BREEDPLAN's Quarterly Report to SA Simbra

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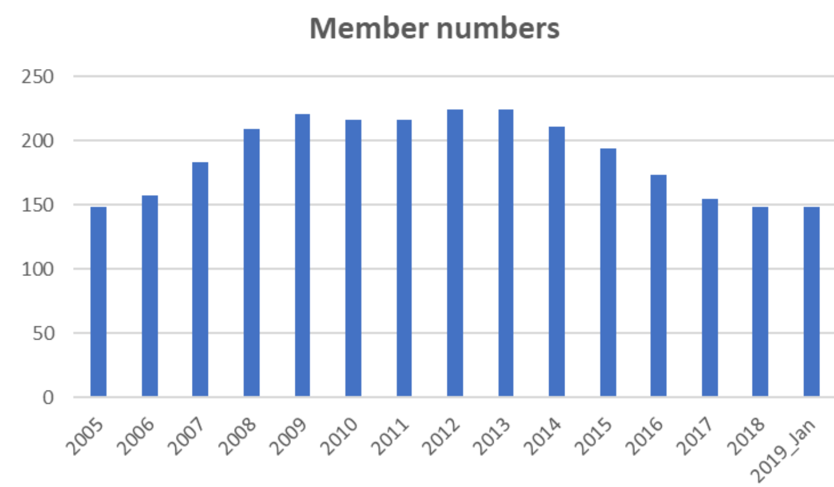
1. Summary

- One of the most important measures of success of any stud breeding enterprise is the genetic improvement that is made within their breeding program from one year to another. This can also be said of a breed society. If a society does not make genetic progress within the traits of economic importance to them, how will they stay relevant within the larger industry? The Simbra society needs to decide which traits are of economic importance to them and how they are going to ensure genetic improvement within these traits.
- Declining member and animal numbers are inevitable in our current economic state. This is however not an excuse for not making genetic progress within the Simbra breed. It just means that each and every member of the society should make his/her contribution towards genetic improvement.
- What is important to remember is that phenotypic recording is the cornerstone of genetic selection and improvement. More than half of Simbra breeders however have a Completeness of Performance star rating of less than 2, which means that they only record the bare minimum; birth date, sire and dam of the calf and maybe the birth weight of the calf.
- Without the recording of the phenotypic measurements of whole contemporary groups, the calculated EBVs for animals will be less accurate. The lower the accuracy, the more likely it is that the EBV is not an accurate prediction of the animal's true breeding value. It is also therefore more likely that the animal's EBV will change as more information is analysed for that animal, its progeny or its relatives. Ultimately, what we need to understand is that the higher the EBV accuracy, the more informed and reliable selection decisions we can make, and the more genetic improvement can be achieved.
- It is very important to note that genomics will not replace performance recording. The work that you as breeders do to performance record your animals will be critical to the success of genomics in the future.

- For traits that the society has a lot of phenotypic data on (e.g. the growth traits), the advantage of adding genomic information, will be negligible. It is therefore pleasing to see the increase in breeders recording the traits that will benefit from genomics.
- An individual breeder that wants his/her herd to benefit from genomic selection, must contribute to the reference populations or use animals that are linked to the animals in the reference population. Otherwise, their animals will be too distant from the animals in the reference population and thus little or no information will be added to the estimation of breeding values for their animals.

2. Member numbers

Year	Member numbers
2005	148
2006	157
2007	183
2008	209
2009	221
2010	216
2011	216
2012	224
2013	224
2014	211
2015	194
2016	173
2017	155
2018	148
2019_Jan	148

