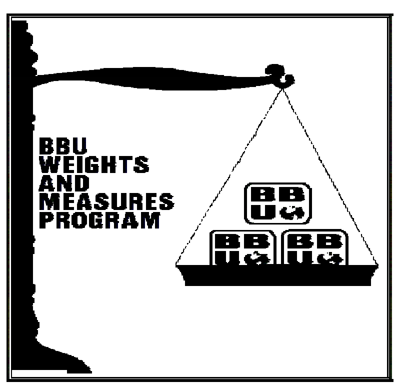
2012

BEEFMASTER
BREEDERS
UNITED

WINTER SIRE SUMMARY



2012 Winter Sire Summary

Without question, EPDs are currently the most objective measures of genetic prediction. For decades, beef cattle producers have been able to utilize these values to make sustained genetic progress in many traits of relative economic importance. Across the nation, breeders have been able to achieve more rapid genetic progress through the sharing of scientifically documented genetics. Ultimately, this process has resulted in a more objective description of Beefmaster cattle. Today the opportunities are even greater. The 2012 Winter BBU Sire Summary is available on the BBU website at www.beefmasters.org. The website features a "Sire Selector" option that allows the user to sort sires using multiple trait selection according to personal preferences for each trait.

The BBU Sire Summary been constructed using the most modern and sophisticated methodologies available. The statistical procedures used to calculate the EPDs within this summary have incorporated massive amounts of information on individuals and their relatives. Because of the volume of records utilized to generate EPDs, they are the most objective and informative tools available for genetic selection. The most accurately described individuals are sires with large numbers of progeny performance records. However, research indicates that EPDs computed for young bulls without offspring are still as much as nine times more accurate than performance ratios for use in across herd selection decisions.

For an Active Sire to be published in the sire summary, he must have an accuracy of .60 for weaning weight. Young Sires are bulls under five years of age (born on or after January 1, 2007). Young Sires must have an accuracy of .30 for weaning weight with a minimum of 10 progeny records. All information on all traits for Active and Young Sires has been printed, provided they have met accuracy requirements for weaning weight. Sires that have not had any offspring born in 2010, 2011 or 2012 (and recorded with BBU before November 1, 2012) are considered inactive sires and have been deleted from the Sire Summary. A list of trait leaders has also been included, presenting the top 15 sires for each trait with a minimum accuracy of .60 for that trait and at least 5 records for that trait (on growth traits only). Scrotal and scan trait leaders must have a minimum accuracy of .50 for that trait with no minimum record requirements.

Dr. Brad Crook and his staff at Agricultural Business Research Institute (ABRI) performed the analysis. BBU wishes to thank Dr. Crook and his staff. A special thanks also goes to the BBU Board of Directors for their involvement in this project.

Frequently Asked Questions

Q. My bull is not listed in the Sire Summary. Why not?
A. Only bulls with progeny performance records in BBU Performance Programs are included in the published Sire Summary. However, this does not ensure that a bull will be listed. The analysis is largely based on the relative differences between progeny records of sires within contemporary groups. For this reason, it is important to use more than one sire in your herd. It is also helpful to make semen available on your herd sires and encourage other BBU breeders to use them in their breeding programs.

Q. I did all of that and still don't see my bull in the Sire Summary. Why?
A. In order for any EPD to be included in the Sire Summary, the accuracy for weaning weight must be at least .60 for Active Sires, or .30 for Young Sires. This accuracy value depends on the number of calves a bull has sired, the distribution of those calves in various herds, and the amount of pedigree information available on a bull. (Accuracy values on young sires will increase more dramatically when they are directly tested against proven, high accuracy sires as opposed to other young bulls).

Q. What happens to the EPD information on all of the bulls that did not meet requirements to be included in the Sire Summary?
A. The BBU office has the EPD information for all of the bulls included in the Sire Summary Analysis, as well as EPDs for females and for young bulls that have not yet sired calves. The owners of these cattle may obtain this information by contacting the BBU office and providing the registration number of these individuals or by using the search feature online at www.beefmasters.org.

Q. If a bull has no progeny recorded, how does he have an EPD?
A. The parents of that bull have enough records to generate his EPD for that trait.

Note: The BBU staff, Board of Directors, and Dr. Crook's staff have tried to make sure that the information presented in this sire summary is as accurate as humanly possible. Information like the genetic predictions listed within this summary may be used to enhance mating decisions along with visual evaluation.

