ^{Ph}				+7.6	+11.4	-12.0	+2.6	+55	+104	+137	+125	+19	+2.3	-9.0	+100	+8.9	+3.5	+1.7	+0.3	+1.8	+0.72	+25	+0.82	+1.24	+0.98	\$267	\$473
SMPG357	HBR	17	56	29	78%	69%	94%	93%	91%	90%	89%	87%	81%	87%	64%	85%	84%	84%	85%	78%	86%	77%	87%	77%	78%	73%		
QKBM01					9	1	1	21	29	17	16	16	34	43	1	2	23	3	18	60	62	91	32	44	94	33	3	1
Breed Average EBVs					+1.9	+2.8	-4.4	+3.9	+51	+92	+119	+101	+17	+2.2	-4.6	+67	+6.6	+0.0	-0.3	+0.5	+2.4	+0.23	+21	+0.85	+0.97	+1.03	+202	+347




UNDERSTANDING THE ASBP SIRE LISTING - PROGENY PERFORMANCE

This listing provides an indication on how the sires are performing within the ASBP. *The values listed can only be validly used to compare sires within each cohort of the ASBP.*

For selection purposes it is strongly advised that the EBVs and selection indexes listed in section 1 of the report be used primarily. They are the highest accuracy information to use in selection as they take into account all available industry data including the data generated from the ASBP. They also account for information from all known relatives and genetic correlations between traits as well as being able to be compared across cohorts and the Angus population.

Interpreting the ASBP Progeny Performance Listing



Angus Sire Benchmarking Project - Progeny Performance
Cohort: 2 - Carcase Weight (kg)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ABBOTT PERFORMER E32	ESTE32	17	467.8	1
ABERDEEN ESTATE EXCITE E21	AHWE21	7	444.1	19
ANVIL ENFORCER E183	HBUE183	14	452.8	7
ARDROSSAN EXACT E162	NAQE162	12	449.5	11
ARDROSSAN FAIRFAX F21	NAQF21	9	437.8	28
AYRVALE BARTEL E7	HIOE7	17	455.0	5
BALDWIN AM HIGH...	...	3	...	13

Number of progeny = Number of progeny the sire has recorded for the specified trait. This excludes any progeny in single animal contemporary groups.

Progeny Average = The average performance of this sire's progeny for the specified trait in the ASBP. The average is calculated using adjusted data (i.e. the standard adjustments for the age of the progeny and age of the dams). It is calculated using a least squares means (LSM) model which takes into account herd and contemporary group.

Rank = The ranking position of the sire within the specified cohort. The ranking order will depend on the trait. E.g. 200 Day weight ranked in descending order, while birth weight is ranked in ascending order.

The lists are sorted on sire name for the specified cohort.

The date the progeny performance values were produced is listed in the bottom left hand margin of the report. The reports will be regularly updated as further ASBP data is recorded and analysed.

Progeny Performance Traits and Interpretation

Separate sections for the following traits are included in the ASBP Progeny Performance listing:

Birth Weight: Weight of birth in kilograms recorded on both steer and heifer progeny. Sires are ranked in ascending order with lower values indicating lighter birth weight.

Gestation Length: Length of gestation in days recorded on both steer and heifer progeny. Sires are ranked in ascending order with lower values indicating shorter gestation length.

200 Day Weight: Weight at 200 days (i.e. weaning weight) in kilograms recorded on both steer and heifer progeny. Sires are ranked in descending order with higher values indicating more weight.

400 Day Weight: Weight at 400 days (i.e. yearling weight) in kilograms recorded on both steer and heifer progeny. Sires are ranked in descending order with higher values indicating more weight.

600 Day Weight: Weight at 600 days (i.e. 18 month weight) in kilograms recorded on both steer and heifer progeny. Sires are ranked in descending order with higher values indicating more weight.

Days to Calving: Length of days from bull introduction (i.e. bull in date) to calving. This is recorded on the heifer progeny for their first joining as yearlings. Sires are ranked in ascending order with lower values indicating shorter days to calving and improved female reproduction.

Scan Eye Muscle Area (EMA): Eye muscle area in cm² from ultrasound scanning both steer and heifer progeny at a standard 500 days of age. Sires are ranked in descending order with higher values indicating larger eye muscle area.

Scan Rib Fat: Rib fat in mm from ultrasound scanning both steer and heifer progeny at a standard 500 days of age. Sires are ranked in descending order with higher values indicating more fat over the ribs.

Scan Rump Fat: Rump (i.e. P8) fat in mm from ultrasound scanning both steer and heifer progeny at a standard 500 days of age. Sires are ranked in descending order with higher values indicating more fat over the rump.

Scan Intramuscular Fat (IMF): Percentage of Intramuscular fat from ultrasound scanning both steer and heifer progeny at a standard 500 days of age. Sires are ranked in descending order with higher values indicating more intramuscular fat.

Carcase Weight: Weight of the hot standard carcass in kilograms at a standard 750 days of age recorded on steer progeny. Sires are ranked in descending order with higher values indicating more carcass weight.

Carcase Eye Muscle Area (EMA): Eye muscle area in cm² in a standard 400 kg carcass measured on steer progeny. Sires are ranked in descending order with higher values indicating larger eye muscle area.

Carcase Rump Fat: Subcutaneous fat measurement in mm at the P8 rump site in a standard 400 kg carcass measured on steer progeny. Sires are ranked in descending order with higher values indicating more rump fat.

Carcase Rib Fat: Subcutaneous fat measurement in mm at the 12th and 13th Rib site in a standard 400 kg carcass measured on steer progeny. Sires are ranked in descending order with higher values indicating more rib fat.

Carcase Intramuscular Fat (IMF): Percentage of Intramuscular fat (by near infrared spectrophotometry or NIR at the UNE meat science laboratory) in a standard 400 kg carcass measured on steer progeny. Sires are ranked in descending order with higher values indicating more intramuscular fat.

Net Feed Intake (NFI): Feed intake at a standard weight and rate of weight gain recorded on steer progeny at

Tullimba Research Feedlot. NFI is expressed as kilograms of feed intake per day. Sires are ranked in ascending order with lower values indicating better feed efficiency through less feed intake for a standard weight and rate of gain.

Meat Standards Australia (MSA) Marbling Score: Marbling score recorded by the Meat Standards Australia (MSA) grader in the chiller on steer progeny based on a standard 400 kg carcass. Sires are ranked in descending order with higher values indicating more marbling in the carcass.

Meat Standards Australia (MSA) Ossification: Ossification score recorded by the Meat Standards Australia (MSA) grader in the chiller on steer progeny. Sires are ranked in ascending order with lower values indicating younger physiological maturity.

Meat Standards Australia (MSA) Index: The MSA Index is an indication of the overall eating quality of beef from the carcass as influenced by a range of factors such as marbling score and ossification. It is generated for steer progeny from the ASBP based on MSA grading data in the chiller. Sires are ranked in ascending order with higher values indicating higher eating quality.

Shear Force: Shear Force is a measurement in the kilograms of the force required to pull a mechanical blade through a piece of cooked beef from the striploin sample of the ASBP steer progeny. It is measured through the UNE meat science laboratory. Sires are ranked in ascending order with lower values indicating less shear force and more tender beef.



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Birth Weight (kg)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	24	34.0	18
ARDROSSAN MAGISTRATE M101	NAQM101	28	35.1	28
BALD BLAIR NELSON N47	NBBN47	27	33.9	16
BANNABY REALITY N187	ECMN187	27	31.8	1
BOONAROO KASBAH N20	HCAN20	29	33.9	16
BOOROOMOOKA JACKPOT N418	NGMN418	18	34.8	24
BOOROOMOOKA NORMANDY N213	NGMN213	20	31.9	4
BROOKLANA GENESIS N9	AMQN9	31	36.1	33
CHILTERN PARK PICASSO P9	GTNP9	17	33.0	10
CLUNES CROSSING DUSTY M13	QMUM13	34	34.7	23
DULVERTON NEW APPROACH N208	NGCN208	22	33.4	14
GLENOCH KALLANGUR K112	QBGK112	30	35.6	32
GVA NEWSWORTHY N1	EETN1	24	32.1	6
HARDHAT K522 NEBRASKA F143 N43	DKKN43	27	32.1	6
HAZELDEAN M586	NHBM586	39	33.3	13
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	18	33.0	10
KOOJAN HILLS PATRIOT N33	WKHN33	31	32.2	8
LAWSON'S CHARLIE N131	VLN131	34	34.1	21
MERRIBROOK PROGRESSION OF KYAH	VRTP6	20	31.8	1
MILLAH MURRAH MILESTONE M308	NMMM308	21	34.0	18
MURDEDUKE BLACK PEARL P036	CSWP036	32	33.5	15
MURRAY KODAK N70	NURN70	28	34.0	18
MURRAY TWINHEARTS P54	NURP54	23	35.3	30
PATHFINDER NUCLEUS N56	SMPN56	32	34.9	25
RENNYLEA L508	NORL508	30	32.0	5
RENNYLEA M1078	NORM1078	38	32.5	9
STELLAR NEUTRON N4	JCAN4	23	33.2	12
STONEY POINT NOLTE N340	SYAN340	24	35.2	29
TE MANIA NEBO N424	VTMN424	24	35.0	26
TE MANIA NERO N181	VTMN181	19	34.2	22
TEXAS MT KAPUTAR M100	DXTM100	21	35.5	31
V A R LEGEND 5019	USA18066037	23	35.0	26
WARRAWEE PATROL P29	QKBP29	16	31.8	1



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Gestation Length (days)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	23	281.2	27
ARDROSSAN MAGISTRATE M101	NAQM101	23	280.9	25
BALD BLAIR NELSON N47	NBBN47	23	282.1	31
BANNABY REALITY N187	ECMN187	25	279.1	9
BOONAROO KASBAH N20	HCAN20	29	280.0	16
BOOROOMOOKA JACKPOT N418	NGMN418	17	279.2	10
BOOROOMOOKA NORMANDY N213	NGMN213	21	279.5	12
BROOKLANA GENESIS N9	AMQN9	27	281.7	28
CHILTERN PARK PICASSO P9	GTNP9	18	283.1	33
CLUNES CROSSING DUSTY M13	QMUM13	34	279.6	14
DULVERTON NEW APPROACH N208	NGCN208	19	280.5	18
GLENOCH KALLANGUR K112	QB GK112	25	281.7	28
GVA NEWSWORTHY N1	EETN1	24	278.3	4
HARDHAT K522 NEBRASKA F143 N43	DKKN43	25	279.0	8
HAZELDEAN M586	NH ZM586	31	279.6	14
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	17	279.4	11
KOOJAN HILLS PATRIOT N33	WKHN33	28	280.5	18
LAWSON'S CHARLIE N131	VL YN131	32	280.8	22
MERRIBROOK PROGRESSION OF KYAH	VRTP6	17	276.5	1
MILLAH MURRAH MILESTONE M308	NMMM308	19	278.7	6
MURDEDUKE BLACK PEARL P036	CSWP036	28	278.6	5
MURRAY KODAK N70	NURN70	24	278.8	7
MURRAY TWINHEARTS P54	NURP54	20	280.7	20
PATHFINDER NUCLEUS N56	SMPN56	27	280.7	20
RENNYLEA L508	NORL508	28	279.5	12
RENNYLEA M1078	NORM1078	33	282.0	30
STELLAR NEUTRON N4	JCAN4	19	280.0	16
STONEY POINT NOLTE N340	SYAN340	24	280.8	22
TE MANIA NEBO N424	VTMN424	25	281.0	26
TE MANIA NERO N181	VTMN181	15	283.0	32
TEXAS MT KAPUTAR M100	DXTM100	22	278.2	3
V A R LEGEND 5019	USA18066037	22	280.8	22
WARRAWEE PATROL P29	QKBP29	16	276.7	2



