EBVs and a keen eye: a winning combination

Using estimated breeding values has dramatically improved the stud genetics of Free State breeders **Chris Nel Snr** and **Chris Nel Jnr** of Eversar Sussex stud. Yet they continue to take visual evaluation very seriously. They explained to **Gerhard Uys** how they combine these methods.

Chris Nel Snr and Jnr of Eversar Sussex stud have always had deep respect for the time-proven method of using one's eye and experience to study conformation and make judgements accordingly. At the same time, they have enthusiastically embraced the science of estimated breeding values (EBVs). Using both methods together has greatly improved their Sussex stud near Petrus Steyn in the Free State, and by extension the commercial herds of their clients.

Chris Snr was a teacher until 1967, when he joined the family farming operation after his father took ill. In 1971, he established the Eversar Sussex stud and explains that the limited available land made a commercial beef herd uneconomical. To get the operation off the ground, he started small: two Sussex cows and a Sussex bull borrowed from his friend, Gerhard Gouws. Today, this father-and-son team runs a 120-cow breeding herd of registered Sussex cattle.

EARLY YEARS

When Chris Snr established the stud, EBVs did not exist.

"Only performance testing, weaning indices, and 12- and 18-month indices were available as empirical selection tools," he recalls. "My approach was that I couldn't go against science, so I jumped right in. I'm not saying that performance testing and EBVs are the ultimate [solution], but breeding has two pillars: the eye and science. A breeder has to combine both. A commercial cattleman who doesn't make use of these is also making a big mistake."

ABOVE: Chris Nel Snr says a combination of science, in the form of EVBs and a keen eye to judge conformation, is key factors in breeding above average cattle. PHOTOS: GERHARD UYS

Chris Snr incorporated EBVs as soon as this new selection tool was made available to stud breeders 20 years ago.

"Our corrective breeding is based on EBVs," he says. "We constantly assess these values: birthweight, wean direct, milk and 12-month growth are crucial to us. Another reason we focus on these is to benefit the commercial cattleman who buys bulls from us. We sell our non-performers for slaughter, and the better our entire herd does, the more profitable the sale of the culls will be. We cull the bottom 10% of our herd."

At Eversar, the 12-month indices and 12-month weights are also essential as they indicate growth after weaning (calves are weaned at seven months) and can be used by feedlots to determine the growth that can be expected.

Chris Snr explains that adding a few kilograms to a weaner can put a lot more money into a cattleman's pocket when selling an animal for slaughter.

"This year, our average weaning weight was 257kg, but one calf weaned at 180kg. Chris Jnr thought the cow or calf might be ill, but investigating her EBVs more closely showed that the cow performed negatively on milk production. We slaughtered her, as keeping her would have had a negative impact on the herd."

NEW STAR-RATING

Chris Snr welcomed the star-rating system for cattle recently introduced in SA Studbook's Logix software. According to this system, one star denotes the lowest value and five stars the highest.

One of their five-star bulls is the first calf of a four-and-a-half-star cow, illustrating the value of breeding the best to the best. "Using breeding values is not negotiable," he stresses.

'A FEW ADDED KILOGRAMS ON A WEANER CAN PUT A LOT OF MONEY IN YOUR POCKET'

Cattle have to be well adapted to optimally utilise the forage on the sourveld on the Nels' farm.

"We can immediately see from the breeding values which animals are not adapted, as low EBVs also reflect their poor performance," adds Chris Snr.

All bulls undergo a Phase D test on the veld to exclude poor growers, rather than identifying maximum growth. Following the Phase D test, the bulls stay on the veld with a lick only. They are then finished off on the veld for the annual production sale held in September.

The herd's average EBV for weaning weight was 11,3 in 2005, with a 97 selection value. This

ABOVE: According to Chris Nel Snr, the superior genetics of Eversar stud animals can help commercial farmers improve their herds.

RIGHT: Eversar bulls are selected for muscling, smooth hair, and growth capacity.

means that, when compared with the base year for Sussex cattle (2002), the calves in the Eversar herd had the genetic potential to be 11,3kg heavier than the breed standard for that year.