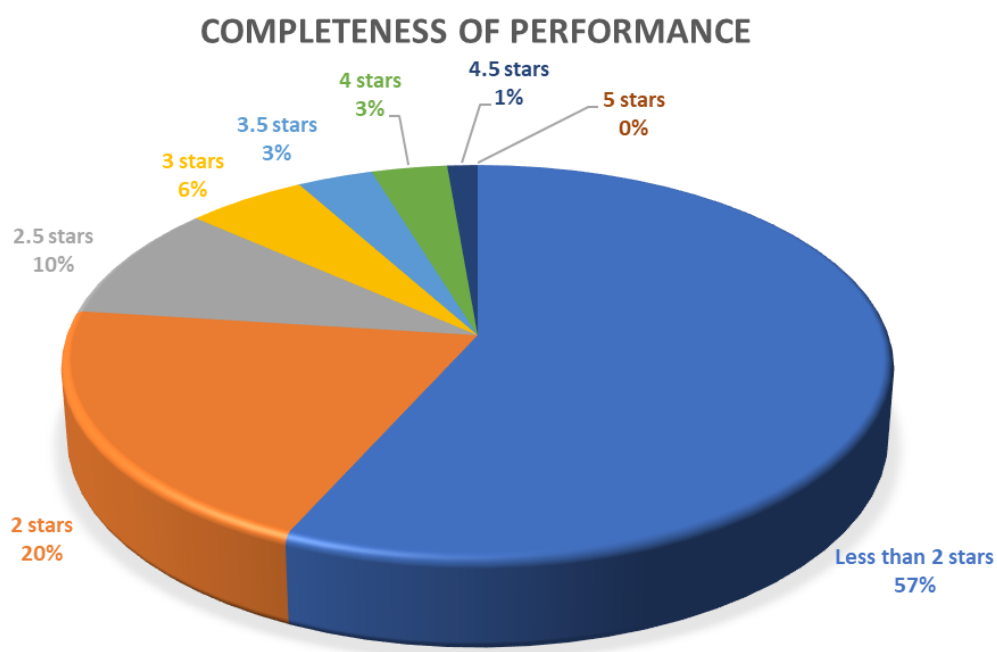


3. Number of registered animals

Year	Calf book bulls	Registered bulls	Calf book females	Registered cows	Total
2008	5 840	1 589	7 202	16 178	30 809
2009	7 512	2 037	9 652	19 092	38 293
2010	8 172	2 247	10 321	20 631	41 371
2011	8 805	2 234	10 751	21 669	43 459
2012	8 927	2 351	11 470	21 887	44 635
2013	8 395	2 447	10 994	22 983	44 819
2014	7 681	2 285	10 156	19 006	39 128
2015	7 003	2 044	9 610	18 563	37 220
2016	6 221	1 886	8 802	15 212	32 121
2017	5 310	1 557	7 541	13 360	27 768
2018	6 668	1 606	7 217	13 716	29 207
2019_Jan	7 053	1 541	7 578	13 808	29 980

4. Completeness of performance summary

	Completeness of Performance	Number of Members (Jun 2018)	Number of Members (Jan 2019)
	Less than 2 stars	88	84
	2 stars	29	30
	2.5 stars	13	14
	3 stars	8	8
	3.5 stars	5	5
	4 stars	5	5
	4.5 stars	2	2
	5 stars	0	0



5. Genetic trends over the past 20 years

One of the most important measures of success of any stud breeding enterprise is the genetic improvement that is made within their breeding program from one year to another. Genetic improvement is achieved when the average genetic value (EBV) of the progeny is higher than the average genetic value (EBV) of the parents from which they were selected, with the rate of improvement achieved is determined by the degree of superiority of the progeny relative to their parents.

Having a good understanding of the factors that influence the rate of genetic improvement is therefore very important for any stud breeder. Below is the formula for genetic gain (R) or response to selection:

$$R = \frac{i \times r \times \sigma_g}{L}$$

Where:		
	R	= Response to Selection
	i	= Selection Intensity
	r	= Accuracy of Selection
	σ_g	= Genetic Variation
	L	= Generation Length

1) Selection intensity (i):
    - Difference in average genetic value of animals selected for breeding (parents for the next generation) versus the genetic value of all animals in the population.
    - In other words: Difference between selected animals' EBVs versus the average of the rest of the population
    - Higher selection intensity → higher genetic improvement

2) Accuracy of selection (r):
    - Accuracies of selected animals' EBVs
    - How much information is available on the selected animals?
    - Also influenced by the heritability of the trait
    - Faster genetic improvement possible for higher heritable traits

3) Genetic variation (σ_g)
    - Amount of genetic variation that exists within the population
    - In other words: What is the variation between the lowest and highest EBVs in population
    - More genetic variation, greater potential to make genetic improvement

4) Generation length (L)
    - Average age of parents in a population at the birth of their progeny
    - Shorter generation length, greater genetic improvement