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - 200 Day Weight (kg)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	21	227.7	28
ARDROSSAN MAGISTRATE M101	NAQM101	24	238.9	12
BALD BLAIR NELSON N47	NBBN47	26	241.4	9
BANNABY REALITY N187	ECMN187	27	222.4	32
BOONAROO KASBAH N20	HCAN20	27	227.9	27
BOOROOMOOKA JACKPOT N418	NGMN418	17	240.2	10
BOOROOMOOKA NORMANDY N213	NGMN213	18	222.5	31
BROOKLANA GENESIS N9	AMQN9	29	238.7	13
CHILTERN PARK PICASSO P9	GTNP9	16	243.6	8
CLUNES CROSSING DUSTY M13	QMUM13	35	236.9	15
DULVERTON NEW APPROACH N208	NGCN208	21	230.4	22
GLENOCH KALLANGUR K112	QBGK112	25	237.6	14
GVA NEWSWORTHY N1	EETN1	23	231.4	20
HARDHAT K522 NEBRASKA F143 N43	DKKN43	24	239.3	11
HAZELDEAN M586	NHBM586	34	235.0	16
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	18	245.1	6
KOOJAN HILLS PATRIOT N33	WKHN33	32	233.0	19
LAWSON'S CHARLIE N131	VLN131	29	247.1	4
MERRIBROOK PROGRESSION OF KYAH	VRTP6	16	233.1	18
MILLAH MURRAH MILESTONE M308	NMMM308	20	229.3	25
MURDEDUKE BLACK PEARL P036	CSWP036	27	225.9	30
MURRAY KODAK N70	NURN70	26	234.0	17
MURRAY TWINHEARTS P54	NURP54	23	253.7	1
PATHFINDER NUCLEUS N56	SMPN56	27	247.0	5
RENNYLEA L508	NORL508	27	228.2	26
RENNYLEA M1078	NORM1078	33	221.6	33
STELLAR NEUTRON N4	JCAN4	22	230.2	23
STONEY POINT NOLTE N340	SYAN340	24	245.0	7
TE MANIA NEBO N424	VTMN424	24	230.6	21
TE MANIA NERO N181	VTMN181	19	227.1	29
TEXAS MT KAPUTAR M100	DXTM100	20	248.8	3
V A R LEGEND 5019	USA18066037	20	249.1	2
WARRAWEE PATROL P29	QKBP29	15	229.4	24



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - 400 Day Weight (kg)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	21	378.1	20
ARDROSSAN MAGISTRATE M101	NAQM101	17	394.1	6
BALD BLAIR NELSON N47	NBBN47	19	403.6	3
BANNABY REALITY N187	ECMN187	18	358.9	33
BOONAROO KASBAH N20	HCAN20	26	372.3	27
BOOROOMOOKA JACKPOT N418	NGMN418	13	386.5	12
BOOROOMOOKA NORMANDY N213	NGMN213	15	366.8	31
BROOKLANA GENESIS N9	AMQN9	23	392.6	8
CHILTERN PARK PICASSO P9	GTNP9	10	372.2	28
CLUNES CROSSING DUSTY M13	QMUM13	24	373.3	26
DULVERTON NEW APPROACH N208	NGCN208	16	383.1	14
GLENOCH KALLANGUR K112	QBGK112	24	377.7	21
GVA NEWSWORTHY N1	EETN1	15	370.4	30
HARDHAT K522 NEBRASKA F143 N43	DKKN43	18	389.5	10
HAZELDEAN M586	NHBM586	22	381.6	17
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	11	382.2	16
KOOJAN HILLS PATRIOT N33	WKHN33	23	378.2	19
LAWSON'S CHARLIE N131	VLN131	19	406.2	2
MERRIBROOK PROGRESSION OF KYAH	VRTP6	10	389.0	11
MILLAH MURRAH MILESTONE M308	NMMM308	9	370.7	29
MURDEDUKE BLACK PEARL P036	CSWP036	24	375.4	24
MURRAY KODAK N70	NURN70	20	382.9	15
MURRAY TWINHEARTS P54	NURP54	17	403.5	4
PATHFINDER NUCLEUS N56	SMPN56	25	389.7	9
RENNYLEA L508	NORL508	22	375.0	25
RENNYLEA M1078	NORM1078	26	363.3	32
STELLAR NEUTRON N4	JCAN4	18	378.8	18
STONEY POINT NOLTE N340	SYAN340	16	408.3	1
TE MANIA NEBO N424	VTMN424	15	376.1	23
TE MANIA NERO N181	VTMN181	13	376.4	22
TEXAS MT KAPUTAR M100	DXTM100	16	393.3	7
V A R LEGEND 5019	USA18066037	13	400.8	5
WARRAWEE PATROL P29	QKBP29	9	385.6	13



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - 600 Day Weight (kg)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	1	425.8	31
ARDROSSAN MAGISTRATE M101	NAQM101	7	437.8	27
BALD BLAIR NELSON N47	NBBN47	6	464.3	13
BANNABY REALITY N187	ECMN187	8	418.6	32
BOONAROO KASBAH N20	HCAN20	3	436.7	28
BOOROOMOOKA JACKPOT N418	NGMN418	4	470.1	9
BOOROOMOOKA NORMANDY N213	NGMN213	3	399.3	33
BROOKLANA GENESIS N9	AMQN9	6	482.5	5
CHILTERN PARK PICASSO P9	GTNP9	4	497.9	2
CLUNES CROSSING DUSTY M13	QMUM13	9	471.5	7
DULVERTON NEW APPROACH N208	NGCN208	4	453.0	19
GLENOCH KALLANGUR K112	QB GK112	3	440.2	25
GVA NEWSWORTHY N1	EETN1	8	444.7	24
HARDHAT K522 NEBRASKA F143 N43	DKKN43	5	462.2	14
HAZELDEAN M586	NH ZM586	11	450.6	21
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	6	453.9	18
KOOJAN HILLS PATRIOT N33	WKHN33	6	464.6	12
LAWSON'S CHARLIE N131	VLYN131	9	485.3	4
MERRIBROOK PROGRESSION OF KYAH	VRTP6	6	454.8	16
MILLAH MURRAH MILESTONE M308	NMMM308	11	466.6	10
MURDEDUKE BLACK PEARL P036	CSWP036	4	456.5	15
MURRAY KODAK N70	NURN70	6	470.9	8
MURRAY TWINHEARTS P54	NURP54	5	452.4	20
PATHFINDER NUCLEUS N56	SMPN56	4	518.8	1
RENNYLEA L508	NORL508	5	454.1	17
RENNYLEA M1078	NORM1078	6	445.8	23
STELLAR NEUTRON N4	JCAN4	4	439.5	26
STONEY POINT NOLTE N340	SYAN340	5	477.4	6
TE MANIA NEBO N424	VTMN424	8	446.6	22
TE MANIA NERO N181	VTMN181	5	465.3	11
TEXAS MT KAPUTAR M100	DXTM100	1	427.3	29
V A R LEGEND 5019	USA18066037	8	426.6	30
WARRAWEE PATROL P29	QKBP29	3	490.6	3



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Days to Calving (heifers) (days)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	3	301.1	7
ARDROSSAN MAGISTRATE M101	NAQM101	12	331.5	33
BALD BLAIR NELSON N47	NBBN47	9	294.3	3
BANNABY REALITY N187	ECMN187	12	318.9	29
BOONAROO KASBAH N20	HCAN20	8	310.4	19
BOOROOMOOKA JACKPOT N418	NGMN418	8	309.2	17
BOOROOMOOKA NORMANDY N213	NGMN213	5	288.2	1
BROOKLANA GENESIS N9	AMQN9	12	302.2	9
CHILTERN PARK PICASSO P9	GTNP9	6	290.2	2
CLUNES CROSSING DUSTY M13	QMUM13	11	316.7	25
DULVERTON NEW APPROACH N208	NGCN208	9	316.9	27
GLENOCH KALLANGUR K112	QB GK112	7	311.5	21
GVA NEWSWORTHY N1	EETN1	10	312.0	22
HARDHAT K522 NEBRASKA F143 N43	DKKN43	8	305.9	14
HAZELDEAN M586	NH ZM586	19	296.8	4
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	321.5	32
KOOJAN HILLS PATRIOT N33	WKHN33	12	315.0	24
LAWSON'S CHARLIE N131	VLYN131	16	306.6	15
MERRIBROOK PROGRESSION OF KYAH	VRTP6	8	304.4	12
MILLAH MURRAH MILESTONE M308	NMMM308	13	317.1	28
MURDEDUKE BLACK PEARL P036	CSWP036	19	298.6	6
MURRAY KODAK N70	NURN70	9	316.7	25
MURRAY TWINHEARTS P54	NURP54	7	304.1	10
PATHFINDER NUCLEUS N56	SMPN56	9	301.3	8
RENNYLEA L508	NORL508	9	304.5	13
RENNYLEA M1078	NORM1078	10	310.9	20
STELLAR NEUTRON N4	JCAN4	10	304.1	10
STONEY POINT NOLTE N340	SYAN340	11	320.3	31
TE MANIA NEBO N424	VTMN424	11	307.6	16
TE MANIA NERO N181	VTMN181	7	320.1	30
TEXAS MT KAPUTAR M100	DXTM100	4	309.8	18
V A R LEGEND 5019	USA18066037	11	314.9	23
WARRAWEE PATROL P29	QKBP29	8	297.9	5



