Appendix B Brangus animals can be brindle, have scurs and white in front of the navel.

APPENDIX B:

The following animals which comply with the breed standards and in respect of which all other registration requirements have been met shall be eligible for registration as Appendix B animals:

- Registered Angus females.
- Non-registered Brangus females
- The progeny of: (i) registered Brahman X registered Angus, (ii) registered Brangus X registered Brahman and (iii) registered Brangus X registered Angus.
- The progeny of Appendix A animals mated to Appendix B, C or Stud Book Proper animals.

Except for registered Angus females, Appendix B animals must be pure Brangus in appearance, naturally polled (scurs are permissible) and exhibit no white above the underline or on the head (white on the underline is allowed). Animals can be brindle. Multiple sire matings are allowed.

APPENDIX C:

The progeny of the following animals which comply with the breed standards and in respect of which all other registration requirements have been met shall be eligible for registration as Appendix C animals:

- Appendix B X Appendix B
- Appendix B X Appendix C
- Appendix B X Stud Book Proper

Appendix C animals must be pure Brangus in appearance, clean polled (no scurs), have no white on the underline in front of the navel and be solid black or solid red in colour (no brindle).

White is only allowed under the belly from the navel backwards in Appendix C and Stud Proper

STUD BOOK PROPER:

The progeny of the following animals which comply with the breed standards and in respect of which all other registration requirements have been met shall be eligible for registration in the Stud Book Proper section:

- Appendix C X Appendix C
- Appendix C X Stud Book Proper
- Stud Book Proper X Stud Book Proper

Animals must be pure Brangus in appearance, clean polled (no scurs), exhibit no white on the underline in front of the navel and be solid black or solid red in colour (no brindle).

BRANGUS TOOLS TO MANAGE INBREEDING

Internet Solutions is a web based service developed by the Agricultural Business Research Institute (ABRI) for application within the livestock industry. It allows Brangus breeders to instantly access detailed information about registered animals, sale and semen catalogues, exchange information with the Brangus Society and access a suite of Breedplan tools and services free of charge.

Mating predictor is a simple EBV calculator and is one of the tools available on the Brangus website (www.brangus.org.za). Users can specify a mating or range of matings and this facility will calculate the expected EBVs, EBV accuracies and Breed Object Selection Index values of the progeny. This facility also includes the calculation of an Inbreeding Coefficient, which gives an indication of the amount of inbreeding expected in the progeny from the mating specified.

WHAT CAN THE BRANGUS SOCIETY OFFER YOU?

- When new members join the Brangus family they are equipped with a new members package that serves as a step-by-step guide on how, when and what to do.
- We offer a range of Brangus courses which enables breeders to (1) identify functional animals through a linear classification system (2) learn more about Breedplan and (3) make breeders aware of available tools they can use to ensure easy management of their herds. Our courses are not exclusively for Brangus Breeders only.
- Brangus membership includes a free herd visit once a year by one of our trained inspectors who will inspect the herd and offer professional advice on queries the breeder might have.
- The ILR2 Breedplan system produces EBV's for a range of traits including birth, fertility, growth and carcass traits. ILR2 also generates among other reports a farm, Breedplan and completeness report for each herd.
- Brangus members receive free Brangus Journals and Calendars yearly.
- Brangus offers a number of DNA tests for animals.
- Various sales are held under the auspices of the Society throughout the year in different regions of South Africa to cater for all our members and also for the commercial market.

BRANGUS

BECOME A MEMBER

Brangus membership forms can be requested from the society or downloaded from the website at www.brangus.org.za

Send the completed forms to the Brangus Office:

POST: PO Box 12456
Brandwag
9324

EMAIL: info@brangus.org.za

FAX: 051 451 2506

EACH NEW BRANGUS MEMBER WILL RECEIVE A NEW MEMBER PACKAGE WHICH EXPLAINS THE BASIC PROCESSES AND STANDARDS OF THE BRANGUS SOCIETY.

