

"In God we trust, all others
must bring data."

W. Edwards Deming



Selection of beef cattle for profit

If you're not
selecting for profit,
we wish you well
with your hobby.

What is genetic progress ?

- the use of genetically superior animals as the parents of the next generation
- genetic superiority is the function of many variables, including production environment and market being supplied
- most measures of genetic superiority is based on **potential profit**

What drives genetic progress ?

$$R = \frac{S \times h^2}{L}$$

R = Response to Selection
S = Selection Differential
h² = Heritability
L = Generation Length



The rate of genetic progress = Response to selection

HERITABILITY

$$R = \frac{S \times h^2}{L}$$

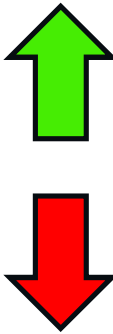
The efficiency of transmission of parental superiority **(or inferiority)** from the parents to the progeny.

We cannot change heritability

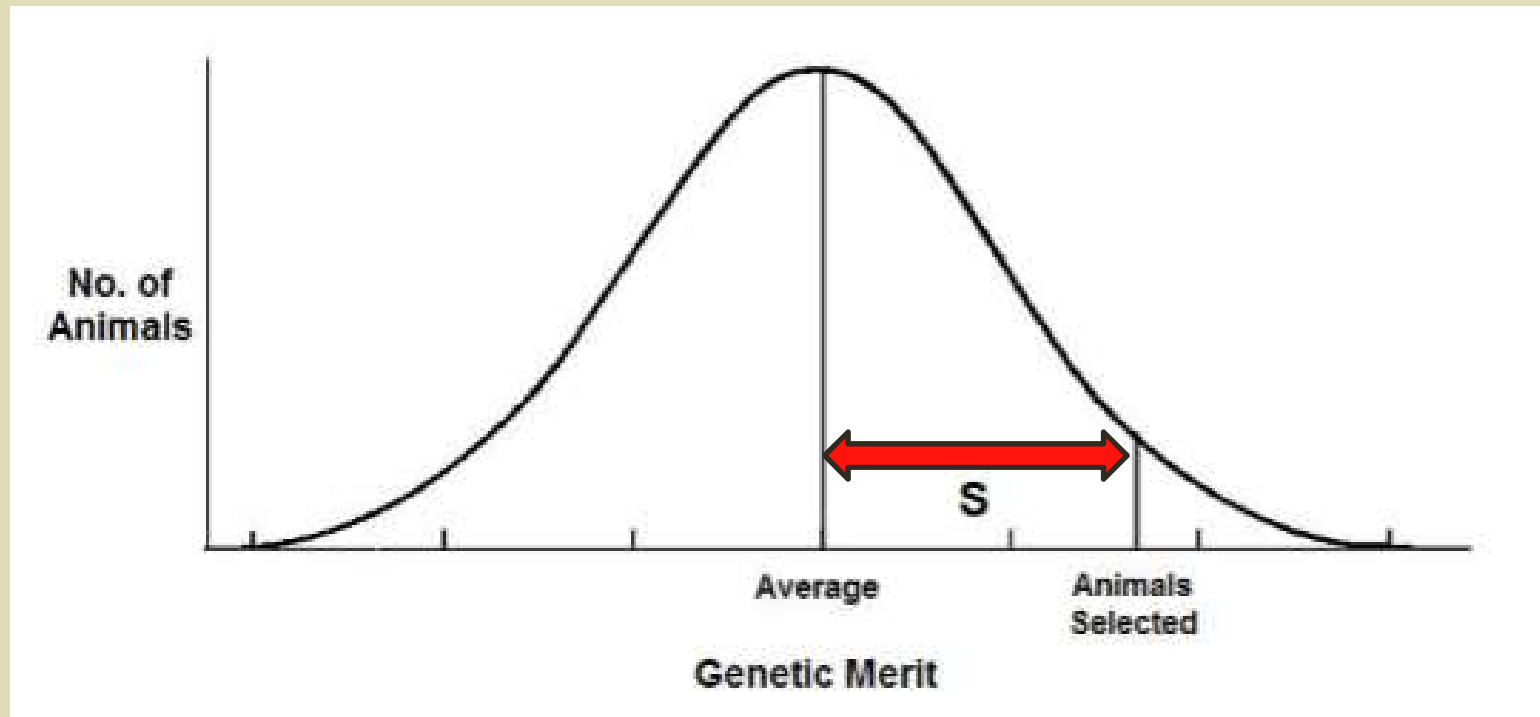
Trait	Heritability
Direct: Birth weight	0.37
Direct: 200-Day weight	0.18
Direct: 400-D weight	0.27
Direct: 600-Day weight	0.30
Direct: Mature Cow Weight	0.39
Direct: Scrotal Size	0.36
Direct: Days to Calving	0.06
Maternal: Birth weight	0.07
Maternal: 200-Day weight	0.10

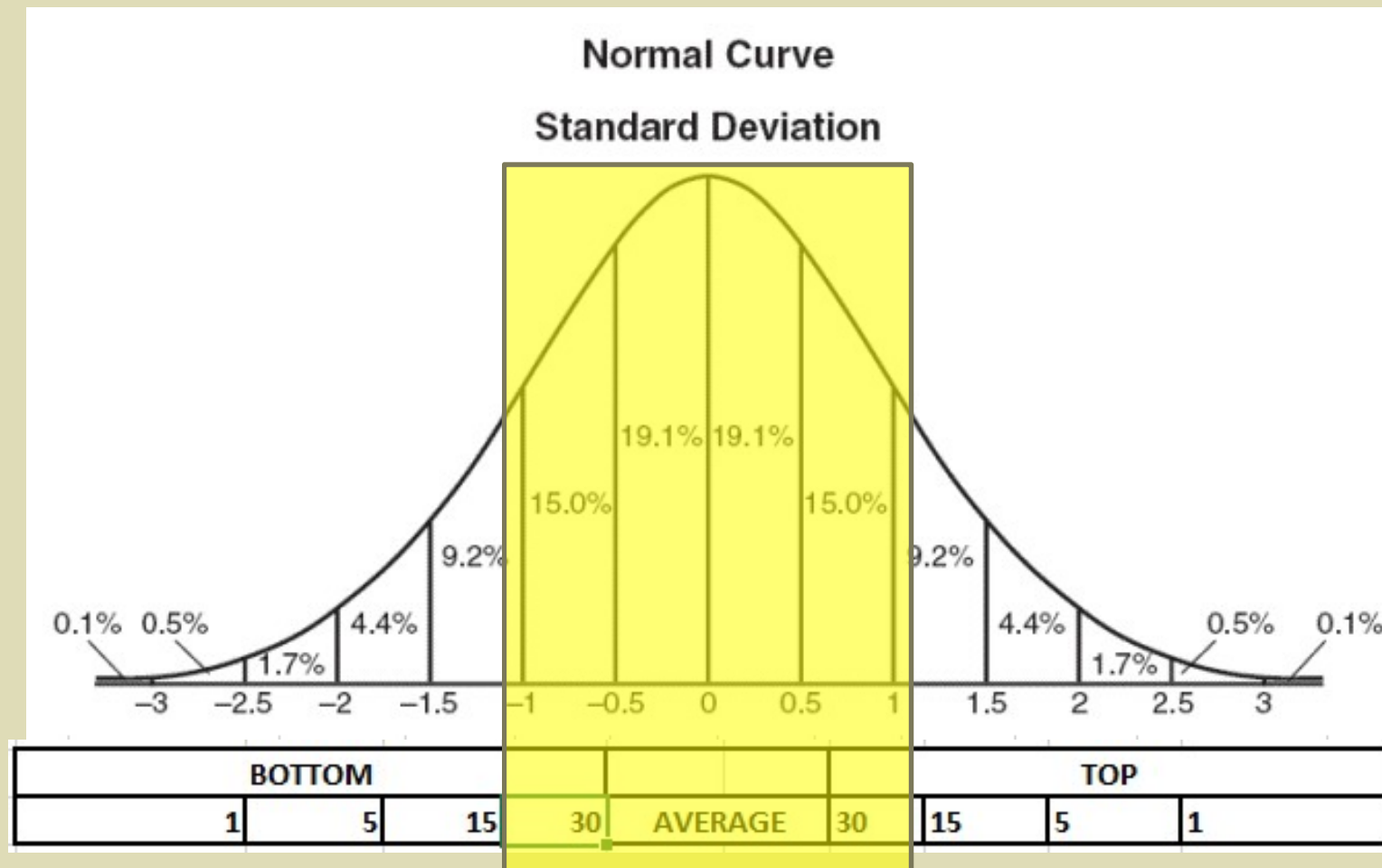
SELECTION DIFFERENTIAL (S)

The difference in average genetic value of the animals selected for breeding and the average genetic value of the population from which they were selected.

$$R = \frac{S}{L}$$


SELECTION DIFFERENTIAL (S)



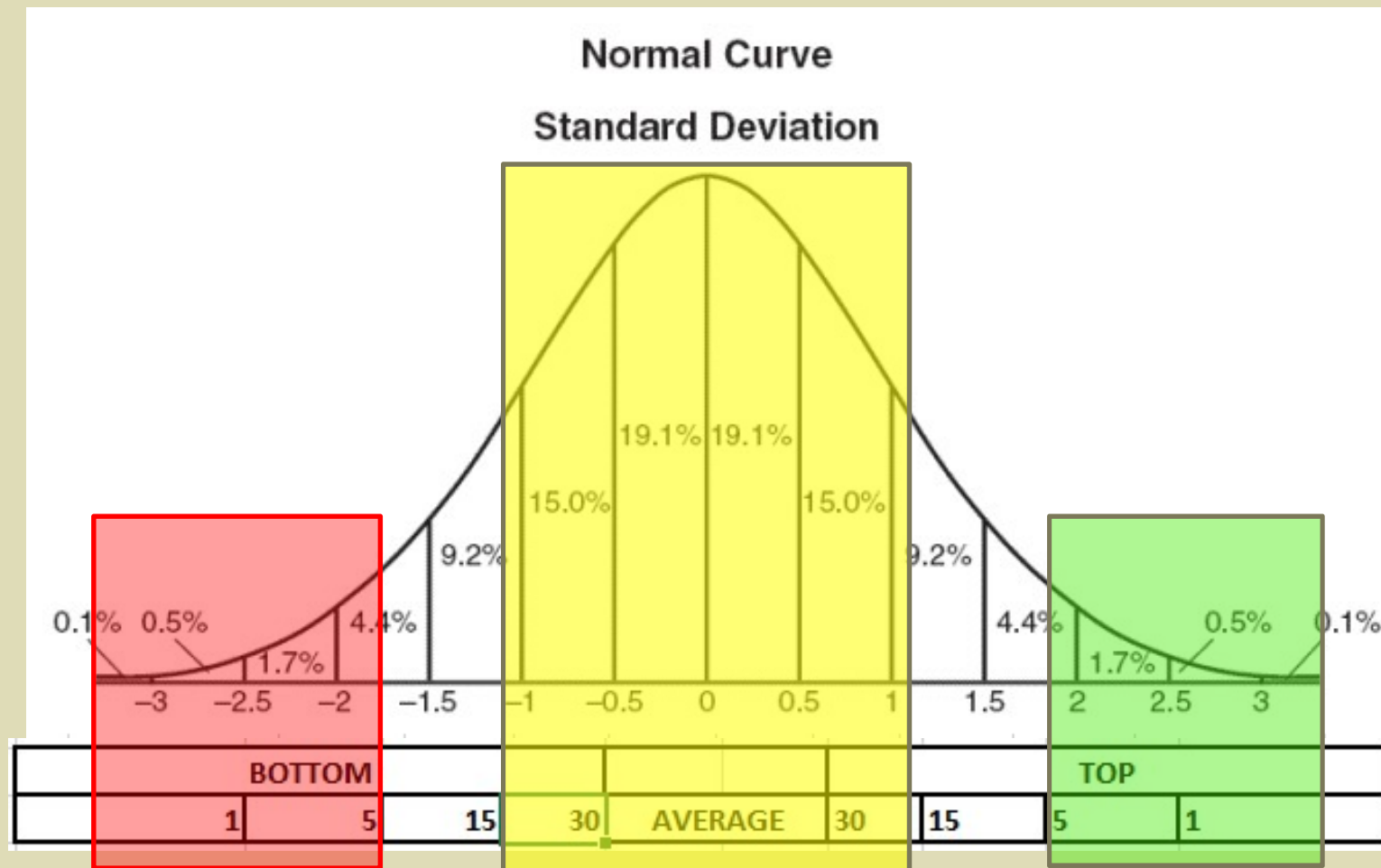


THE PERCENTILE TABLE

November 2015 South African Simmentaler GROUP BREEDPLAN EBVS - Percentile Bands for all 2013 born animals

Use this table as a guide to compare individual animals with the current genetic level of the breed

	Calv-Ease		Birth		Growth					Fert		Carcase						Indexes		
	Dir	Dtrs	GL	Bwt	200	400	600	Mwt	Milk	SS	DC	Cwt	EMA	Rib	Rump	RBV	IMF	SF	SG	TS
	%		days				kg			cm	days	kg	sq.cm	mm		%		R		
High 1%	+8.0	+6.2	-2.6	-1.1	+26	+41	+52	+58	+9	+1.1	-3.4	+30	+1.7	+0.4	+0.7	+1.0	+0.3	+109	+185	+217
High 5%	+5.4	+4.3	-1.9	-0.1	+22	+36	+45	+50	+8	+0.8	-2.1	+26	+1.2	+0.2	+0.4	+0.7	+0.3	+86	+151	+185
High 10%	+4.2	+3.5	-1.5	+0.3	+21	+33	+42	+46	+7	+0.7	-1.6	+24	+0.9	+0.1	+0.4	+0.5	+0.2	+75	+135	+169
High 15%	+3.3	+2.9	-1.3	+0.6	+20	+31	+40	+43	+7	+0.6	-1.3	+22	+0.8	+0.1	+0.3	+0.4	+0.2	+68	+124	+159
High 20%	+2.7	+2.5	-1.2	+0.7	+19	+30	+38	+41	+6	+0.5	-1.1	+21	+0.7	+0.0	+0.2	+0.4	+0.2	+62	+116	+151
High 25%	+2.2	+2.2	-1.0	+0.9	+18	+28	+36	+39	+6	+0.5	-0.9	+21	+0.6	+0.0	+0.2	+0.3	+0.2	+58	+109	+145
High 30%	+1.8	+1.9	-0.9	+1.0	+18	+27	+35	+38	+6	+0.4	-0.8	+20	+0.5	+0.0	+0.2	+0.3	+0.2	+54	+104	+140
High 35%	+1.3	+1.6	-0.8	+1.2	+17	+26	+33	+36	+5	+0.4	-0.7	+19	+0.4	+0.0	+0.2	+0.2	+0.2	+51	+100	+134
High 40%	+1.0	+1.4	-0.7	+1.3	+16	+26	+32	+35	+5	+0.3	-0.6	+19	+0.4	+0.0	+0.1	+0.2	+0.2	+48	+96	+129
High 45%	+0.6	+1.1	-0.6	+1.4	+16	+25	+31	+33	+5	+0.3	-0.5	+18	+0.3	-0.1	+0.1	+0.2	+0.1	+45	+92	+124
50%	+0.3	+0.9	-0.5	+1.5	+15	+24	+30	+32	+5	+0.3	-0.4	+17	+0.3	-0.1	+0.1	+0.1	+0.1	+43	+89	+120
Low 45%	-0.1	+0.6	-0.4	+1.6	+15	+23	+29	+30	+4	+0.2	-0.3	+17	+0.2	-0.1	+0.1	+0.1	+0.1	+40	+85	+115
Low 40%	-0.4	+0.4	-0.3	+1.7	+14	+22	+27	+29	+4	+0.2	-0.2	+16	+0.2	-0.1	+0.0	+0.1	+0.1	+38	+82	+111
Low 35%	-0.8	+0.1	-0.2	+1.8	+14	+21	+26	+27	+4	+0.1	-0.1	+16	+0.1	-0.1	+0.0	+0.0	+0.1	+35	+78	+106
Low 30%	-1.2	-0.2	-0.1	+2.0	+13	+20	+25	+26	+4	+0.1	+0.0	+15	+0.1	-0.1	+0.0	+0.0	+0.1	+32	+74	+101
Low 25%	-1.6	-0.5	+0.0	+2.1	+12	+19	+24	+24	+3	+0.0	+0.1	+14	+0.0	-0.2	+0.0	+0.0	+0.1	+29	+70	+95
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Low 15%	-2.8	-1.3	+0.3	+2.4	+11	+16	+20	+20	+3	-0.1	+0.3	+12	-0.1	-0.2	-0.1	-0.1	+0.1	+23	+60	+82
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Low 5%	-4.7	-2.6	+0.7	+3.0	+8	+12	+15	+13	+1	-0.4	+0.8	+10	-0.4	-0.3	-0.3	-0.3	+0.0	+10	+43	+59
Low 1%	-7.0	-4.3	+1.4	+3.7	+5	+6	+7	+3	-1	-0.8	+1.5	+6	-0.8	-0.5	-0.5	-0.4	-0.1	-4	+20	+32



SELECTION DIFFERENTIAL

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	%		days				kg				cm	days	kg	sq.cm	mm		%			R	
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Low 45%	-0.1	+0.6	-0.4	+1.6	+15	+23	+29	+30	+4	+0.2	-0.3	+17	+0.2	-0.1	+0.1	+0.1	+0.1	+40	+85	+115	
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Low 1%	-7.0	-4.3	+1.4	+3.7	+5	+6	+7	+3	-1	-0.8	+1.5	+6	-0.8	-0.5	-0.5	-0.4	-0.1	-4	+20	+32	

