

BEEFMASTER

GENOMIC BREEDING VALUE REPORT

September 2026



NANHATI ZAMBIA LIMITED

Herd Number: 730002

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BEEFMASTER
CATTLE BREEDERS' SOCIETY OF SA
BEESTELERSGENOOTSAP VAN SA



EBVs, EBVi's and GEBVs

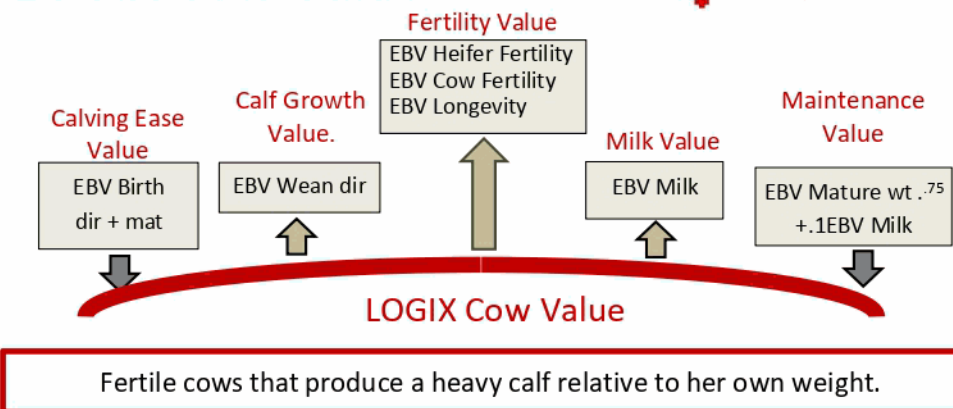
EBVi (Breeding Value Index): Genetic potential relative to the average (100) of the live (active) animals in the breed. Roughly 50% of the animals have values between 90 and 110. Values above 100, depending on the trait, tend to be in the more favourable direction.

EBV (Breeding Value): Genetic potential relative to the average of the animals born in the base year (1990), expressed in the unit of measurement.

GEBV (Genomic Breeding Value) Interpreted like the EBVi. (GEBV = EBV + Genomic information)

LOGIX Selection values combine different breeding values in a logical way. For example, Heifer Fertility (how early a heifer starts calving), Cow Fertility (how regular she calves) and Longevity (retention within the family) are combined to form the Fertility Value.

LOGIX Cow Value



Selection Values

LOGIX Cow Value



Selecting for:

- fertile,
- low maintenance,
- easy calving cows
- with heavy weaners

LOGIX Growth Value



Select for efficient growers on veld and in feedlot, as measured in Phase C and D Growth Tests.

LOGIX Carcass Value



Select for more meat on the carcass as measured from end weight in Phase C and D Growth Tests and RTU scanning.

LOGIX Production Value



80% LOGIX Cow Value +
20% LOGIX Growth Value

How to use the Cow Value

Selection values should be compatible with your selection goal.

AVERAGE ANIMALS

(NO GROWTH EXTREMES)

- Selection Values 90 to 110
 - Cow Value and Fertility Value average to high
- A safe choice, as animals are profitable in most environments.

GROWERS

(GOOD ENVIRONMENT)

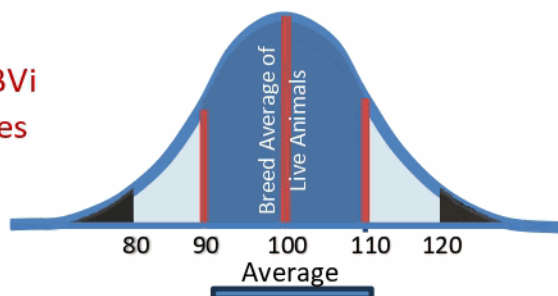
- WeanerCalf / Growth Value > 120
 - Cow Value and Fertility Value average to high
- Growers are usually heavier at birth (lower Calving Ease Value), and maturity (lower Maintenance Value).

LOW- MAINTENANCE ANIMALS

(HARSH ENVIRONMENT)

- Maintenance Value >110
 - Cow Value and Fertility Value average to high
- Lighter cows have a lower maintenance.