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Scan EMA (sq cm)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	21	65.3	19
ARDROSSAN MAGISTRATE M101	NAQM101	24	66.8	5
BALD BLAIR NELSON N47	NBBN47	24	66.2	11
BANNABY REALITY N187	ECMN187	25	63.8	31
BOONAROO KASBAH N20	HCAN20	29	65.0	21
BOOROOMOOKA JACKPOT N418	NGMN418	15	66.7	6
BOOROOMOOKA NORMANDY N213	NGMN213	15	63.9	28
BROOKLANA GENESIS N9	AMQN9	30	67.7	1
CHILTERN PARK PICASSO P9	GTNP9	15	66.9	4
CLUNES CROSSING DUSTY M13	QMUM13	32	66.0	13
DULVERTON NEW APPROACH N208	NGCN208	20	65.7	14
GLENOCH KALLANGUR K112	QBGK112	25	65.5	15
GVA NEWSWORTHY N1	EETN1	21	64.3	26
HARDHAT K522 NEBRASKA F143 N43	DKKN43	23	63.9	28
HAZELDEAN M586	NHZN586	34	64.9	22
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	17	65.5	15
KOOJAN HILLS PATRIOT N33	WKHN33	27	64.2	27
LAWSON'S CHARLIE N131	VLN131	28	67.6	2
MERRIBROOK PROGRESSION OF KYAH	VRTP6	16	64.5	25
MILLAH MURRAH MILESTONE M308	NMMM308	19	66.5	8
MURDEDUKE BLACK PEARL P036	CSWP036	28	63.9	28
MURRAY KODAK N70	NURN70	26	66.5	8
MURRAY TWINHEARTS P54	NURP54	21	66.6	7
PATHFINDER NUCLEUS N56	SMPN56	29	67.0	3
RENNYLEA L508	NORL508	26	65.1	20
RENNYLEA M1078	NORM1078	31	65.5	15
STELLAR NEUTRON N4	JCAN4	22	62.5	33
STONEY POINT NOLTE N340	SYAN340	21	66.1	12
TE MANIA NEBO N424	VTMN424	22	64.8	23
TE MANIA NERO N181	VTMN181	17	65.4	18
TEXAS MT KAPUTAR M100	DXTM100	18	63.7	32
V A R LEGEND 5019	USA18066037	21	66.5	8
WARRAWEE PATROL P29	QKBP29	14	64.8	23



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Scan Rib Fat (mm)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	21	6.0	10
ARDROSSAN MAGISTRATE M101	NAQM101	24	5.9	14
BALD BLAIR NELSON N47	NBBN47	24	5.3	31
BANNABY REALITY N187	ECMN187	24	6.0	10
BOONAROO KASBAH N20	HCAN20	29	5.7	19
BOOROOMOOKA JACKPOT N418	NGMN418	15	6.1	8
BOOROOMOOKA NORMANDY N213	NGMN213	16	4.8	33
BROOKLANA GENESIS N9	AMQN9	30	5.5	24
CHILTERN PARK PICASSO P9	GTNP9	15	5.9	14
CLUNES CROSSING DUSTY M13	QMUM13	32	6.0	10
DULVERTON NEW APPROACH N208	NGCN208	20	5.4	26
GLENOCH KALLANGUR K112	QBGK112	25	6.0	10
GVA NEWSWORTHY N1	EETN1	21	5.8	18
HARDHAT K522 NEBRASKA F143 N43	DKKN43	22	6.5	2
HAZELDEAN M586	NHBM586	34	6.3	6
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	16	6.4	4
KOOJAN HILLS PATRIOT N33	WKHN33	27	5.4	26
LAWSON'S CHARLIE N131	VLN131	28	5.9	14
MERRIBROOK PROGRESSION OF KYAH	VRTP6	16	6.5	2
MILLAH MURRAH MILESTONE M308	NMMM308	18	5.9	14
MURDEDUKE BLACK PEARL P036	CSWP036	29	5.7	19
MURRAY KODAK N70	NURN70	26	6.1	8
MURRAY TWINHEARTS P54	NURP54	22	5.7	19
PATHFINDER NUCLEUS N56	SMPN56	29	6.3	6
RENNYLEA L508	NORL508	26	6.4	4
RENNYLEA M1078	NORM1078	32	5.6	22
STELLAR NEUTRON N4	JCAN4	22	5.6	22
STONE POINT NOLTE N340	SYAN340	21	5.5	24
TE MANIA NEBO N424	VTMN424	23	5.4	26
TE MANIA NERO N181	VTMN181	17	5.4	26
TEXAS MT KAPUTAR M100	DXTM100	18	5.2	32
V A R LEGEND 5019	USA18066037	20	5.4	26
WARRAWEE PATROL P29	QKBP29	14	7.0	1



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Scan Rump Fat (mm)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	21	7.9	6
ARDROSSAN MAGISTRATE M101	NAQM101	24	7.7	10
BALD BLAIR NELSON N47	NBBN47	24	6.3	30
BANNABY REALITY N187	ECMN187	24	7.6	12
BOONAROO KASBAH N20	HCAN20	29	6.8	23
BOOROOMOOKA JACKPOT N418	NGMN418	15	8.1	3
BOOROOMOOKA NORMANDY N213	NGMN213	16	6.0	33
BROOKLANA GENESIS N9	AMQN9	30	6.3	30
CHILTERN PARK PICASSO P9	GTNP9	14	7.6	12
CLUNES CROSSING DUSTY M13	QMUM13	32	7.1	22
DULVERTON NEW APPROACH N208	NGCN208	20	6.8	23
GLENOCH KALLANGUR K112	QBGK112	24	7.8	7
GVA NEWSWORTHY N1	EETN1	21	7.2	20
HARDHAT K522 NEBRASKA F143 N43	DKKN43	21	7.6	12
HAZELDEAN M586	NHBM586	34	7.4	17
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	14	8.0	5
KOOJAN HILLS PATRIOT N33	WKHN33	27	6.8	23
LAWSON'S CHARLIE N131	VLN131	28	7.6	12
MERRIBROOK PROGRESSION OF KYAH	VRTP6	16	7.6	12
MILLAH MURRAH MILESTONE M308	NMMM308	18	8.4	2
MURDEDUKE BLACK PEARL P036	CSWP036	28	7.7	10
MURRAY KODAK N70	NURN70	26	7.8	7
MURRAY TWINHEARTS P54	NURP54	22	7.4	17
PATHFINDER NUCLEUS N56	SMPN56	29	8.1	3
RENNYLEA L508	NORL508	26	7.8	7
RENNYLEA M1078	NORM1078	32	7.2	20
STELLAR NEUTRON N4	JCAN4	22	7.3	19
STONEY POINT NOLTE N340	SYAN340	20	6.5	28
TE MANIA NEBO N424	VTMN424	23	6.5	28
TE MANIA NERO N181	VTMN181	17	6.6	27
TEXAS MT KAPUTAR M100	DXTM100	18	6.8	23
V A R LEGEND 5019	USA18066037	18	6.3	30
WARRAWEE PATROL P29	QKBP29	14	8.7	1



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Scan IMF (%)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	21	7.0	1
ARDROSSAN MAGISTRATE M101	NAQM101	24	6.6	9
BALD BLAIR NELSON N47	NBBN47	24	6.2	27
BANNABY REALITY N187	ECMN187	25	6.5	13
BOONAROO KASBAH N20	HCAN20	29	5.9	30
BOOROOMOOKA JACKPOT N418	NGMN418	15	6.1	29
BOOROOMOOKA NORMANDY N213	NGMN213	16	5.7	33
BROOKLANA GENESIS N9	AMQN9	30	6.5	13
CHILTERN PARK PICASSO P9	GTNP9	15	6.5	13
CLUNES CROSSING DUSTY M13	QMUM13	32	6.3	24
DULVERTON NEW APPROACH N208	NGCN208	20	6.7	5
GLENOCH KALLANGUR K112	QBGK112	25	6.6	9
GVA NEWSWORTHY N1	EETN1	22	6.6	9
HARDHAT K522 NEBRASKA F143 N43	DKKN43	23	6.3	24
HAZELDEAN M586	NHBM586	34	6.4	19
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	17	6.7	5
KOOJAN HILLS PATRIOT N33	WKHN33	26	6.2	27
LAWSON'S CHARLIE N131	VLN131	28	6.4	19
MERRIBROOK PROGRESSION OF KYAH	VRTP6	16	6.4	19
MILLAH MURRAH MILESTONE M308	NMMM308	19	6.5	13
MURDEDUKE BLACK PEARL P036	CSWP036	29	6.6	9
MURRAY KODAK N70	NURN70	26	6.8	3
MURRAY TWINHEARTS P54	NURP54	22	6.7	5
PATHFINDER NUCLEUS N56	SMPN56	29	7.0	1
RENNYLEA L508	NORL508	26	6.8	3
RENNYLEA M1078	NORM1078	32	6.5	13
STELLAR NEUTRON N4	JCAN4	22	6.3	24
STONEY POINT NOLTE N340	SYAN340	21	6.4	19
TE MANIA NEBO N424	VTMN424	23	6.4	19
TE MANIA NERO N181	VTMN181	17	6.5	13
TEXAS MT KAPUTAR M100	DXTM100	18	5.8	32
V A R LEGEND 5019	USA18066037	21	5.9	30
WARRAWEE PATROL P29	QKBP29	14	6.7	5



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Carcase Weight (kg)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	437.0	26
ARDROSSAN MAGISTRATE M101	NAQM101	10	443.4	22
BALD BLAIR NELSON N47	NBBN47	10	464.4	5
BANNABY REALITY N187	ECMN187	10	447.1	18
BOONAROO KASBAH N20	HCAN20	18	444.6	21
BOOROOMOOKA JACKPOT N418	NGMN418	5	448.3	16
BOOROOMOOKA NORMANDY N213	NGMN213	8	429.7	31
BROOKLANA GENESIS N9	AMQN9	15	463.9	6
CHILTERN PARK PICASSO P9	GTNP9	5	467.4	4
CLUNES CROSSING DUSTY M13	QMUM13	14	432.0	29
DULVERTON NEW APPROACH N208	NGCN208	11	455.0	9
GLENOCH KALLANGUR K112	QB GK112	15	460.4	7
GVA NEWSWORTHY N1	EETN1	10	448.0	17
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	450.7	13
HAZELDEAN M586	NH ZM586	17	437.6	25
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	448.4	15
KOOJAN HILLS PATRIOT N33	WKHN33	10	445.3	20
LAWSON'S CHARLIE N131	VLYN131	7	435.5	27
MERRIBROOK PROGRESSION OF KYAH	VRTP6	7	449.3	14
MILLAH MURRAH MILESTONE M308	NMMM308	6	440.2	24
MURDEDUKE BLACK PEARL P036	CSWP036	13	427.1	32
MURRAY KODAK N70	NURN70	13	447.0	19
MURRAY TWINHEARTS P54	NURP54	7	474.7	2
PATHFINDER NUCLEUS N56	SMPN56	19	453.2	11
RENNYLEA L508	NORL508	15	430.5	30
RENNYLEA M1078	NORM1078	19	432.9	28
STELLAR NEUTRON N4	JCAN4	8	451.6	12
STONEY POINT NOLTE N340	SYAN340	7	477.5	1
TE MANIA NEBO N424	VTMN424	8	407.1	33
TE MANIA NERO N181	VTMN181	7	440.3	23
TEXAS MT KAPUTAR M100	DXTM100	9	455.7	8
V A R LEGEND 5019	USA18066037	9	474.4	3
WARRAWEE PATROL P29	QKBP29	4	454.7	10