GENERATION LENGTH (L)

$$R = \frac{S}{L}$$

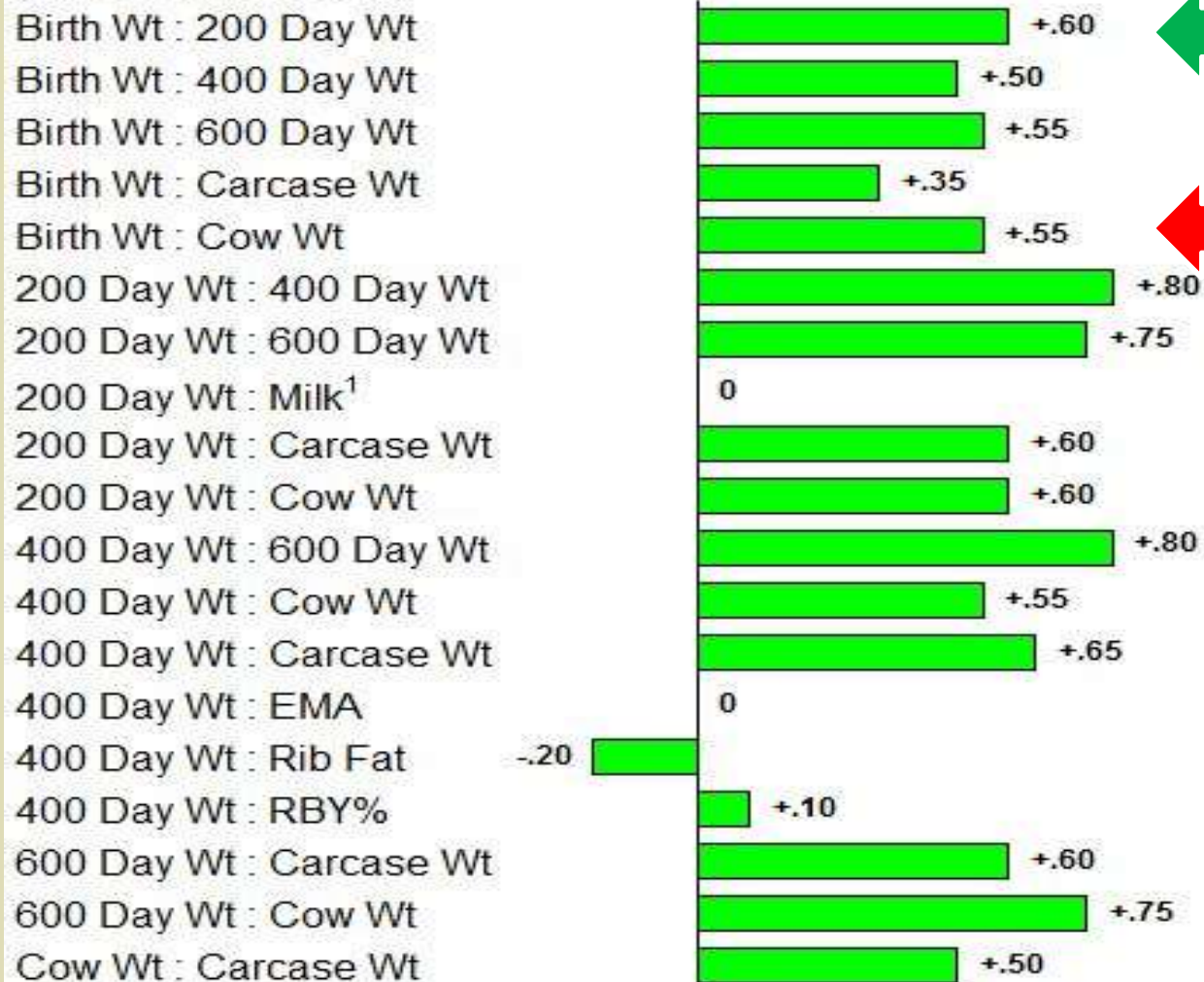

Generation Length (L) is defined as the average age of the parents in a population at the time that their progeny are born. A short generation length means that animals selected for breeding are mated in the herd at a younger average age. Reducing the generation length will generally increase the rate of genetic progress.

Generation length calculations

Herdmaster extract						Age calc's @ last calf (Days)			
Animal Tag	Animal Date of Birth	Animal Dam's Society ID	Dam Date of Birth	Sire Sire's Society ID	Sire Date of Birth	Age dam	Age Sire	Ave age	Ave Age years
BTB15011	14/09/2015	BTB1379	07/11/2013	PN11357	31/07/2011	676	1506	1091	2.99
BTB15012	24/09/2015	BTB1362	26/10/2013	PJO133	07/01/2013	698	990	844	2.31
BTB15123	06/12/2015	UG12189	30/09/2012	AHR1016	19/12/2010	1162	1813	1488	4.08
BTB15124	07/12/2015	BTB1130	08/10/2011	BTB1332	25/09/2013	1521	803	1162	3.18
BTB15125	10/12/2015	WEH119	15/01/2011	BTB1264	27/10/2012	1790	1139	1465	4.01
BTB15126	23/12/2015	BTB09103	23/11/2009	BTB1282	06/11/2012	2221	1142	1682	4.61
BTB16001	07/01/2016	BTB1372	31/10/2013	AB1276	22/11/2012	798	1141	970	2.66
						1560	1255	1408	3.86
						4.27	3.44	3.86	Years
					BTB Aim			3.5	Years

CORRELATIONS & ANTAGONISTIC RELATIONSHIPS: Growth traits

(a) Growth traits



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South African fascination with high growth EBV's



- Maintenance cost ?
- Stayability?
- Weaning rate?
- Age of puberty?
- Etc.

GROWTH TRAITS :

Correlations & antagonistic relationships

Table 1: Simmental sire EPD correlations*

	Calving Ease Direct	Birth Weight	Weaning Weight	Yearling Weight	Calving Ease Maternal
Calving Ease (Direct)	1.000	— High	— Moderate	— Low	Moderate
Birth Wt.	-0.594	1.000	High	High	— Low
Weaning Wt.	-0.295	0.611	1.000	High	Low
Yearling Wt.	-0.257	0.563	0.946	1.000	Low
Calving Ease (Maternal)	0.303	— 0.141	0.039	0.093	1.000

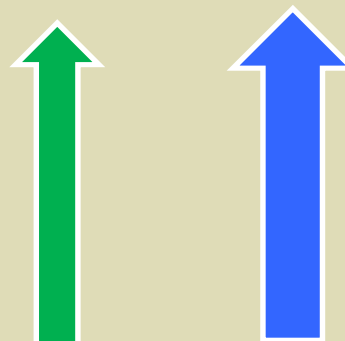
Legend: •0.25 = low; 0.26-0.50 = moderate; •0.50 = high

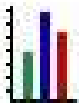
*Source: American Simmental Association 2001 Spring Sire Summary

TIP: More selection pressure on CED rather than birth weight is less antagonistic to growth traits

THE ANTAGONISTS

Typical herd EBV profile



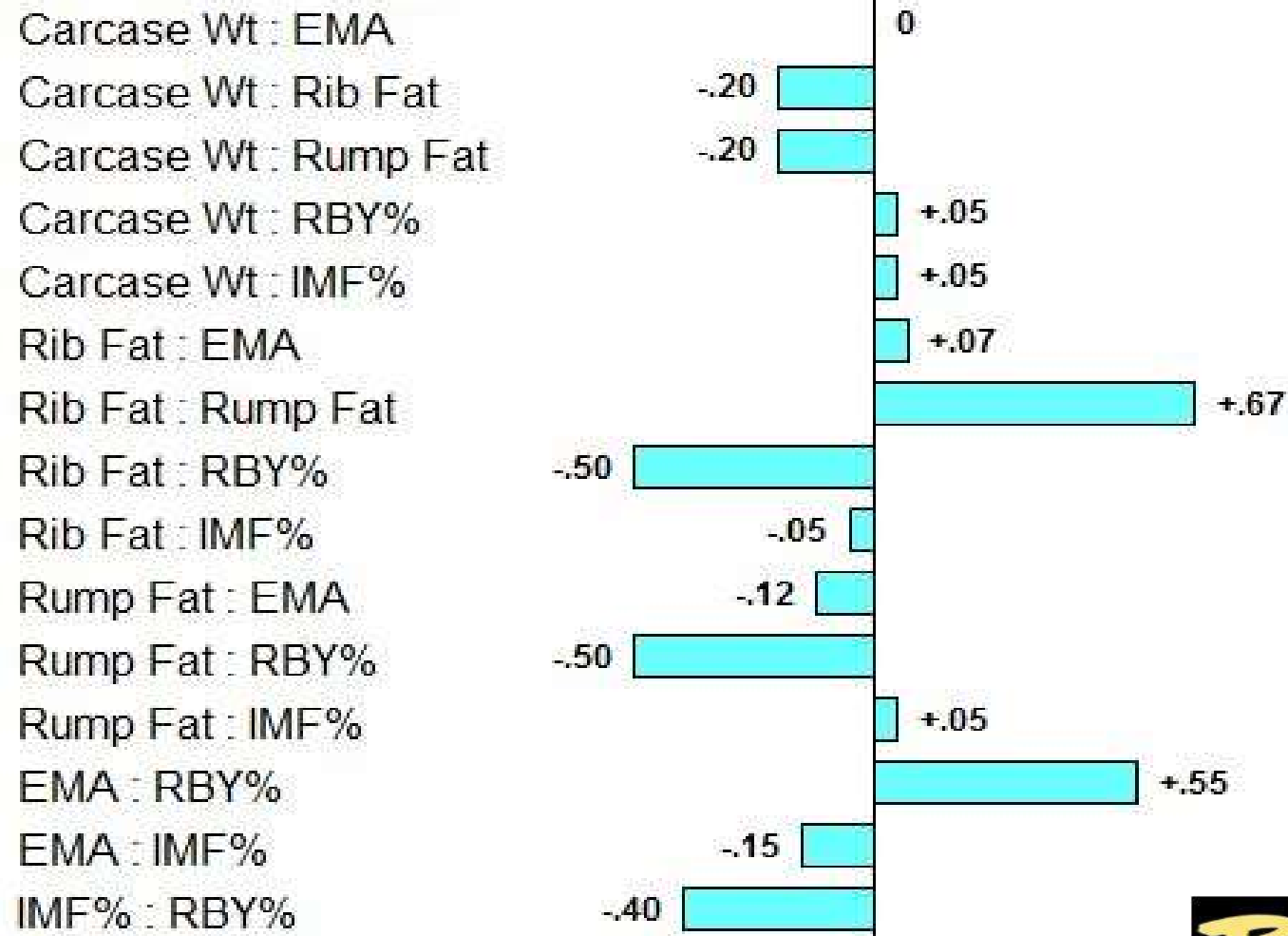
	Calving Ease DIR (%)	Calving Ease DTRS (%)	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt (kg)	400 Day Wt (kg)	600 Day Wt (kg)	Mat Cow Wt (kg)	Milk (kg)
EBV	-1.3	-1.4	-0.7	+1.1	+11	+11	+15	+14	+6
EBV	+0.3	+0.9	-0.6	+1.5	+15	+24	+30	+32	+5



CARCASE TRAITS:

Correlations & antagonistic relationships

(b) Carcase Traits²



Why is multiple trait selection..

- **Difficult?**
 - Lots of EBVs
 - Correlations between traits
 - Antagonistic relationships
 - Some EBVs for Economically Relevant Traits (ERT) some for Indicator Traits



FOLLOW THE MONEY !!



OVERVIEW

What are Selection Indexes ?

- Defined selection for purpose
- Follows a Breeding Objective
- Relative Economic values



Why do we need Selection Indexes?

- **Actual** multiple trait selection

Selection Index Defined

- **Two Step approach by Henderson (1950s)**
 - Calculate predictions of genetic merit (EBV) for each trait in selection objective
 - Weight each genetic prediction by it's Relative Economic Value (REV)



A Tool for Multiple Trait Selection

- **Selection Indexes**
 - Objective
 - Easy to use and interpret (Rand)
 - Economically driven
 - Links ERTs and Indicator Traits
 - Customizable (Site/user specific)
- **Breedplan: BreedObject software**

Breeding Objective

Characteristics In Breeding Objective

- Calf Survival (wean rate)
- Weaning weight
- Male/female Fertility
- Longevity
- Milk production
- Feed efficiency

Traits in Selection Index

- CED EBV
- CEM EBV
- WW EBV
- YW EBV
- Milk EBV
- MCW
- DTC

Compiling Selection Indexes

- **Defining the Breeding Objective**
- **Based on the “ideal” animal for a particular enterprise**
 - **Market requirements** (At the end of the value chain)
 - Export (carcass weight, fat cover, IMF)
 - Domestic (carcass weight, fat cover)
 - **Production system**, returns affected by weight & price
 - Harvest age
 - Carcass weight and fatness
 - Grassfed
 - Grainfed (Number of days)
 - **What happens to the heifers?**
 - Terminal or self replacing
 - **Production costs**
 - Cost of supplying extra feed
 - Cost of non-survival
 - Time taken to manage calving
 - Labour cost

Current Southern African Selection Indexes



Selection Indexes	Breed
Self Replacing Grassfed Index	Brahman, Simbra, Simmentaler
Self Replacing Feedlot	Brahman, Simmentaler, Simbra
Self Replacing Weaner	Brahman, Simbra
Terminal Sire	Simmental



The BTB selection Index

Simmentaler Feedlot Index

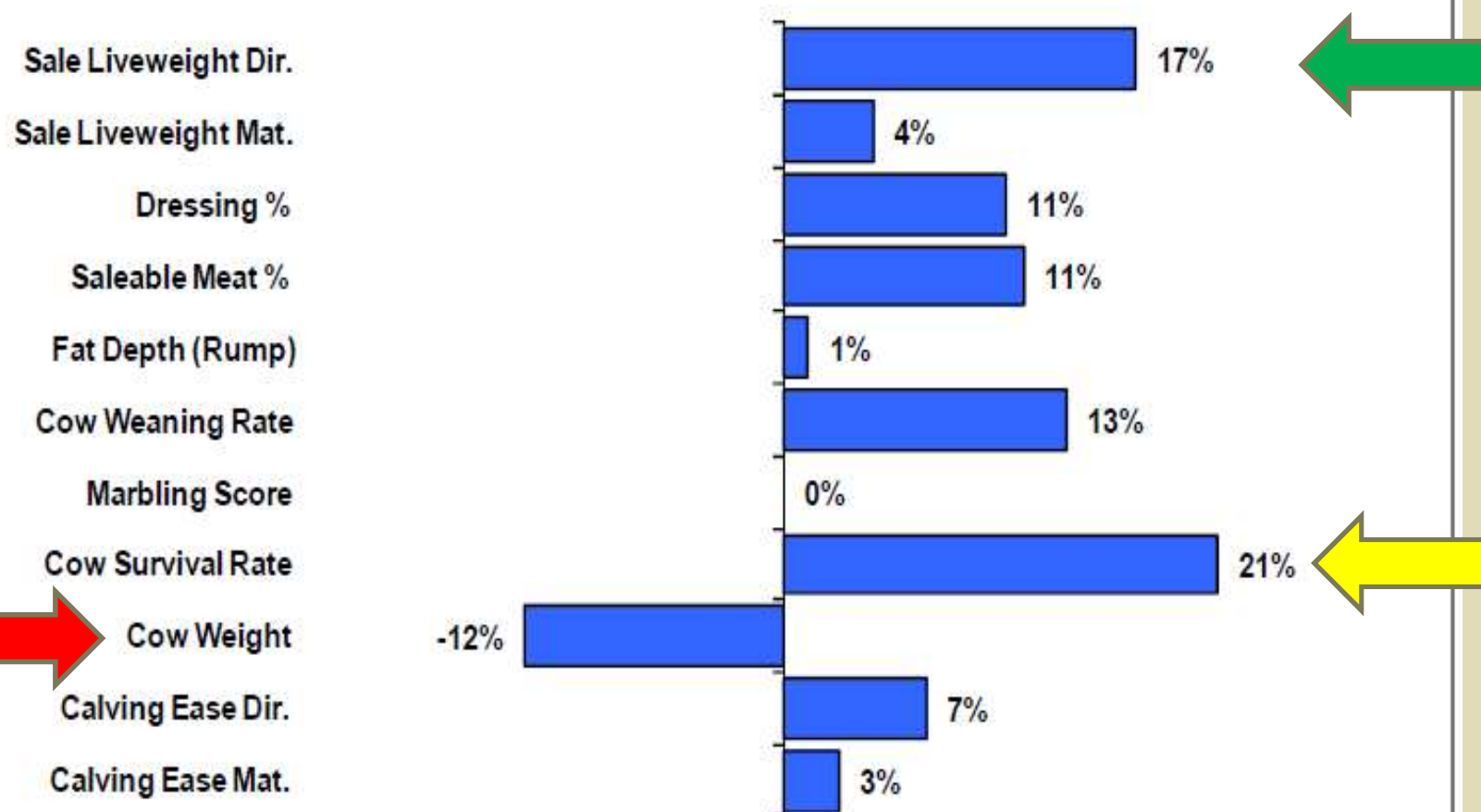
The Feedlot Index estimates the genetic differences between animals in terms of net profitability per cow. The Feedlot Index is aimed at a high fertility, self replacing (keeping replacement and breeding progeny) pure bred herd. Calves are weaned at 7 months (at around 250kg) and then steers are fed extra rations for 120 days to be slaughtered at around 11 months and 430kg steer live weight. **Significant emphasis is placed on calving ease, 400 day weight and carcass yield.**