For More Information Call BBU at 210-732-3132

Foreword
Brad Crook ABRI, Australia

1. Introduction

This Sire Summary published by Beefmaster Breeders United (BBU) represents part of a comprehensive breed-wide genetic evaluation program available to breeders of Beefmaster cattle. This program provides genetic values in the form of Expected Progeny Differences (EPDs) for all animals – male and female – recorded on the BBU database with performance records of their own or progeny with performance records. This Sire Summary contains bulls which have produced progeny with at least one weaning weight record. EPDs for all other animals included in the evaluation - such as cows with performance progeny or non—parent animals with performance records – are available from the BBU office and via the EPD search facility on the BBU website.

The BBU genetic evaluation calculates EPDs for individual animals using all available pedigree and performance information on the animal as well as its progeny and close relatives. The genetic evaluation takes into account the influence of management, environmental effects and other non-genetic effects as recorded by Beefmaster breeders, to provide the best possible estimate of an animal's genetic value (ie. EPDs) for all traits evaluated.

EPDs are reported for a range of economically important traits including: birth weight, 205-day weight, 365-day weight, maternal growth (milk), scrotal size and four ultra-sound scan traits (rib eye area, rib and rump fat, and intra-muscular fat percent). The trait EPDs reported do not represent the complete list of traits that must be considered during the selection of functional cattle. However, EPDs are the best figures available on the genetic value of animals for these economically important traits. They should be used in conjunction with assessment for structural soundness, fertility, mature size and temperament, among other traits, as part of a systematic and balanced cattle breeding program.

2. The Analysis

The EPDs published in this Sire Summary were produced using version 4.3 of BREEDPLAN genetic evaluation software. This analytical software represents an advanced implementation of Best Linear Unbiased Prediction (BLUP) technology for across-herd genetic evaluation of beef cattle. BREEDPLAN genetic evaluation software was developed by the Animal Genetics and Breeding Unit (AGBU) at the University of New England, Australia [1, 2].

This evaluation is based on a wide range of information including the performance of the individual and its relatives for a number of traits, the genetic relationships between the traits and the pedigree links between animals and between herds. All information is combined into one multi-trait genetic evaluation of the Beefmaster breed.

i. The traits included

All performance traits included in the BBU genetic evaluation are adjusted for age of dam and age of calf effects, where such non-genetic effects have been shown to be a significant source of variation in performance for the trait.

Birth Weight

Actual birth weights are adjusted for age of dam effects using multiplicative adjustment factors derived from the BBU data. Birth weight EPDs indicate likely genetic differences between sires in progeny birth weights, after removing age of dam and contemporary group differences. The lower the birth weight EPD of a sire the lighter is the expected birth weight of his progeny.

Birth weight is of economic importance because it reflects calving ease to some degree, i.e. larger calves at birth tend to result in more difficult births, especially amongst first-calving females. However, whilst low birth weight EPDs may be favoured for calving ease they are also generally associated with lower overall growth potential. Consequently, birth weight and growth need to be carefully balanced. Fortunately, animals can be found that have both moderate birth weight EPDs and above average EPDs for later growth.

205-day (Weaning) Weight

Actual weaning weights are adjusted for age of calf at weighing to a standard age of 205-days, and also adjusted for differences in age of dam, using multiplicative adjustment factors derived from the BBU data. This revised approach to adjusting for age at weighing no longer requires the use of a default birth weight if actual birth weight is unavailable and therefore reduces the risk of any bias that might occur.

The 205-day weight EPDs indicate likely genetic differences between sires in the growth of their progeny to weaning.

205-day Maternal Growth (i.e. Milk)

The BBU genetic evaluation partitions the genetic variation in 205-day weight into direct and maternal genetic components. That is, separating the effects of the genes for growth possessed by the calf itself from the effects of genes possessed by the dam for milking or mothering ability.

The 205-day maternal growth or milk EPD reflects extra calf weight that is due to the genetic influence a sire has on his daughters' milking and mothering ability. These EPDs are reported in pounds of weaning weight. Sires with above average 205-day Milk EPDs are therefore expected to sire daughters with above average milking potential. A sire's 205-day Milk EPD is usually less accurate than its growth EPDs because of the lower heritability of the trait and the time lag before the performance of the daughter's calves becomes available.

A prediction of total contributions of a sire's daughter to calf performance can be obtained by adding one half of the sire's weaning weight EPD to his milk EPD.