Interpretation of EBVi and Selection Values



Examples

Type of Animal	Cow Value	Calving Ease V	Weaner Calf V	Milk Value	Maint. Value	Fertility Value
Average	Med-High	Avg	Avg	Avg	Avg	Med-High
Grower	Med-High		High			Med-High
Low Maintenance	Med-High				High	Med-High

Contemporary Groups

The correct composition of contemporary groups is one of the cornerstones of BLUP breeding value estimation. Breeding values are estimated from the differences between animals exposed to the same environment, ***as these differences are caused by genetics***. The following aspects are important:

1. Animals at the same time, place and treatment

A contemporary group is a comparable group of animals measured at the same time in the same environment. It is therefore a comparable group of animals that were together on the same farm or camp in the same year and season. If there are animals in the group that were treated differently, they should be given a separate treatment code because their performance is influenced by other environmental influences than the rest of the group. Examples of possible different treatments are when some animals received supplements or creep feed, sale or show animals, embryo donors, sick or foster calves or even purchased cows and calves. If bull and heifer calves or older cows and young heifers were in the same camp, they should be placed in the same group – corrections for sex, age and first calving of cows are automatically made during breeding value estimation.

2. Progeny of at least two sires, of which one is a link sire

The progeny of different sires needs to be compared in the same group in order to determine the sires' genetic merit relative to each other. At least one sire should be a link sire with progeny in other herds. Genetic links between herds are used to determine the position of sires in the breed. All sires are good link sires. Smaller herds could artificially inseminate some cows or allow some cows to be covered by another herd's bull.

3. Larger groups stabilise Breeding Values

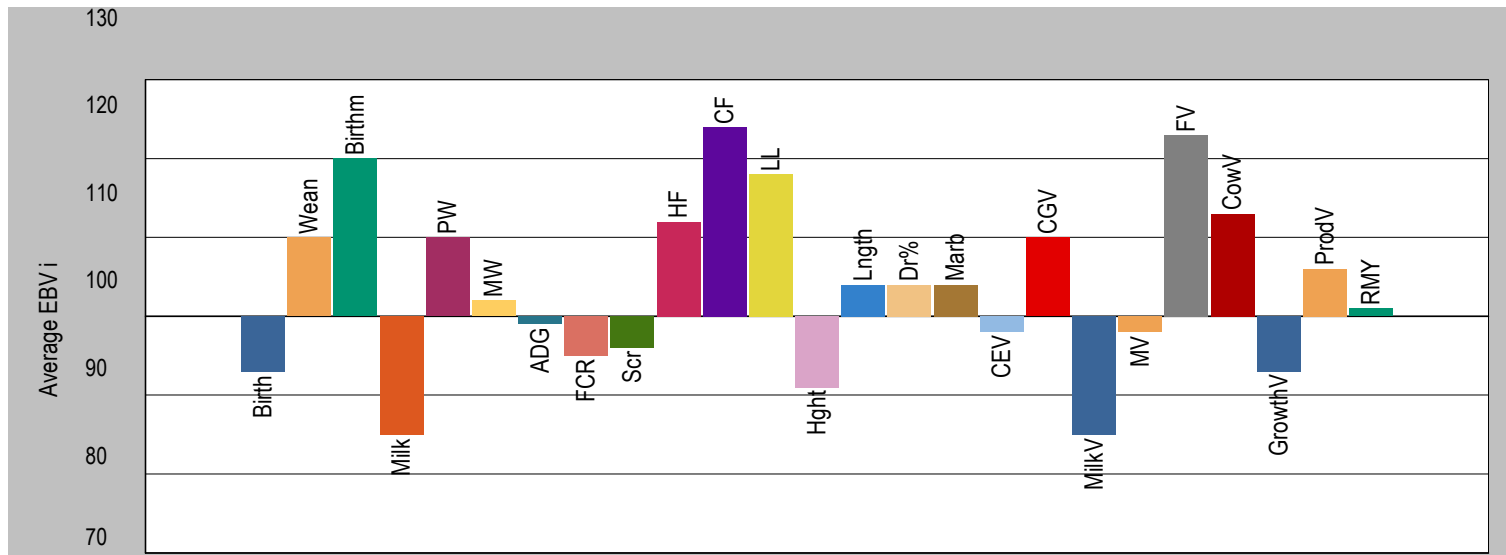
Larger groups result in more accurate and stable breeding values, as the mean and distribution of the group can be more accurately determined and are thus more representative. Groups should preferably have more than 5 animals. Weigh all the animals in the same group on the same day, as corrections for age differences are made during genetic evaluation. The use of breeding seasons rather than through the year calving will also increase contemporary group size. Groups with less than 3 animals are not included in breeding value estimation. An accidental mistake in a small group affects the animal itself, its family, all the other animals in the group and their families. The effect could be much less in large groups.