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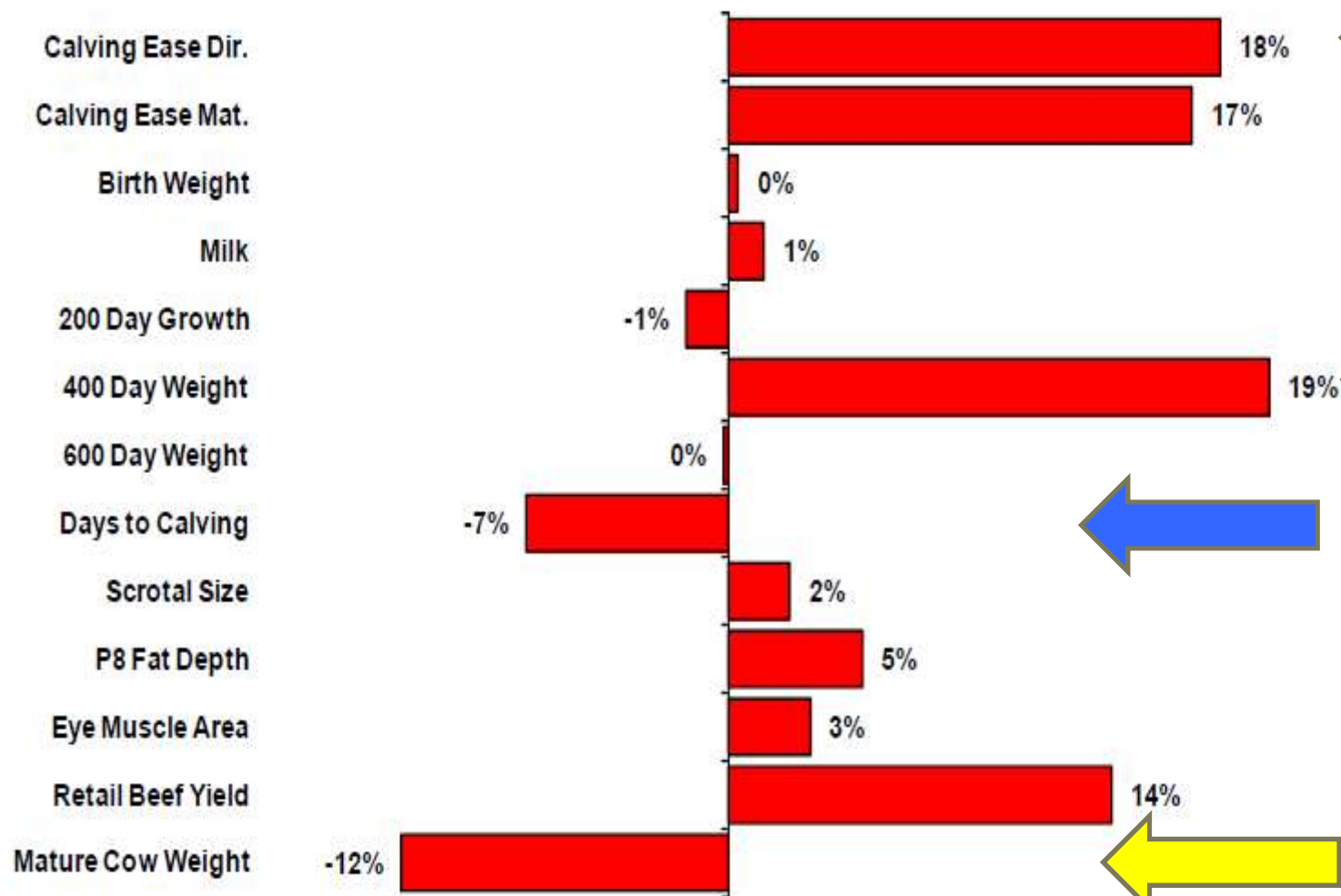
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Self Replacing Feedlot Index - Profit Drivers



Self Replacing Feedlot Index - EBV Weightings

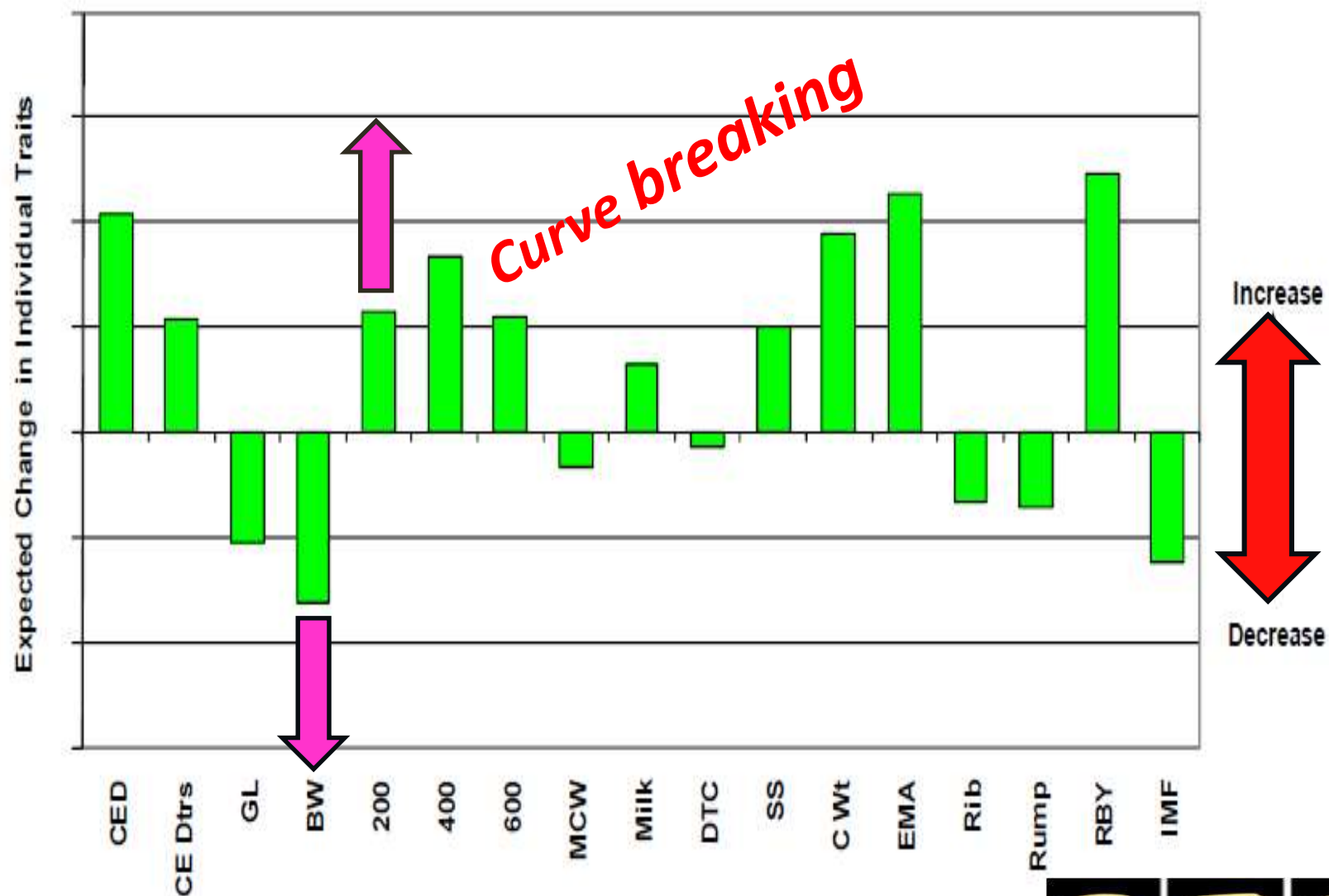


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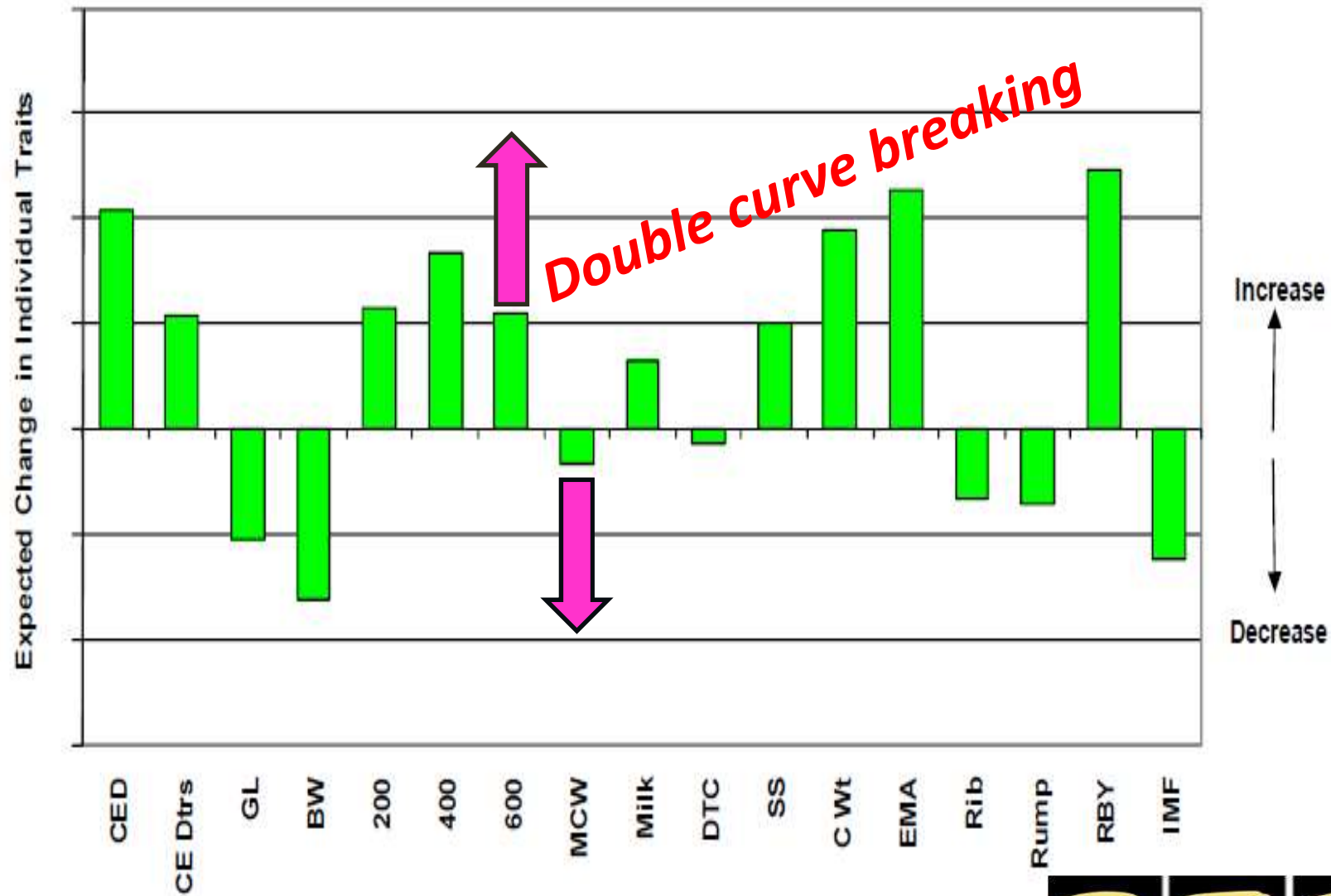
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Self Replacing Feedlot Index - Predicted Response

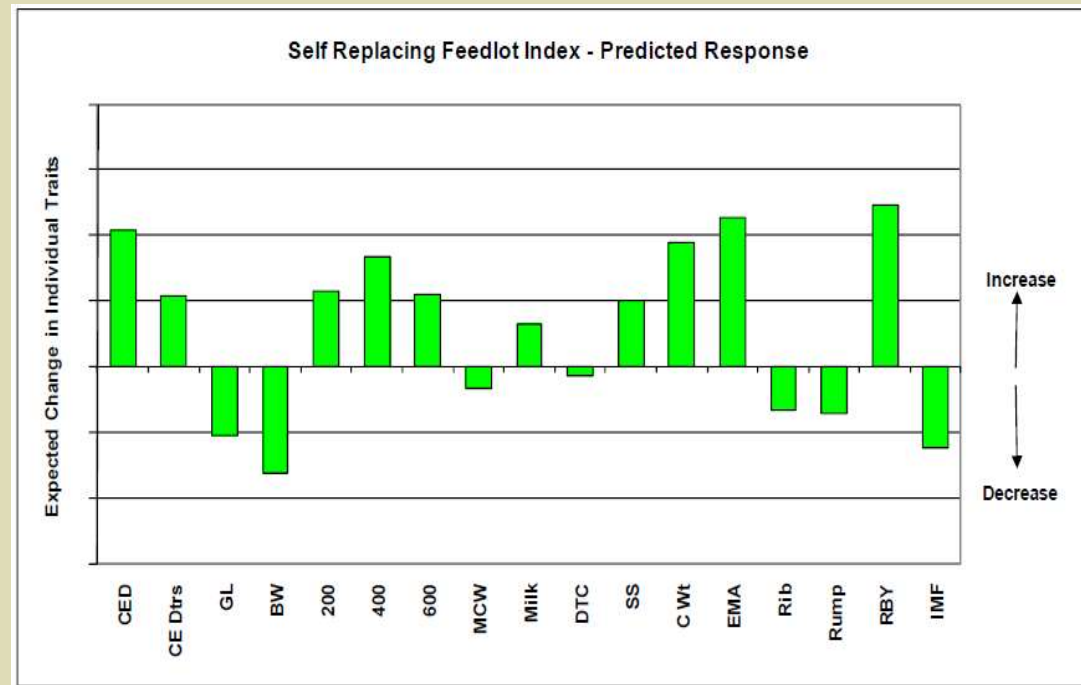


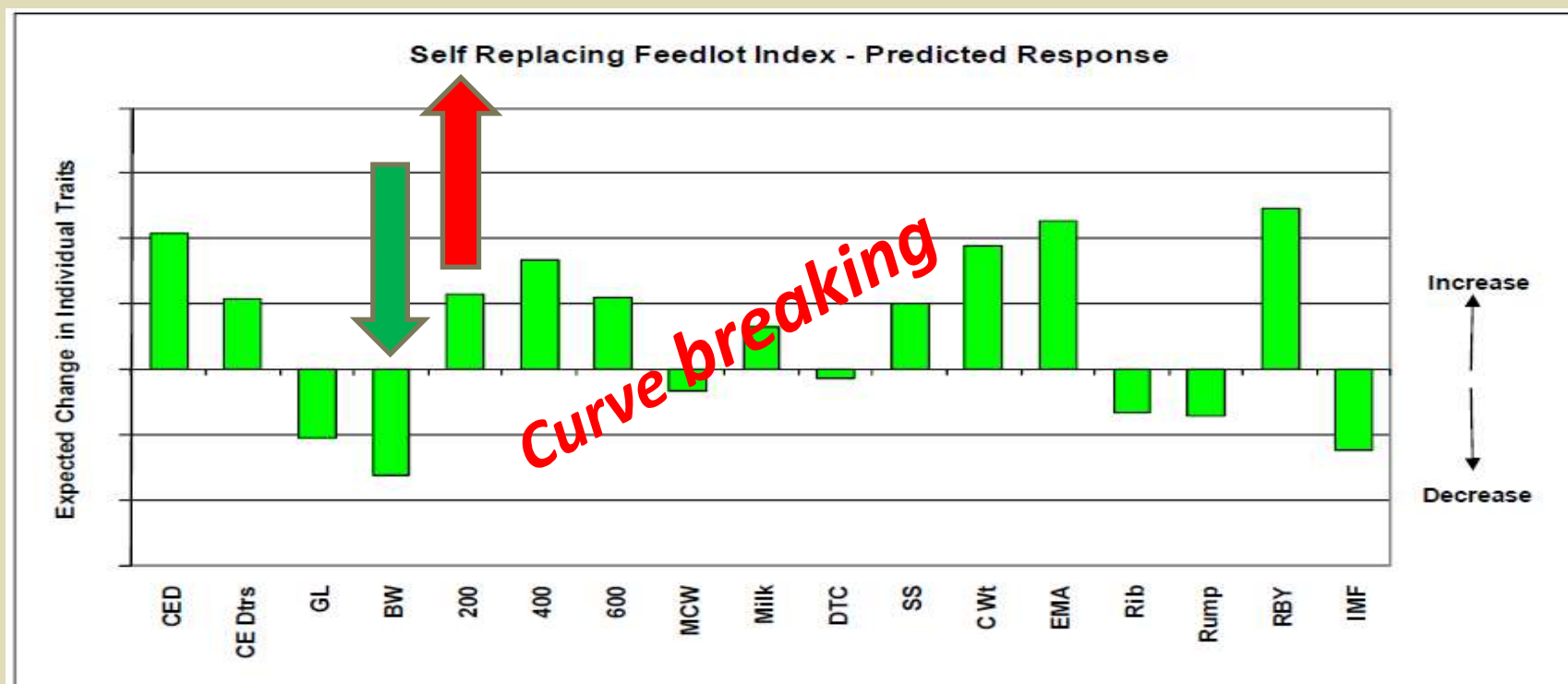
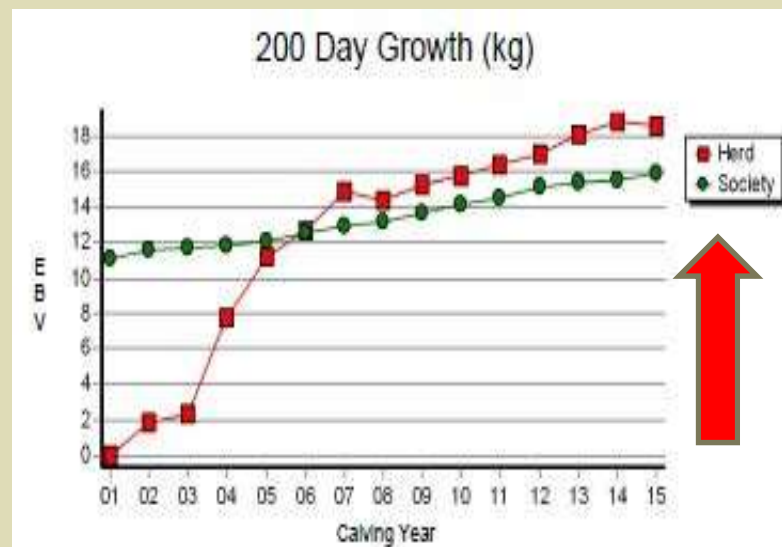
Self Replacing Feedlot Index - Predicted Response