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Carcase EMA (sq cm)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	81.9	29
ARDROSSAN MAGISTRATE M101	NAQM101	10	84.5	14
BALD BLAIR NELSON N47	NBBN47	10	81.6	30
BANNABY REALITY N187	ECMN187	10	82.5	25
BOONAROO KASBAH N20	HCAN20	18	83.0	22
BOOROOMOOKA JACKPOT N418	NGMN418	5	85.5	10
BOOROOMOOKA NORMANDY N213	NGMN213	8	78.6	33
BROOKLANA GENESIS N9	AMQN9	14	94.7	1
CHILTERN PARK PICASSO P9	GTNP9	5	88.1	4
CLUNES CROSSING DUSTY M13	QMUM13	14	86.6	6
DULVERTON NEW APPROACH N208	NGCN208	11	86.6	6
GLENOCH KALLANGUR K112	QBGK112	15	86.7	5
GVA NEWSWORTHY N1	EETN1	10	85.4	11
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	83.1	21
HAZELDEAN M586	NHBM586	17	86.6	6
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	85.2	12
KOOJAN HILLS PATRIOT N33	WKHN33	10	81.3	31
LAWSON'S CHARLIE N131	VLN131	7	82.7	24
MERRIBROOK PROGRESSION OF KYAH	VRTP6	7	83.5	20
MILLAH MURRAH MILESTONE M308	NMMM308	6	82.1	28
MURDEDUKE BLACK PEARL P036	CSWP036	13	80.6	32
MURRAY KODAK N70	NURN70	13	84.5	14
MURRAY TWINHEARTS P54	NURP54	7	84.0	19
PATHFINDER NUCLEUS N56	SMPN56	19	88.9	3
RENNYLEA L508	NORL508	15	84.2	18
RENNYLEA M1078	NORM1078	19	85.7	9
STELLAR NEUTRON N4	JCAN4	8	83.0	22
STONE POINT NOLTE N340	SYAN340	7	84.3	16
TE MANIA NEBO N424	VTMN424	8	82.3	26
TE MANIA NERO N181	VTMN181	7	84.7	13
TEXAS MT KAPUTAR M100	DXTM100	9	84.3	16
V A R LEGEND 5019	USA18066037	9	90.2	2
WARRAWEE PATROL P29	QKBP29	4	82.3	26



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Carcase Rump Fat (mm)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	20.8	11
ARDROSSAN MAGISTRATE M101	NAQM101	10	19.6	19
BALD BLAIR NELSON N47	NBBN47	10	19.4	21
BANNABY REALITY N187	ECMN187	10	22.6	4
BOONAROO KASBAH N20	HCAN20	18	19.6	19
BOOROOMOOKA JACKPOT N418	NGMN418	5	26.2	1
BOOROOMOOKA NORMANDY N213	NGMN213	8	19.7	18
BROOKLANA GENESIS N9	AMQN9	15	18.9	25
CHILTERN PARK PICASSO P9	GTNP9	5	23.9	2
CLUNES CROSSING DUSTY M13	QMUM13	14	20.0	15
DULVERTON NEW APPROACH N208	NGCN208	11	22.1	7
GLENOCH KALLANGUR K112	QBGK112	15	22.3	6
GVA NEWSWORTHY N1	EETN1	10	19.2	22
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	21.3	10
HAZELDEAN M586	NHBM586	17	21.6	9
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	22.4	5
KOOJAN HILLS PATRIOT N33	WKHN33	10	20.4	13
LAWSON'S CHARLIE N131	VLN131	7	17.4	28
MERRIBROOK PROGRESSION OF KYAH	VRTP6	7	15.7	33
MILLAH MURRAH MILESTONE M308	NMMM308	6	17.6	27
MURDEDUKE BLACK PEARL P036	CSWP036	13	18.0	26
MURRAY KODAK N70	NURN70	13	19.0	24
MURRAY TWINHEARTS P54	NURP54	7	17.0	29
PATHFINDER NUCLEUS N56	SMPN56	19	19.8	16
RENNYLEA L508	NORL508	15	19.1	23
RENNYLEA M1078	NORM1078	19	17.0	29
STELLAR NEUTRON N4	JCAN4	8	19.8	16
STONE POINT NOLTE N340	SYAN340	7	16.0	32
TE MANIA NEBO N424	VTMN424	8	16.1	31
TE MANIA NERO N181	VTMN181	7	20.3	14
TEXAS MT KAPUTAR M100	DXTM100	8	21.7	8
V A R LEGEND 5019	USA18066037	8	20.6	12
WARRAWEE PATROL P29	QKBP29	4	23.0	3



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Carcase Rib Fat (mm)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	14.6	17
ARDROSSAN MAGISTRATE M101	NAQM101	10	16.2	5
BALD BLAIR NELSON N47	NBBN47	10	14.8	12
BANNABY REALITY N187	ECMN187	10	15.8	7
BOONAROO KASBAH N20	HCAN20	18	15.6	8
BOOROOMOOKA JACKPOT N418	NGMN418	5	16.8	3
BOOROOMOOKA NORMANDY N213	NGMN213	8	14.0	21
BROOKLANA GENESIS N9	AMQN9	15	13.6	22
CHILTERN PARK PICASSO P9	GTNP9	5	12.6	30
CLUNES CROSSING DUSTY M13	QMUM13	14	14.7	14
DULVERTON NEW APPROACH N208	NGCN208	11	14.5	20
GLENOCH KALLANGUR K112	QBGK112	15	14.8	12
GVA NEWSWORTHY N1	EETN1	10	16.8	3
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	14.9	10
HAZELDEAN M586	NHBM586	17	14.7	14
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	14.6	17
KOOJAN HILLS PATRIOT N33	WKHN33	10	14.7	14
LAWSON'S CHARLIE N131	VLN131	7	12.7	28
MERRIBROOK PROGRESSION OF KYAH	VRTP6	7	12.9	26
MILLAH MURRAH MILESTONE M308	NMMM308	6	11.8	31
MURDEDUKE BLACK PEARL P036	CSWP036	13	12.9	26
MURRAY KODAK N70	NURN70	13	13.2	24
MURRAY TWINHEARTS P54	NURP54	7	13.1	25
PATHFINDER NUCLEUS N56	SMPN56	19	14.6	17
RENNYLEA L508	NORL508	14	17.3	1
RENNYLEA M1078	NORM1078	19	14.9	10
STELLAR NEUTRON N4	JCAN4	8	11.6	33
STONEY POINT NOLTE N340	SYAN340	7	13.6	22
TE MANIA NEBO N424	VTMN424	8	15.2	9
TE MANIA NERO N181	VTMN181	7	11.7	32
TEXAS MT KAPUTAR M100	DXTM100	8	16.0	6
V A R LEGEND 5019	USA18066037	8	12.7	28
WARRAWEE PATROL P29	QKBP29	4	17.2	2



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Carcase IMF (%)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	11.3	9
ARDROSSAN MAGISTRATE M101	NAQM101	10	9.0	26
BALD BLAIR NELSON N47	NBBN47	10	8.2	32
BANNABY REALITY N187	ECMN187	10	11.0	12
BOONAROO KASBAH N20	HCAN20	18	10.1	17
BOOROOMOOKA JACKPOT N418	NGMN418	5	9.0	26
BOOROOMOOKA NORMANDY N213	NGMN213	8	11.2	10
BROOKLANA GENESIS N9	AMQN9	15	8.4	31
CHILTERN PARK PICASSO P9	GTNP9	5	12.4	2
CLUNES CROSSING DUSTY M13	QMUM13	14	11.2	10
DULVERTON NEW APPROACH N208	NGCN208	11	9.2	25
GLENOCH KALLANGUR K112	QBGK112	14	9.4	22
GVA NEWSWORTHY N1	EETN1	10	10.7	14
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	8.5	30
HAZELDEAN M586	NHZM586	17	12.4	2
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	8.7	29
KOOJAN HILLS PATRIOT N33	WKHN33	10	10.0	18
LAWSON'S CHARLIE N131	VLYN131	7	9.3	24
MERRIBROOK PROGRESSION OF KYAH	VRTP6	7	8.2	32
MILLAH MURRAH MILESTONE M308	NMMM308	6	11.0	12
MURDEDUKE BLACK PEARL P036	CSWP036	13	11.9	7
MURRAY KODAK N70	NURN70	13	12.4	2
MURRAY TWINHEARTS P54	NURP54	7	9.7	19
PATHFINDER NUCLEUS N56	SMPN56	19	9.6	21
RENNYLEA L508	NORL508	15	12.1	5
RENNYLEA M1078	NORM1078	19	13.5	1
STELLAR NEUTRON N4	JCAN4	8	9.4	22
STONEY POINT NOLTE N340	SYAN340	7	10.3	16
TE MANIA NEBO N424	VTMN424	8	10.5	15
TE MANIA NERO N181	VTMN181	7	12.0	6
TEXAS MT KAPUTAR M100	DXTM100	9	11.6	8
V A R LEGEND 5019	USA18066037	9	8.9	28
WARRAWEE PATROL P29	QKBP29	4	9.7	19