JACKPOT
BRANGUS BREEDERS

JACKPOT
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EXPECTED ANNUAL SUBMISSION TASKS

When to measure	What to measure	Requirements	Age range	Methods for data submission
Mating Season	Reproduction: Days to Calving	AI Dates Date when bull is joined with cows Date bull is taken out	All serviceable females	Excel Sheets Herdmaster Online Web function
Calving	Birth Weight	Weight	Within 24 hours of calving	Excel Sheets Herdmaster Online Web function
Weaning	200 Day Weight Mature Cow Weight	Weight	80 to 299 days 870 to 3900 days	Excel Sheets Herdmaster Online Web function
Year Old	400 Day Weight Scrotal Size	Weight Circumference	300 to 499 days 300 to 700 days	Excel Sheets Herdmaster Online Web function
Final Weight	600 Day Weight	Weight	500 to 699 days	Excel Sheets Herdmaster Online Web function
Scanning	P8 Rump Fat Rib Fat Eye Muscle Area Intra Muscular Fat	Ultra Sound Scan	300 to 699 days	Data obtained from an accredited Scanner (ARC)

ANNUAL PER CAPITA AND DISPOSALS

- Membership and per capita fees per animal are charged on the 1st of June each year
- All animal disposals (sold, slaughtered etc.) must be submitted before the end of April and not later than the 15th of May to be excluded from the per capita fees.

BRANGUS STATS

1. Aktiewe lede: 170

2. Streeksverdeling:

PROVINSIES	BUURSTATE
Gauteng	Malawie
Mpumalanga	Namibië
Noord-Kaap	Swaziland
Noordwes	
Oos-Kaap	
Wes-Kaap	
KwaZulu-Natal	
Vrystaat	

3. Diere getalle in die besit van lede: 41 791

4. Gemiddelde kudde grootte: totale diere: 246

5. Gemiddelde gewigte van Brangus in Suid Afrika:
a) Geboorte: 32.94 kg
b) Speen:
Vroulik: 210 kg
Manlik: 225 kg
c) 400 dae:
Vroulik: 295 kg
Manlik: 335 kg
d) 600 dae:
Vroulik: 396 kg
Manlik: 446 kg
e) Volwasse koei gewig:
1ste Kalf: 458 kg
2de Kalf: 496 kg
3de Kalf: 570 kg
4de Kalf: 516 kg
f) Koei/kalf speenverhouding: 48%
g) Ouderdom 1ste kalwing – 38 maande
h) Dragtigheidsduur: 282 dae
i) Skrotum omvang: 34 cm

6. Teeldoelwitte bladsy 23 Stambome, teelwaardes, kontak inligting van telers en menigte ander gegewens van Brangus diere is vrylik en gratis beskikbaar by www.brangus.org.za

TABLE MOUNTAIN view from Bloubergstrand. Table mountain is one of the new world's seven wonders of nature.