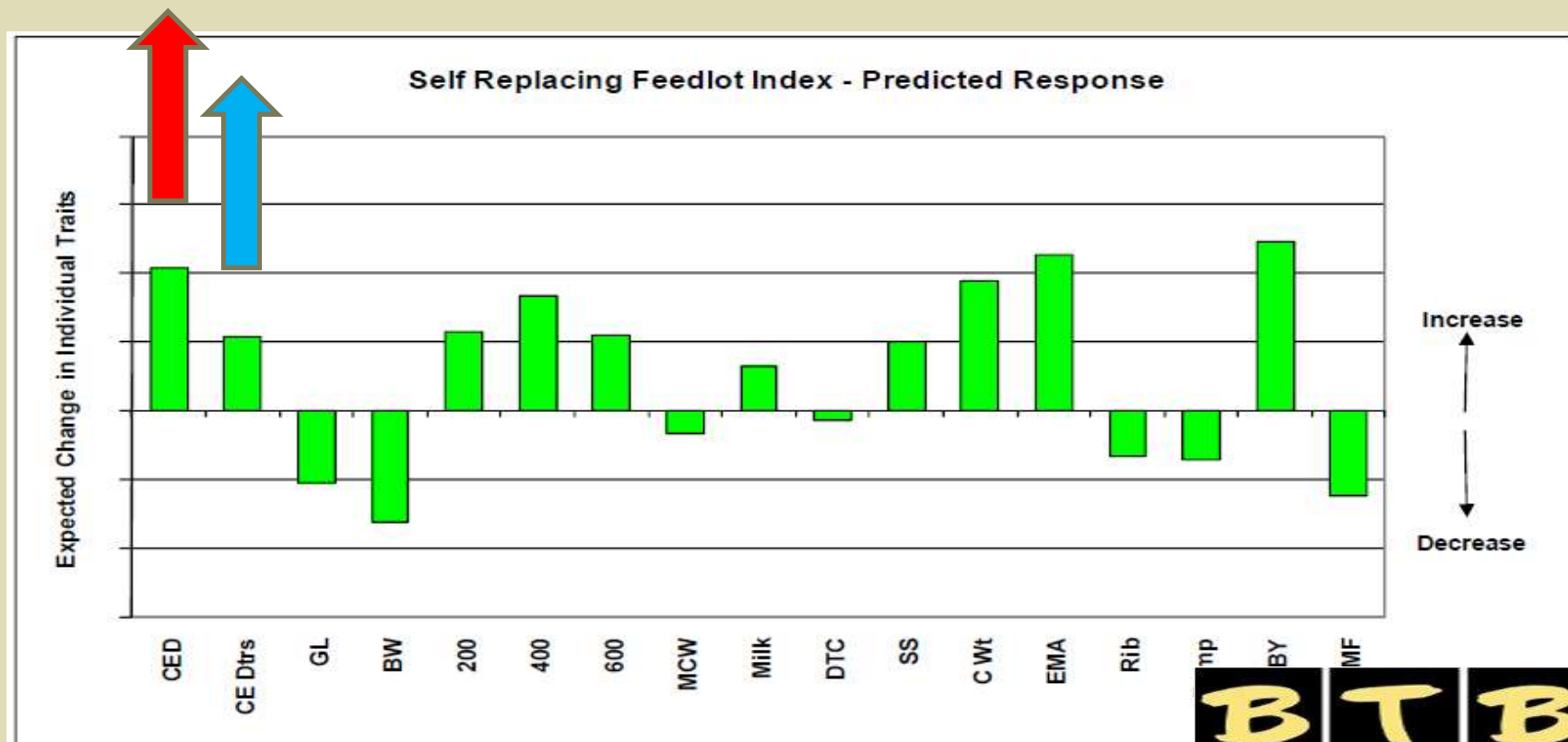
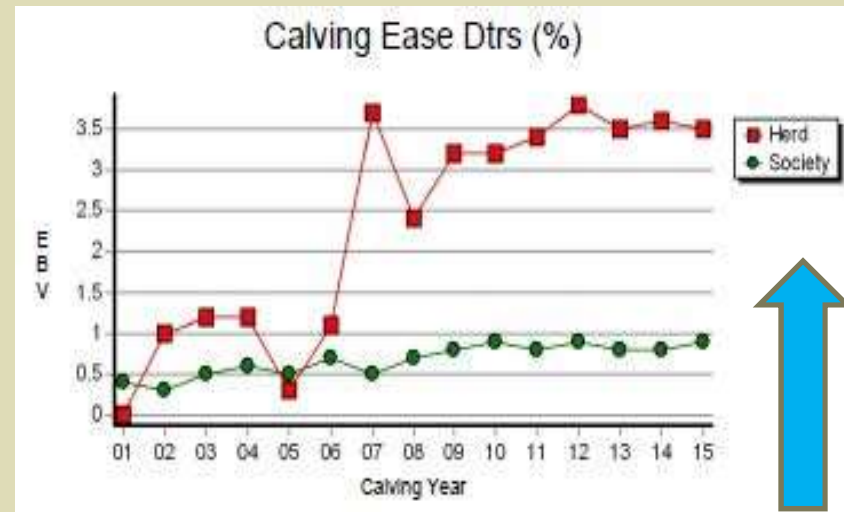
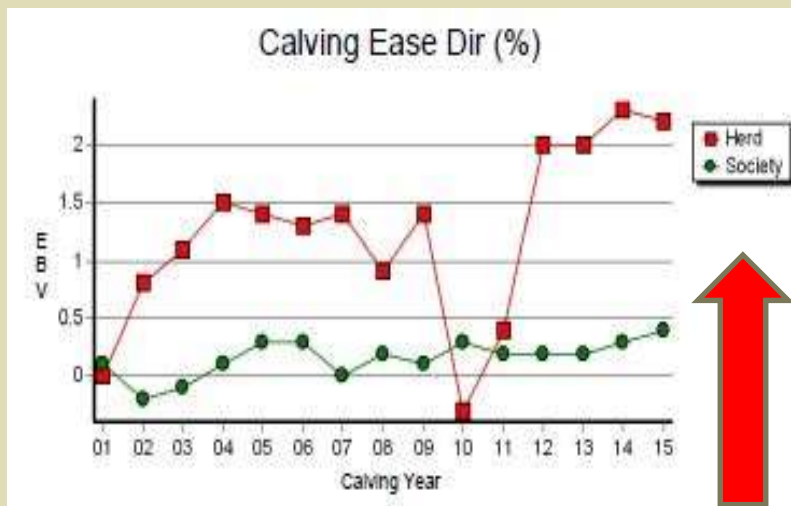


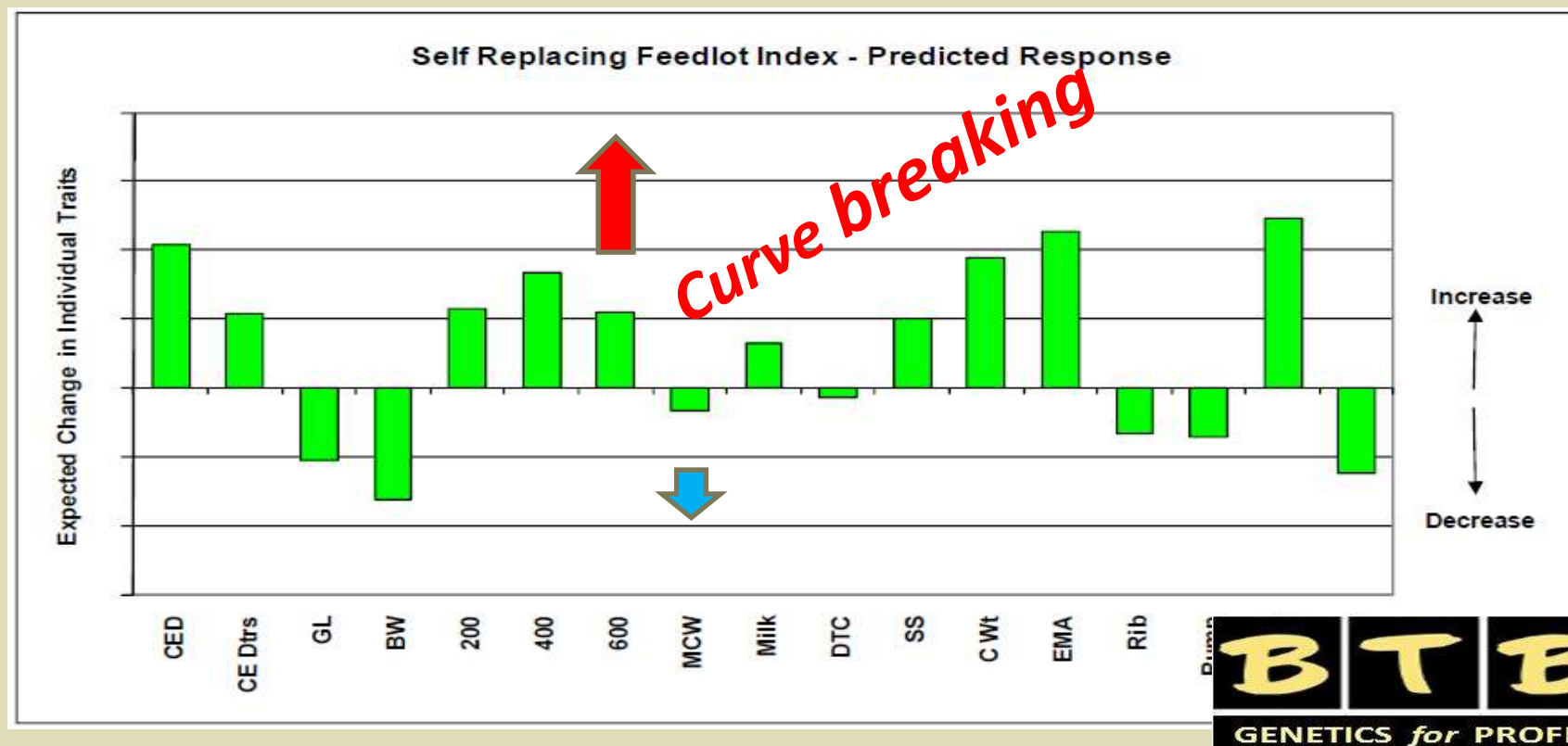
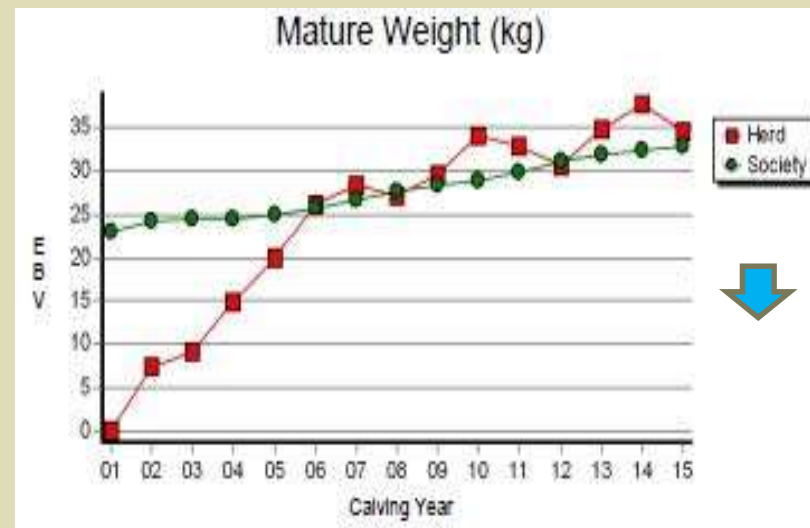
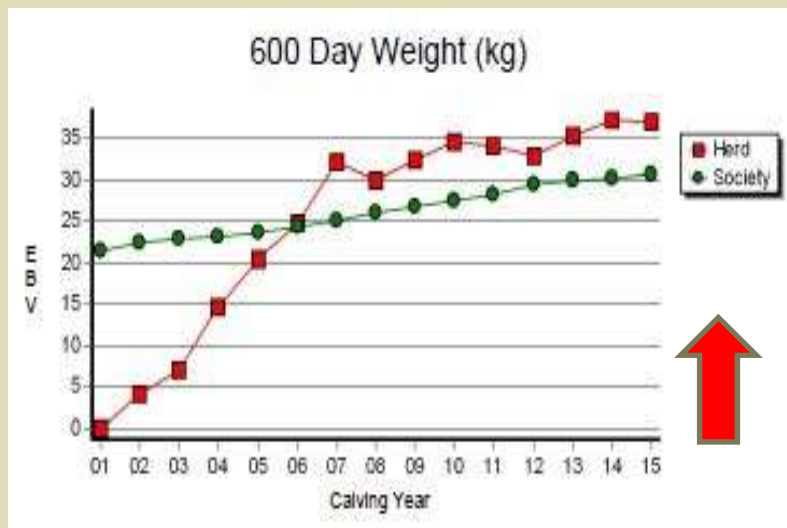
Self Replacing Feedlot Index SELECTION RESPONSE

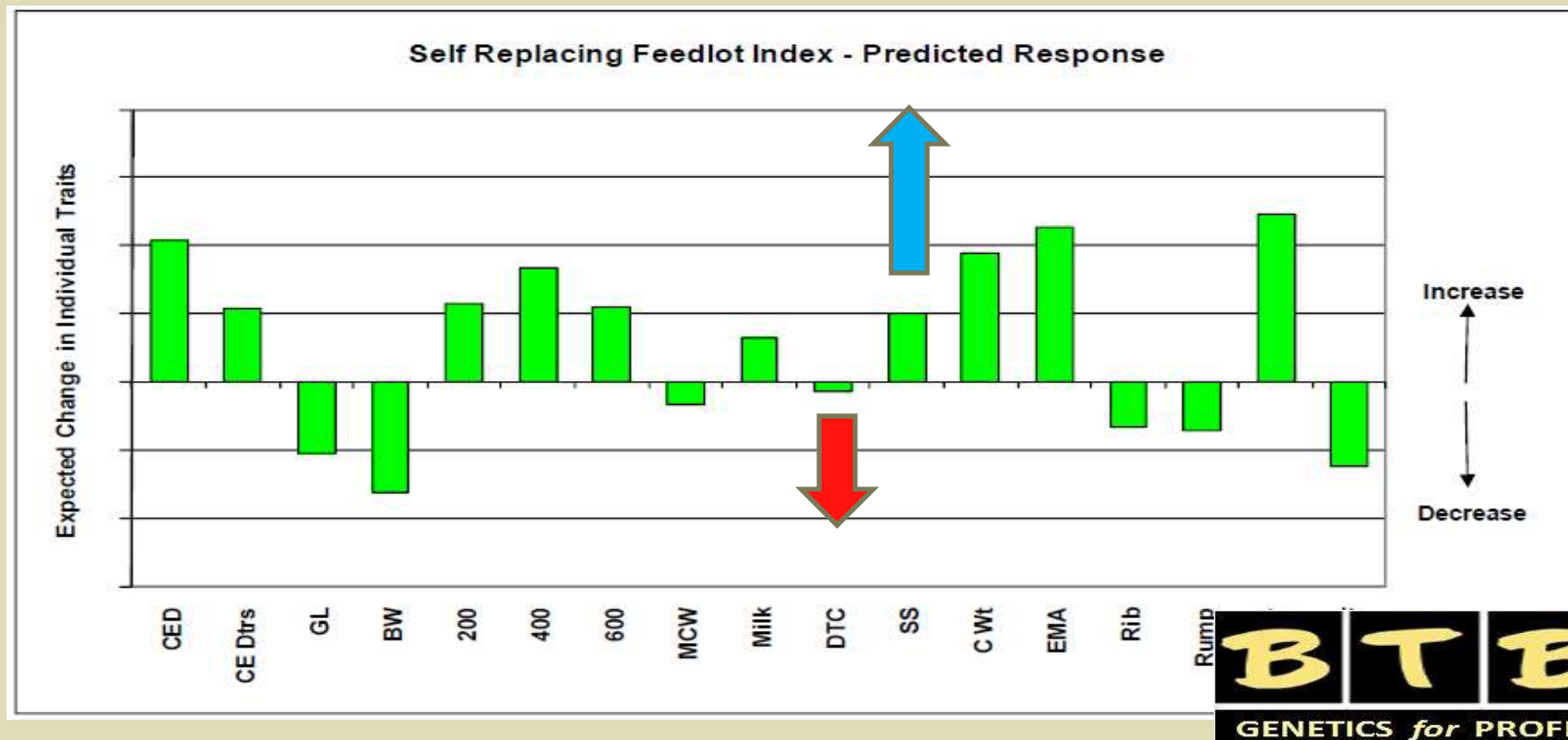
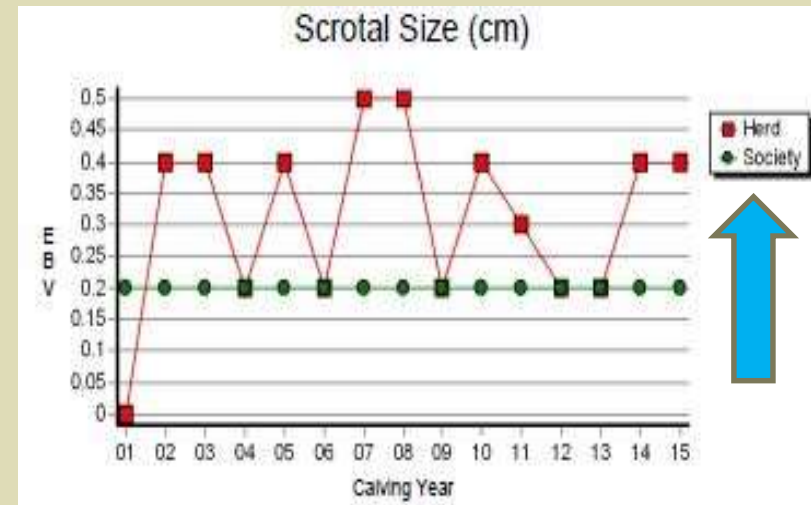
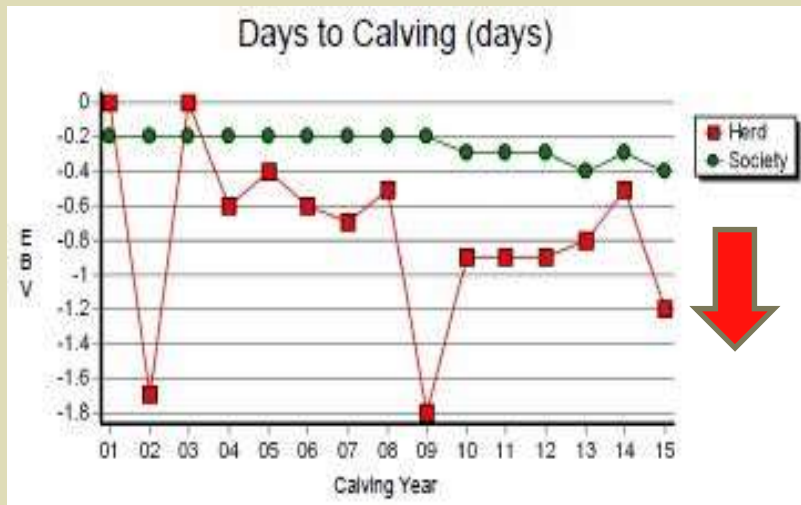
BTB SIMMENTALERS