4. Measure all animals in the contemporary group

Weigh ALL the animals in the contemporary group, the good as well as the poor performers. Weigh animals before they are culled, so their parents can be penalized for their poor breeding.



Herd and Breed Averages



Breeding Values:

Birth:	Birth weight	Scr:	Scrotal circumf.
Wean:	Weaning weight	HF:	Heifer Fertility
Birthm:	Birth maternal	CF:	Cow Fertility
Milk:	Milk	LL:	Longevity
PW:	Post-wean weight	Hght:	Height
MW:	Mature weight	Lngth:	Length
ADG:	Average Daily Gain	EMA:	Eye Muscle Area
FCR:	Feed Conversion Ratio	RMY:	Carcass Value
		Marb:	Marbling

Selection Values:

CEV:	Calving Ease Value
CGV:	Calf Growth Value
MilkV:	Milk Value
MV:	Maintenance Value
FV:	Fertility Value
CowV:	Cow Value (CV)
GrowthV:	Growth Value (GV)
ProdV:	Production Value (PV)

	Trait	EBV Herd	EBV Index	EBV Breed
Prewrite Growth	Birth Weight	0.88	93	0.34
	Wean Weight	18.1	110	12.1
	Birth Mat.	-0.84	120	-0.05
	Milk (Wn.Mat.)	-5.7	85	-1.4
Postwean Growth	Postwean Wt	26.4	110	19.0
	Mature Weight	9	102	7
	ADG	69	99	72
	FCR	-34	95	-39
Fertility	Scrotal Circumf.	8.8	96	11.1
	Heifer Fertility	-16.5	112	-7.5
	Cow Fertility	-9.0	124	-4.1
	Longevity	25.8	118	14.8
Frame	Height	-4	91	1
	Length	17	104	13
Carcass	EMA	1.24	104	0.85
	Fat	0.64	109	0.11
	Marbling	0.54	104	0.30

Selection Value	Ave. Herd
Calving Ease	98
Calf Growth	110
Milk	85
Maintenance	98
Fertility	123
Cow Value	113
Growth Value	93
Production Value	106
Carcass Value	101

- Average of live animals in the breed: 100
- Above 100: **more favourable**,
- Below 100: **less favourable**

What does a sub-selection value above breed average (100) mean?:

Calving ease:	Smaller calf at birth - easier calving
Calf growth:	Heavier calves at wean due to growth potential of the calf
Milk:	Cows with more milk and better mothering ability
Maintenance:	Animals with low maintenance requirements (lower mature weight).
Fertility:	Cows/daughters that calve

Genetic Windows

Bulls on the farm

Bulls born in and earlier that are available for natural mating
130
120
110
100
90
80
70

Animals available for breeding

Total:	Cows born in and earlier
	130
	120
	110
	100
	90
	80
	70

Cow Herd

Total:

Sires of young animals

Sires (Natural mating and AI) of animals 3 years and younger
130
120
110
100
90
80
70

Results of previous selection decisions

Total:	Cows born in and earlier
	130
	120
	110
	100
	90
	80
	70

Cows older than 6 years

Total:

Selection possibilities

Bull calves

Bulls born in
130
120
110
100
90
80
70

Total:

Heifers born in
130
120
110
100
90
80
70

Heifer calves

Total:

Summary of Cow Herd

			Selection Values (SV)								Calf Weight		Dam		Growth & Efficiency				Fertiity				Frame	
Birth Year	No. Cows	Average Cow Value	Calving Ease	Calf Grwth	Milk	Maint.	Fertility	Cow Value	Growth Value	Prod Value	Birth Weight	Wean Weight	Birth Mat.	Milk (Wn.Mat)	Postwn Weight	Mature Weight	ADG	Kleiber	Scrotal Circumf.	Heifer Fertility	Cow Fertility	Longevity	Height	Length
Cows in Breed Average:			100	99	100	101	100	100	99	100	100	99	99	100	99	99	99	99	99	100	100	100	99	99
2016	1																							
2021	53																							
2022	58																							
2023	54																							
Cows in Herd Average:																								

Genetic Trends for On-Farm Traits

The graphs show the genetic gain of the herd relative to the breed. Only data of animals with measurements are included.