365-day (Yearling) Weight

Actual yearling weights are adjusted for age of calf at weighing to a standard age of 365-days, and also adjusted for differences in age of dam, using multiplicative adjustment factors derived from the BBU data.

The 365-day weight EPDs indicate likely genetic differences between sires in progeny growth potential through to market age.

Scrotal Size

Actual scrotal circumference records, in centimeters, are adjusted for age of bull at measurement to a standard age of 365-days, and also adjusted for differences in age of dam, using multiplicative adjustment factors derived from the BBU data.

Scrotal size EPDs indicate likely genetic differences between sires in the fertility of their male progeny, which passes on in part to female relatives. Increased scrotal size is associated with increased fertility in male progeny and with earlier age at puberty of male and female progeny.

Rib Eye Area
Ultrasound scanning measurements of rib eye area are adjusted for age at scanning to a standard age of 380 days, using linear regression coefficients derived from the BBU data. These are applied separately for bulls and heifers. The effect of age of dam is also removed using multiplicative adjustment factors derived from the BBU data.

These EPDs indicate likely genetic differences between sires in rib eye area as measured in progeny at scanning. Sires with relatively higher EPDs are expected to produce better muscled and higher percentage yielding progeny at the same age than will sires with lower EPDs.

Rib and Rump Fat
Ultrasound scanning measurements of fat depth over the ribs and rump are adjusted for age at scanning to a standard age of 380 days, using linear regression coefficients derived from the BBU data. These are applied separately for bulls and heifers. The effect of age of dam is also removed using multiplicative adjustment factors derived from the BBU data.

These EPDs indicate likely genetic differences between sires in the degree of subcutaneous fat in progeny at a constant age at scanning. Sires with low, or negative, fat EPDs are expected to produce leaner progeny at a constant scanning age than those sires with higher EPDs. Differences between Rib Fat and Rump Fat EPDs may indicate differences in fat distribution.

Intra Muscular Fat Percent
Intra muscular fat percent (IMF%), as measured using ultrasound scan technology, is adjusted for age at scanning to a standard age of 380 days, using linear regression coefficients derived from the BBU data. These are applied separately for bulls and heifers.

These EPDs indicate likely genetic differences between sires in the degree of intra muscular fat percentage (or marbling) in progeny at a constant age at scanning. Sires with positive EPDs are expected to produce progeny with higher IMF% when scanned at a constant age.

ii. Statistics
The following table provides some general statistics relating to the BBU genetic evaluation:

TRAITS	Total
Animals	450,033
Sires	23,655
Dams	191,001
Birth weight	153,823
205-day weight	281,351
365-day weight	78,091
Scrotal Size	9,436
Scan:	
Rib Eye Area	4,025
Rib fat	4,060
Rump fat	3,968
IMF%	4,026

iii. The genetic parameters
All genetic parameters used in the BBU genetic evaluation were re-estimated in 2009 using the actual BBU pedigree and performance database. In many instances, the new genetic variances, heritabilities and correlations differ from those assumed in BBU genetic evaluations prior to August 2009.

As a result of this, EPDs can be expected to change – both in terms of the spread in EPDs and ranking on EPDs. However it should be noted that a comparison of new and old EPDs for sires of at least 60% accuracy showed a correlation of over 0.85 for each weight, milk and scrotal trait. In other words, while EPDs may change for a number of higher accuracy sires, the overall ranking remains quite similar overall. For sires of lower accuracy, a greater degree of change in EPDs should be expected. The most noticeable changes will be in milk EPDs as the updated adjustment factors and revised estimates for direct and maternal genetic components of weaning weight show a considerably different picture than that based on earlier estimates.

Likewise, genetic trends – which are simply the change over time in average EPDs – and percentile tables may show some changes compared to previous years.

To maintain a degree of continuity between the new EPDs and those from previous evaluations, the base was adjusted such that average EPDs for more recent-born animals would remain relatively similar when compared on new and old EPDs. In subsequent BBU genetic evaluations, all calves born in 1998 will be used as the reference point (or base) such that changes in average EPDs for this sub-population will be constrained.