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Net Feed Intake (kg/day)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	13	-1.6	29
ARDROSSAN MAGISTRATE M101	NAQM101	9	-1.5	31
BALD BLAIR NELSON N47	NBBN47	11	-2.5	5
BANNABY REALITY N187	ECMN187	10	-2.1	13
BOONAROO KASBAH N20	HCAN20	18	-1.9	23
BOOROOMOOKA JACKPOT N418	NGMN418	7	-2.5	5
BOOROOMOOKA NORMANDY N213	NGMN213	8	-1.5	31
BROOKLANA GENESIS N9	AMQN9	14	-1.8	25
CHILTERN PARK PICASSO P9	GTNP9	4	-1.6	29
CLUNES CROSSING DUSTY M13	QMUM13	13	-2.4	8
DULVERTON NEW APPROACH N208	NGCN208	10	-2.4	8
GLENOCH KALLANGUR K112	QBGK112	16	-2.0	19
GVA NEWSWORTHY N1	EETN1	10	-2.1	13
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	-2.0	19
HAZELDEAN M586	NHBM586	16	-1.8	25
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	-2.0	19
KOOJAN HILLS PATRIOT N33	WKHN33	9	-2.1	13
LAWSON'S CHARLIE N131	VLN131	8	-2.1	13
MERRIBROOK PROGRESSION OF KYAH	VRTP6	6	-2.7	3
MILLAH MURRAH MILESTONE M308	NMMM308	5	-2.2	12
MURDEDUKE BLACK PEARL P036	CSWP036	13	-2.1	13
MURRAY KODAK N70	NURN70	13	-3.2	1
MURRAY TWINHEARTS P54	NURP54	8	-1.8	25
PATHFINDER NUCLEUS N56	SMPN56	19	-2.0	19
RENNYLEA L508	NORL508	14	-1.9	23
RENNYLEA M1078	NORM1078	17	-1.8	25
STELLAR NEUTRON N4	JCAN4	8	-1.3	33
STONE POINT NOLTE N340	SYAN340	6	-2.4	8
TE MANIA NEBO N424	VTMN424	9	-2.6	4
TE MANIA NERO N181	VTMN181	7	-2.4	8
TEXAS MT KAPUTAR M100	DXTM100	9	-2.1	13
V A R LEGEND 5019	USA18066037	9	-2.5	5
WARRAWEE PATROL P29	QKBP29	4	-2.9	2



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - MSA Marble Score (Score)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	485.9	16
ARDROSSAN MAGISTRATE M101	NAQM101	10	487.1	15
BALD BLAIR NELSON N47	NBBN47	10	399.0	33
BANNABY REALITY N187	ECMN187	10	502.5	11
BOONAROO KASBAH N20	HCAN20	18	452.9	25
BOOROOMOOKA JACKPOT N418	NGMN418	5	416.2	32
BOOROOMOOKA NORMANDY N213	NGMN213	8	516.6	9
BROOKLANA GENESIS N9	AMQN9	15	469.0	20
CHILTERN PARK PICASSO P9	GTNP9	5	556.8	4
CLUNES CROSSING DUSTY M13	QMUM13	14	493.8	12
DULVERTON NEW APPROACH N208	NGCN208	11	479.4	18
GLENOCH KALLANGUR K112	QB GK112	15	437.8	28
GVA NEWSWORTHY N1	EETN1	10	482.4	17
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	436.3	30
HAZELDEAN M586	NH ZM586	17	575.6	2
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	460.3	24
KOOJAN HILLS PATRIOT N33	WKHN33	10	469.3	19
LAWSON'S CHARLIE N131	VLYN131	7	437.1	29
MERRIBROOK PROGRESSION OF KYAH	VRTP6	7	432.6	31
MILLAH MURRAH MILESTONE M308	NMMM308	6	467.7	22
MURDEDUKE BLACK PEARL P036	CSWP036	13	527.3	7
MURRAY KODAK N70	NURN70	13	550.5	5
MURRAY TWINHEARTS P54	NURP54	7	491.2	13
PATHFINDER NUCLEUS N56	SMPN56	19	468.1	21
RENNYLEA L508	NORL508	15	526.5	8
RENNYLEA M1078	NORM1078	19	607.9	1
STELLAR NEUTRON N4	JCAN4	8	461.0	23
STONEY POINT NOLTE N340	SYAN340	7	488.4	14
TE MANIA NEBO N424	VTMN424	8	516.6	9
TE MANIA NERO N181	VTMN181	7	561.7	3
TEXAS MT KAPUTAR M100	DXTM100	9	536.2	6
V A R LEGEND 5019	USA18066037	9	448.3	26
WARRAWEE PATROL P29	QKBP29	4	439.5	27



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - MSA Ossification (Score)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	147.4	23
ARDROSSAN MAGISTRATE M101	NAQM101	10	142.1	12
BALD BLAIR NELSON N47	NBBN47	10	142.7	15
BANNABY REALITY N187	ECMN187	10	140.1	8
BOONAROO KASBAH N20	HCAN20	18	142.4	14
BOOROOMOOKA JACKPOT N418	NGMN418	5	148.0	26
BOOROOMOOKA NORMANDY N213	NGMN213	8	134.8	3
BROOKLANA GENESIS N9	AMQN9	15	137.4	6
CHILTERN PARK PICASSO P9	GTNP9	5	148.0	26
CLUNES CROSSING DUSTY M13	QMUM13	14	154.3	33
DULVERTON NEW APPROACH N208	NGCN208	11	137.3	5
GLENOCH KALLANGUR K112	QB GK112	15	146.3	20
GVA NEWSWORTHY N1	EETN1	10	132.5	1
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	147.6	24
HAZELDEAN M586	NH ZM586	17	142.1	12
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	141.3	10
KOOJAN HILLS PATRIOT N33	WKHN33	10	148.1	28
LAWSON'S CHARLIE N131	VLYN131	7	149.6	30
MERRIBROOK PROGRESSION OF KYAH	VRTP6	7	144.4	19
MILLAH MURRAH MILESTONE M308	NMMM308	6	148.2	29
MURDEDUKE BLACK PEARL P036	CSWP036	13	136.9	4
MURRAY KODAK N70	NURN70	13	140.5	9
MURRAY TWINHEARTS P54	NURP54	7	153.1	32
PATHFINDER NUCLEUS N56	SMPN56	19	143.0	17
RENNYLEA L508	NORL508	15	147.1	21
RENNYLEA M1078	NORM1078	19	133.4	2
STELLAR NEUTRON N4	JCAN4	8	147.6	24
STONEY POINT NOLTE N340	SYAN340	7	144.0	18
TE MANIA NEBO N424	VTMN424	8	151.1	31
TE MANIA NERO N181	VTMN181	7	147.1	21
TEXAS MT KAPUTAR M100	DXTM100	9	142.8	16
V A R LEGEND 5019	USA18066037	9	141.7	11
WARRAWEE PATROL P29	QKBP29	4	137.7	7



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - MSA Index (Index)

Sire Name	Sire ID	Number of Progeny	Progeny Average	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	64.5	22
ARDROSSAN MAGISTRATE M101	NAQM101	10	65.0	15
BALD BLAIR NELSON N47	NBBN47	10	64.1	30
BANNABY REALITY N187	ECMN187	10	65.1	12
BOONAROO KASBAH N20	HCAN20	18	64.4	23
BOOROOMOOKA JACKPOT N418	NGMN418	5	63.7	32
BOOROOMOOKA NORMANDY N213	NGMN213	8	65.2	9
BROOKLANA GENESIS N9	AMQN9	15	65.2	9
CHILTERN PARK PICASSO P9	GTNP9	5	65.8	3
CLUNES CROSSING DUSTY M13	QMUM13	14	64.3	26
DULVERTON NEW APPROACH N208	NGCN208	11	65.2	9
GLENOCH KALLANGUR K112	QBGK112	15	64.4	23
GVA NEWSWORTHY N1	EETN1	10	65.3	8
HARDHAT K522 NEBRASKA F143 N43	DKKN43	12	64.4	23
HAZELDEAN M586	NHBM586	17	65.9	2
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	8	64.7	19
KOOJAN HILLS PATRIOT N33	WKHN33	10	64.3	26
LAWSON'S CHARLIE N131	VLN131	7	63.6	33
MERRIBROOK PROGRESSION OF KYAH	VRTP6	7	64.2	28
MILLAH MURRAH MILESTONE M308	NMMM308	6	64.2	28
MURDEDUKE BLACK PEARL P036	CSWP036	13	64.9	16
MURRAY KODAK N70	NURN70	13	65.6	5
MURRAY TWINHEARTS P54	NURP54	7	65.1	12
PATHFINDER NUCLEUS N56	SMPN56	19	64.8	18
RENNYLEA L508	NORL508	15	65.1	12
RENNYLEA M1078	NORM1078	19	66.3	1
STELLAR NEUTRON N4	JCAN4	8	64.6	21
STONEY POINT NOLTE N340	SYAN340	7	65.4	7
TE MANIA NEBO N424	VTMN424	8	64.1	30
TE MANIA NERO N181	VTMN181	7	65.5	6
TEXAS MT KAPUTAR M100	DXTM100	9	65.7	4
V A R LEGEND 5019	USA18066037	9	64.7	19
WARRAWEE PATROL P29	QKBP29	4	64.9	16



UNDERSTANDING THE ASBP SIRE LISTING - PROGENY PERFORMANCE II CATEGORICAL TRAITS

This listing provides an indication on how the sires are performing for several categorical (i.e. scored) traits within the ASBP, through their progeny.

For selection purposes it is strongly advised that the TACE EBVs and selection indexes listed in section 1 of the report be used primarily. They are the highest accuracy information to use in selection as they take into account all available industry data including the data generated from the ASBP. They also account for information from all known relatives and genetic correlations between traits as well as being able to be compared across cohorts and the Angus population.

Interpreting the ASBP Progeny Performance Listing



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 8 - Claw Set (Score)

Sire Name	Sire ID	Number of Progeny	Progeny % Score 5-6	Rank
AJC L172	NXOL172	33	36.4	30
ALLOURA LOCK STOCK & BARREL L94	DGJL94	10	40.0	28
BEN NEVIS JUDO J158	NBNJ158	5	60.0	12
BOOROOMOOKA LEROY L173	NGML173	25	44.0	25
BRIDGEWATER STIMULUS K65	BONK065	24	79.2	2
BROOKLANA INFINITY L39	AMQL39	25	52.0	18
CHILTERN PARK MARBLE M3	GTNM3	23	69.6	8

Number of progeny = Number of progeny the sire has recorded within the ASBP for the specified trait.

Progeny % = The percentage of ASBP progeny displaying the desirable score for the specified trait. The scores deemed ideal are listed in traits section below.

Rank = The ranking position (descending order) of the sire within the specified cohort.

The lists are sorted on sire name for the specified cohort. The date the progeny performance values were produced is listed in the bottom left hand margin of the report. The reports will be regularly updated as further ASBP data is recorded and analysed.

Progeny Performance Categorical Traits and Interpretation

Separate sections for the following traits are included in the ASBP Progeny Performance listing:

Docity: Percentage of progeny displaying a crush docility score, taken at weaning, of 1 or 1.5 (out of 5). Higher Progeny % values indicate a higher percentage of progeny with desirable temperament.

Claw Set: Percentage of progeny displaying a front feet claw set score, taken around 12 to 18 months of age, of 5 or 6 (out of the 1 to 9 scoring range). Higher Progeny % values indicate a higher percentage of progeny with structure of optimal score for front foot claw set.

Foot Angle: Percentage of progeny displaying a front feet angle score, taken around 12 to 18 months or age, of 5 or 6 (out of the 1 to 9 scoring range). Higher Progeny % values indicate a higher percentage of progeny with structure of optimal score for front feet angle.