REPRODUCTION & ANIMAL HEALTH

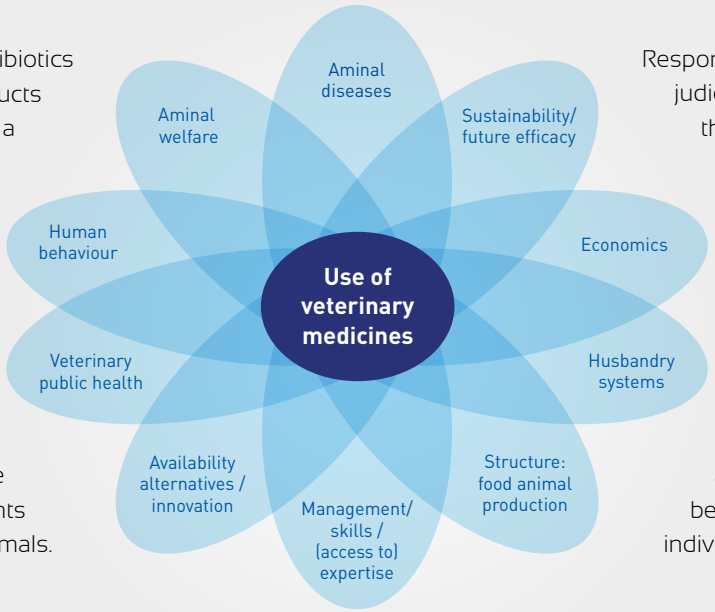
RESPONSIBLE ANTIBIOTIC USE ON FARM

THE FUTURE IS IN OUR HANDS

DR B.B. VAN HOUTEN, TECHNICAL MANAGER: ZOETIS SOUTH AFRICA PTY LTD

Antimicrobial use in animal production systems are under more pressure than ever before and this pressure is here to stay. The responsible use of antibiotics encompasses various different aspects and is an extremely complex topic. Every person in the food producing chain is pivotal in managing this situation and ensuring the future use of these products for years to come.

Stopping the use of antibiotics isn't an option. These products are essential in maintaining a safe food supply to people all over the country and protecting animal welfare by preventing pain and suffering due to disease. It's important to understand that although we can't stop their use, we can reduce it, and find the balance between multiple elements in maintaining healthy animals.



Responsible use, also referred to judicious use, can help sustain the efficacy of antimicrobials, provide us safe animal protein and minimise the emergence of resistance.

There are various aspects of an operation where producers can make a difference. There is no "one size fits all" plan, each and every plan needs to be devised according to the individual farm.

Figure 1: Visualisation of the complexity regarding use of veterinary medicines

Three aspects that need to be considered are: Animal specifics • Husbandry system • Management

The first two involve the specific species, breed and husbandry systems the producer has on his/her farm. For the most part, these aspects are already set out per individual farm. Management, however, is where we can try and make a difference.

MANAGEMENT: Can be defined as all the activities of the producer regarding the care of animals. Increased producer awareness of diseases, biosecurity, nutrition, and animal health aspects are all included in this definition:

- **Increased producer awareness and education:** are essential and involves increased knowledge about various diseases, antibiotic resistance and good record keeping. Educating farmers around the importance of how various types of stress and husbandry procedures predispose to disease will hopefully change the way they think about management of their animals as a whole.

continued on page 42

Educating farmers on the importance of weighing their animals and treating them with the correct dose of antimicrobial. Informing them about the consequences of under dosing animals with antimicrobials and getting them to understand that these processes are not a waste of time, but rather an investment in the future of their herd. All this may be key in getting the required compliance from them.

- **Biosecurity:** The main objective for biosecurity is to protect animals on the farm against any infections from elsewhere. This includes restricting visitors onto/ into premises, wearing protective clothing, rodent and bird control, having a closed herd, testing new introductions for various diseases as well as good cleaning and disinfection procedures.

- **Nutrition and drinking water quality:** Have an important impact on the animals' health. Any diets deficient in macro/micro minerals, vitamins, protein or energy will have a profound effect on the ability of any animal to fend off or recover from disease.

- **Animal health aspects:** This is definitely an area where the veterinarian must be involved as they have an invaluable role to play with regards to animal health. This isn't the only aspect that a veterinarian can be involved with, they can have vital inputs at all stages of management on the farm. Individual herd health plans are essential in protecting herds from the dangers of disease. A well planned vaccination program goes long way in protecting animals from diseases prevalent in that specific area, but vaccination can only do so much. The ability of a vaccine to work correctly is completely dependent on the animals' immune system's ability to respond to the vaccine. If the nutrition isn't correct, or the husbandry system results in excessive stress or disease challenge, the vaccine won't perform as it should and more antibiotics will need to be used.

A good colostrum management program is something that is often forgotten. A calf is born wholly dependent on receiving the antibodies that are going to protect it for the first few months of its life, from colostrum. Ensuring they receive the right quality and quantity at the right time is essential in giving these young calves the best possible start to life.