A new set of traits has also been introduced into the BBU genetic evaluation, these being the 4 ultrasound scan traits. Adjustment factors and genetic parameters were derived from the BBU data, with additional reference to published literature estimates for similar breeds when implementing these into the complete multi-trait genetic analysis.

iv. Contemporary Groups
One of the critical aspects of the BBU genetic evaluation is the use of contemporary groups to take out the influence of as many non-genetic effects as possible (eg. feeding, years, seasons). The underlying principle is that only animals that have had an equal opportunity to perform are directly compared together within each contemporary group. If the contemporary groups are not correctly formed, the EPDs calculated may be biased and misleading. Most of the problems that breeders encounter in “believing” their EPDs can be traced back to incorrect contemporary grouping – either calves being fragmented into isolated groups of only one or two animals (and thereby virtually eliminating those calves from any comparison with their peers) or by not differentiating between calves that have had different levels of management or feeding.

Importantly, the breeder has a major influence on deciding which animals will be directly compared within each contemporary group. This influence is through both their on farm management and the recording of management group information when submitting their performance data to the BBU office. It is therefore vital that breeders understand the factors that influence the formation of contemporary groups to ensure they maximize the effectiveness of their performance records and the accuracy of their EPDs.

Providing management group information is the responsibility of the breeder. Animals should be assigned into different management or treatment groups in any situation when either individually or as a group, they have not had equal opportunity to perform. Differences in management or treatment may be deliberate, such as when young bulls receive supplementary feeding and others do not, or accidental (eg if a calf is sick). By assigning animals into management groups, only like treated animals will be grouped together and therefore directly compared in the genetic evaluation.

The BREEDPLAN genetic evaluation software automatically creates the contemporary groups of animals for comparison based on the following criteria: breeder herd; calving year; sex of calf; number in birth (single or twin); birth status (natural or ET); breeder-defined management group; weigh herd; weigh date. The breed of the recipient dam, if known, is also used in formation of contemporary groups for ET calves to reduce bias due to differences in maternal breed effects. ET calves without a known recipient dam are assigned to a single-calf group. Single calf groups are retained in the analysis, although the EPDs reported for such animals are a function of pedigree (and progeny, if any) information only – their own performance records contribute nothing useful.

For all post-weaning traits, the previous contemporary group is also included in the definition of the current contemporary group. For example, bulls identified as being in different management groups for their weaning weights will automatically be assigned to different yearling weight contemporary groups even if they are run together as one group from weaning to their yearling weighing. In other words, post-weaning contemporary groups are cumulative in the way they are formed in the BBU genetic evaluation.

Once contemporary groups are formed, an "age slicing" process is imposed to restrict the range in age represented in the group. This helps to minimize potential bias in age adjustments due to seasonal changes (in situations where an extended calving season exists) or bias due to confounding of sire and season effects (where different sires may be used throughout the year). A 60-day age slice is used for birth weights and a 90-day age slice for all post-birth traits in the BBU genetic evaluation. Note that age slicing takes place after contemporary groups are formed and is therefore not included in the criteria used to define the contemporary group.

Accuracy

It is impossible to predict with 100% certainty the genetic value of an animal and therefore the genetic value of the progeny of a particular mating. Therefore, by definition EPDs are estimates of genetic value.

The accuracy of an EPD depends on two major factors:

1. The heritability of the trait - that is, the proportion of an animal's superiority that is passed on to its progeny; and
2. The amount of performance information available on an animal and its relatives.

The accuracy of an EPD increases as more performance information on an animal and its relatives becomes available. The values can range from zero to one. The higher the accuracy of an EPD, the more likely it is that the EPD is a close estimate of the animal's true breeding value (which is never known). Put another way, a higher accuracy means the EPD has greater reliability. There is less risk that the progeny performance of an individual with high accuracy EPDs will, on average, be much different than the EPDs indicate, whereas the average progeny performance of an individual with low accuracy values may be quite different from what their EPDs indicate.

It is important to keep accuracy in perspective. Accuracy and genetic merit are not the same things. It is possible for animals to have very low EPDs, but for these EPDs to be highly accurate. Conversely, animals may have high EPDs with low accuracy. Bulls should be compared on EPDs regardless of accuracy. However, where two bulls have the same EPD, the bull with the higher accuracy would normally be used more heavily than the bull with the lower accuracy because the results are more predictable. So breeders should refer to the EPDs to decide whether a bull is selected for their breeding program and then use the accuracy value to determine how extensively to use that bull.

Following the implementation of new genetic parameters in August 2009, it can be expected that the accuracy values for some sires and EPDs may change.