This value has since increased further and currently stands at 15,9 with a 107 selection value, which means that the calves currently have the genetic potential to be 15,9kg heavier than breed average. The above- 100 value indicates the herd's dramatic improvement to the current 7% above breed average. Genetically, the herd is thus outperforming the breed average on weaning weight.

The average weaning weight has shown an upward trend: from 244kg in 2012 to 238kg in 2013;

LEFT:
Veld conditions are also reflected in EBVs. In drier years, poor veld conditions may have an effect on herd performance.

TOP :
From left: Simon Motaung, Samuel Hlangwe, Bongani Molake and Chris Nel Snr. It is essential to employ farmworkers who understand cattle management, Chris Snr says.

ABOVE:
Eversar Domitor 14 0004 will be put up for sale at the Eversar production sale on 13 September. His EBV for weaning weight is 27,1, which means that his offspring have the genetic potential to be 27,1kg above the breed average at weaning.

253kg in 2014; 261kg in 2015; and 257kg in 2016. EBVs are linked to environment and management; in drought years, a dip in the curve of many EBVs is evident.

It is important that statistics show that a herd's performance is improving over the long-term, says Chris Snr.

"If it dips, the breeder has to correct [values] immediately to ensure consistent improvement."

BEYOND EBVS

Chris Snr explains that, although pelvis measurements to assess calving ease are not included in the breeding values, he and Chris Jnr believe it is essential.

Assisted by vet Piet van Zyl, Chris Snr was the first Sussex breeder to incorporate pelvis measurements as a selection criterion in his herd. By culling animals with sub-standard pelvic measurements, they have ensured that not a single heifer needed assistance with calving during the past three years. These measurements are made up of the anterior height, the posterior height and the posterior width. Although not selecting for a larger pelvis, they cull animals with abnormally small ones.

"When we started with pelvis measurements, we culled about 10% of the heifers before mating, but now we cull only about 5%," Chris Jnr adds.

SIZE MATTERS

While many breeders prefer smaller-framed animals, citing lower feed requirements and lower cow maintenance requirements, the Nels favour larger-framed cattle in their operation. "In a pure breed such as the Sussex, the animals tend to become smaller over time," Chris Snr explains.

Chris Jnr adds that when selecting for increased weaning weight, a breeder also has to keep an eye on cow size. "This is where visual evaluation plays a very important role."

A KEEN EYE

Using EBVs for corrective breeding will yield results in the herd's next calf crop, but Chris Snr also stresses the value of observation and a keen eye.

"It's no good for a herd's EBVs to be the best in the breed, but the conformation of the animals to be the worst. The two go hand-in-hand. A buyer looks for the correct conformation."

When the Nels acquire bulls at the national sale to introduce new genetics to their stud, they select them on this basis.

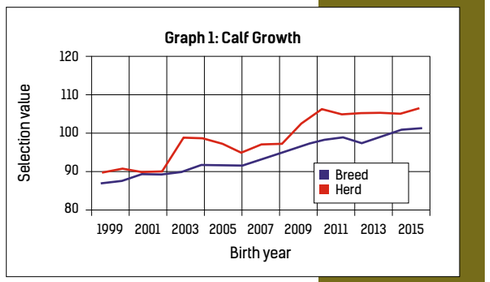
"We leave the catalogue with the bulls' EBVs behind. We initially select the 10 best bulls on the basis of conformation, then start excluding them one by one according to smaller faults we pick up visually. We usually end up with two or three bulls with great conformation. We then go back to the catalogue and select the bull we want according to its EBVs."

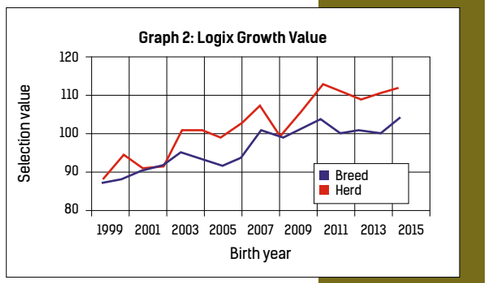
Commercial cattlemen also know that the correct bull can improve their herds. It is this group of customers that buys most of the registered bulls at the annual Eversar production sale, which will be held on 13 September this year.