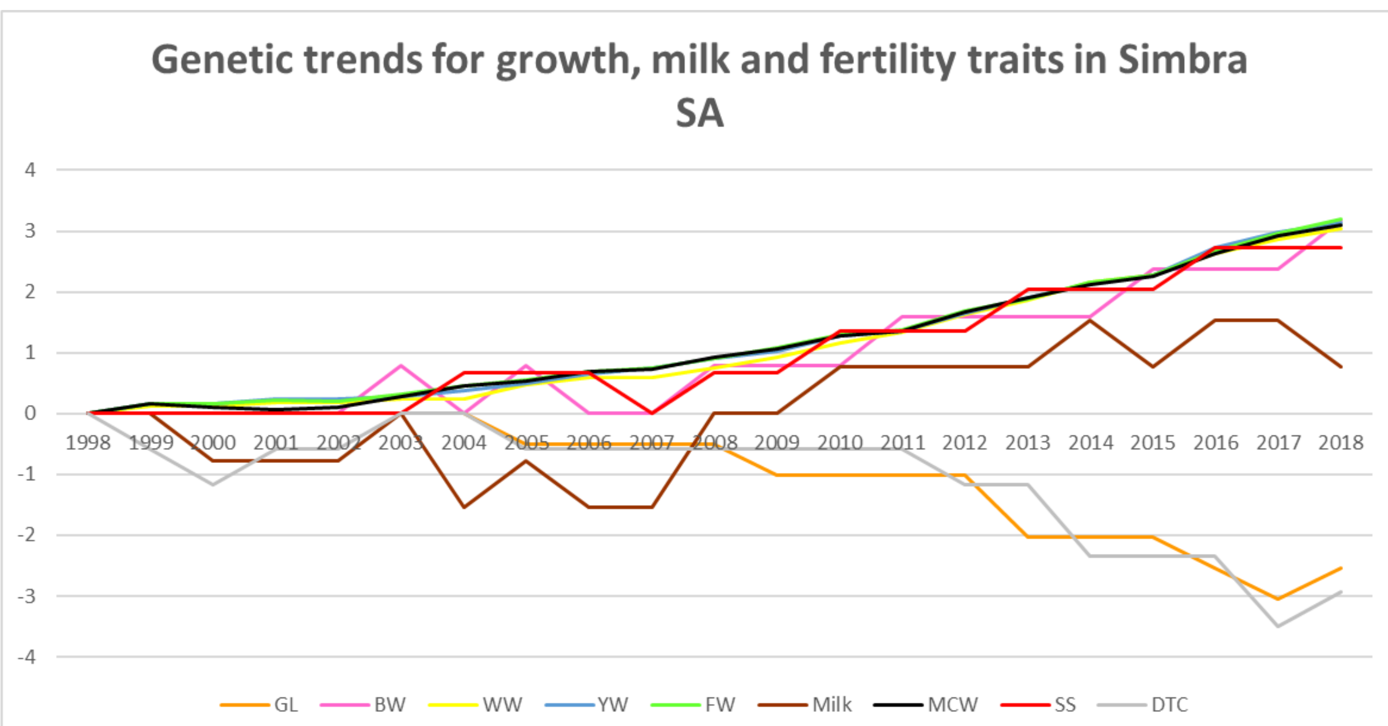
5.1 Growth traits

When looking at Graph 1 (below) it is clear that for the different traits indicated on the graph, genetic changes did occur over the past 20 years. For the growth traits, the genetic trends were positive and for most of them favourable. The genetic trends for the different growth traits followed each other closely. The reason for this is that the growth traits are medium to strongly positively genetically correlated with each other. This means that as selection pressure is placed on e.g. increased weaning weights, yearling weights and mature cow weights will also increase. This is since many of the same underlining genes influence the expression of the different growth traits.

The genetic correlations that exist between the different growth traits can be useful, e.g. 400-day weights will also increase when selecting for increased weaning weights. However, it also poses a problem in the case of selection for higher weaning weights that will also increase birth weights leading to dystocia problems and higher mature cow weights leading to higher maintenance cost associated with cow herds. Fortunately, the growth traits are not 100 % genetically correlated. In other words, there are some animals within our herds that have high breeding values for weaning weight but low breeding values for birth weight. These animals are called curve benders.

If you search on Internet Solutions for curve benders using the EBV enquiry, you will find at least 37 active Simbra bulls with BW EBVs in the top 30% (lightest) of the breed and WW EBVs in the top 10% (heaviest) of the breed. Selecting these bulls to become sires of the next generations might cause the genetic trend for birth weight to flatten out. In the case of mature cow weight, curve benders also exist within the breed, 13 active Simbra bulls with FW EBVs in the top 20% (heaviest) and MCW EBVs in the bottom 40 % (lightest) can be identified on Internet Solutions.

<u>Graph 1</u>:



5.2 Fertility traits

The genetic trends for the female fertility traits, Gestation Length and Days to Calving, over the past 10 years were negative and favourable (Graph 1). Shorter gestation lengths and shorter Days to calving are favourable as these females will produce on average more offspring in their productive lives than e.g. cows with higher EBVs for these traits. More selection pressure should however be placed on these traits, as can be seen in Graph 1 (above) no genetic improvement was made over some of the years. E.g. the average DTC EBV in 2009 up until 2012 remained unchanged. This was also the case from 2013 to 2015.

The scrotal circumference of a bull provides an important indication of his genetic merit for several important fertility traits. Various studies have shown that increased scrotal circumference is associated with earlier age at puberty, increased semen production and improved semen quality. Increased scrotal circumference also has a favourable relationship with female fertility, both in terms of earlier age at puberty, earlier return to oestrous and shorter days to calving. Over the last 10 years (Graph 1) the genetic trend for scrotal size was positive and favourable.

From Graph 1 (above) it is clear, for all three of the fertility traits, that in some years no genetic improvement was obtained. This can be due to several factors. One of these factors may be the low heritability of the fertility traits, this is however not the case for SS as it is mediumly heritability. As was said earlier, slower genetic improvement will be made for traits that are lower heritable. A second factor might be the relatively small quantities of phenotypic measurements that exist on the society database for these traits. As can be seen from Table 1 (below), only a small portion (less than 10% in most years) of male calves born each year have recorded measurements for scrotal size. In 2017, for days to calving, only 2952 Simbra heifers and cows had recorded mating records. When expressed as a percentage of the number of calves born in 2017, it is 31%. This influences the accuracy of the animals' EBVs for these traits.

Table 1 **(extract from the Simbra Completeness of Performance Report as on 10.01.2019)**