Conclusion

Breeders can compare Beefmaster sires with confidence using EPDs from the BBU genetic evaluation because:

1. this evaluation makes use of leading genetic evaluation software;
2. it employs a complete multi-trait BLUP model using all available sources of pedigree and performance information;
3. it accounts for possible bias in traits recorded at a later age due to any early stage selection;
4. it accounts for any bias arising from superiority or inferiority of the cows to which sires are mated;
5. it implements adjustment factors and genetic parameters that are derived from, and therefore best suited to, the BBU database

These EPDs are the best figures available on the genetic value of sires in the Beefmaster breed for those economically important traits reported.

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[1] The Animal Genetics & Breeding Unit (AGBU) is a joint venture of NSW DPI and the University of New England. BREEDPLAN development is supported by funding from Meat and Livestock Australia

[2] Graser, H-U., Tier, B., Johnston, D.J. and Barwick, S.A. (2005). Genetic evaluation for the beef industry in Australia. *Australian Journal of Experimental Agriculture* **45**, 913-921

Sire Summary Listings

A			B	C	D	E	F	G	H
Name of Bull **Date of Birth/Color** **Sire of Bull**	**BBU#** **CS HS**	**Breeder of Bull** **Current Owners(s)**	**#** **HERDS**	**BW** EPD ACC # Rec	**WW** EPD ACC # Rec	**YW** EPD ACC # Rec	**MILK** EPD ACC # Rec	**TM** EPD	**SC** EPD ACC # Rec
Americana 9020 10/03/1998 Red TexReb	C939461 U 1/1 P	Don Husfled, TX Texas Rebel Land & Livestock, TX	**10**	**-1.5** .82 149	**25** .83 187	**45** .77 37	**5** .72 45	**18**	**0.5** .72 45

I	J	K	L
FAT EPD ACC # Rec	**REA** EPD ACC # Rec	**IMF** EPD ACC # Rec	**RUMP** EPD ACC # Rec
-0.20 .65 14	**0.76** .78 90	**0.4** .64 200	**-0.25** .80 55

Color MF= Mottle Face; MUL= Mottle Underline; WF= White Face; WUL= White Underline; SF= Star Face; BF= Blaze Face; R=Red; B=Black; D=Dun; BRN=Brown; G=Gray; RE=Ring Eyed; BRIND=Brindle)

A
1. BBU Certificate of Breeding Number
2. Classification Score (CS)
3. Horn Status (HS)

B **# HERDS -** This number represents the number of herds that each sire has been reported in.

C **Birth Weight -** expressed in pounds, a predictor of a sire's ability to transmit birth weight to his progeny compared to that of other sires.

D **Weaning Weight** - expressed in pounds, a predictor of a sire's ability to transmit weaning growth to his progeny compared to that of other sires

E **Yearling Weight** - expressed in pounds, a predictor of a sire's ability to transmit yearling growth to his progeny compared to that of other sires.

F **Maternal Milk** - a predictor of a sire's genetic merit for milk and mothering ability as expressed in his daughters compared to daughters of other sires. In other words, it is that part of a calf's weaning weight attributed to milk and mothering ability. This listing is also referred to as "Milk".

G **Total Maternal** - a prediction of the total contribution of a sire's daughter to calf performance. This can be obtained by adding one-half of the sire's WW EPD to his Milk EPD.

H **Scrotal Circumference -** expressed in centimeters, a predictor of the difference in transmitting ability for scrotal size compared to that of other sires. Note: Females are able to have Scrotal Circumference EPDs, just as bulls have Maternal Trait EPDs. Although females cannot express this trait directly, they still possess the genes that influence scrotal circumference.

I **Rib Fat –** expressed in inches, a predictor of the differences in external fat thickness at the 12th rib (as measured between the 12th and 13th ribs) of a sire's progeny compared to progeny of other sires.

J **Ribeye Area –** expressed in square inches, a predictor of the difference in ribeye area of a sire's progeny compared to progeny of other sires.

K **Intramuscular Fat –** expressed as a percentage (%), a predictor of the difference of a sire's progeny for percent intramuscular fat in the ribeye muscle compared to progeny of other sires.

L **Rump Fat –** expressed in inches, a predictor of the differences in external fat thickness at the juncture of the gluteus medius and superficial gluteus medius muscles of a sire's progeny compared to progeny of other sires. This measure is taken between the hooks (hips) and pins.