Coat Type: Percentage of progeny displaying a coat type score, taken around 12 to 18 months or age, of 1, 1.5 or 2 (out of 7). Higher Progeny % values indicate a higher percentage of slick coated progeny.

Further information on the scoring systems are available from the Angus Education Centre - <https://www.angusaustralia.com.au/education/>



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Docility (Score)

Sire Name	Sire ID	Number of Progeny	Progeny % Score 1-1.5	Rank
ARDROSSAN HOLBROOK N329	NAQN329	22	54.5	29
ARDROSSAN MAGISTRATE M101	NAQM101	25	52.0	30
BALD BLAIR NELSON N47	NBBN47	26	73.1	13
BANNABY REALITY N187	ECMN187	27	48.1	31
BOONAROO KASBAH N20	HCAN20	29	69.0	20
BOOROOMOOKA JACKPOT N418	NGMN418	16	81.3	5
BOOROOMOOKA NORMANDY N213	NGMN213	18	77.8	7
BROOKLANA GENESIS N9	AMQN9	30	56.7	28
CHILTERN PARK PICASSO P9	GTNP9	16	93.8	1
CLUNES CROSSING DUSTY M13	QMUM13	35	60.0	27
DULVERTON NEW APPROACH N208	NGCN208	21	90.5	3
GLENOCH KALLANGUR K112	QB GK112	26	69.2	19
GVA NEWSWORTHY N1	EETN1	23	65.2	23
HARDHAT K522 NEBRASKA F143 N43	DKKN43	24	75.0	10
HAZELDEAN M586	NH ZM586	35	91.4	2
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	18	61.1	26
KOOJAN HILLS PATRIOT N33	WKHN33	33	75.8	9
LAWSON'S CHARLIE N131	VLYN131	29	69.0	20
MERRIBROOK PROGRESSION OF KYAH	VRTP6	16	75.0	10
MILLAH MURRAH MILESTONE M308	NMMM308	20	65.0	24
MURDEDUKE BLACK PEARL P036	CSWP036	29	72.4	14
MURRAY KODAK N70	NURN70	27	74.1	12
MURRAY TWINHEARTS P54	NURP54	24	70.8	16
PATHFINDER NUCLEUS N56	SMPN56	29	72.4	14
RENNYLEA L508	NORL508	27	48.1	31
RENNYLEA M1078	NORM1078	33	69.7	18
STELLAR NEUTRON N4	JCAN4	22	63.6	25
STONEY POINT NOLTE N340	SYAN340	24	70.8	16
TE MANIA NEBO N424	VTMN424	24	83.3	4
TE MANIA NERO N181	VTMN181	19	68.4	22
TEXAS MT KAPUTAR M100	DXTM100	20	45.0	33
V A R LEGEND 5019	USA18066037	21	76.2	8
WARRAWEE PATROL P29	QKBP29	15	80.0	6



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Claw Set (Score)

Sire Name	Sire ID	Number of Progeny	Progeny % Score 5-6	Rank
ARDROSSAN HOLBROOK N329	NAQN329	21	71.4	10
ARDROSSAN MAGISTRATE M101	NAQM101	24	83.3	5
BALD BLAIR NELSON N47	NBBN47	24	66.7	17
BANNABY REALITY N187	ECMN187	25	84.0	3
BOONAROO KASBAH N20	HCAN20	28	64.3	22
BOOROOMOOKA JACKPOT N418	NGMN418	15	26.7	33
BOOROOMOOKA NORMANDY N213	NGMN213	15	66.7	17
BROOKLANA GENESIS N9	AMQN9	28	57.1	28
CHILTERN PARK PICASSO P9	GTNP9	15	80.0	7
CLUNES CROSSING DUSTY M13	QMUM13	32	62.5	25
DULVERTON NEW APPROACH N208	NGCN208	20	55.0	29
GLENOCH KALLANGUR K112	QBGK112	25	84.0	3
GVA NEWSWORTHY N1	EETN1	22	45.5	31
HARDHAT K522 NEBRASKA F143 N43	DKKN43	22	63.6	24
HAZELDEAN M586	NHZN586	34	91.2	1
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	17	76.5	8
KOOJAN HILLS PATRIOT N33	WKHN33	27	66.7	17
LAWSONS CHARLIE N131	VLYN131	28	64.3	22
MERRIBROOK PROGRESSION OF KYAH	VRTP6	15	86.7	2
MILLAH MURRAH MILESTONE M308	NMMM308	18	66.7	17
MURDEDUKE BLACK PEARL P036	CSWP036	29	58.6	27
MURRAY KODAK N70	NURN70	27	70.4	13
MURRAY TWINHEARTS P54	NURP54	22	68.2	16
PATHFINDER NUCLEUS N56	SMPN56	29	69.0	15
RENNYLEA L508	NORL508	26	69.2	14
RENNYLEA M1078	NORM1078	31	71.0	12
STELLAR NEUTRON N4	JCAN4	22	54.5	30
STONEY POINT NOLTE N340	SYAN340	19	73.7	9
TE MANIA NEBO N424	VTMN424	23	82.6	6
TE MANIA NERO N181	VTMN181	17	58.8	26
TEXAS MT KAPUTAR M100	DXTM100	18	66.7	17
V A R LEGEND 5019	USA18066037	21	42.9	32
WARRAWEE PATROL P29	QKBP29	14	71.4	10



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Foot Angle (Score)

Sire Name	Sire ID	Number of Progeny	Progeny % Score 5-6	Rank
ARDROSSAN HOLBROOK N329	NAQN329	21	81.0	29
ARDROSSAN MAGISTRATE M101	NAQM101	24	95.8	7
BALD BLAIR NELSON N47	NBBN47	24	100.0	1
BANNABY REALITY N187	ECMN187	25	84.0	25
BOONAROO KASBAH N20	HCAN20	28	92.9	13
BOOROOMOOKA JACKPOT N418	NGMN418	15	86.7	21
BOOROOMOOKA NORMANDY N213	NGMN213	15	93.3	12
BROOKLANA GENESIS N9	AMQN9	28	92.9	13
CHILTERN PARK PICASSO P9	GTNP9	15	100.0	1
CLUNES CROSSING DUSTY M13	QMUM13	32	87.5	20
DULVERTON NEW APPROACH N208	NGCN208	20	90.0	17
GLENOCH KALLANGUR K112	QBGK112	25	84.0	25
GVA NEWSWORTHY N1	EETN1	22	90.9	15
HARDHAT K522 NEBRASKA F143 N43	DKKN43	22	95.5	9
HAZELDEAN M586	NHZN586	34	94.1	10
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	17	94.1	10
KOOJAN HILLS PATRIOT N33	WKHN33	27	77.8	32
LAWSON'S CHARLIE N131	VLN131	28	85.7	23
MERRIBROOK PROGRESSION OF KYAH	VRTP6	15	100.0	1
MILLAH MURRAH MILESTONE M308	NMMM308	18	100.0	1
MURDEDUKE BLACK PEARL P036	CSWP036	29	79.3	30
MURRAY KODAK N70	NURN70	27	96.3	6
MURRAY TWINHEARTS P54	NURP54	22	86.4	22
PATHFINDER NUCLEUS N56	SMPN56	29	100.0	1
RENNYLEA L508	NORL508	26	88.5	19
RENNYLEA M1078	NORM1078	31	83.9	27
STELLAR NEUTRON N4	JCAN4	22	90.9	15
STONEY POINT NOLTE N340	SYAN340	19	89.5	18
TE MANIA NEBO N424	VTMN424	23	95.7	8
TE MANIA NERO N181	VTMN181	17	82.4	28
TEXAS MT KAPUTAR M100	DXTM100	18	66.7	33
V A R LEGEND 5019	USA18066037	21	85.7	23
WARRAWEE PATROL P29	QKBP29	14	78.6	31



Angus Sire Benchmarking Program - Progeny Performance Report Cohort: 10 - Coat Type (Score)

Sire Name	Sire ID	Number of Progeny	Progeny % Score 1-2	Rank
ARDROSSAN HOLBROOK N329	NAQN329	14	78.6	8
ARDROSSAN MAGISTRATE M101	NAQM101	15	73.3	11
BALD BLAIR NELSON N47	NBBN47	18	83.3	4
BANNABY REALITY N187	ECMN187	15	66.7	16
BOONAROO KASBAH N20	HCAN20	24	50.0	31
BOOROOMOOKA JACKPOT N418	NGMN418	13	46.2	33
BOOROOMOOKA NORMANDY N213	NGMN213	9	88.9	1
BROOKLANA GENESIS N9	AMQN9	19	68.4	15
CHILTERN PARK PICASSO P9	GTNP9	10	70.0	14
CLUNES CROSSING DUSTY M13	QMUM13	18	61.1	24
DULVERTON NEW APPROACH N208	NGCN208	15	80.0	5
GLENOCH KALLANGUR K112	QB GK112	18	66.7	16
GVA NEWSWORTHY N1	EETN1	14	57.1	28
HARDHAT K522 NEBRASKA F143 N43	DKKN43	18	61.1	24
HAZELDEAN M586	NH ZM586	26	61.5	22
INGLEBRAE FARMS NOBLEMAN N6	DYFN6	13	76.9	9
KOOJAN HILLS PATRIOT N33	WKHN33	18	66.7	16
LAWSON'S CHARLIE N131	VLYN131	15	80.0	5
MERRIBROOK PROGRESSION OF KYAH	VRTP6	10	60.0	26
MILLAH MURRAH MILESTONE M308	NMMM308	13	61.5	22
MURDEDUKE BLACK PEARL P036	CSWP036	20	85.0	3
MURRAY KODAK N70	NURN70	20	60.0	26
MURRAY TWINHEARTS P54	NURP54	14	57.1	28
PATHFINDER NUCLEUS N56	SMPN56	23	73.9	10
RENNYLEA L508	NORL508	17	70.6	13
RENNYLEA M1078	NORM1078	24	79.2	7
STELLAR NEUTRON N4	JCAN4	14	50.0	31
STONEY POINT NOLTE N340	SYAN340	11	63.6	21
TE MANIA NEBO N424	VTMN424	14	71.4	12
TE MANIA NERO N181	VTMN181	15	86.7	2
TEXAS MT KAPUTAR M100	DXTM100	12	66.7	16
V A R LEGEND 5019	USA18066037	15	66.7	16
WARRAWEE PATROL P29	QKBP29	9	55.6	30



UNDERSTANDING THE ASBP SIRE LISTING - PROGENY PERFORMANCE SUMMARY TABLE

This listing provides an indication of how the sires are performing within the ASBP. *The values listed can only be validly used to compare sires within each cohort of the ASBP.*

For selection purposes it is strongly advised that the EBVs and selection indexes listed in section 1 of the report be used primarily. They are the highest accuracy information to use in selection as they take into account all available industry data including the data generated from the ASBP. They also account for information from all known relatives and genetic correlations between traits as well as being able to be compared across cohorts and the Angus population.