Administration of antimicrobials to sick animals is essential. Using the correct antimicrobial, at the correct time and at the correct dose is just as important. Animals that are at high risk of suffering from disease also warrant receiving antibiotics. Certain times of the year or stages of animals lives are high risk periods for specific diseases. Using antimicrobials strategically during these times not only reduces the incidence of disease but also the pain and suffering of a number of animals, improving their welfare. The use of antibiotics in these animals requires in depth consultation between farmer and veterinarian to determine when and for which animals this kind of metaphylactic treatment is justified.

All these aspects are so interlinked that you can't focus on one without getting involved in another. The essential message regarding responsible antibiotic use is using antimicrobials as little as possible, but as much as necessary. It is a holistic approach between nutritionist, farmer, manager and veterinarian all working together toward a common goal; healthy productive animals.

References: EPRUMA (European platform for the responsible use of medicines in animals) best-practice framework for the use of antibiotics in food-producing animals. Available at www.epruma.eu/publications/brochures

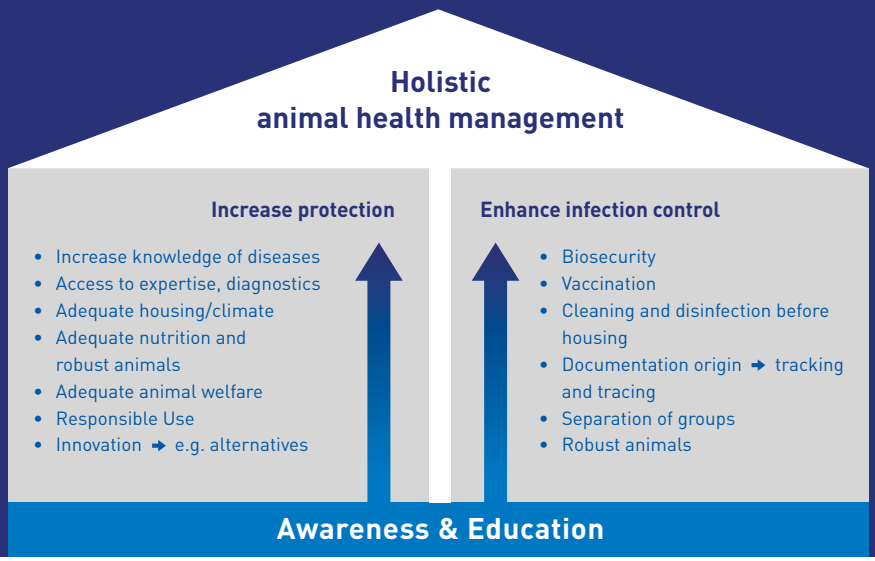


Figure 2: Simplification of the holistic approach regarding animal health management by te farmer

BARRY VAN HOUTON
qualified as a Veterinarian from Onderstepoort (University of Pretoria) in 2011, and spent a short time in private practice before joining Zoetis South Africa as a ruminant technical manager in 2013.

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SALE DATES FOR THIS YEAR:

11/05/2016 - Brangus World Congress
26/05/2016 - Central FS Club Sale, Parys
19/07/2016 - Makiti Veld Bull Sale, Frankfort
29/07/2016 - Bastion Breeder's Sale, Warden
11/08/2016 - National Sale, Harrismith

GUIDELINES FOR SELECTING THE IDEAL BRANGUS STUD COW HERD

CHARNÉ JOSLING

The focus of the South African Brangus cow herd is primarily on reproductive superiority which envelopes fertility, birth traits, pre-weaning growth, mothering ability and longevity. Although the breeding bull makes a much larger genetic contribution to the herd (>30 offspring/year) compared to a cow (1 offspring/year), the cow still contributes 50% to an individual calf's genetic makeup. Therefore female selection is important when considering genetic progress. The article will give guidelines for selecting Brangus stud females on farm, from an upgrading system, at a sale and culling during droughts.