Averages and Ranges

Summary Statistics - Active Sires

Trait	Number	Average	Range	Std. Dev.	Acc. Range
Birth Weight	677	0.5	6.6 to -5.8	1.52	.19 to .99
Weaning Weight	677	11	-19 to 64	10.33	.60 to .99
Yearling Weight	677	16	-22 to 83	13.84	.48 to .99
Milking Ability	677	1	-24 to 16	4.98	.10 to .99
Scrotal	677	0.2	-1.0 to 2.5	0.46	.21 to .97
REA	450	0.03	-0.55 to 0.64	0.18	.08 to .92
%IMF	450	0.0	-0.4 to 0.3	0.12	.01 to .88
Rib Fat	450	0.00	0.21 to -0.18	0.06	.01 to .87
Rump Fat	450	0.01	0.46 to -0.32	0.10	.01 to .88

Summary Statistics - Young Sires

Trait	Number	Average	Range	Std. Dev.	Acc. Range
Birth Weight	187	0.1	3.6 to -4.3	1.57	.17 to .89
Weaning Weight	187	12	-16 to 54	10.50	.31 to .88
Yearling Weight	187	19	-17 to 63	13.24	.26 to .85
Milking Ability	187	2	-11 to 11	4.11	.06 to .38
Scrotal	187	0.3	-0.8 to 1.7	0.45	.12 to .75
REA	104	0.09	-0.22 to 0.54	0.17	.08 to .70
%IMF	104	0.0	-0.4 to 0.3	0.13	.02 to .71
Rib Fat	104	-0.01	0.16 to -0.18	0.07	.02 to .68
Rump Fat	104	0.01	0.46 to -0.32	0.12	.02 to .70

Summary Statistics – 2010 to 2012 Calves with EPD's

Trait	Number	Average	Range	Std. Dev.	Acc. Range
Birth Weight	20233	0.3	5.9 to -4.9	1.17	.01 to .60
Weaning Weight	20233	9	-29 to 55	8.71	.01 to .59
Yearling Weight	20233	13	-34 to 76	11.32	.01 to .58
Milking Ability	20233	2	-18 to 14	3.26	.01 to .41
Scrotal	20233	0.2	-1.5 to 2.0	0.32	.01 to .59
REA	2076	0.04	-0.52 to 0.56	0.18	.02 to .50
%IMF	2076	0.0	-0.4 to 0.5	0.13	.01 to .52
Rib Fat	2076	0.01	0.26 to -0.26	0.07	.01 to .52
Rump Fat	2076	0.01	0.45 to -0.39	0.12	.01 to .54

Each EPD has an accuracy (ACC) value associated with it. The accuracy value indicates how reliable the EPD is, and is a reflection of the number and distribution of progeny along with the amount of pedigree information available. Accuracy values range from 0.0 to 1.0. As the accuracy approaches 1.0, the EPD is more reliable and changes less. Refer to the chart below to see how EPD values for each trait are affected by various accuracy values (Possible Change).

ACC	BW	WW	YW	MILK	SC	Rib Fat	REA	%IMF	Rump Fat
0.00	2.43	13.58	18.48	6.93	0.78	0.12	0.27	0.18	0.17
0.05	2.37	13.23	18.01	6.76	0.76	0.12	0.26	0.17	0.17
0.10	2.31	12.88	17.53	6.58	0.74	0.11	0.26	0.17	0.16
0.15	2.24	12.52	17.04	6.39	0.72	0.11	0.25	0.16	0.16
0.20	2.18	12.15	16.53	6.20	0.70	0.11	0.24	0.16	0.15
0.25	2.11	11.76	16.01	6.00	0.67	0.10	0.23	0.15	0.15
0.30	2.04	11.36	15.46	5.80	0.65	0.10	0.23	0.15	0.14
0.35	1.96	10.95	14.90	5.59	0.63	0.10	0.22	0.14	0.14
0.40	1.89	10.52	14.32	5.37	0.60	0.09	0.21	0.14	0.13
0.45	1.81	10.07	13.71	5.14	0.58	0.09	0.20	0.13	0.13
0.50	1.72	9.60	13.07	4.90	0.55	0.08	0.19	0.13	0.12
0.55	1.63	9.11	12.40	4.65	0.52	0.08	0.18	0.12	0.12
0.60	1.54	8.59	11.69	4.38	0.49	0.08	0.17	0.11	0.11
0.65	1.44	8.03	10.93	4.10	0.46	0.07	0.16	0.10	0.10
0.70	1.33	7.44	10.12	3.80	0.43	0.07	0.15	0.10	0.09
0.75	1.22	6.79	9.24	3.47	0.39	0.06	0.14	0.09	0.09
0.80	1.09	6.07	8.27	3.10	0.35	0.05	0.12	0.08	0.08
0.85	0.94	5.26	7.16	2.68	0.30	0.05	0.10	0.07	0.07
0.90	0.77	4.29	5.84	2.19	0.25	0.04	0.09	0.06	0.05
0.95	0.54	3.04	4.13	1.55	0.17	0.03	0.06	0.04	0.04
0.99	0.24	1.36	1.85	0.69	0.08	0.01	0.03	0.02	0.02
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Genetic Trends