Interpreting the ASBP Progeny Performance Summary Table

Angus Sire Benchmarking Program - Cohort 3 Summary of Progeny Averages (rank)												
Sire ID Name	BW	GL	WW	YW	FW	DTC	SCAN EMA	SCAN RIB	SCAN RUMP	SCAN IMF	CARC WT	EBI
DGJF27 ALLOURA FOURTH DIMENSION F27	34.1 (1)	282.8 (23)	192.1 (35)	359.3 (40)	512.9 (36)	300.7 (16)	66.0 (15)	8.5 (1)	10.8 (1)	6.4 (1)	426.6 (36)	8.2
DGJG19 ALLOURA GET UP-AND-GO G19	37.0 (15)	283.0 (24)	202.7 (17)	396.7 (13)	537.3 (21)	290.1 (1)	64.9 (26)	7.8 (8)	10.0 (14)	5.4 (24)	432.3 (31)	8.1
CGKE9 ALPINE EXTRA SPECIAL E9	37.1 (18)	279.1 (4)	190.7 (39)	370.2 (37)	515.0 (34)	316.6 (40)	62.4 (39)	5.8 (40)	7.7 (39)	4.9 (40)	434.6 (30)	8.1
WJMF96 ARDCAIRNIE F96	36.2 (7)	281.7 (17)	198.9 (21)	390.3 (18)	551.2 (10)	310.5 (37)	69.0 (2)	7.7 (10)	10.1 (11)	5.6 (12)	465.0 (11)	8.1
NBBG117 BALD BLAIR NEW DESIGN G117	36.3 (9)	282.1 (20)	197.0 (29)	397.5 (11)	544.0 (12)	302.1 (22)	67.0 (11)	7.4 (18)	9.3 (28)	5.0 (39)	453.4 (19)	8.1
WMYF3 BLACKROCK F3	36.5 (10)	279.0 (3)	204.3 (11)	388.2 (22)	555.2 (8)	301.5 (19)	67.2 (9)	7.6 (14)	10.3 (8)	5.7 (10)	479.1 (2)	8.1
NGMF510 BOOROOMOOKA FRANKEL F510	40.3 (39)	281.3 (14)	200.3 (20)	405.9 (3)	555.5 (7)	304.1 (26)	65.8 (16)	7.3 (20)	10.1 (11)	5.4 (24)	444.3 (26)	8.1

Progeny Average = The average performance of this sires progeny for the specified trait in the ASBP. The average is calculated using adjusted data (i.e. the standard adjustments for the age of the progeny and age of the dams). It is calculated using a least squares means (LSM) model which takes into herd and contemporary group.

Rank = The ranking position of the sire within the specified cohort (in brackets). The ranking order will depend on the trait. E.g. 200 Day weight ranked in descending order, while birth weight is ranked in ascending order.

For easy interpretation colour coding has been applied to the ranking being:

- Rank 1 to 5 (dark green with white text). E.g. 
- Rank 6 to 10 (light green with black text). E.g. 

The definition of the traits are detailed in the previous section of this report titled *“Understanding the ASBP Progeny Performance Listing”*

The table is sorted on sire name for the specified cohort.

The date the progeny performance values were produced is listed in the bottom left hand margin of the report. The reports will be regularly updated as further ASBP data is recorded and analysed.



Angus Sire Benchmarking Program - Cohort 10

Summary of Progeny Averages (rank)

Sire ID Name	BW	GL	WW	YW	FW	DTC	SCAN EMA	SCAN RIB	SCAN RUMP	SCAN IMF	CARC WT	CARC EMA	CARC IMF	NFI-f	MSA MBL	MSA OSS	MSA IND	DOC	CLAW	ANGLE	CT
NAQN329 ARDROSSAN HOLBROOK N329	34.0 (18)	281.2 (27)	227.7 (28)	378.1 (20)	425.8 (31)	301.1 (7)	65.3 (19)	6.0 (10)	7.9 (6)	7.0 (1)	437.0 (26)	81.9 (29)	11.3 (9)	-1.6 (29)	485.9 (16)	147.4 (23)	64.5 (22)	54.5 (29)	71.4 (10)	81.0 (29)	78.6 (8)
NAQM101 ARDROSSAN MAGISTRATE M101	35.1 (28)	280.9 (25)	238.9 (12)	394.1 (6)	437.8 (27)	331.5 (33)	66.8 (5)	5.9 (14)	7.7 (10)	6.6 (9)	443.4 (22)	84.5 (14)	9.0 (26)	-1.5 (31)	487.1 (15)	142.1 (12)	65.0 (15)	52.0 (30)	83.3 (5)	95.8 (7)	73.3 (11)
NBBN47 BALD BLAIR NELSON N47	33.9 (16)	282.1 (31)	241.4 (9)	403.6 (3)	464.3 (13)	294.3 (3)	66.2 (11)	5.3 (31)	6.3 (30)	6.2 (27)	464.4 (5)	81.6 (30)	8.2 (32)	-2.5 (5)	399.0 (33)	142.7 (15)	64.1 (30)	73.1 (13)	66.7 (17)	100.0 (1)	83.3 (4)
ECMN187 BANNABY REALITY N187	31.8 (1)	279.1 (9)	222.4 (32)	358.9 (33)	418.6 (29)	318.9 (32)	63.8 (31)	6.0 (10)	7.6 (12)	6.5 (13)	447.1 (18)	82.5 (25)	11.0 (12)	-2.1 (13)	502.5 (11)	140.1 (8)	65.1 (12)	48.1 (31)	84.0 (3)	84.0 (25)	66.7 (16)
HCAN20 BOONAROO KASBAH N20	33.9 (16)	280.0 (16)	227.9 (27)	372.3 (27)	436.7 (28)	310.4 (19)	65.0 (21)	5.7 (19)	6.8 (23)	5.9 (30)	444.6 (21)	83.0 (22)	10.1 (17)	-1.9 (23)	452.9 (25)	142.4 (14)	64.4 (23)	69.0 (20)	64.3 (22)	92.9 (13)	50.0 (31)
NGMN418 BOOROOMOOKA JACKPOT N418	34.8 (24)	279.2 (10)	240.2 (10)	386.5 (12)	470.1 (9)	309.2 (17)	66.7 (6)	6.1 (8)	8.1 (3)	6.1 (29)	448.3 (16)	85.5 (10)	9.0 (26)	-2.5 (5)	416.2 (32)	148.0 (26)	63.7 (32)	81.3 (5)	26.7 (33)	86.7 (21)	46.2 (33)
NGMN213 BOOROOMOOKA NORMANDY N213	31.9 (4)	279.5 (12)	222.5 (31)	366.8 (31)	399.3 (33)	288.2 (1)	63.9 (28)	4.8 (33)	6.0 (33)	5.7 (33)	429.7 (31)	78.6 (33)	11.2 (10)	-1.5 (31)	516.6 (9)	134.8 (3)	65.2 (9)	77.8 (7)	66.7 (17)	93.3 (12)	88.9 (1)
AMQN9 BROOKLANA GENESIS N9	36.1 (33)	281.7 (28)	238.7 (13)	392.6 (8)	482.5 (5)	302.2 (9)	67.7 (1)	5.5 (24)	6.3 (30)	6.5 (13)	463.9 (6)	94.7 (1)	8.4 (31)	-1.8 (25)	469.0 (20)	137.4 (6)	65.2 (9)	56.7 (28)	57.1 (28)	92.9 (13)	68.4 (15)
GTNP9 CHILTERN PARK PICASSO P9	33.0 (10)	283.1 (33)	243.6 (8)	372.2 (28)	497.9 (2)	290.2 (2)	66.9 (4)	5.9 (14)	7.6 (12)	6.5 (13)	467.4 (4)	88.1 (4)	12.4 (2)	-1.6 (29)	556.8 (4)	148.0 (26)	65.8 (3)	93.8 (1)	80.0 (7)	100.0 (1)	70.0 (14)
QMUM13 CLUNES CROSSING DUSTY M13	34.7 (23)	279.6 (14)	236.9 (15)	373.3 (26)	471.5 (7)	316.7 (25)	66.0 (13)	6.0 (10)	7.1 (22)	6.3 (24)	432.0 (29)	86.6 (6)	11.2 (10)	-2.4 (8)	493.8 (12)	154.3 (33)	64.3 (26)	60.0 (27)	62.5 (25)	87.5 (20)	61.1 (24)
NGCN208 DULVERTON NEW APPROACH N208	33.4 (14)	280.5 (18)	230.4 (22)	383.1 (14)	453.0 (19)	316.9 (27)	65.7 (14)	5.4 (26)	6.8 (23)	6.7 (5)	455.0 (9)	86.6 (6)	9.2 (25)	-2.4 (8)	479.4 (18)	137.3 (5)	65.2 (9)	90.5 (3)	55.0 (29)	90.0 (17)	80.0 (5)
QBGK112 GLENDOCH KALLANGUR K112	35.6 (32)	281.7 (28)	237.6 (14)	377.7 (21)	440.2 (25)	311.5 (21)	65.5 (15)	6.0 (10)	7.8 (7)	6.6 (9)	460.4 (7)	86.7 (5)	9.4 (22)	-2.0 (19)	437.8 (28)	146.3 (20)	64.4 (23)	69.2 (19)	84.0 (3)	84.0 (25)	66.7 (16)
EETN1 GVA NEWSWORTHY N1	32.1 (6)	278.3 (4)	231.4 (20)	370.4 (30)	444.7 (24)	312.0 (22)	64.3 (26)	5.8 (18)	7.2 (20)	6.6 (9)	448.0 (17)	85.4 (11)	10.7 (14)	-2.1 (13)	482.4 (17)	132.5 (1)	65.3 (8)	65.2 (23)	45.5 (31)	90.9 (15)	57.1 (28)
DKKN43 HARDHAT K522 NEBRASKA F143 N43	32.1 (6)	279.0 (8)	239.3 (11)	389.5 (10)	462.2 (14)	305.9 (14)	63.9 (28)	6.5 (2)	7.6 (12)	6.3 (24)	450.7 (13)	83.1 (21)	8.5 (30)	-2.0 (19)	436.3 (30)	147.6 (24)	64.4 (23)	75.0 (10)	63.6 (24)	95.5 (9)	61.1 (24)
NHBM586 HAZELDEAN M586	33.3 (13)	279.6 (14)	235.0 (16)	381.6 (17)	450.6 (21)	296.8 (4)	64.9 (22)	6.3 (6)	7.4 (17)	6.4 (19)	437.6 (25)	86.6 (6)	12.4 (2)	-1.8 (25)	575.6 (2)	142.1 (12)	65.9 (2)	91.4 (2)	91.2 (1)	94.1 (10)	61.5 (22)
DYFN6 INGLEBRAE FARMS NOBLEMAN N6	33.0 (10)	279.4 (11)	245.1 (6)	382.2 (16)	453.9 (18)	321.5 (32)	65.5 (15)	6.4 (4)	8.0 (5)	6.7 (5)	448.4 (15)	85.2 (12)	8.7 (29)	-2.0 (19)	460.3 (24)	141.3 (10)	64.7 (19)	61.1 (26)	76.5 (8)	94.1 (10)	76.9 (9)
WKHN33 KOOJAN HILLS PATRIOT N33	32.2 (8)	280.5 (18)	233.0 (19)	378.2 (19)	464.6 (12)	315.0 (24)	64.2 (27)	5.4 (26)	6.8 (23)	6.2 (27)	445.3 (20)	81.3 (31)	10.0 (18)	-2.1 (13)	469.3 (19)	148.1 (28)	64.3 (26)	75.8 (9)	66.7 (17)	77.8 (32)	66.7 (16)
VLYN131 LAWSON'S CHARLIE N131	34.1 (21)	280.8 (22)	247.1 (4)	406.2 (2)	485.3 (4)	306.6 (15)	67.6 (2)	5.9 (14)	7.6 (12)	6.4 (19)	435.5 (27)	82.7 (24)	9.3 (24)	-2.1 (13)	437.1 (29)	149.6 (30)	63.6 (33)	69.0 (20)	64.3 (22)	85.7 (23)	80.0 (5)
VRTP6 MERRIBROOK PROGRESSION OF KYAH PARK	31.8 (1)	276.5 (1)	233.1 (18)	389.0 (11)	454.8 (16)	304.4 (12)	64.5 (25)	6.5 (2)	7.6 (12)	6.4 (19)	449.3 (14)	83.5 (20)	8.2 (32)	-2.7 (3)	432.6 (31)	144.4 (19)	64.2 (28)	75.0 (10)	86.7 (2)	100.0 (1)	60.0 (26)
NMMM308 MILLAH MURRAH MILESTONE M308	34.0 (18)	278.7 (6)	229.3 (25)	370.7 (29)	466.6 (10)	317.1 (28)	66.5 (8)	5.9 (14)	8.4 (2)	6.5 (13)	440.2 (24)	82.1 (28)	11.0 (12)	-2.2 (12)	467.7 (22)	148.2 (29)	64.2 (28)	65.0 (24)	66.7 (17)	100.0 (1)	61.5 (22)
CSWP036 MURDEDUKE BLACK PEARL P036	33.5 (15)	278.6 (5)	225.9 (30)	375.4 (24)	456.5 (15)	298.6 (6)	63.9 (28)	5.7 (19)	7.7 (10)	6.6 (9)	427.1 (32)	80.6 (32)	11.9 (7)	-2.1 (13)	527.3 (7)	136.9 (4)	64.9 (16)	72.4 (14)	58.6 (27)	79.3 (30)	85.0 (3)
NURN70 MURRAY KODAK N70	34.0 (18)	278.8 (7)	234.0 (17)	382.9 (15)	470.9 (8)	316.7 (25)	66.5 (8)	6.1 (8)	7.8 (7)	6.8 (3)	447.0 (19)	84.5 (14)	12.4 (2)	-3.2 (1)	550.5 (5)	140.5 (9)	65.6 (5)	74.1 (12)	70.4 (13)	96.3 (6)	60.0 (26)