1. ON FARM SELECTION

1.1 MINIMUM STANDARDS FOR BRANGUS STUD FEMALES

The following minimum standards are requirements for full registration of Brangus stud females:

Calving specifications:

- Age at first calving ≤ 41 months
- Calving interval from first to second calf ≤ 18 months
- Calving interval from second calf onward ≤ 14 months

Functional efficiency

An approved Brangus inspector must inspect all females for structural soundness and breed characteristics (see breeding goals on pg. 23) before entering the stud herd. Once approved females only need to be re-inspected when they are sold as stud animals on a Brangus sale. *A summary of the characteristics of a typical functionally sound Brangus breeding cow is on page 30:*

Selection of self-bred replacement heifers

Breeders that are building herd numbers (selecting for quantity) will retain a higher number of heifers and will therefore be less strict during selection (only consider minimum requirements). On the other hand, breeders that have achieved the desired herd size can apply stricter selection to start selecting for quality. The selection approach should be a balance between a visual-, maternal- and breeding value evaluation:

- Heifers must pass breed inspection
- Heifers older than 30 months must be certified in calf and calve down before 41 months
- The maternal line
  Because heifers do not have reproduction data yet, the following traits of the dams can be considered: (1) age at first calf; (2) inter-calving period; (3) number of calves; and (4) offspring retention % in the breeding herd.
- Estimated Breeding Values (EBVs)
  An EBV is a value that predicts the average performance of an animal's offspring for a specific trait (e.g. birth weight, weaning weight etc). EBVs are expressed relative to the average of the base population which is corrected to zero for simplicity. Average breed performance, average breed EBVs and *recommended EBVs for Brangus females:*

	BW (kg)	WW (kg)	MCW (kg)	Milk
Ave. breed performance	32.9	210	497	-
Ave. breed EBVs	1.1	11	24	2
Recommended EBV ranges	**-1.8 - 2.1**	**8 - 22**	**16 - 32**	**1 - 6**

1.2 THE CULLING AND SELECTION PROCESS

A rule of thumb is to replace 20 – 30 % of females annually in order to make acceptable genetic progress in the cow herd. The culling process will eliminate animals that do not achieve the minimum standards (mentioned in section 2.1), old cows (worn teeth, poor body condition, cracked hooves etc.) and poorer performers (longest inter-calving periods, poor breeding values for growth traits etc.). Replacement females will consist largely of self-bred heifers that are ready to enter production (18 - 30 months old), but can also include cows/heifers via the upgrading system or bought in females. Selection for the latter two types of replacement females are discussed in sections 3 and 4.

Birth weight, weaning weight and final weight is highly correlated, in other words selecting to increase one of the weight traits might increase all the weight traits. Ideally birth weight should be kept at an optimum (31 – 34 kg) to ensure easy calving; weaning weight can be selected for above breed average performance (> 225 kg) especially in weaner-calf production systems, while maintaining a moderate final weight to ensure an early maturing, medium frame type of animal. Similarly, mature cow weight should reflect a medium frame type (below 500 kg) in order to maintain a high cow – calf weaning ratio (± 46%). In simple terms large frame cattle have higher maintenance requirements and are consequently less efficient than medium frame cattle.

	575 kg cows	690 kg cows
Number of cows	116	100
% weaned per cows mated	93%	88%
Weaning weight as % of cow weight	46%	43%
Weaning weight on 8 months	238 kg	272 kg
Calculation	116 x 93% x 238 kg	100 x 88% x 272 kg
Total weaning weight	25 675 kg	23 936

Mathematics behind mature cow weight (Lee Leachman 2011):

**Optimum average cow weight for cows under Southern African conditions are 450kg.*

Milk EBVs are calculated indirectly from weaning weight data. Poor milk production will lead to poor calf weaning weights, while excessive milk production will cause the cow to lose too much weight during lactation to take to the bull the following breeding season.

Care should be taken to rely on EBVs with low accuracies (below 50%). *The accuracy value* provides a measure of the stability of the EBV and gives an indication of the amount of information that has been used in the calculation of the EBV. For EBVs of medium accuracy the accuracy values should be between 50% – 74%. Medium to highly accurate EBVs will have accuracy values of 75% – 90% and highly accurate EBVs have accuracy values above 90%.