The following table represents the genetic trend for the Beefmaster breed by birth year since 1992. Evaluating average EPD values for individual traits for the last twenty years can provide an informative description of the past, present, and probable future genetic progress of the breed. The trends charted below reflect all animals in the ABRI genetic analysis born from 1992 to present.

		BW		WW		YW		MILK		TMAT		Scrotal		REA		%IMF		Rib Fat		Rump Fat	
Trend Year		EPD	Num	EPD	Num	EPD	Num	EPD	Num	EPD	Num	EPD	Num	EPD	Num	EPD	Num	EPD	Num	EPD	Num
1992	A	0.2	19292	3	19292	6	19292	2	19292	4	19292	0.0	19292	0.03	24	0.0	24	0.02	24	0.01	24
1993	A	0.3	21059	3	21059	7	21059	2	21059	4	21059	0.0	21059	0.01	22	0.0	22	0.01	22	0.01	22
1994	A	0.3	21768	4	21768	7	21768	2	21768	4	21768	0.0	21768	0.02	47	0.0	47	-0.01	47	-0.03	47
1995	A	0.3	20462	4	20462	7	20462	2	20462	4	20462	0.0	20462	-0.01	58	0.0	58	0.01	58	0.01	58
1996	A	0.3	18165	4	18165	7	18165	2	18165	4	18165	0.0	18165	-0.03	97	0.0	97	-0.01	97	-0.01	97
1997	A	0.3	16817	4	16817	7	16817	2	16817	4	16817	0.0	16817	0.01	117	0.0	117	0.00	117	0.01	117
1998	A	0.3	15810	4	15810	8	15810	2	15810	5	15810	0.0	15810	0.01	199	0.0	199	-0.01	199	-0.01	199
1999	A	0.4	15243	5	15243	8	15243	2	15243	5	15243	0.0	15243	-0.03	279	0.0	279	0.00	279	0.00	279
2000	A	0.4	14313	5	14313	9	14313	2	14313	5	14313	0.0	14313	0.00	340	0.0	340	0.00	340	0.01	340
2001	A	0.4	13949	5	13949	9	13949	2	13949	5	13949	0.0	13949	0.00	462	0.0	462	0.00	462	-0.01	462
2002	A	0.3	13637	5	13637	9	13637	2	13637	4	13637	0.0	13637	-0.01	592	0.0	592	0.00	592	0.00	592
2003	A	0.3	12939	5	12939	9	12939	2	12939	5	12939	0.0	12939	0.00	725	0.0	725	-0.01	725	0.00	725
2004	A	0.4	12909	6	12909	10	12909	2	12909	5	12909	0.0	12909	0.01	894	0.0	894	0.00	894	0.00	894
2005	A	0.4	12357	6	12357	10	12357	2	12357	5	12357	0.0	12357	0.01	1063	0.0	1063	0.00	1063	0.00	1063
2006	A	0.4	11814	6	11814	10	11814	2	11814	5	11814	0.1	11814	0.01	1069	0.0	1069	0.00	1069	0.01	1069
2007	A	0.3	12346	7	12346	11	12346	2	12346	5	12346	0.1	12346	0.03	1368	0.0	1368	0.01	1368	0.01	1368
2008	A	0.3	12309	7	12309	11	12309	2	12309	5	12309	0.1	12309	0.04	1527	0.0	1527	0.00	1527	0.01	1527
2009	A	0.3	10989	7	10989	12	10989	2	10989	6	10989	0.1	10989	0.02	1151	0.0	1151	0.00	1151	0.00	1151
2010	A	0.3	9848	8	9848	13	9848	2	9848	6	9848	0.2	9848	0.04	1144	0.0	1144	0.01	1144	0.01	1144
2011	A	0.3	8570	9	8570	14	8570	2	8570	6	8570	0.2	8570	0.04	926	0.0	926	0.00	926	0.01	926
2012	A	0.4	1815	10	1815	14	1815	1	1815	6	1815	0.2	1815	0.12	6	-0.1	6	0.00	6	-0.10	6