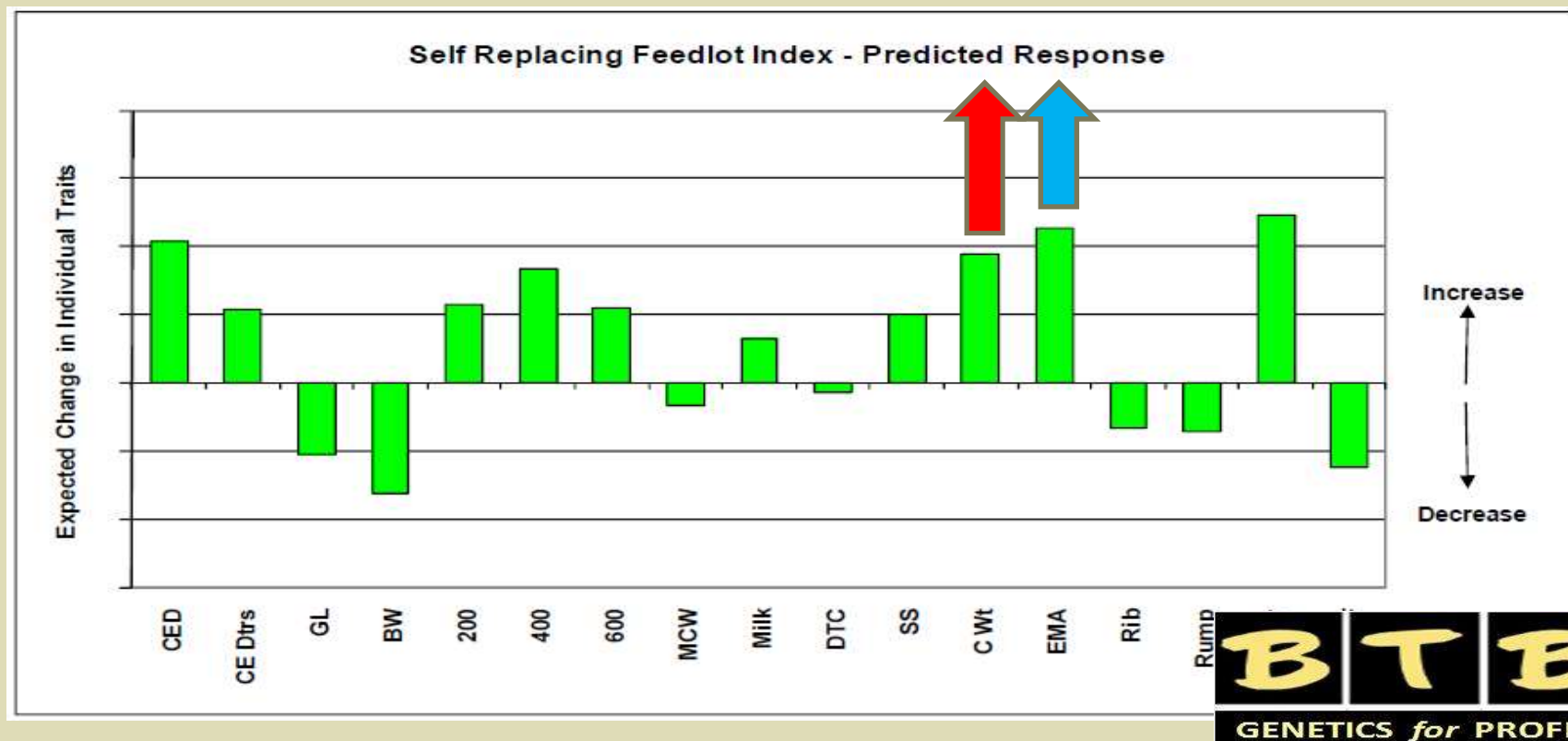
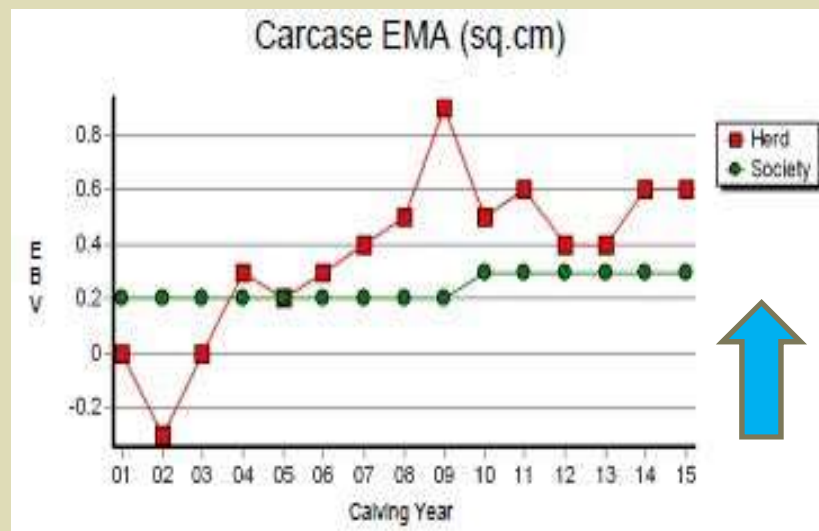
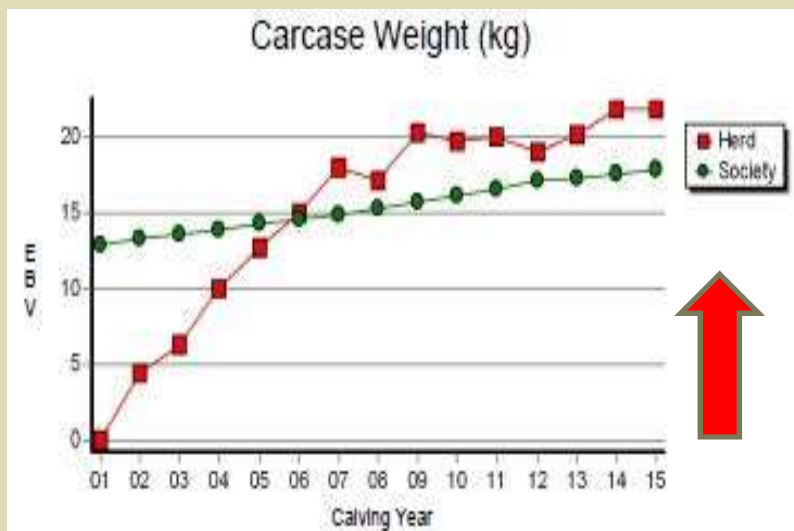


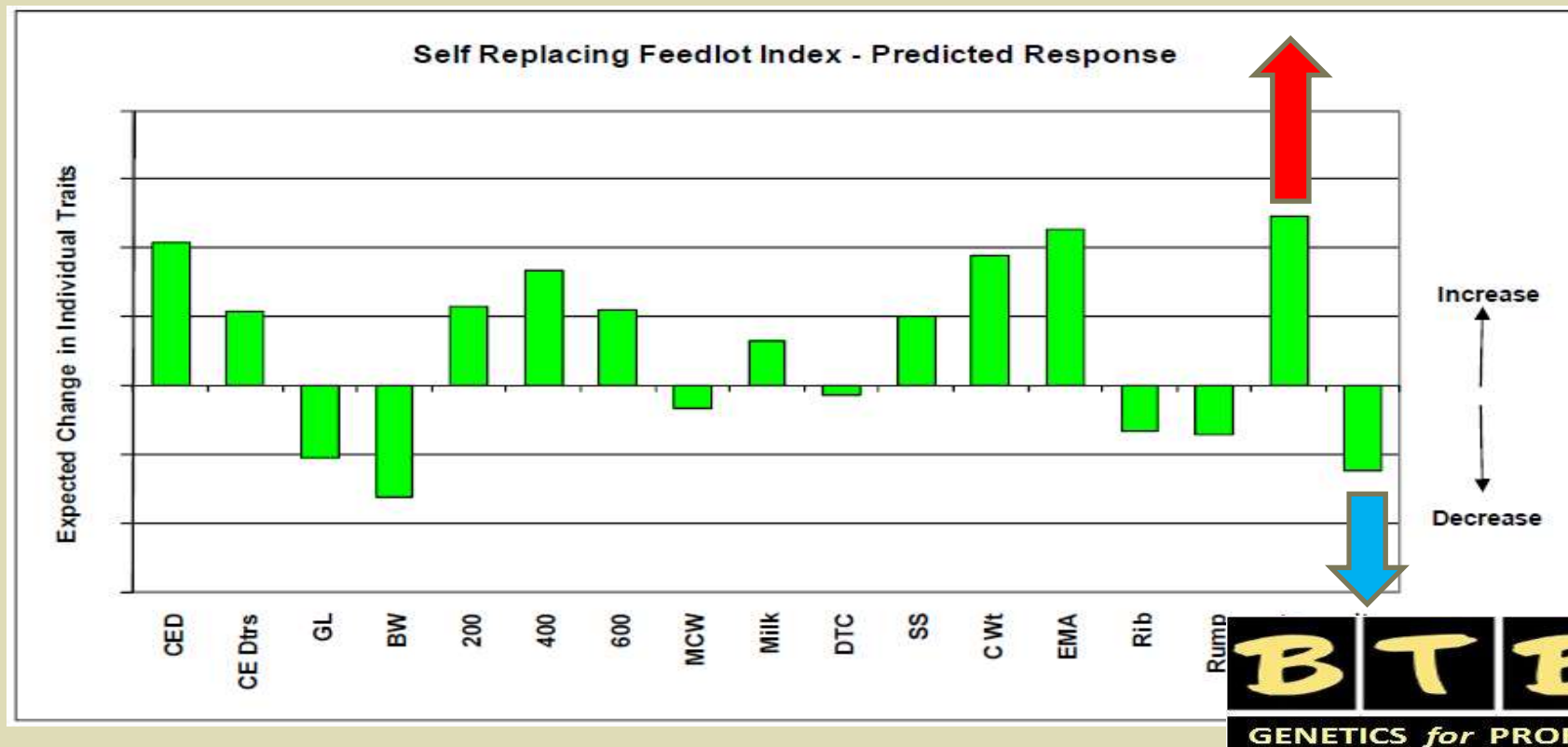
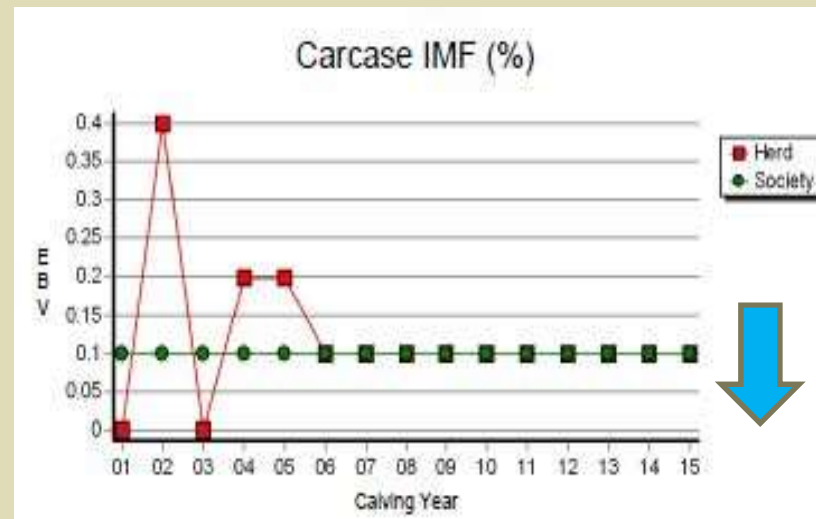
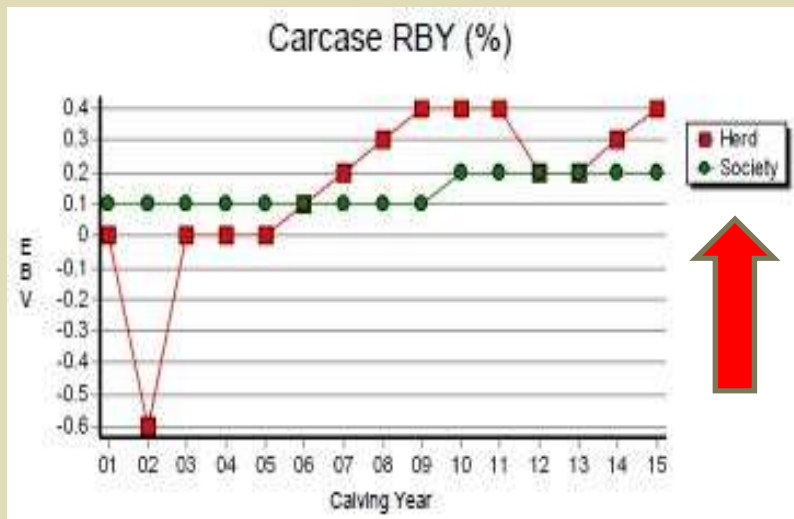


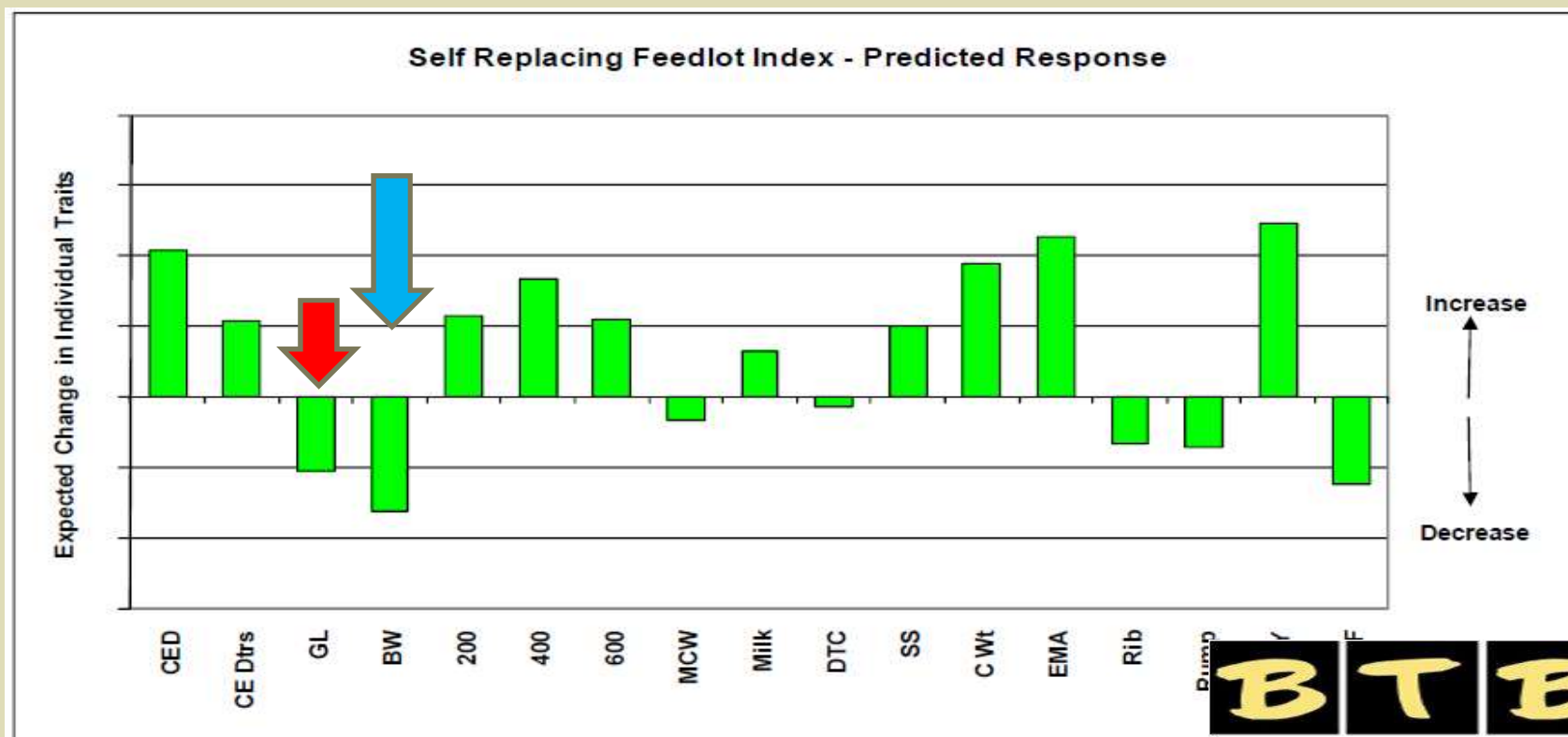
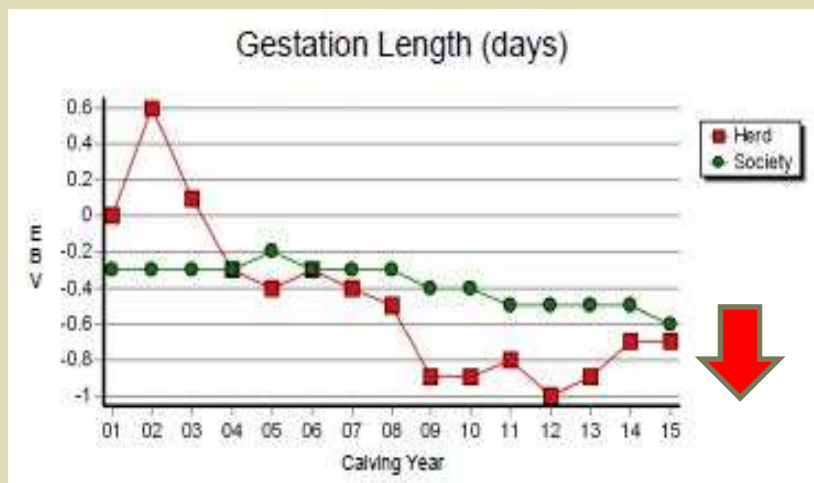