ALL HERDS
Completeness of Performance
Birth and Fertility

			Calving Ease		Birth Weight		AI Date		Scrotal Size		Days to Calving	
Calving Year	Sex	Animals	No.	%	No.	%	No.	%	No.	%	No.	%
2004	F	4919	3864	79%	2883	59%	100	33%			801	9%
2004	M	4395	3829	87%	2875	65%	83	29%	177	4%		
2005	F	5253	4154	79%	3242	62%	75	25%			573	6%
2005	M	4793	4123	86%	3255	68%	88	30%	165	3%		
2006	F	5618	4514	80%	3845	68%	96	31%			633	6%
2006	M	5378	4522	84%	3897	72%	107	31%	142	3%		
2007	F	6428	5004	78%	4682	73%	39	14%			727	6%
2007	M	6041	4840	80%	4534	75%	36	14%	271	4%		
2008	F	6652	5259	79%	5240	79%	106	24%			503	4%
2008	M	6278	5082	81%	5022	80%	125	27%	212	3%		
2009	F	7039	5885	84%	5467	78%	91	27%			1159	8%
2009	M	6845	5762	84%	5369	78%	97	29%	263	4%		
2010	F	7110	6268	88%	5777	81%	113	26%			1449	10%
2010	M	6863	6097	89%	5682	83%	103	24%	235	3%		
2011	F	7367	6470	88%	6097	83%	133	33%			2117	15%
2011	M	7162	6378	89%	5993	84%	148	34%	186	3%		
2012	F	7167	6141	86%	5963	83%	116	27%			2154	15%
2012	M	7116	6175	87%	5906	83%	112	26%	378	5%		
2013	F	6661	5791	87%	5412	81%	232	65%			2493	19%
2013	M	6513	5717	88%	5414	83%	228	57%	547	8%		
2014	F	6329	5375	85%	5274	83%	161	62%			3555	29%
2014	M	6139	5362	87%	5192	85%	185	65%	585	10%		
2015	F	5804	4949	85%	4914	85%	182	73%			3491	30%
2015	M	5869	5121	87%	5017	85%	164	68%	523	9%		
2016	F	5223	4534	87%	4399	84%	165	72%			3195	31%
2016	M	5122	4479	87%	4352	85%	128	70%	713	14%		
2017	F	4799	4336	90%	4244	88%	183	52%			2952	31%
2017	M	4884	4476	92%	4379	90%	220	55%	193	4%		
2018	F	2580	2266	88%	2256	87%	170	75%			919	18%
2018	M	2673	2363	88%	2334	87%	190	72%	0	0%		

10/01/2019

As explained earlier accuracy also influences the genetic improvement that can be made. There are only three Simbra bulls (currently not active) with DTC EBV accuracies of more than 80%. In terms of active bulls, there is only one active Simbra bull with a DTC EBV accuracy of more than 70% (71%). For SS there are only 11 active Simbra bulls with an EBV accuracy of more than 80%. A third factor that should also be considered is the amount of selection pressure placed on these traits. Do breeders really select for better fertility within their breeding herds and do they realize the importance thereof? Consideration should be given to the above-mentioned factors to see where improvement can be made.

5.3 200-day Milk

The overall genetic trend for 200-day Milk in the Simbra breed over the past 10 years was slightly positive (Graph 1). However, over the past 5 years, the trend was fairly stable. It is important to note that the optimum level of Milk EBV will be dependent upon the production system and environment in which the cows are run. E.g. in tough environments you might not want high milking cows as they would on average take longer to get in calf again.

The 200-day milk EBV is often understood incorrectly. Below is a short explanation of the trait as well as what information is used to estimate the EBV:

The milk EBV can be interpreted as the maternal contribution of a dam to the 200-day weight of her calf. In the case of bulls, this is an indication of the maternal contribution that his daughters will make to the 200-day weight of their progeny.

The weight of a calf at 200 days is influenced by many factors:

- Non-genetic factors (e.g. nutrition) – contributes to 70% of the variation
- Calf's genetics for growth – 20%
- Maternal contribution by mother– remaining 10%. This include:
  - ✓ amount of milk
  - ✓ quality of milk
  - ✓ mothering ability of the dam.

The Milk EBV is expressed in kg and indicates the expected difference in the weight of the calf at 200 days due to the maternal contribution of the cow.

<u>How is the milk EBV calculated</u>?

BREEDPLAN calculates the milk EBV by partitioning the difference in the 200-day weight of calves into growth and milk components. E.g. a calf has an adjusted 200-day weight of 300 kg compared to a group average of 260 kg. Thus, the calf is 40 kg heavier than the average weight of his peers. As the maternal component contributes to 10% of the difference in 200-day weight, the heritability of the Milk trait is 10%.

Milk EBV = (Animal's Performance – Performance of peers) x Heritability

= 40 kg x 0.1

= +4 kg

The BREEDPLAN analysis is however more complicated and the milk EBV can be influenced by the following factors:

- the later weight performances of the animal (e.g. 400-day weight)
- the other calves from the dam of the calf

- the performance of all known relatives in all herds

Information recorded:

The 200-day weight of calves should be recorded. BREEDPLAN will also use the 400-day weight recorded for a calf as a repeated measure in the calculation of its Milk EBV. Therefore, recording 400-day weight will further enhance the accuracy of your herds' Milk EBVs.

Therefore, without recording the 200-day weights of his whole calf crop in several consecutive years the 200-day Milk EBVs of a breeder's herd will not be very accurate and reliable.

6. Genomics

We are now moving into the so-called genomics era, which is at the same time very exciting, frightening and unsure. Exciting? Yes, very as we now have the opportunity to take animal breeding and the way we manage our herds to the next level. We also have the opportunity to catch up and keep up with the technologies used worldwide and stay relevant within the beef cattle industry. Why frightening and unsure? Because the decisions we make today will only bear fruits in a couple of years. Good fruits or bad fruits? That only the future will reveal. Genomics is the study of all the genetic material of an animal. Genomic selection, what we are interested in, refers to the inclusion of DNA information into the breed's genetic evaluation and selection program. SNP tests are performed to capture this genetic information.