Herd

Birth Year	Calving Ease				Calf Growth			Milk		Maintenance					Fertility						Cow Value	
	Birth Weight		Mat EBV	Calv. Ease	Weaning Weight		Calf Growth	Milk (Wn.Mat.)		Postwean Weight		Mature Weight		Mainte- nance	Heifer Fert.		Cow Fert.		Longevity			Ferti- lity
	Number	Dir EBV			Number	EBV		Number	EBV	Milk	Number	EBV	Number		EBV	Number	EBV	Number	EBV	Number		

Breed

Birth Year	Calving Ease				Calf Growth			Milk		Maintenance					Fertility						Cow Value		
	Birth Weight		Mat EBV	Calv. Ease	Weaning Weight		Calf Growth	Milk (Wn.Mat.)		Postwean Weight		Mature Weight		Mainte-nance	Heifer Fert.		Cow Fert.		Longevity			Ferti-lity	
	Number	Dir EBV			Number	EBV		Number	EBV	Number	EBV	Number	EBV		Number	EBV	Number	EBV	Number	EBV			Number
2016	13219	0.14	0.07	102	12679	9.1	95	12679	-1.48	100	8440	15.3	1794	3	102	3547	-3.4	2382	-3.3	17317	7.0	92	91
2017	13995	0.13	0.10	101	13543	9.5	95	13543	-1.37	100	9155	16.1	1876	5	102	3705	-3.9	2610	-3.3	17744	7.7	93	92
2018	14638	0.19	0.05	101	14085	10.0	96	14085	-1.34	100	9471	16.9	2043	6	101	3752	-4.9	2671	-3.5	18478	8.4	96	93
2019	14156	0.27	0.02	100	13892	10.8	98	13892	-1.52	100	9219	18.0	2528	6	101	4491	-5.8	3152	-3.8	18218	9.0	97	94
2020	15148	0.25	0.00	101	15376	10.8	98	15376	-1.55	99	10390	17.9	2588	6	100	4524	-5.8	3018	-3.8	19306	9.7	97	94
2021	16009	0.27	0.04	100	16004	10.8	98	16004	-1.35	100	10852	18.0	2635	6	100	4750	-5.2	2794	-3.8	18490	8.9	97	95
2022	17601	0.32	-0.01	100	16942	11.8	99	16942	-1.58	99	11576	19.5	2295	8	100	4355	-6.7	1065	-4.2	8636	9.8	100	97
2023	18573	0.32	-0.02	100	18307	11.8	99	18307	-1.53	100	11750	19.7	741	11	99	2183	-7.2	100	-4.8			102	98
2024	18117	0.35	-0.05	100	16963	12.1	100	16963	-1.48	100	9904	20.0	3	6	99	166	-7.7					105	99
2025	17947	0.27	-0.03	101	15468	12.0	100	15468	-1.38	100	2468	22.0			98								99
2026	5644	0.19	0.00	102	192	13.1	102	192	-1.95	98													100

Genetic Trends for Growth Test Traits

Herd

Birth Year	Growth									Frame						Carcass						Selection Values			
	FCR			ADG			Scrotum			Height			Length			EMA			Fat		Marbling		Carcass Value	Growth Value	Prod Value
	Number	EBV	EBVi	Number	EBV	EBVi	Number	EBV	EBVi	Number	EBV	EBVi	Number	EBV	EBVi	RTU Number	EBV	EBVi	EBV	EBVi	EBV	EBVi			

Breed

Birth Year	Growth									Frame						Carcass						Selection Values			
	FCR			ADG			Scrotum			Height			Length			RTU Number	EMA		Fat		Marbling		Cracss Value	Growth Value	Prod Value
	Number	EBV	EBVi	Number	EBV	EBVi	Number	EBV	EBVi	Number	EBV	EBVi	Number	EBV	EBVi		EBV	EBVi	EBV	EBVi	EBV	EBVi			
2017	62	-38	100	1015	76	101	979	12.8	103	953	4	105	953	15	102	101	0.00	91	0.00	98	0.00	95	93	97	91
2018	16	-50	110	835	94	106	830	14.6	106	830	6	107	830	18	105	33	1.18	103	0.28	103	0.55	104	108	102	93
2019	13	-43	103	772	95	106	773	14.5	106	767	6	108	766	19	106	32	0.58	97	-0.14	96	0.44	102	100	101	94
2020	15	-50	110	1035	102	108	1026	15.8	108	960	6	108	960	21	108	60	1.56	107	-0.22	94	0.67	107	109	104	96
2021	20	-40	101	1162	102	108	1151	15.5	108	1048	5	107	1048	21	108	148	1.41	106	-0.20	95	0.46	103	106	104	97
2022	20	-45	106	1222	104	109	1266	14.4	106	1115	5	106	1115	21	108	147	1.11	103	-0.08	97	0.28	100	103	104	99
2023	10	-52	112	1270	110	110	1263	15.5	108	1127	5	107	1127	22	109	250	1.52	107	0.14	101	0.58	105	109	106	101
2024	11	-49	109	918	108	110	945	16.3	109	790	5	106	790	22	109	127	1.57	107	0.12	100	0.66	106	108	105	101
2025				54	90	105	58	13.0	103	58	0	98	58	14	100	25	1.70	109	-0.30	93	0.47	103	108	100	106
2026																									