2. UPGRADING FEMALES

The Brangus breed has a unique upgrading system (Appendix A, B, C and Stud Book Proper) that allow breeders to breed up from pure Angus and Brahman animals as well as Brangus-type animals. This allows for a consistent introduction of new genetic material into the local population which promotes genetic diversity and prevents inbreeding depression. It is also an easy way to start and build your Brangus stud herd. *Females selected from the upgrading system will enter as per summary on page Pg. 34.*

3. BUYING IN BRANGUS STUD HEIFERS/COWS

When buying in female animals at a sale you have the opportunity to select top genetic breeding material that will complement your breeding objectives, contribute to the genetic diversity of the herd and promote linkages between your herd and the national herd.

When selecting heifers/cows at a sale the selection can be much stricter compared to on farm selection. The following recommendations can be considered:

- Calving specifications: Intercalving period should be below your herd's average or below the breed average (≤ 453 days).
- Estimated Breeding Values (EBVs): Select females that perform in the top 50% for the following traits (breeders can also use their own herd EBV averages):

	BW (kg)	WW (kg)	MCW (kg)	Milk
Ave. breed EBVs	1.1	11	24	2
Recommended EBV ranges (top 50%)	≤ 1.1	≥ 11	≤ 24	≥ 2

5. CULLING DURING DROUGHT

- During the onset of a drought it is recommended to reduce the cow herd by 40% (or more if necessary) when roughage is a limiting factor.
- The herd numbers should be reduced before the start of the coming winter.
- Animals that should be culled include: all heifers, old cows and poorer performing cows (heifers and old cows have the highest maintenance requirements).
- When drought conditions subside, the stud cow herd numbers can be built up again by retaining more heifers, upgrading or buying in females over the following 2 to 3 years.

6. CONCLUSION

- The on farm cow herd selection approach should be a balance between a visual-, reproductive- and breeding value evaluation.
- The Brangus breed has a unique upgrading system that allows the constant inflow of new genetic material and makes it easy for commercial breeders to start a Brangus stud herd.
- Much stricter selection pressure can be applied when buying in stud female animals at a sale (compared to on farm selection) to ensure that these animals make a positive contribution to your herd.
- When reducing cow herd numbers during drought conditions, all heifers and old cows should be culled first, then poorer performing animals.

"THE BROOD COW HERD IS THE CORNERSTONE OF A PROFITABLE BEEF ENTERPRISE"
- Dr. Bill Turner

CHARNÉ JOSLING

completed her BSc. degree in Animal Science at the University of Pretoria in 2009, after which she obtained her BSc Agric. Hons. and MSc Agric. in Animal Science at the University of the Free State and is currently enrolled for her PhD. During her post-graduate studies Charné started her career at the University of the Free State. In 2013 she held the position of Technical Advisor at the Brangus Breeders Society and is currently appointed as the Technical Advisor of Wildlife Stud Services (WS2).

082 928 9387 | tech@ws2.co.za
www.ws2.co.za

THE POTENTIAL OF EXPORTING SOUTH AFRICAN GENETICS

DR FANIE STEYN

The International trade in genetics is a multi-billion dollar industry and South Africa has the opportunity to be part of this. Lately with the weakening of our currency it has also become increasingly profitable for breeders to export genetics and we now know that the value of exports will have to increase if we hope to correct this country's current account deficit.

South Africa has some of the worlds' best livestock genetics and stud livestock breeders. This is evident by the fact that a number of locally developed breeds are flourishing on various continents such as South America, North America, Europe; Asia and Australia.

I have been fortunate to travel to most continents of the world, including the countries that are currently leaders in genetic exports such as Australia and America. There is a large amount of genetic exports taking place currently from Australia to e.g. China. We have a lot to learn from Australia in order to become more successful in the marketing of livestock and livestock genetics. I will sum up the success of our Australian counterparts in 3 points namely;

1. Marketing,
2. The implementation of export protocols that were negotiated by National government and
3. Their superior sanitary health status.