Currently, without the inclusion of genomic information, the BREEDPLAN analysis uses pedigree information and performance data (both on the individual and related animals) to generate EBVs. With a genomic or single step analysis, the genotype information (in the form of a g-matrix) is included with the pedigree and performance data into a single step to estimate genomic EBVs (GEBVs). A reference population is needed for genomic selection to be implemented. A reference population consists out of thousands of animals which have both phenotypes for economically important traits and genotypes or SNP information. Genomic selection uses the known relationship between the phenotypes and genotypes of the animals in the reference population to calculate genomic EBVs for young animals.

Factors affecting how well genomic selection will work for you:

- The size of the reference population
- The relatedness of the target population (your herd) to the reference population.

The reference population should therefore represent the whole genetic pool of a breed. And for this reason, breeders should continue building the reference population by keep performance recording their animals. If this is not done, the next generations will become too distant from the reference population.
It is very important to note that genomics will not replace performance recording.
The work that you as breeders do to performance record your animals will be critical to the success of genomics in the future.

The benefits of genomics:

- EBVs can be generated for animals which do not have performance data
    - ✓ Young animals
    - ✓ For traits that are hard and/or expensive to measure, e.g. RFI
    - ✓ For traits only measured in one sex, e.g. MCW
    - ✓ For traits only measured on dead animals, e.g. abattoir carcass data
    - ✓ Due to single animal contemporary groups

    - With genomic information these animals will not simply get a mid-parent value with low accuracy.
- Thus, more accurate EBVs can be generated for animals with limited performance information

It is important to note that for traits that the society has a lot of phenotypic data on (e.g. the growth traits), the advantage of adding genomic information will be negligible. For individual farmers, it is also important to note that if you want your herd to benefit from genomic selection, you must contribute to the reference populations or use animals that are linked to the animals in the reference population. Otherwise, your animals will be too distant from the animals in the reference population and thus little or no information will be added to the estimation of breeding values for your animals.

The Simbra breed in Southern Africa currently have the following number of genotypes:

7K = 171
150K = 9

The Simbra breed is currently still building their reference population to an appropriate size that can be used to estimate GEBVs. Hence breeders may currently experience limited advantages/returns on their investments in terms of SNP profiling their animals. ABRI in Australia is however currently busy setting up a genomic database for the Simbra society as part of the services they will supply to the society. This database will in the near future allow the ability to do value-added services for the breeders, for example, parentage verification.

7. Performance recording

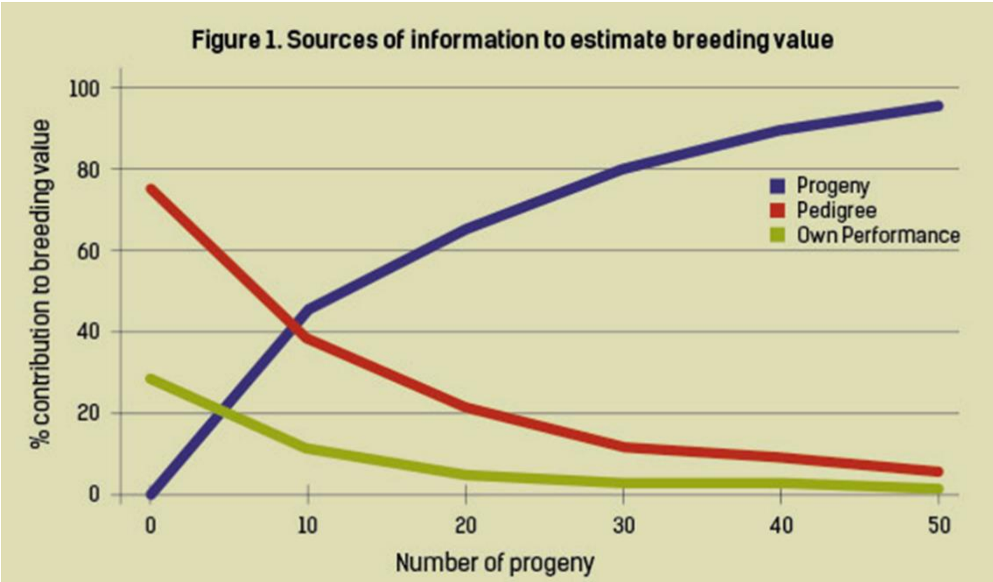
Why should stud breeders record the performance of their animals? Earlier we said that one of the most important measures of the success of any stud breeding enterprise is the genetic improvement that is made within their breeding herd from one year to another. To make genetic improvement, breeders need to select animals as parents of the next generation that are genetically superior to the average of their current herd. With genetics, what we see (phenotype) is unfortunately not always what we get as the environmental factors to which animals are exposed to have a considerable influence on the performance of animals in most of the production traits. Therefore, breeders need to select their animals based on their Estimated Breeding Values (EBVs).

The saying "You only get out of something that you put into it" is particularly true of performance recording for genetic evaluation purposes. The BREEDPLAN analysis removes the environmental factors from each animal's raw performance data and calculates EBVs. They do this by comparing the performance of individual animals to the average performance of their contemporary group. Other information that is also included in the analysis is the performance records of all the animal's relatives (pedigree), the performance of the animal's progeny and the performance of the animal in genetically correlated traits (Graph 2). In future, the genomic information of animals will also be included in the analysis to estimate GEBVs.

It is possible for BREEDPLAN to estimate breeding values for animals, that do not have their own measurements for a specific trait, through their pedigrees or through their performance in correlated traits. However, the accuracy of these animals' EBVs will be lower than if they had their own measurements. Thus, the more phenotypic information available for a specific animal and its relatives, the higher the accuracy of this animal's EBVs will be. This will also be the case when we move over to GEBVs.