Sires

Bull			Selection Values									Calf		Dam		Growth				Fertility				Frame		Carcass			Measured Progeny	
ID	Index EBV Acc	Sire ID  Dam ID	Calv. Ease Value	Calf Grwth Value	Milk Value	Maint. Value	Fertility Value	Cow Value	Growth Value	Prod Value	Birth Dir	Wean Dir	Birth Mat.	Wean Mat.	Post wn wt	Mature weight	ADG	FCR	Scrotal	Heifer Fertility	Cow Fertility	Long-evi ty	Height	Length	EMA	Fat	Marbling	Birth Grwth Test	Wean Dgt/Calvs.	
	Name																													
BOS 144174	 BOS 100048  BOS 099083	BOS144174	112	103	80	111	95	98	89	91	111	103	98	80	100	92	96	87	99	115	75	104	115	113	93	89	94	81	211	
			98	98	97	95	96	89	95	90	98	98	96	97	97	95	96	94	96	97	95	97	96	96	94	94	94	20	52	119
BOS 144451	 BOS 099110  BOS 099053	BOS144451	94	108	89	109	142	143	97	135	94	108	138	89	111	93	105	99	87	136	149	132	70	105	110	124	104	2	305	
			96	99	97	95	97	89	94	90	96	99	95	97	97	95	94	94	95	97	96	97	95	95	94	94	94	2	73	216
BOS 177146	 BOS 144451  BOS 144160	BOS177146	103	120	78	81	142	127	96	120	97	120	123	78	121	123	105	102	102	119	149	134	89	114	122	130	103	16	371	
			98	99	98	96	97	89	96	90	98	99	97	98	98	96	96	96	97	98	96	98	97	97	96	96	96	5	61	111
S 177029	 BOS 144028  S 144003	177029	70	116	84	97	103	89	94	84	61	116	143	84	109	102	96	84	121	99	108	101	111	111	99	101	116	151	185	
			95	97	93	87	90	85	88	86	97	97	90	93	92	87	90	86	91	92	87	92	91	91	86	86	86	9	13	14