Angus Sire Benchmarking Program - Cohort 10

Summary of Progeny Averages (rank)

Sire ID Name	BW	GL	WW	YW	FW	DTC	SCAN EMA	SCAN RIB	SCAN RUMP	SCAN IMF	CARC WT	CARC EMA	CARC IMF	NFI-f	MSA MBL	MSA OSS	MSA IND	DOC	CLAW	ANGLE	CT
NURP54 MURRAY TWINHEARTS P54	35.3 (30)	280.7 (20)	253.7 (1)	403.5 (4)	452.4 (20)	304.1 (10)	66.6 (7)	5.7 (19)	7.4 (17)	6.7 (5)	474.7 (2)	84.0 (19)	9.7 (19)	-1.8 (25)	491.2 (13)	153.1 (32)	65.1 (12)	70.8 (16)	68.2 (16)	86.4 (22)	57.1 (28)
SMPN56 PATHFINDER NUCLEUS N56	34.9 (25)	280.7 (20)	247.0 (5)	389.7 (9)	518.8 (1)	301.3 (8)	67.0 (3)	6.3 (6)	8.1 (3)	7.0 (1)	453.2 (11)	88.9 (3)	9.6 (21)	-2.0 (19)	468.1 (21)	143.0 (17)	64.8 (18)	72.4 (14)	69.0 (15)	100.0 (1)	73.9 (10)
NORL508 RENNYLEA L508	32.0 (5)	279.5 (12)	228.2 (26)	375.0 (25)	454.1 (17)	304.5 (13)	65.1 (20)	6.4 (4)	7.8 (7)	6.8 (3)	430.5 (30)	84.2 (18)	12.1 (5)	-1.9 (23)	526.5 (8)	147.1 (21)	65.1 (12)	48.1 (31)	69.2 (14)	88.5 (19)	70.6 (13)
NORM1078 RENNYLEA M1078	32.5 (9)	282.0 (30)	221.6 (33)	363.3 (32)	445.8 (23)	310.9 (20)	65.5 (15)	5.6 (22)	7.2 (20)	6.5 (13)	432.9 (28)	85.7 (9)	13.5 (1)	-1.8 (25)	607.9 (1)	133.4 (2)	66.3 (1)	69.7 (18)	71.0 (12)	83.9 (27)	79.2 (7)
JCAN4 STELLAR NEUTRON N4	33.2 (12)	280.0 (16)	230.2 (23)	378.8 (18)	439.5 (26)	304.1 (10)	62.5 (33)	5.6 (22)	7.3 (19)	6.3 (24)	451.6 (12)	83.0 (22)	9.4 (22)	-1.3 (33)	461.0 (23)	147.6 (24)	64.6 (21)	63.6 (25)	54.5 (30)	90.9 (15)	50.0 (31)
SYAN340 STONE POINT NOLTE N340	35.2 (29)	280.8 (22)	245.0 (7)	408.3 (1)	477.4 (6)	320.3 (31)	66.1 (12)	5.5 (24)	6.5 (28)	6.4 (19)	477.5 (1)	84.3 (16)	10.3 (16)	-2.4 (8)	488.4 (14)	144.0 (18)	65.4 (7)	70.8 (16)	73.7 (9)	89.5 (18)	63.6 (21)
VTMN424 TE MANIA NEBO N424	35.0 (26)	281.0 (26)	230.6 (21)	376.1 (23)	446.6 (22)	307.6 (16)	64.8 (23)	5.4 (26)	6.5 (28)	6.4 (19)	407.1 (33)	82.3 (26)	10.5 (15)	-2.6 (4)	516.6 (9)	151.1 (31)	64.1 (30)	83.3 (4)	82.6 (6)	95.7 (8)	71.4 (12)
VTMN181 TE MANIA NERO N181	34.2 (22)	283.0 (32)	227.1 (29)	376.4 (22)	465.3 (11)	320.1 (30)	65.4 (18)	5.4 (26)	6.6 (27)	6.5 (13)	440.3 (23)	84.7 (13)	12.0 (6)	-2.4 (8)	561.7 (3)	147.1 (21)	65.5 (6)	68.4 (22)	58.8 (26)	82.4 (28)	86.7 (2)
DXTM100 TEXAS MT KAPUTAR M100	35.5 (31)	278.2 (3)	248.8 (3)	393.3 (7)	427.3 (29)	309.8 (18)	63.7 (32)	5.2 (32)	6.8 (23)	5.8 (32)	455.7 (8)	84.3 (16)	11.6 (8)	-2.1 (13)	536.2 (6)	142.8 (16)	65.7 (4)	45.0 (33)	66.7 (17)	66.7 (33)	66.7 (16)
USA18066037 V A R LEGEND 5019	35.0 (26)	280.8 (22)	249.1 (2)	400.8 (5)	426.6 (30)	314.9 (23)	66.5 (8)	5.4 (26)	6.3 (30)	5.9 (30)	474.4 (3)	90.2 (2)	8.9 (28)	-2.5 (5)	448.3 (26)	141.7 (11)	64.7 (19)	76.2 (8)	42.9 (32)	85.7 (23)	66.7 (16)
QKBP29 WARRAWEE PATROL P29	31.8 (1)	276.7 (2)	229.4 (24)	385.6 (13)	490.6 (3)	297.9 (5)	64.8 (23)	7.0 (1)	8.7 (1)	6.7 (5)	454.7 (10)	82.3 (26)	9.7 (19)	-2.9 (2)	439.5 (27)	137.7 (7)	64.9 (16)	80.0 (6)	71.4 (10)	78.6 (31)	55.6 (30)

8.2 Industry Economic Value Assumptions

The economic gains achieved in the temperate Australian beef industry resulting from genetic improvement by Angus seedstock breeders was calculated from the trend in the average Angus Breeding Index value achieved in the registered Angus seedstock population. For simplicity, the calculations ignore any benefits accrued in the sub-tropical northern beef industry where Angus genetics have also had significant penetration in recent years.

Since limited accurate statistics are available on the breed composition in the Australian beef herd, it was assumed that the proportion of Angus animals represented in the temperate commercial beef population (targeted population) was equivalent to the proportion of Angus cattle in the seedstock sector relative to the total number of registered breeding females across all temperate breeds, as published annually by the Australian Registered Cattle Breeders Association (ARCBA). These statistics show that the proportion of Angus cattle in the seedstock sector servicing the targeted population increased from about 10% in the early 1980s to 48% in 2021. In the analysis it was assumed that this proportion would continue to increase at the same average rate of that experienced over the last 10 years.

In the “Without Project” case it was assumed that 75% of the industry in the targeted population sourced their bull replacements from recorded seedstock herds (“Tier 1” commercial herds), with a 5-year lag in genetic improvement (approximately 1 generation); and, the remaining 25% of commercial herds (“Tier 2” commercial herds) had a 10-year lag (approximately 2 generations) in genetic improvement relative to the seedstock sector. In the analysis it was assumed that the proportion of the targeted population that source their bull replacements from recorded herds progressively increases to 80% over 5 years, commencing from Year 2 of the project.

Statistics on the numbers of breeding females mated each year in the temperate Australian beef herd were estimated from industry data provided by MLA, with 50% of these cows assumed to be run in temperate regions where Angus bulls are commonly used.

Further details of the model calculations are available on request.