Graph 2 (below) gives an indication of the contribution that the different sources of information make towards the breeding value of an animal. Initially, before an animal has its own measurement, that of its relatives contribute the most. Thereafter, his own performance record will also be taken into account. However, as its progeny are measured for the specific trait, their contribution becomes the most important.

Graph 2:



The higher the accuracy, the more likely it is that the EBV will predict the animal's true breeding value. It is also less likely that the animal's EBV will change as more information is analysed for that animal, its progeny or its relatives. Ultimately, the higher the EBV accuracy, the more informed and reliable the selection decisions will be, and the more genetic improvement can be achieved.

The accuracy of a specific animal's EBV will depend on:

- Heritability of the trait
- EBV accuracies of its parents
- Amount of performance information available
- Effectiveness of performance information, e.g. contemporary group structure
- Genetic correlation with other measured traits

Taking all the above-mentioned information into account, it makes sense for breeders to record the phenotypic measurements of all their animals on all the traits that are of economic importance to them. As Graph 2 suggests, a breeder needs to record the performance of his whole herd each year for the traits of economic importance to him. This is because at any point in time a specific animal is going to be the progeny of another animal, contributing to his own performance information or be a relative or parent of another animal. The golden rule is the more information available, the higher the accuracy of the EBVs and the more informed decisions can be made.

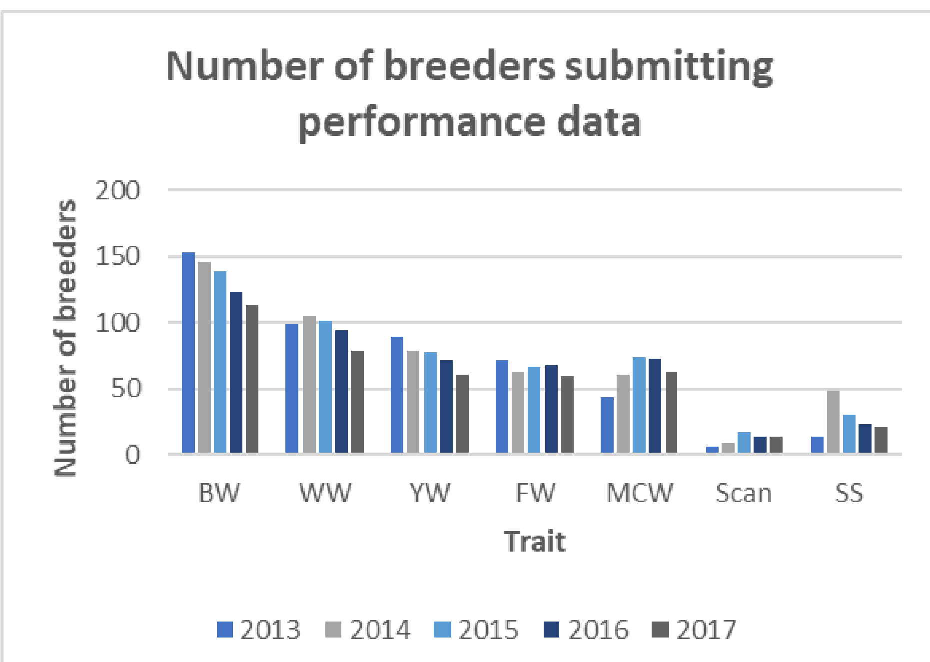
7.1 Performance recording over the past 5 years for the Simbra breed

Table 2

Number of Simbra breeders recording performance records										
	2013		2014		2015		2016		2017	
	# Breeders	# Records	# Breeders	# Records	# Breeders	# Records	# Breeders	# Records	# Breeders	# Records
BW	153	10923	146	10486	139	10238	123	9146	113	9124
	68%		69%		72%		71%		73%	
WW	99	7253	105	6549	102	7708	94	7638	78	6022
	44%		50%		53%		54%		50%	
YW	89	2968	78	3036	77	3389	71	2991	60	2903
	40%		37%		40%		41%		39%	
FW	71	3530	63	3185	67	3154	68	3066	59	3077
	32%		30%		35%		39%		38%	
MCW	44	2905	60	3316	74	5678	73	5855	63	4954
	20%		28%		38%		42%		41%	
Scan	6	438	8	494	17	686	13	976	14	836
	3%		4%		9%		8%		9%	
SS	14	408	48	3075	30	663	23	693	21	516
	6%		23%		15%		13%		14%	
Total # members	224		211		194		173		155	