Breeding Values and Accuracies: Bulls

Green: >120 High
White: 80-120 Average
Orange: <80 Low

Inbreeding in red is high

Value <80 Value >120

Breeding values with an accuracy < 5% are not printed

Animal				Selection Values								Birth		Wean				Growth			Fertility				Frame		Carcass			
Index EBV Acc	% Inbreeding	Sire ID Dam ID		Calv. Ease V	Calf Growth V	Milk V	Maint. V	Fertility V	Cow Value	Growth Value	Prod. Value	Carcass Value	Birth wt dir	Birth mat	Mature wt	Wean wt	Wean mat	Cow-Calf Ratio (Wean)	Postwean wt	ADG	FCR	Scrotal Circ.	Heifer Fertility	Cow Fertility	Longevity	Height	Length	EMA	Fat	Marbling
ID Number Name																														
BOS 222208 94426269 BOS222208	3	BOS 177146 BOS 199122		106 52	111 68	84 60	91 39	124 52	114 51	90 32	106 47	102 27	99 0.39 53	120 -0.86 49	109 18 39	111 18.7 68	84 -6.0 60	93 26 56	112 28.2 58	97 63 40	94 -33 20	90 5.4 43	110 -15.5 57	122 -8.5 43	123 29.1 55	92 -3 43	106 19 42	108 1.59 28	115 0.95 26	104 0.54 25
BOS 222274 94426574 BOS222274	3	BOS 177146 BOS 144070		107 53	109 69	85 62	93 39	127 53	116 51	85 31	107 47	98 29	100 0.34 54	118 -0.76 49	106 14 39	109 17.4 69	85 -5.8 62	93 25 57	108 25.1 60	92 44 40	87 -24 19	91 5.9 43	113 -17.6 58	126 -9.2 44	123 29.2 57	88 -6 43	103 16 42	105 1.35 30	112 0.81 28	102 0.40 27
BOS 222287 94515749 BOS222287	5	BOS 177146 BOS 155213		99 53	116 68	79 61	97 39	129 52	119 51	97 32	113 47	106 29	96 0.67 54	128 -1.15 49	102 10 39	116 21.3 68	79 -7.2 61	97 35 56	116 31.2 58	103 82 41	99 -38 21	99 10.5 44	115 -19.1 57	129 -9.9 43	124 29.5 56	91 -4 45	104 17 44	110 1.85 30	116 1.03 28	103 0.46 27
BOS 222403 94666633 BOS222403	5	BOS 144451 BOS 133106		97 51	111 69	85 63	108 40	134 54	127 52	96 28	120 47	103 22	92 1.03 52	122 -0.94 48	93 0 40	111 18.4 69	85 -5.7 63	100 42 57	111 27.2 58	103 82 39	97 -36 13	94 8.0 42	111 -15.8 58	145 -13.2 46	122 28.5 58	82 -9 41	102 15 40	104 1.25 23	114 0.95 21	107 0.68 21
BOS 222414 94720836 BOS222414	1	BOS 144451 BOS 111382		98 47	108 66	88 60	106 35	142 50	134 48	92 24	125 43	101 20	92 0.98 48	120 -0.85 44	94 0 35	108 16.7 66	88 -4.9 60	99 40 54	107 24.3 54	101 76 34	101 -40 12	93 7.2 37	141 -39.4 54	148 -13.8 41	117 25.6 56	84 -8 37	100 14 36	102 1.04 20	110 0.70 19	107 0.69 18
BOS 222425 94515368 BOS222425	2	BOS 144174 BOS 166257		97 51	108 69	79 61	101 36	101 50	93 50	93 28	88 46	96 17	95 0.71 53	106 -0.30 46	98 5 36	108 16.5 69	79 -7.2 61	90 19 55	105 23.0 56	97 63 46	90 -28 9	98 10.2 48	98 -6.0 56	95 -3.1 38	110 21.1 56	103 3 49	106 19 48	94 0.28 18	94 -0.22 16	100 0.31 16
BOS 233020 95288619 BOS233020	5	S 177029 BOS 155060		77 54	116 69	86 57	97 30	110 47	99 48	100 26	94 44	102 16	74 2.46 55	124 -1.02 50	101 9 30	116 21.6 69	86 -5.2 57	104 51 52	113 29.2 57	102 80 41	93 -31 9	108 15.5 44	101 -8.6 54	114 -6.8 32	108 19.8 54	102 3 45	107 20 44	102 1.06 16	100 0.12 15	110 0.87 15
BOS 233078 95436093 BOS233078	1	BOS 177146 BOS 166003		105 50	104 69	92 61	89 35	114 52	104 50	91 30	98 46	101 26	98 0.50 51	119 -0.81 46	110 19 35	104 14.5 69	92 -3.6 61	92 23 55	105 23.1 60	98 65 37	91 -30 19	94 7.7 41	103 -10.0 57	115 -7.2 42	115 23.8 56	88 -5 41	102 15 40	107 1.50 27	112 0.81 25	101 0.38 24

Inbreeding in red is high

Value <80

Value >120

Breeding values with an accuracy < 5% are not printed

Animal		Selection Values								Birth		Wean				Growth			Fertility				Frame		Carcass					
Index EBV Acc	% Inbreeding	Sire ID	Dam ID	Calv. Ease V	Calf Growth V	Milk V	Maint. V	Fertility V	Cow Value	Growth Value	Prod. Value	Carcass Value	Birth wt dir	Birth mat	Mature wt	Wean wt	Wean mat	Cow-Calf Ratio (Wean)	Postwean wt	ADG	FCR	Scrotal Circ.	Heifer Fertility	Cow Fertility	Longevity	Height	Length	EMA	Fat	Marbling