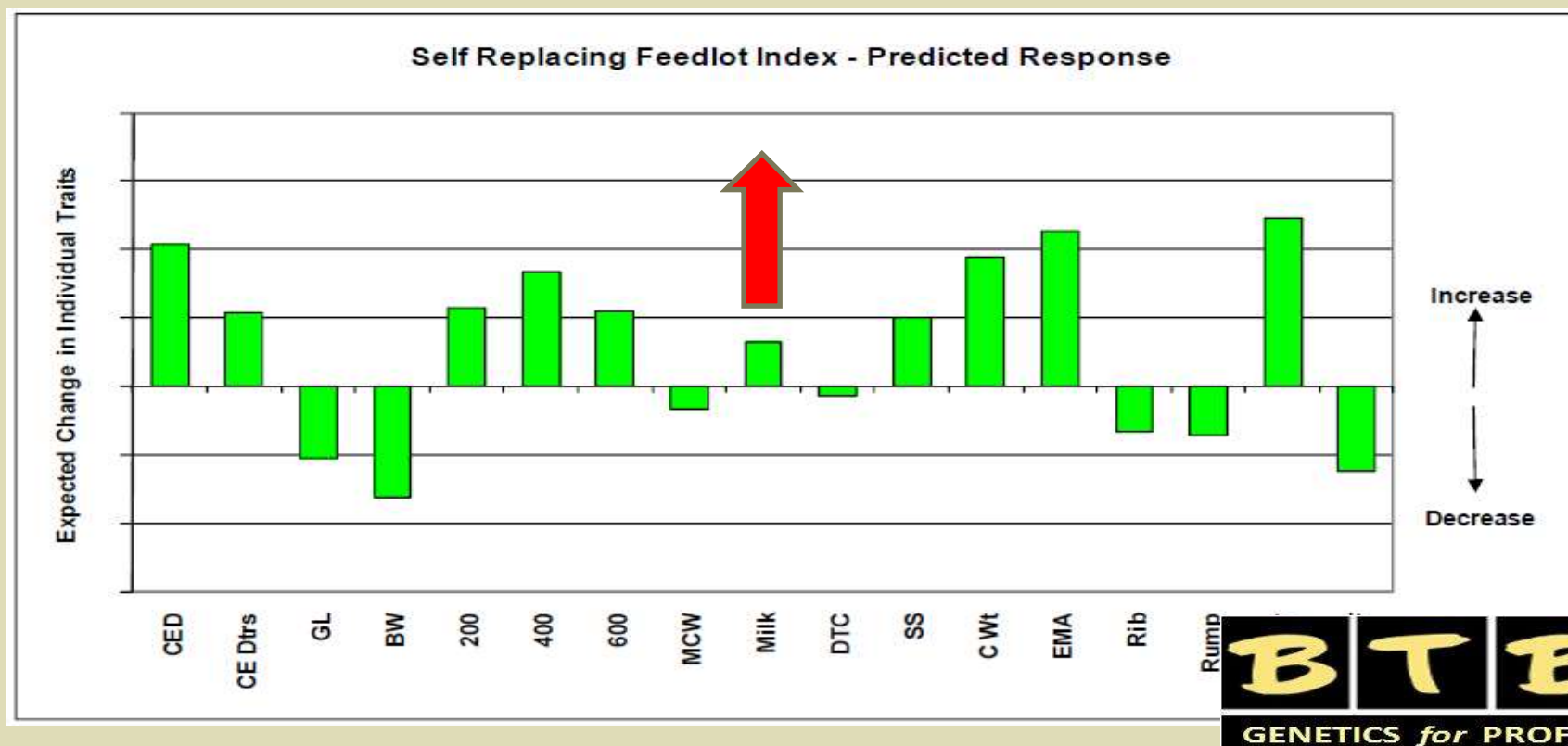
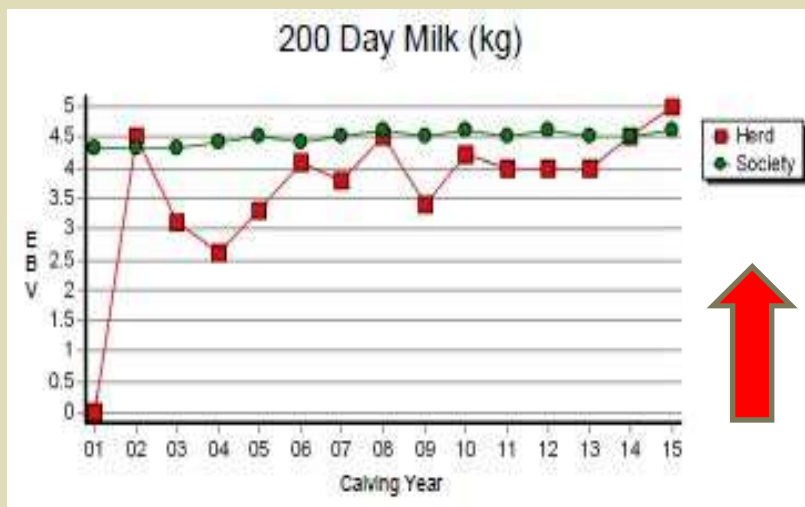












Benchmarking BTB Simmentaler

June 2016 South African Simmentaler GROUP BREEDPLAN EBVS - Percentile Bands for all 2014 born animals

Use this table as a guide to compare individual animals with the current genetic level of the breed

	Calv-Ease		Birth		Growth					Fert		Carcase						Indexes		
	Dir	Dtrs	GL	Bwt	200	400	600	Mwt	Mik	SS	DC	Cwt	EMA	Rib	Rump	REY	IMF	SF	SG	TS
	%		days				kg			cm	days	kg	sq.cm	mm		%			R	
High 1%	+7.8	+6.2	-2.5	-1.0	+25	+41	+51	+58	+9	+1.1	-3.2	+29	+1.6	+0.3	+0.6	+0.9	+0.3	+106	+181	+216
High 5%	+5.4	+4.5	-1.8	-0.1	+23	+36	+45	+50	+8	+0.8	-2.1	+26	+1.1	+0.2	+0.3	+0.3	+0.3	+86	+150	+187
High 10%	+4.1	+3.5	-1.5	+0.3	+21	+33	+42	+46	+7	+0.6	-1.6	+24	+0.9	+0.1	+0.4	+0.5	+0.2	+75	+133	+172
High 15%	+3.3	+2.9	-1.3	+0.5	+20	+31	+39	+44	+7	+0.6	-1.3	+22	+0.7	+0.1	+0.3	+0.5	+0.2	+68	+123	+161
High 20%	+2.7	+2.5	-1.1	+0.7	+19	+30	+38	+42	+6	+0.5	-1.0	+21	+0.6	+0.1	+0.3	+0.4	+0.2	+62	+115	+153
High 25%	+2.2	+2.1	-1.0	+0.9	+18	+29	+36	+40	+6	+0.5	-0.8	+21	+0.5	+0.0	+0.2	+0.3	+0.2	+58	+109	+147
High 30%	+1.8	+1.8	-0.9	+1.0	+18	+28	+35	+38	+6	+0.4	-0.7	+20	+0.5	+0.0	+0.2	+0.3	+0.2	+54	+104	+141
High 35%	+1.4	+1.5	-0.8	+1.2	+17	+27	+34	+37	+5	+0.4	-0.6	+19	+0.4	+0.0	+0.2	+0.2	+0.2	+51	+100	+136
High 40%	+1.0	+1.3	-0.7	+1.3	+17	+26	+33	+35	+5	+0.3	-0.4	+19	+0.3	+0.0	+0.1	+0.2	+0.2	+48	+96	+131
High 45%	+0.6	+1.1	-0.6	+1.4	+16	+25	+31	+34	+5	+0.3	-0.3	+18	+0.3	-0.1	+0.1	+0.2	+0.1	+45	+92	+126
50%	+0.3	+0.6	-0.5	+1.5	+16	+24	+30	+32	+5	+0.3	-0.2	+17	+0.2	-0.1	+0.1	+0.1	+0.1	+43	+88	+122
Low 45%	-0.1	+0.6	-0.4	+1.6	+15	+23	+29	+31	+4	+0.2	-0.1	+17	+0.2	-0.1	+0.1	+0.1	+0.1	+40	+85	+117
Low 40%	-0.4	+0.4	-0.3	+1.7	+15	+22	+28	+30	+4	+0.2	-0.1	+16	+0.1	-0.1	+0.0	+0.1	+0.1	+37	+81	+113
Low 35%	-0.8	+0.1	-0.2	+1.9	+14	+21	+27	+28	+4	+0.1	+0.0	+16	+0.1	-0.1	+0.0	+0.0	+0.1	+35	+77	+108
Low 30%	-1.2	-0.2	-0.1	+2.0	+13	+21	+26	+27	+4	+0.1	+0.1	+15	+0.0	-0.2	+0.0	+0.0	+0.1	+32	+74	+103
Low 25%	-1.6	-0.5	+0.0	+2.1	+13	+19	+24	+25	+3	+0.0	+0.2	+14	+0.0	-0.2	-0.1	+0.0	+0.1	+29	+70	+98
Low 20%	-2.1	-0.9	+0.1	+2.2	+12	+18	+23	+23	+3	+0.0	+0.4	+14	-0.1	-0.2	-0.1	-0.1	+0.1	+26	+65	+91
Low 15%	-2.7	-1.3	+0.3	+2.4	+11	+17	+21	+21	+3	-0.1	+0.5	+13	-0.2	-0.2	-0.1	-0.1	+0.0	+22	+60	+84
Low 10%	-3.4	-1.8	+0.4	+2.6	+10	+15	+19	+18	+2	-0.2	+0.7	+12	-0.3	-0.3	-0.2	-0.2	+0.0	+17	+53	+74
Low 5%	-4.6	-2.6	+0.7	+3.0	+8	+12	+16	+13	+1	-0.4	+1.0	+10	-0.4	-0.3	-0.3	B T E				
Low 1%	-6.9	-4.0	+1.4	+3.7	+5	+7	+8	+5	-1	-0.8	+1.7	+6	-0.7	-0.5	-0.5					

16 February 2017

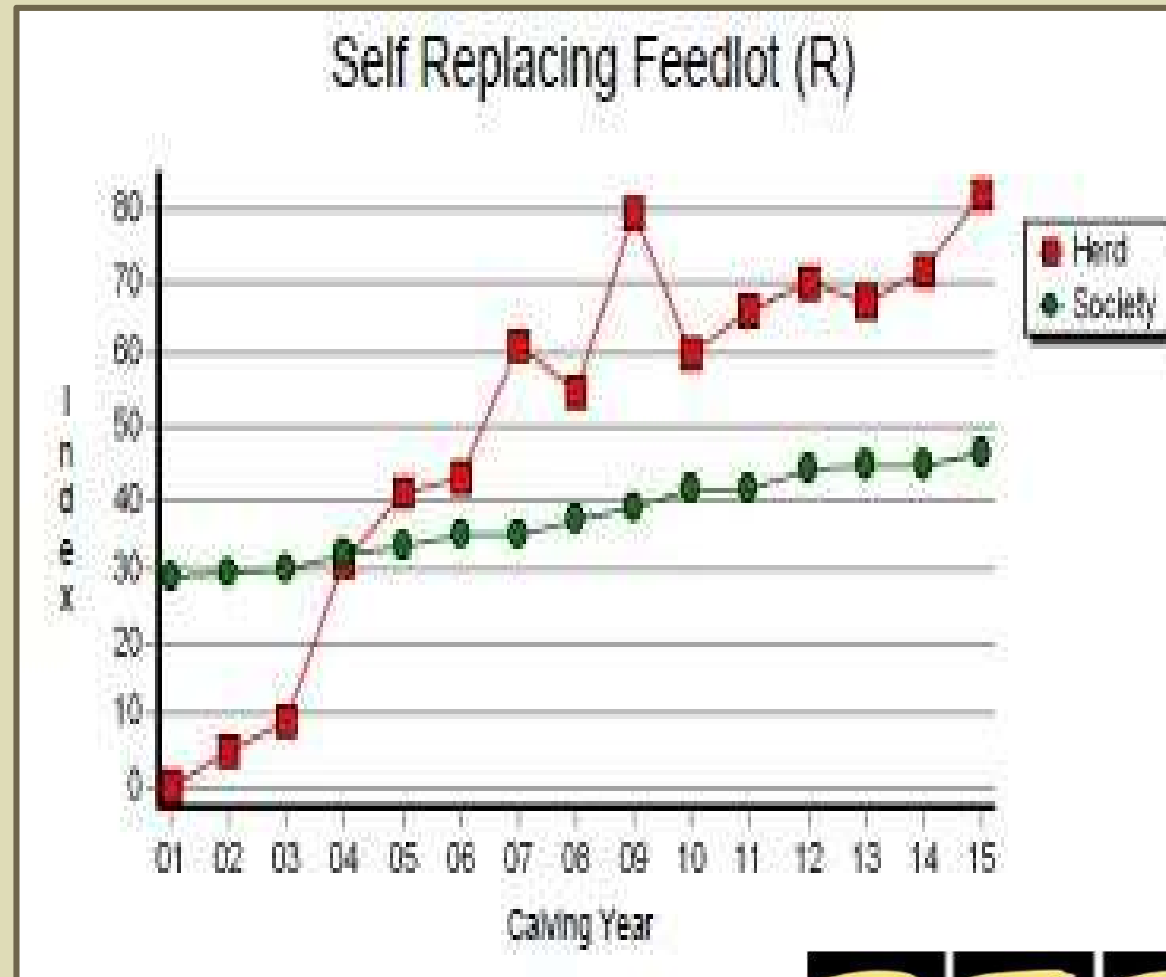
PROFIT SELECTION
Johan Styger BTB Simmentaler

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BTB Simmentaler Progress

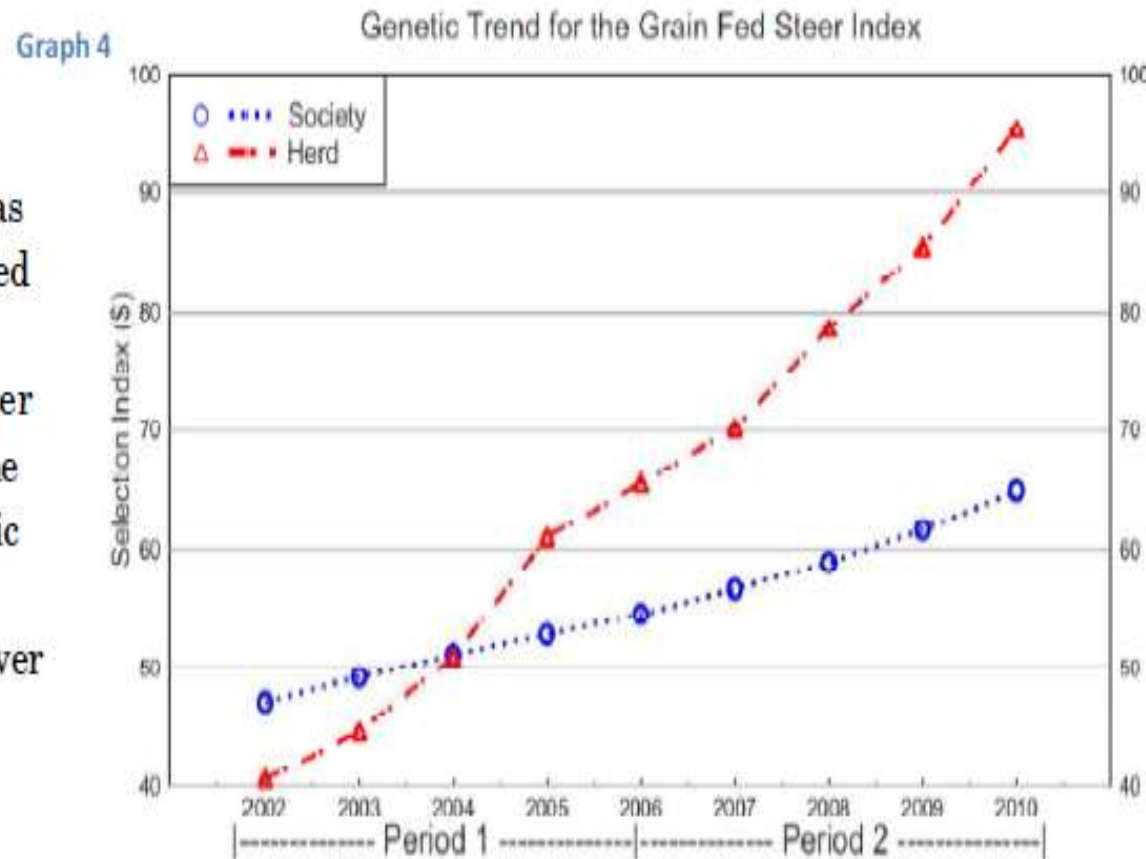
The Simmentaler Breed has improved the \$SRF Index by R1.10/yr over the last 11 years.