Nico Kriek, a commercial cattleman from Reitz, has been buying Sussex bulls from Eversar for nearly 30 years to use on his Afrikaner cattle.

"My father started buying Sussex bulls in 1960 and eventually bought from Eversar," he explains. "I currently wean calves at 260kg to 263kg on average, up from 220kg to 225kg before. It's easy to hit a ceiling with a herd, but by using EBVs, I'm progressing. The Afrikaner is known for good milk production, but not for volume. Using EBVs to select the correct bulls has increased my cow herd's milk production dramatically."

• *Visit www.eversar.co.za.* ■ FW





TOP:
Graph 1 indicates the genetic trend for the breed and the herd in terms of calf growth, one of the sub-values of cow value.

ABOVE:
Graph 2, the Logix growth value (one of the selection values), shows the average growth value per year of all measured animals in the breed and herd. It measures the genetic merit of bulls and/or cows for growth and growth efficiency after weaning.
GRAPHS SUPPLIED

FAST FACTS

Using EBVs correctly has substantially increased the Eversar Sussex stud's weaning weight over the years.

Pelvic measurement is an important culling criterion, as a cow with a small pelvis can experience calving problems.

Chris Nel Snr stresses that visual appraisal is nonetheless equally important when selecting bulls.

EBVs explained

Estimated breeding values (EBVs) indicate the genetic potential of an animal for a specific trait. This value is calculated relative to the average values of animals born in the base year (1990 for most breeds and traits). The birth weight and weaning weight of calves (Table 1) is taken into account when measuring some of the sub-values of Cow Value such as Calving Ease and Calf Growth (Table 2a and 2b).

The EBV index helps farmers to interpret EBVs. The base breeding value on the index is set at 100, the average for all the live animals in the breed, and all other values are expressed relative to this value. Generally, values above 100 are more desirable and represent the percentage that an animal or herd scores above the breed average.

Table 1: Calf weight

	Birth weight	Weaning weight
EBV breed	1,04	12,70
EBV herd	1,96	16,00
EBV Index	101	107

Table 2a: Herd

Year	Calving Ease				Calf Growth		
	Birth weight			Calving ease selection value index	Weaning weight		Calf growth selection value index
	Number	Dir EBV	Mat EBV		Number	EBV	
2005	129	0,82	0,48	**103**	109	11,3	**97**
2006	102	0,57	0,72	**105**	100	10,3	**95**
2007	111	0,50	0,63	**107**	102	11,3	**97**
2008	128	0,71	0,44	**104**	120	11,3	**97**
2009	121	0,96	0,49	**101**	112	13,9	**103**
2010	115	0,90	0,48	**102**	97	15,8	**106**
2011	101	0,90	0,49	**102**	98	15,2	**105**
2012	104	1,00	0,38	**101**	95	15,3	**105**
2013	87	0,95	0,56	**101**	76	15,3	**105**
2014	106	0,89	0,49	**102**	86	15,2	**105**
2015	90	0,89	0,63	**102**	79	15,9	**107**

Table 2b: Breed

Year	Calving Ease				Calf Growth		
	Birth weight			Calving ease selection value index	Weaning weight		Calf growth selection value index
	Number	Dir EBV	Mat EBV		Number	EBV	
2005	2 920	0,66	0,31	**105**	1788	8,6	**92**
2006	2 634	0,78	0,35	**103**	1753	8,6	**92**
2007	2 639	0,81	0,36	**103**	1876	9,6	**94**
2008	2 671	0,84	0,36	**103**	1826	10,3	**95**
2009	2 577	0,98	0,37	**101**	1913	11,1	**97**
2010	2 550	0,94	0,36	**101**	1700	11.9	**98**
2011	2 389	1,06	0,33	**100**	1899	12,1	**99**
2012	2 338	0,98	0,34	**101**	1764	11.5	**98**
2013	1 992	1,00	0,35	**100**	1492	12,3	**99**
2014	2 072	0,98	0,37	**101**	1332	13,0	**101**
2015	1 635	1,04	0,38	**100**	628	13,3	**101**
2016	139	0,87	0,34	**102**			