Selection List on Cow Value

Bulls 2 years and older

ID Sorted on ID	Name	Sire ID	Dam ID	% Inbreeding	Horned / Polled	Myostatin nt821 Q204X F94L Genomic tested	Calving Ease Value Acc	Calf Growth Value Acc	Milk Value Acc	Maint. Value Acc	Fertility Value Acc	Cow Value Acc	Growth Value Acc	Prod Value Acc	
											★★★★★				
1	BOS 222414	BOS222414	BOS 144451	BOS 111382	1.4		98 47	108 66	88 60	106 35	142 50	134 48	92 24	125 43	
											★★★★★				
1	BOS 222403	BOS222403	BOS 144451	BOS 133106	4.5		97 51	111 69	85 63	108 40	134 54	127 52	96 28	120 47	
											★★★★★				
1	BOS 222208	BOS222208	BOS 177146	BOS 199122	3.2		106 52	111 68	84 60	91 39	124 52	114 51	90 32	106 47	
2	BOS 222274	BOS222274	BOS 177146	BOS 144070	3.3		107 53	109 69	85 62	93 39	127 53	116 51	85 31	107 47	
3	BOS 222287	BOS222287	BOS 177146	BOS 155213	5.4		99 53	116 68	79 61	97 39	129 52	119 51	97 32	113 47	
											★★★★★				
1	BOS 233078	BOS233078	BOS 177146	BOS 166003	1.1		105 50	104 69	92 61	89 35	114 52	104 50	91 30	98 46	
											★★★★				
1	BOS 222425	BOS222425	BOS 144174	BOS 166257	1.8		97 51	108 69	79 61	101 36	101 50	93 50	93 28	88 46	
2	BOS 233020	BOS233020	S 177029	BOS 155060	4.6		77 54	116 69	86 57	97 30	110 47	99 48	100 26	94 44	

Selection List on Cow Value

Cows 2 years and older

ID	Name	Sire ID	Dam ID	% Inbreeding	Horned / Polled	Myostatin				Calving Ease Value	Calf Growth Value	Milk Value	Maint. Value	Fertility Value	Cow Value	Growth Value	Prod Value	
Sorted on ID						nt821	Q204X	F94L	Genomic tested	Acc	Acc	Acc	Acc	Acc	Acc	Acc	Acc	

	EBVi	Description / Measurement	Goal	Low Value	High Value
Selection Values	Calving Ease Value	Difficult calving due to high birth weight	Average birth weight	High	Low
	Calf Growth Value	Calf's genetic ability for prewean growth	Heavy weaner	Light	Heavy
	Milk Value	Cow's genetic mothering and milking ability	Enough milk for calf	Less	More
	Maintenance Value	Maintenance requirement of cow (weight and milk)	Low cow maintenance	High	Low
	Fertility Value	Fertility and retention of cows and heifers	Fertile cows	Low	High
	Cow Value	Combination of calving ease, calf growth, milk, maintenance and fertility values (Rand-value per Ha)	Profitable cows	Loss	Profit
	Weaner Calf Value	Heavier weaners and more milk, with lower birth and cow weights	Heavy weaner	Light	Heavy
	Growth Value	Efficient growth on veld and in feedlot (Rand-value per animal)	Profitable growth	Loss	Profit
	Production Value	Combination of Cow- and Growth Values (Rand-value)	Profitable animals	Loss	Profit
	Carcass Value	Meat on carcass (Weight and RTU EBVs)	Meat on carcass	Less	More
Birth	Cow weight - birth	Cow weight at birth of calves	Mature cow weight	Light	Heavy
	Birth weight direct	Birth weight (Calf's genetic ability)	Average birth weight	Heavy	Light
	Cow-Calf birth	EBV Birth dir / EBV Mature cow weight	Average	Low	High
Wean	Cow Weight wean	Cow weight at weaning of calves	Mature cow weight	Light	Heavy
	Weaning weight direct	Weaning weight (Calf's genetic ability)	Heavy weaners	Light	Heavy
	Weaning weight mat	Weaning weight (Dam's genetic ability)	Good mothers	Poor	Good
	Cow-Calf Wean	EBV Wean dir / EBV Mature cow weight	High cow-calf ratio	Low	High
Growth & Adaptation	Post-Wean weight	12- and 18mth weights	Post-wean growth	Low	High
	Ave. Daily Gain	Average daily gain in growth test (Phase C and D)	Good growth	Poor	Good
	Veld Growth	ADG on veld (Phase B)	Good adaptation	Poor	Good
	Feed Conversion Ratio	100g feed intake /g weight gain	Feed Efficiency	Poor	Good
	Final Test Weight	Final weight in growth test (Phase C and D)	Heavy Carcasses	Light	Heavy
	Skin Thickness	Measured in growth tests	Thicker skin	Thin	Thick
Fertility	Scrotal Circumference	Scrotal circumference in growth test	Fertile bulls	Less	More
	Heifer Fertility	Age at first calving	Fertile heifers	Less	More
	Cow Fertility	First 3 inter-calving periods (ICPs)	Fertile cows	Less	More
	Longevity	Retention of progeny	Acceptable progeny	Poor	Good
Frame	Height	Shoulder / Hip height in growth test	Average height	Short	Tall
	Length	Length in growth test	Longer (more meat)	Short	Long
	Length:Height	EBV Length / EBV Height	Longer, not higher	Less desirable	More desirable
Carcass	Eye Muscle Area	RTU Eye muscle area	Muscle in carcass	Small	Big
	Fat	RTU P8 Backfat Thickness	Carcass quality & adaptability	Thin	Thick
	Marbling	RTU % Marbling	Juicy meat	Low	High
	Dressing%	Carcass weight / Live weight	High dressing %	Low	High