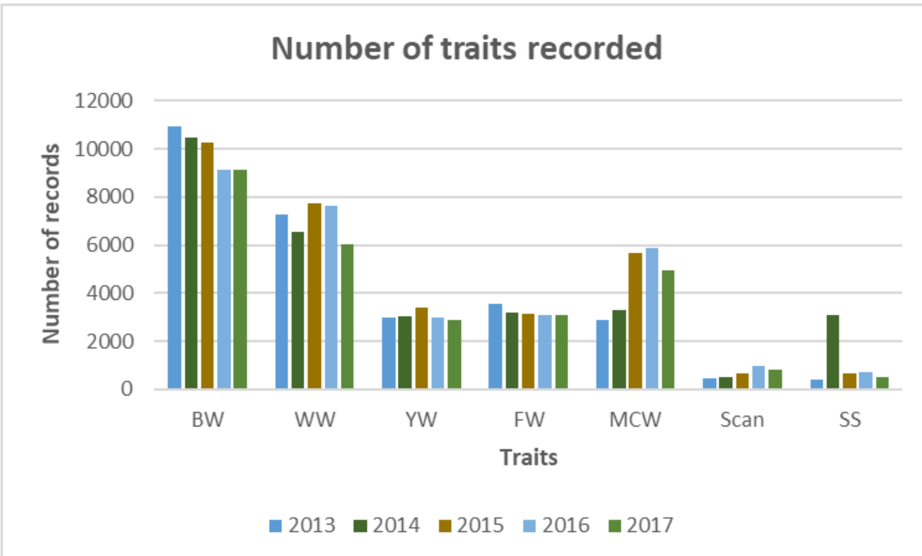
Table 2 (above) gives a summary of the number of traits recorded by the number and percentage of Simbra breeders in the last 5 years, excluding 2018. 2018 was excluded as not all 2018 data has been summited by the breeders. This information was also graphically portrayed in a number of graphs given below. NOTE: As indicated under point 2 of this document, the total number of Simbra breeders declined over the past couple of years.

Graph 3:



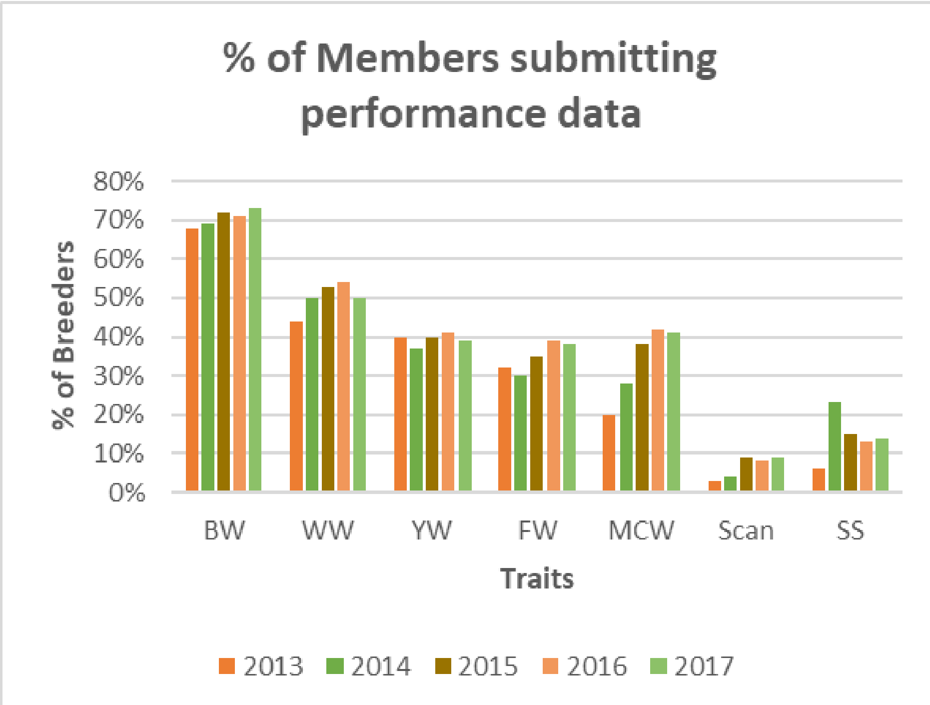
The same decline can be seen in the number of breeders who recorded phenotypic data over the past 5 years (Table 2 & Graph 3). This was however not the case with traits like MCW, Scan and SS. There was an increase in 2014/2015 in the number of breeders recording these traits, thereafter the number gradually decreased again. Despite the decrease in the number of breeders doing performance recording, for most of the traits, the number of records recorded increased or stayed the same (Graph 4). To exclude the effect of the decline in member numbers over the years, we will more closely look at the percentage of members recording performance traits in the different years.

Graph 4:



In Graph 5 (below) the number of breeders recording performance traits is shown as a percentage of the total number of active breeders in that year. For most of the traits, the percentage of breeders recording the different traits increase up until 2016 and decline again in 2017. This was however not the case with Scan data, which increased in 2015 and thereafter stayed more or less the same. For scrotal size, there was a fairly large increase in the percentage of breeders recording the trait in 2014. From 2015 and onwards the percentage of breeders recording scrotal size did not change considerably. What is important to notice is that even though the number of members recording the different traits decrease (Graph 3), the percentage of members increase or stayed the same. This is positive for the Simbra breed and the members can build on this going forward.