BTB achieved a average rate of genetic gain of over R 4.64/yr over the same period (+/- 400% better than the breed)



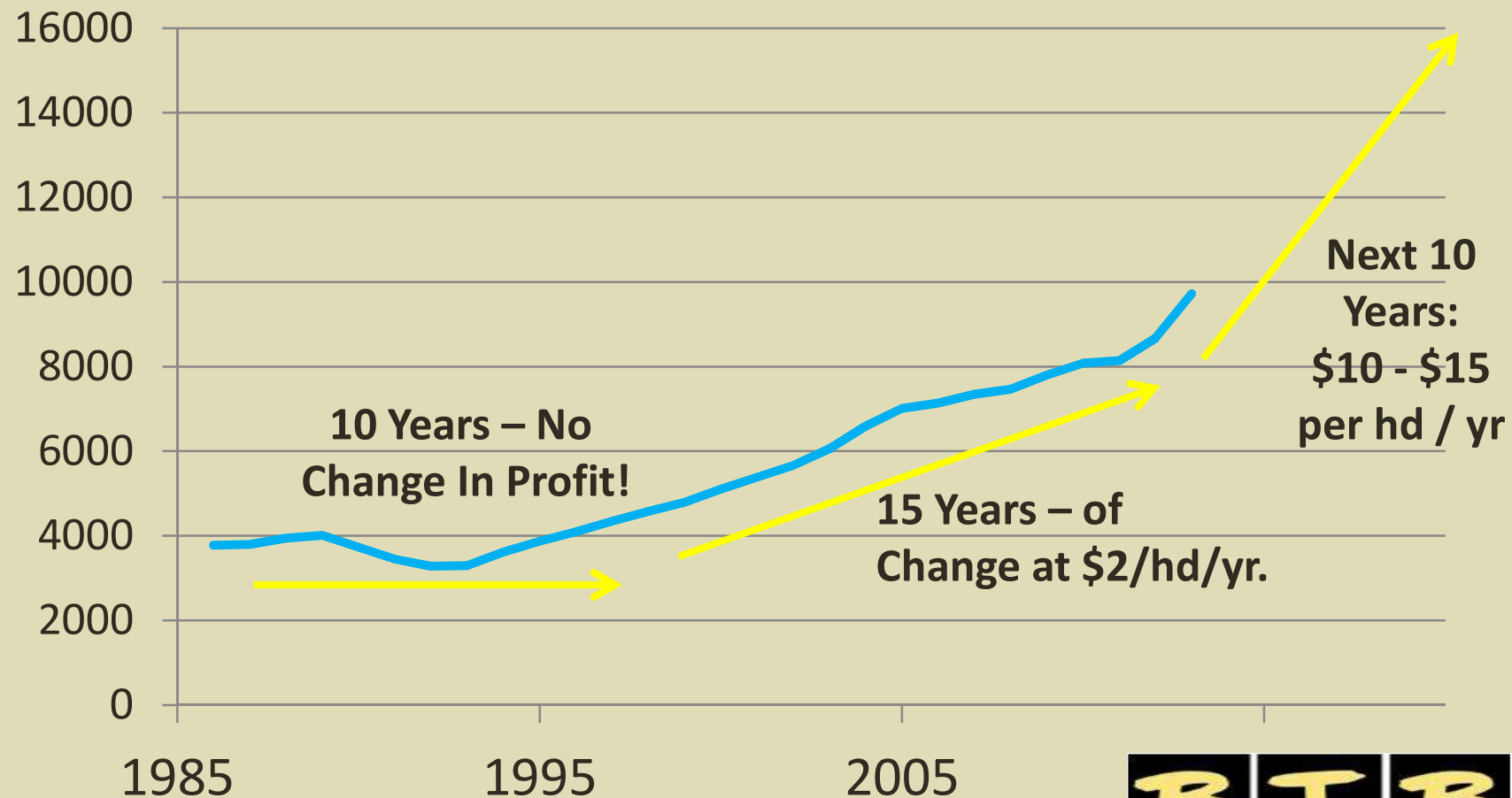
WIRRUNA HEREFORDS PROGRESS

The Hereford breed has improved the Grain Fed \$Index by around \$2.14/cow mated/yr over the last 10 years. The Wirruna rate of genetic gain over the same period has averaged over \$7/cow mated/yr.



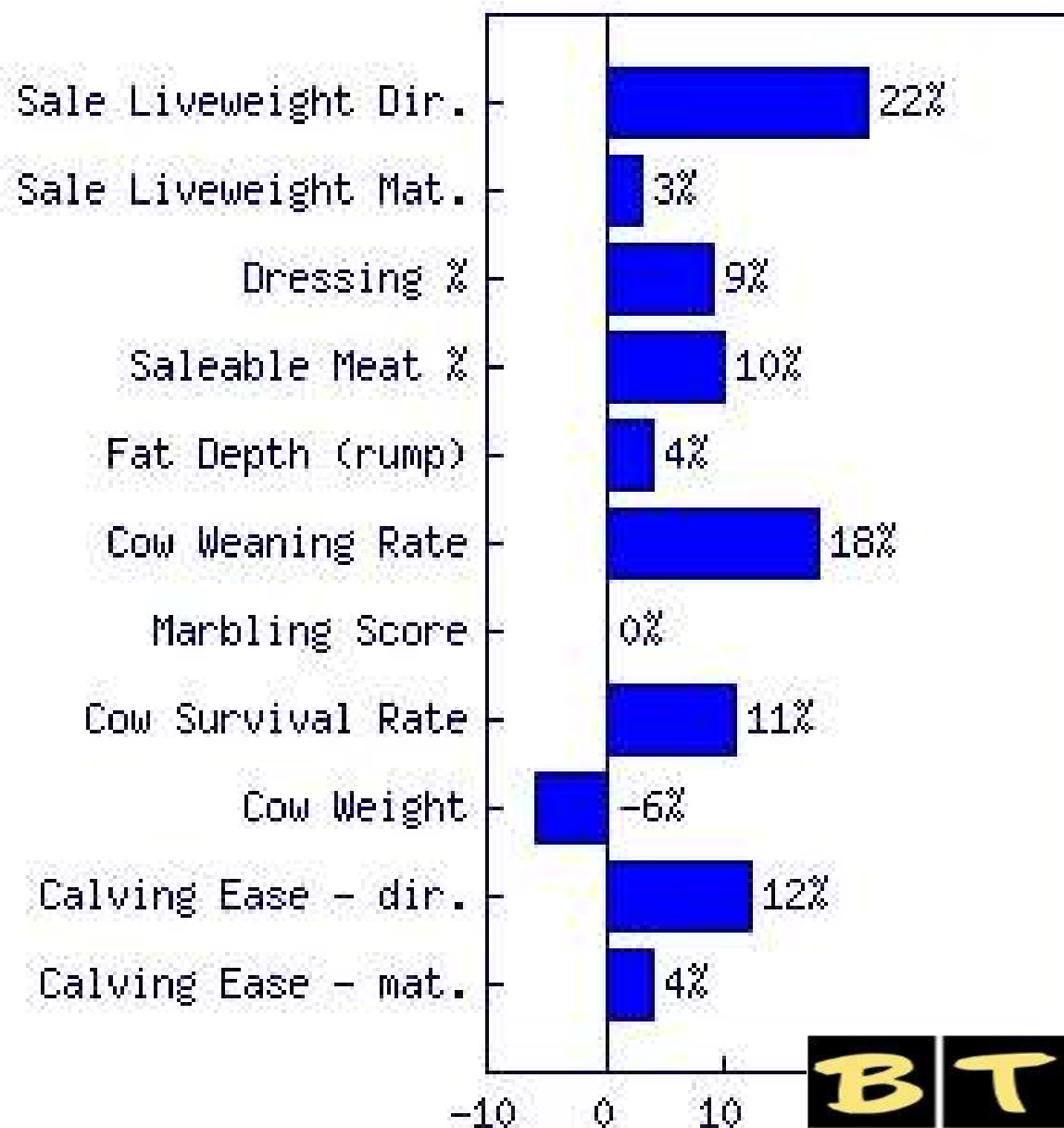
How Fast Can We Improve?

Leachman: \$Profit Genetic Trend





Economically relevant trait importance of Extensive Rangeland Grazing Index



BTB
GENETICS for PROFIT

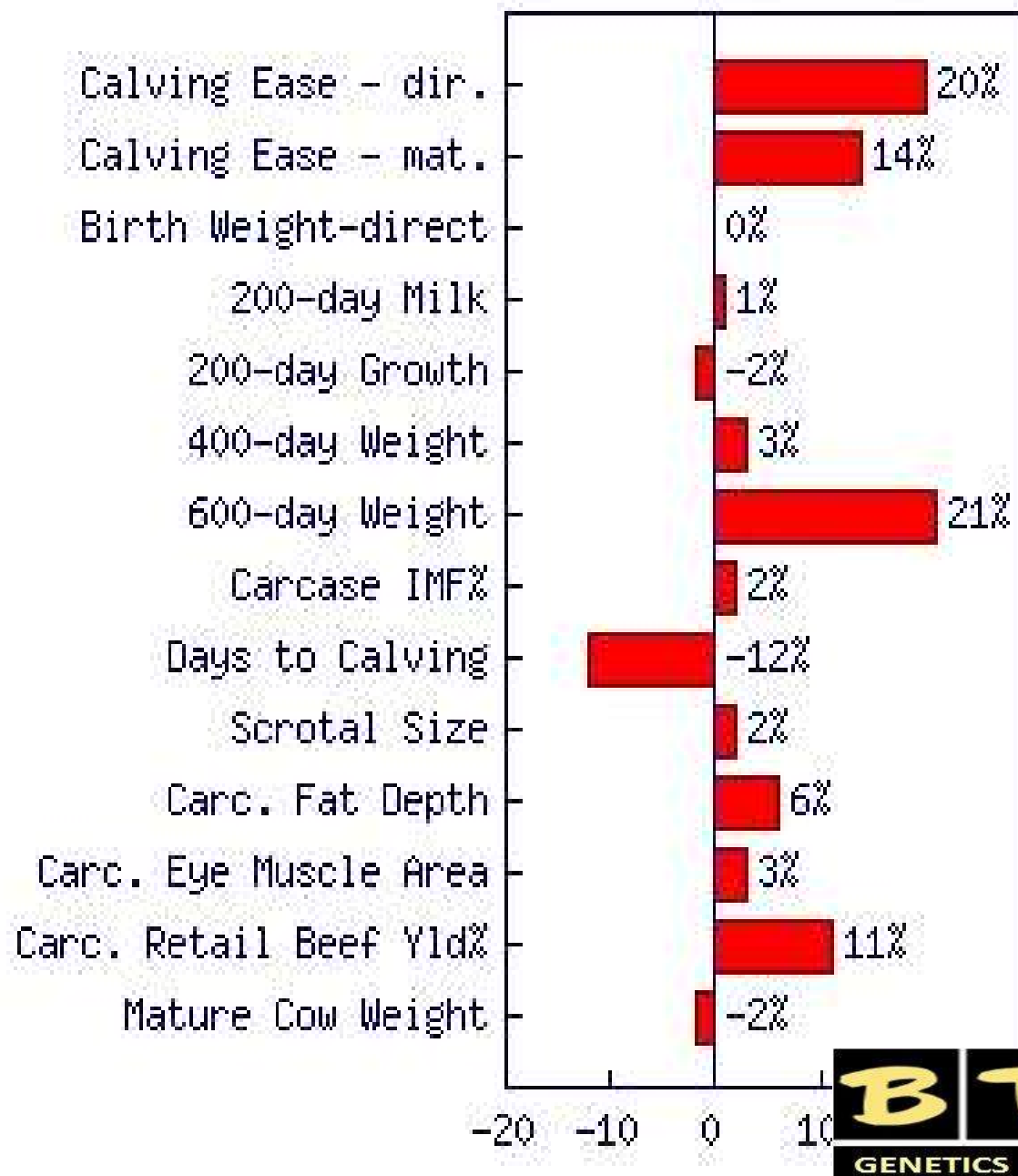
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PROFIT SELECTION
Johan Styger BTB Simmentaler

(46)



EBV composition of Extensive Grassland Index



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PROFIT SELECTION
Johan Styger BTB Simmentaler

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How to use Selection Indexes

- Identify the Selection index of most relevance to your breeding aims.
- Benchmark your herd. Identify specific EBV focus areas, if any.
- Bull selection
 - Rank available bulls with your Selection Index
 - Also consider
 - Specific EBV requirements
 - Horn status
 - Genetic conditions
 - Phenotypical fancy points

16 February 2017

PROFIT SELECTION
Johan Styger BTB Simmentaler

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December 2016 South African Simmentaler GROUP BREEDPLAN

Name ID	Calving Ease DIR (%)	Calving Ease DTRS (%)	Gestation Length (days)	Birth Wt (kg)	200 Day Wt (kg)	400 Day Wt (kg)	600 Day Wt (kg)	Mat Cow Wt (kg)	Milk (kg)	Scrotal Size (cm)	Days to Calving (days)	Carcass Wt (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF (%)	Self Replacing Feedlot Index (R)	Self Replacing Grassfed Index (R)	Terminal Sire Index (R)
UG12209	+0.9 50%	+4.5 38%	-2.1 56%	+1.7 83%	+28 76%	+53 74%	+62 72%	+56 69%	+3 48%	+1.1 30%	- -	+40 58%	+2.8 38%	-0.1 48%	+0.1 48%	+1.4 46%	0.0 44%	+R 166	+R 266	+R 303
UG0938 	+0.4 67%	+3.7 53%	-1.5 82%	+2.9 96%	+22 91%	+42 91%	+52 90%	+47 84%	-2 62%	+1.6 46%	-2.2 40%	+33 73%	+2.5 59%	-0.3 71%	-0.2 71%	+1.4 69%	0.0 67%	+R 137	+R 226	+R 248
UG1437	+3.8 44%	+3.7 36%	-0.7 48%	+1.7 71%	+22 57%	+40 56%	+42 57%	+40 55%	+4 39%	+1.4 33%	- -	+28 46%	+1.7 35%	0.0 45%	+0.2 45%	+0.8 43%	0.0 40%	+R 136	+R 221	+R 234
UG12160	+6.9 50%	+4.3 37%	-1.6 56%	+0.4 86%	+14 75%	+28 73%	+31 71%	+22 69%	+2 43%	+0.9 30%	- -	+23 57%	+2.3 36%	-0.1 44%	0.0 44%	+1.2 42%	-0.1 40%	+R 136	+R 188	+R 201
BTB1447	+7.0 42%	+6.8 36%	-1.2 51%	+0.1 70%	+22 67%	+36 68%	+41 68%	+30 63%	+5 40%	+0.5 68%	- -	+25 54%	+1.0 44%	-0.1 54%	0.0 54%	+0.8 51%	-0.1 45%	+R 134	+R 181	+R 225
UG09174	+8.3 58%	+4.7 46%	-3.6 60%	-0.8 90%	+20 85%	+35 84%	+41 84%	+32 79%	+5 58%	+2.0 64%	-5.4 40%	+18 69%	-0.7 57%	+0.1 67%	+0.4 67%	-0.1 65%	-0.1 61%	+R 132	+R 233	+R 195
JS1236	+7.1 55%	+3.3 50%	-1.6 60%	+0.1 78%	+22 66%	+32 66%	+39 66%	+33 65%	+4 55%	+0.7 44%	-3.7 38%	+24 56%	+1.1 41%	+0.3 49%	+0.6 49%	+0.4 48%	+0.1 45%	+R 122	+R 205	+R 198
LH1019	+3.8 49%	+1.1 37%	-0.9 50%	+1.4 89%	+28 83%	+54 78%	+59 78%	+56 73%	+3 45%	+1.4 47%	- -	+33 59%	+0.3 23%	-0.3 23%	-0.2 23%	+0.3 25%	- -	+R 121	+R 194	+R 281
BTB1482	+4.7 44%	+3.3 36%	-0.1 48%	+0.9 72%	+21 68%	+40 69%	+39 69%	+40 64%	+5 48%	+1.7 67%	- -	+28 55%	+1.7 44%	-0.2 51%	-0.1 51%	+0.8 49%	+0.1 42%	+R 120	+R 173	+R 237
WH147	+1.6 33%	+2.3 27%	-1.6 33%	+1.5 51%	+23 48%	+38 49%	+48 50%	+41 47%	+5 33%	- -	- -	+27 39%	+0.8 29%	0.0 38%	+0.1 37%	+0.7 36%	- -	+R 118	+R 206	+R 209

PROFIT SELECTION 16 February 2017
Johan Styger BTB Simmentaler

\$SRF Index = Reg, Male, Active, Polled

The BTB EBV screening

June 2016 South African Simmentaler GROUP BREEDPLAN EBVS - Percentile Bands for all 2014 born animals

Use this table as a guide to compare individual animals with the current genetic level of the breed