Notes on the interpretation of EBVs, EBVi's, sub-values and selection values

EBVi (EBVindex) is the breeding value index and is easier to interpret than the breeding value, especially for commercial farmers buying from stud farmers. The base of a breeding value index is 100, which is the average of all the live animals in the breed, and all values are expressed relative to this value. Values above 100 are always in a more desirable direction: an index of 105 for AFC indicates a genetic potential to calve earlier. Note that a very high index is not always desirable. For certain traits, such as birth weight, average values can be better.

EBV: (Estimated Breeding Value) indicates the genetic potential of the animal for a specific trait. It is presented in the unit of measurement and relative to the average of animals born in the base year (1990 for most breeds and traits). Higher values for certain traits are better while lower values for other traits are better, for example, an EBV of -2 for AFC (age at first calving) indicates that the animal has the genetic potential to calve 2 days earlier than the average heifer in 1990 (the base year). Earlier calving is better and therefore low breeding values (high breeding value indices) are better. For weaning weight, higher values are better.

Sub-values combine similar breeding values in a scientific manner to simplify the selection of animals. For example, AFC (age at first calving) and ICP (inter-calving period) are combined to form the sub-value Fertility by taking the heritability and economic importance in consideration. The sub-value is expressed in an index format, thus an animal with a sub-value of 110 for Fertility will genetically be above average compared to the live animals in the breed.

Selection Values (Cow Value and Growth Value) combine the sub-values into a single value. This gives a quick and easy indication of the combined genetic value of an animal compared to the breed. It is advised to still look at the sub-values to see where the strengths and weaknesses lie.

How to use breeding values to select animals

Selecting animals on breeding values is easy if you know how. There is a common saying that “good nutrition can mask poor breeding”. This is very true. If an animal that is genetically inferior is fed well, it can appear as a great animal. This great performance will not be passed over to future generations. An animal that is genetically superior can appear to be inferior if its environment did not allow it to reach its true potential. It is best to select animals that are most adapted to the environment and can reach their full potential. To continuously adapt the environment to the animal can be expensive.

The reason why the use of breeding values is such a valuable tool is because it “removes” the environmental effect that contributes to the performance.

Scientific methods are used to determine how much of the performance is due to genetics and to identify genetically superior animals. This involves the measurement of animals under controlled environments, complete record keeping and pedigree information. *If performance recording and pedigree information are not done correctly, breeding values of these animals will not be useful.* Keep in mind that breeding is a long-term option: the effect of a bull selected/bought today will only show much later. If it is a good decision, his daughters will become part of the breeding herd and contribute to overall profitability in future.

Even if a bull is not perfect in all aspects, knowing the shortcomings will allow strategic selection with suitable cows. Traits are genetically correlated, meaning that a change in one trait can lead to a change in another. This change can be favourable or unfavourable. An increase in weaning weight can lead to an increase in birth weight, which can lead to calving difficulty. It is therefore advisable to not only select on a single trait. Take other traits in consideration to avoid negative effects.

How to improve the herd genetically

The first and most important aspect is to know what type of animal will improve the herd genetically. This can be determined through the following factors:

What happens to the calves? For example: used as replacement heifers, sold as stud animals or sold to commercial breeders who sell weaner calves.

How much feed is available? The availability of feed (or the hardness of the environment) determines the optimal frame size. If feed is abundant and the environment is less harsh, larger animals would be ideal. If not, medium framed animals would be ideal.

What is the genetics of the cow herd? Are they the wrong frame type, grow too slowly, do not have enough milk, etc.? Always aim to breed a calf that is superior to its dam.

Conclusion

Different types of bulls are suitable for different types of cows, environments and breeding objectives. Inbreeding should be avoided or limited as much as possible. Mating programs are available to aid in the pairing of bulls and cows.

The data used for this evaluation is pedigree information and performance data found on LOGIX as provided by breeders. All attempts are made to present accurate information. SA Stud Book takes no responsibility for the use and interpretation of information presented in this report.