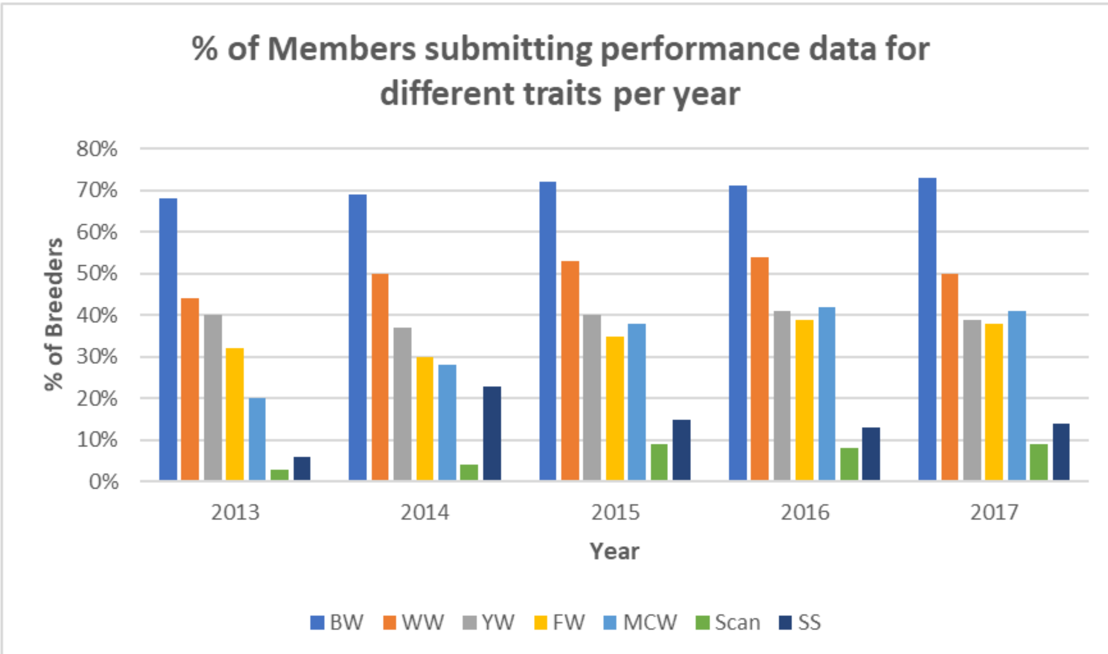
<u>Graph 5</u>:



Graph 6 (below) shows the **percentage of members** submitting performance data for the **different traits** in a **specific year**. Just to clarify this: In 2017 73% of the active Simbra breeders send in birth weights (whether it was 1 BW per breeder or 200), for the same year 50% of the breeders send in weaning weights (whether it was 1 WW per breeder or 200). For all the years presented here, the percentage of breeders submitting Birth Weight (BW) data is by far the largest (ranging from 68% - 73% over the 5 years). According to this, it seems as though birth weight is the trait of most economic importance to the Simbra breed. Even though BW is genetically correlated to the other weight traits it is normally not used as a growth trait, but as an indicator trait of calving ease. Many studies have shown that BW is the most important factor influencing calving ease. It is a trait that is very "age" or "time" sensitive and preferably breeders should measure BW within 24 hours after the birth as the weight of a calf changes considerably over the first few days after birth. It is also important to physically weigh the calf with a scale rather than guessing the weight or using a girth measurement. The golden rule: **IF YOU DO NOT WEIGH, DO NOT RECORD!!**

A weaning weight EBV gives a good indication of an animal's ability to grow to weaning weight and is therefore very important for weaner producers. Within the South African commercial beef industry, the major determinant of the price received for an animal is live weight. Therefore, the recording of weaning weight (WW) should be one of the most important traits to record for the Simbra breed as most of the commercial calves are sold as weaners. You would want to identify bulls that will breed heavy weaner calves for yourself and your clients. It is also important to remember that up to two weaning weights per animal can be submitted to BREEDPLAN via the society, leading to higher WW EBV accuracies. However, from 2013 to 2017 only between 44 % and 54 % of Simbra breeders submitted any weaning weights (whether it was one or 200) (Graph 6 & Table 2). This is on average ± 20% fewer breeders than which submitted birth weights. From this, it seems as though WW is less important to Simbra breeders than BW. The percentage of Simbra breeders submitting WW records did however increase from 2013 to 2016, but in 2017 there was an alarming 4% decrease (16 members less) in members.

Graph 6:



The other two growth traits of importance are yearling weight (400-day) and final weight (600-day). As price is determined by weight, these later weights are important to breeders selling steers for slaughter and it is also important to feedlots. The number of yearling and final weights recorded (Graph 5) over the past 5 years more or less stayed the same but was recorded by fewer members each year (Graph 4). In accordance with this, a slight increase in the percentage of members recording these traits can be seen in 2015 and 2016. As explained earlier, animals can receive EBVs for these later growth traits without having their own measurements through their pedigree and performance in other correlated traits. The problem with this is that curve bender animals, with for example high YW EBVs and low BW EBVs, will less likely be identified if the animals are not recorded for both traits.

Efficiency is becoming more and more important in our farming environments with farms that are getting smaller and with our regular droughts. One form of efficiency is the efficiency in which a farmer utilizes the available forage on his farm. Mature cow weight is an indication of a cow's feed requirements. In general, lighter cows will tend to eat less and consequently have lower feed requirements and be less expensive to maintain. This enables farmers to keep more animals on a specific piece of land and therefore increase its efficiency. The percentage of Simbra members recording the Mature cow weight of their cows increased from 2013 to 2016 (Graph 5). In 2016, double the percentage of members recorded the mature weights of their cows than in 2013. This increase in members recording mature cow weights may be an indication of breeders realizing the benefits of recording and selecting on mature cow weight. The mature cow weight of a cow is weighed at the same time as the weaning weight of her calf. Thus, it is therefore expected that the same percentage of members will submit MCW records than those submitting WW records. This was however not the case, in 2017, 9% fewer breeders submitted MCW records than which submitted WW records.