Percentiles - Active Sires

	BW	WW	YW	MILK	Scrotal	REA	%IMF	Rib Fat	Rump Fat
Average	0.5	11	16	1	0.2	0.03	0.0	0.00	0.01
High	-5.8	64	83	16	2.5	0.64	0.3	-0.18	-0.32
Low	6.6	-19	-22	-24	-1.0	-0.55	-0.4	0.21	0.46
5%	-2.3	27	38	9	1.0	0.32	0.2	-0.09	-0.16
10%	-1.4	24	34	8	0.8	0.27	0.2	-0.07	-0.10
15%	-1.0	21	31	7	0.7	0.21	0.1	-0.05	-0.09
20%	-0.7	19	28	5	0.6	0.19	0.1	-0.04	-0.07
25%	-0.5	17	26	5	0.5	0.15	0.1	-0.04	-0.06
30%	-0.2	16	23	4	0.4	0.12	0.1	-0.03	-0.04
35%	0.0	14	21	3	0.3	0.11	0.1	-0.02	-0.03
40%	0.2	13	19	3	0.3	0.09	0.0	-0.02	-0.02
45%	0.5	11	17	2	0.2	0.06	0.0	-0.01	-0.01
50%	0.6	10	15	2	0.2	0.04	0.0	0.00	0.01
55%	0.8	9	14	1	0.1	0.02	0.0	0.00	0.02
60%	0.9	8	12	0	0.1	0.00	0.0	0.01	0.03
65%	1.1	6	11	0	0.0	-0.03	0.0	0.02	0.04
70%	1.2	5	9	-1	0.0	-0.06	0.0	0.03	0.05
75%	1.4	4	7	-1	-0.1	-0.09	-0.1	0.04	0.06
80%	1.7	3	4	-2	-0.2	-0.12	-0.1	0.04	0.08
85%	1.9	0	2	-3	-0.2	-0.16	-0.1	0.06	0.10
90%	2.2	-2	-1	-4	-0.3	-0.21	-0.1	0.08	0.14
95%	2.7	-5	-5	-7	-0.4	-0.26	-0.2	0.10	0.19

Percentiles - 2010 to 2012 Calves with EPDs

	BW	WW	YW	MILK	Scrotal	REA	%IMF	Rib Fat	Rump Fat
Average	0.3	9	13	2	0.2	0.04	0.0	0.01	0.01
High	-4.9	55	76	14	2.0	0.56	0.5	-0.26	-0.39
Low	5.9	-29	-34	-18	-1.5	-0.52	-0.4	0.26	0.45
5%	-1.8	23	32	7	0.7	0.34	0.2	-0.11	-0.18
10%	-1.3	19	27	6	0.6	0.27	0.2	-0.09	-0.14
15%	-0.9	17	24	5	0.5	0.22	0.1	-0.07	-0.10
20%	-0.7	15	22	5	0.4	0.19	0.1	-0.05	-0.08
25%	-0.5	14	20	4	0.4	0.16	0.1	-0.04	-0.06
30%	-0.3	13	18	3	0.3	0.13	0.1	-0.03	-0.05
35%	-0.1	11	17	3	0.3	0.11	0.1	-0.02	-0.03
40%	0.1	10	16	3	0.2	0.08	0.1	-0.01	-0.02
45%	0.2	9	14	2	0.2	0.06	0.0	0.00	-0.01
50%	0.4	8	13	2	0.1	0.04	0.0	0.00	0.00
55%	0.5	7	12	1	0.1	0.02	0.0	0.01	0.02
60%	0.7	7	10	1	0.1	0.00	0.0	0.02	0.03
65%	0.8	6	9	1	0.0	-0.03	0.0	0.03	0.05
70%	0.9	5	8	0	0.0	-0.06	0.0	0.04	0.07
75%	1.1	3	6	0	0.0	-0.09	-0.1	0.05	0.09
80%	1.2	2	4	-1	-0.1	-0.12	-0.1	0.06	0.11
85%	1.4	1	2	-1	-0.1	-0.14	-0.1	0.08	0.13
90%	1.6	-2	0	-2	-0.2	-0.18	-0.1	0.10	0.16
95%	2.0	-6	-5	-4	-0.3	-0.24	-0.2	0.13	0.21