	Calv-Ease		Birth		Growth					Fert		Carcase						Indexes		
	Dir	Dtrs	GL	Bwt	200	400	600	Mwt	Milk	SS	DC	Cwt	EMA	Rib	Rump	RBV	IMF	SF	SG	TS
	%	%	days	kg	kg	kg	kg	kg	kg	cm	days	kg	sq.cm	mm	mm	%	%	R	R	R
High 1%	+7.8	+6.2	-2.5	-1.0	+25	+41	+51	+58	+9	+1.1	-3.2	+29	+1.6	+0.3	+0.6	+0.9	+0.3	+106	+181	+216
High 5%	+5.4	+4.5	-1.8	-0.1	+23	+36	+45	+50	+8	+0.8	-2.1	+26	+1.1	+0.2	+0.5	+0.7	+0.3	+86	+150	+187
High 10%	+4.1	+3.5	-1.5	+0.3	+21	+33	+42	+46	+7	+0.6	-1.6	+24	+0.9	+0.1	+0.4	+0.5	+0.2	+75	+133	+172
High 15%	+3.3	+2.9	-1.3	+0.5	+20	+31	+39	+44	+7	+0.6	-1.3	+22	+0.7	+0.1	+0.3	+0.5	+0.2	+68	+123	+161
High 20%	+2.7	+2.5	-1.1	+0.7	+19	+30	+38	+42	+6	+0.5	-1.0	+21	+0.6	+0.1	+0.3	+0.4	+0.2	+62	+115	+153
High 25%	+2.2	+2.1	-1.0	+0.9	+18	+29	+36	+40	+6	+0.5	-0.8	+21	+0.5	+0.0	+0.2	+0.3	+0.2	+58	+109	+147
High 30%	+1.8	+1.8	-0.9	+1.0	+18	+28	+35	+38	+6	+0.4	-0.7	+20	+0.5	+0.0	+0.2	+0.3	+0.2	+54	+104	+141
High 35%	+1.4	+1.5	-0.8	+1.2	+17	+27	+34	+37	+5	+0.4	-0.6	+19	+0.4	+0.0	+0.2	+0.2	+0.2	+51	+100	+136
High 40%	+1.0	+1.3	-0.7	+1.3	+17	+26	+33	+35	+5	+0.3	-0.4	+19	+0.3	+0.0	+0.1	+0.2	+0.2	+48	+96	+131
High 45%	+0.6	+1.1	-0.6	+1.4	+16	+25	+31	+34	+5	+0.3	-0.3	+18	+0.3	-0.1	+0.1	+0.2	+0.1	+45	+92	+126
50%	+0.3	+0.6	-0.5	+1.5	+16	+24	+30	+32	+5	+0.3	-0.2	+17	+0.2	-0.1	+0.1	+0.1	+0.1	+43	+86	+122
Low 45%	-0.1	+0.6	-0.4	+1.6	+15	+23	+29	+31	+4	+0.2	-0.1	+17	+0.2	-0.1	+0.1	+0.1	+0.1	+40	+85	+117
Low 40%	-0.4	+0.4	-0.3	+1.7	+15	+22	+28	+30	+4	+0.2	-0.1	+16	+0.1	-0.1	+0.0	+0.1	+0.1	+37	+81	+113
Low 35%	-0.8	+0.1	-0.2	+1.9	+14	+21	+27	+28	+4	+0.1	+0.0	+16	+0.1	-0.1	+0.0	+0.0	+0.1	+35	+77	+108
Low 30%	-1.2	-0.2	-0.1	+2.0	+13	+21	+26	+27	+4	+0.1	+0.1	+15	+0.0	-0.2	+0.0	+0.0	+0.1	+32	+74	+103
Low 25%	-1.6	-0.5	+0.0	+2.1	+13	+19	+24	+25	+3	+0.0	+0.2	+14	+0.0	-0.2	-0.1	+0.0	+0.1	+29	+70	+98
Low 20%	-2.1	-0.9	+0.1	+2.2	+12	+18	+23	+23	+3	+0.0	+0.4	+14	-0.1	-0.2	-0.1	-0.1	+0.1	+26	+65	+91
Low 15%	-2.7	-1.3	+0.3	+2.4	+11	+17	+21	+21	+3	-0.1	+0.5	+13	-0.2	-0.2	-0.1	-0.1	+0.0	+22	+60	+84
Low 10%	-3.4	-1.8	+0.4	+2.6	+10	+15	+19	+18	+2	-0.2	+0.7	+12	-0.3	-0.3	-0.2	-0.2	+0.0	+17	+53	+74
Low 5%	-4.6	-2.6	+0.7	+3.0	+8	+12	+16	+13	+1	-0.4	+1.0	+10	-0.4	-0.3	-0.3					
Low 1%	-6.9	-4.0	+1.4	+3.7	+5	+7	+8	+5	-1	-0.8	+1.7	+6	-0.7	-0.5	-0.5					

Trait Description		Min	Max	Min. Accuracy (%)	Breed Avg *
Calving Ease DIR (%)		1.8			+0.3
Calving Ease DTRS (%)		1.8			+0.8
Gestation Length (days)					-0.6
Birth Wt. (kg)			2		+1.5
200 Day Wt (kg)					+15
400 Day Wt (kg)					+24
600 Day Wt (kg)					+30
Mat Cow Wt (kg)			38		+32
Milk (kg)		3	6		+5
Scrotal Size (cm)					+0.3
Days to Calving (days)					-0.3
Carcase Wt (kg)					+18
Eye Muscle Area (sq cm)					+0.3
Rib Fat (mm)					+0.0
Rump Fat (mm)					+0.1
Retail Beef Yield (%)					+0.1
IMF (%)					+0.1
Self Replacing Feedlot Index (R)		75			+44
Self Replacing Grassfed Index (R)					+91
Terminal Sire Index (R)					+121

December 2016 South African Simmentaler GROUP BREEDPLAN

NameID	Calving Ease DIR (%)	Calving Ease DTR5 (%)	Gestation Length (days)	Birth Wt (kg)	200 Day Wt (kg)	400 Day Wt (kg)	600 Day Wt (kg)	Mat Cow Wt (kg)	Milk (kg)	Scrotal Size (cm)	Days to Calving (days)	Carcass Wt (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF (%)	Self Replacing Feedlot Index (R)	Self Replacing Grassfed Index (R)	Terminal Sire Index (R)
BTB1447	+7.0 42%	+6.8 36%	-1.2 51%	+0.1 70%	+22 67%	+36 68%	+41 68%	+30 63%	+5 40%	+0.5 68%	- -	+25 54%	+1.0 44%	-0.1 54%	0.0 54%	+0.8 51%	-0.1 45%	+R 134	+R 181	+R 225
UG09174	+8.3 58%	+4.7 46%	-3.6 60%	-0.8 90%	+20 85%	+35 84%	+41 84%	+32 79%	+5 58%	+2.0 64%	-5.4 40%	+18 69%	-0.7 57%	+0.1 67%	+0.4 67%	-0.1 65%	-0.1 61%	+R 132	+R 233	+R 195
JS1236	+7.1 55%	+3.3 50%	-1.6 60%	+0.1 78%	+22 66%	+32 66%	+39 66%	+33 65%	+4 55%	+0.7 44%	-3.7 38%	+24 56%	+1.1 41%	+0.3 49%	+0.6 49%	+0.4 48%	+0.1 45%	+R 122	+R 205	+R 198
ZM12633	+6.6 34%	+1.8 26%	-1.2 39%	-0.1 70%	+21 63%	+36 59%	+39 63%	+28 57%	+4 38%	+1.2 55%	- -	+23 46%	- -	- -	- -	- -	- -	+R 116	+R 160	+R 208
LN15131	+4.3 34%	+4.6 27%	-1.0 41%	+1.3 68%	+20 62%	+33 64%	+38 60%	+32 56%	+3 32%	+2.4 66%	- -	+20 49%	0.0 43%	0.0 51%	+0.2 51%	+0.2 48%	0.0 41%	+R 115	+R 202	+R 181
HPN1150	+4.8 46%	+3.2 38%	0.0 50%	+0.2 73%	+13 55%	+23 55%	+24 56%	+16 55%	+5 43%	+1.3 34%	- -	+18 45%	+1.3 33%	-0.1 39%	+0.1 39%	+0.7 38%	0.0 36%	+R 111	+R 161	+R 153
AB1434	+5.2 40%	+3.0 32%	-2.9 57%	+0.8 70%	+18 56%	+32 55%	+37 55%	+30 53%	+3 38%	+0.8 26%	- -	+23 43%	+1.3 31%	-0.2 36%	-0.1 36%	+0.8 36%	- -	+R 111	+R 159	+R 199
UG1328	+7.6 49%	+2.9 38%	-1.1 54%	-0.3 79%	+15 73%	+21 67%	+16 68%	+12 65%	+3 41%	+0.6 34%	- -	+14 53%	+0.8 33%	+0.1 44%	+0.4 44%	+0.3 42%	0.0 38%	+R 103	+R 144	+R 143
LN1559	+5.8 35%	+3.3 29%	-1.0 39%	-0.4 68%	+14 62%	+20 64%	+22 60%	+13 56%	+5 31%	+1.4 66%	- -	+15 48%	+0.8 40%	+0.5 45%	+0.9 45%	+0.3 44%	-0.1 35%	+R 102	+R 154	+R 131
UG12111	+8.7 45%	+4.5 38%	-0.7 48%	-0.6 72%	+14 58%	+22 57%	+23 59%	+19 56%	+4 44%	+0.9 38%	- -	+15 48%	+0.6 37%	0.0 45%	+0.2 45%	+0.2 43%	+0.1 40%	+R 99	+R 155	+R 148

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The Bull team concept

- The EBV's of individual bulls have a **equal chance** of going up or down as more information becomes available.
- The EBV's of a group of bulls are less likely to move much from the group average (some go up and some go down)
- Much more effective to plan genetic progress on the characteristics of the bull group, rather than one individual bull



Selection differential: The bull team

2016 BTB BULL TEAM														
No	Bull ID	H	Type	Birth date	Age at mating (y)	CED	CEM	Bwt	200d	400d	600d	MCW	Milk	\$SRF
					15/12/2015									
1	BTB1482	P	Nat	31/10/2014	1.1	4.7	3.2	0.9	21	41	40	39	5	118
2	BTB1461	H	Nat	21/10/2014	1.2	3.1	3.2	0.7	25	47	56	63	6	96
3	BTB1452	P	Nat	18/10/2014	1.2	4.1	4.4	0.9	18	32	40	40	5	74
4	BTB1447	P	Nat	16/10/2014	1.2	6.0	6.3	0.2	23	38	46	39	5	129
5	JAD 13138	P	Nat	28/09/2013	2.2	3.6	5.9	0.5	20	35	41	33	7	118
6	BTB1332	P	Nat	25/09/2013	2.3	6.3	4.7	0.5	21	37	42	42	4	120
7	BTB1325	H	Nat	10/09/2013	2.3	-1.2	3.5	1.9	22	39	44	37	4	115
8	PJO133	H	AI	07/01/2013	3.0	5.1	0.2	0.4	18	31	34	34	10	83
9	AB1276	P	Nat	22/11/2012	3.1	5.3	5.0	1.4	17	28	39	31	2	100
10	JAD12113	P	AI	17/09/2012	3.3	6.0	2.1	-0.9	20	23	30	30	4	46
11	UG11209	H	AI	30/09/2011	4.3	1.8	1.8	2.1	22	34	38	44	4	95
12	PN11357	H	AI	31/07/2011	4.4	6.0	2.6	-0.5	25	37	44	50	5	78
13	AHR1016	P	Nat	19/12/2010	5.1	1.5	2.1	1.1	17	25	33	25	4	77
14	BTB013	H	AI	23/03/2006	9.9	5.9	2.3	0.1	18	35	38	35	4	162
TEAM EBV Ave					3.2	4.2	3.4	0.7	21	34	40	39	5	101
Breed ave						0.6	1.1	1.4	16	25	31	33	5.0	45
TEAM Percentile rank					TOP	7%	14%	11%	10%	5%	13%	20%	33%	3%

MOST WIDELY USED SIRES IN THE LAST TWO YEARS - QUICK FACTS

Andrew Byrne, Breed Development & Extension Manager



Tuwharetoa Regent D145

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(55)

1. Tuwharetoa Regent D145 has the most progeny born in the last two years, followed by Rennyalea Edmund E11 and Te Mania Emperor E343. These bulls have a combined total of 5,614 progeny born during this period.
2. Of the 20 bulls with the most progeny in the last two years, 8 are imported sires, with 7 from the United States and 1 from New Zealand. An additional 2 bulls are sired by imported sires.
3. The average Angus Breeding Index of the 20 bulls with the most progeny in the last two years is +126, which is placed in the highest 10% percentile band (when compared to 2014 drop calves).
4. Across individual traits, the average EBVs of the 20 bulls with the most progeny in the last two years is outlined in Figure 1.

TRAIT	AVERAGE OF SIRES WITH MOST PROGENY	BREED AVERAGE
Calving Ease Direct	+0.7	-0.1
Calving Ease Daughters	+0.8	+0.0
Gestation Length	-5.0	-3.5
Birth Weight	+3.2	+4.3
200 Day Growth	+48	+41
400 Day Weight	+88	+75
600 Day Weight	+113	+98
Mature Cow Weight	+90	+87
Milk	+20	+14
Scrotal Size	+1.6	+1.6
Days to Calving	-4.9	-3.6
Carcase Weight	+68	+54
Eye Muscle Area	+7.1	+4.4
Rib Fat	+0.7	+0.0
Rump Fat	+0.3	-0.1
Retail Beef Yield	-0.2	+0.2
IMF	+2.9	+1.5
NFI-P	+0.36	+0.09
NFI-F	+0.43	+0.15

Figure 1. Average EBV's of the 20 bulls with most progeny in last two years

ANGUS AUSTRALIA

TOP 20 PROGENY BULLS – PERCENTILE RANKING

November 2015 South African Simmentaler GROUP BREEDPLAN EBVS - Percentile Bands for all 2013 born animals

Use this table as a guide to compare individual animals with the current genetic level of the breed

	Calv-Ease		Birth		Growth					Fert		Carcase						Indexes		
	Dir	Dtrs	GL	Bwt	200	400	600	Mwt	Milk	SS	DC	Cwt	EMA	Rib	Rump	RBV	IMF	SF	SG	TS
	%		days		kg					cm	days	kg	sq.cm	mm		%		R		
High 1%	+8.0	+6.2	-2.6	-1.1	+26	+41	+52	+58	+9	+1.1	-3.4	+30	+1.7	+0.4	+0.7	+1.0	+0.3	+109	+185	+217
High 5%	+5.4	+4.3	-1.9	-0.1	+22	+36	+45	+50	+8	+0.8	-2.1	+26	+1.2	+0.2	+0.4	+0.7	+0.3	+86	+151	+185
High 10%	+4.2	+3.5	-1.5	+0.3	+21	+33	+42	+46	+7	+0.7	-1.6	+24	+0.9	+0.1	+0.4	+0.5	+0.2	+75	+135	+169
High 15%	+3.3	+2.9	-1.3	+0.6	+20	+31	+40	+43	+7	+0.6	-1.3	+22	+0.8	+0.1	+0.3	+0.4	+0.2	+68	+124	+159
High 20%	+2.7	+2.5	-1.2	+0.7	+19	+30	+38	+41	+6	+0.5	-1.1	+21	+0.7	+0.0	+0.2	+0.4	+0.2	+62	+116	+151
High 25%	+2.2	+2.2	-1.0	+0.9	+18	+28	+36	+39	+6	+0.5	-0.9	+21	+0.6	+0.0	+0.2	+0.3	+0.2	+58	+109	+145
High 30%	+1.8	+1.9	-0.9	+1.0	+18	+27	+35	+38	+6	+0.4	-0.8	+20	+0.5	+0.0	+0.2	+0.3	+0.2	+54	+104	+140
High 35%	+1.3	+1.6	-0.8	+1.2	+17	+26	+33	+36	+5	+0.4	-0.7	+19	+0.4	+0.0	+0.2	+0.2	+0.2	+51	+100	+134
High 40%	+1.0	+1.4	-0.7	+1.3	+16	+26	+32	+35	+5	+0.3	-0.6	+19	+0.4	+0.0	+0.1	+0.2	+0.2	+48	+96	+129
High 45%	+0.6	+1.1	-0.6	+1.4	+16	+25	+31	+33	+5	+0.3	-0.5	+18	+0.3	-0.1	+0.1	+0.2	+0.1	+45	+92	+124
50%	+0.3	+0.9	-0.5	+1.5	+15	+24	+30	+32	+5	+0.3	-0.4	+17	+0.3	-0.1	+0.1	+0.1	+0.1	+43	+89	+120
Low 45%	-0.1	+0.6	-0.4	+1.6	+15	+23	+29	+30	+4	+0.2	-0.3	+17	+0.2	-0.1	+0.1	+0.1	+0.1	+40	+85	+115
Low 40%	-0.4	+0.4	-0.3	+1.7	+14	+22	+27	+29	+4	+0.2	-0.2	+16	+0.2	-0.1	+0.0	+0.1	+0.1	+38	+82	+111
Low 35%	-0.8	+0.1	-0.2	+1.8	+14	+21	+26	+27	+4	+0.1	-0.1	+16	+0.1	-0.1	+0.0	+0.0	+0.1	+35	+78	+106
Low 30%	-1.2	-0.2	-0.1	+2.0	+13	+20	+25	+26	+4	+0.1	+0.0	+15	+0.1	-0.1	+0.0	+0.0	+0.1	+32	+74	+101
Low 25%	-1.6	-0.5	+0.0	+2.1	+12	+19	+24	+24	+3	+0.0	+0.1	+14	+0.0	-0.2	+0.0	+0.0	+0.1	+29	+70	+95
Low 20%	-2.2	-0.9	+0.1	+2.2	+12	+18	+22	+22	+3	+0.0	+0.2	+13	+0.0	-0.2	-0.1	-0.1	+0.1	+27	+66	+89
Low 15%	-2.8	-1.3	+0.3	+2.4	+11	+16	+20	+20	+3	-0.1	+0.3	+12	-0.1	-0.2	-0.1	-0.1	+0.1	+23	+60	+82
Low 10%	-3.5	-1.8	+0.4	+2.6	+10	+15	+18	+17	+2	-0.2	+0.5	+11	-0.2	-0.3	-0.2	-0.2	+0.0	+18	+54	+73
Low 5%	-4.7	-2.6	+0.7	+3.0	+8	+12	+15	+13	+1	-0.4	+0.8	+10	-0.4	-0.3	-0.3	-0.3	+0.0	+10	+43	+59
Low 1%	-7.0	-4.3	+1.4	+3.7	+5	+6	+7	+3	-1	-0.8	+1.5	+6	-0.8	-0.5	-0.5	-0.4	-0.1	-4	+20	+32

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CSA-S14	CE	BW	WW	YW	MCE	MWW	MILK	SC	CW	REA	FAT	MARB
EPD	8.9	3.3	67.3	90.0	10.8	69.4	35.7	-0.10	27.3	0.81	-0.079	-0.09
ACC	0.31	0.35	0.31	0.33	0.24	0.26	0.23	PE	0.27	0.08	0.09	0.09
 RANK	25%	20%	45%	60%	35%	5%	3%	75%	65%	10%	1%	60%

SEMEX WORLD WIDE CATALOGUE



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