Firstly the marketing of livestock and livestock genetics is done by breeders and breed associations. Secondly and probably most importantly, they are supported by the Australian government. The government is actively involved and plays a leading role in the marketing of all Australian agricultural products.

For example, Australia, through its department of Trade has established an entity called "Austrade" which markets all Australian commodities within their major trade partners. Austrade has a vast network of offices worldwide, including Brazil, China, Germany, India, Japan, Korea and the United Kingdom. Austrade has 11 major offices in China – one in each of the major cities. This underscores the effectivity and seriousness of the Austrade marketing program.

The second reason why Australia is able to export more genetics than the RSA is the large number of well-established export protocols they have in place with other countries. The Australian government through its Departments of Trade and the Department of Animal Health is constantly negotiating for new export protocols on behalf of livestock breeders and breed societies. Together with the Brangus Society our own bull semen center, and SAVSEG (South African Veterinary Semen and Embryo Group) has been working hard on establishing export protocols for Bovine semen to South America. In this regard we are pleased to announce that we have received the new Mercosul Bovine semen protocol. This protocol specifies the conditions for semen to be exported to all Mercosul countries (Brazil, Argentina , Paraguay , Uruguay ,etc). Our veterinarians have also studied the protocol issued by Mercosul and we are confident that we can comply with all the health requirements stated in the protocol. The only step that remains is for our government through the Department Agriculture, Forestries and Fisheries to accept and implement the said protocol.

Australia markets itself as having a superior sanitary health status with regards to notifiable diseases. It is true in some instances – for example Australia does not have Foot and Mouth disease, but on the other hand Australia does have widespread Johne's disease. The point of importance here is that if all sanitary, quarantine and health testing procedures are followed correctly – then the risk of disease transmission via embryos or semen becomes negligible. Proof of this is

continued on page 48

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- Bontebuck
- Lechwe
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the fact that South Africa has been exporting genetics for more than 20 years to various countries like Australia and Brazil without any incidence of disease outbreak in the importing country.

What measures need to be taken by the government's policy makers to ensure a viable export market for South African livestock genetics? This calls for on-going negotiation on the highest political levels between the respective governments. For instance, our ministries of agriculture and trade should be in constant communication with their South American and Chinese counterparts to ensure a viable market for South African livestock and livestock genetics in that country. Communication between the above mentioned Departments, government veterinarians, breed societies and registered export centres such as Ramsem is of the essence. All role players, but especially the provincial and national state veterinary services, should prioritise and implement measures to preserve our countries' fragile animal health status. After the last outbreak of Foot and Mouth disease we lost almost all of our major export markets for livestock and livestock products for a period of 2 years. Some countries including Australia have in fact still not accepted our Foot and Mouth disease free status that we regained under the OIE in 2015.

Importing countries are continuously requiring increased amounts of information before issuing import permits. For example Brazil requires, among other, 5 Generation Animal Pedigrees, DNA certificates, inspection reports by breed societies, individual animal performance figures as well as official sanitary certificates. All of this data has to be officially verified and signed-off before it is accepted by the Brazilian authorities.

Does SA have the technological infrastructure for large scale genetic exports? South Africa has a number of world class registered export facilities. These facilities are managed by qualified veterinary team leaders whom are registered and regulated by the Animal Improvement Act and Animal Diseases Act. With regards to reproductive technologies I believe most of our registered centres are on par with other international companies / centres.

For a bull to qualify as a semen donor it has to meet all the attached health testing requirements before and during quarantine. The bull also has to be inspected and approved by the Breed society as a semen donor.

It is essential that all bulls registered for exports are representative of the best that the SA Brangus breed has to offer to the world.

CONTACT DR FANIE STEYN ON DRFANIESTEYN@GMAIL.COM OR 051 412 6327

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Mpumalanga Brangus Club

THE SIGNIFICANCE OF THE "COW FAMILY"

For any business that produces a product, consistency and predictability are essential to sustaining demand. In the same manner, purebred cattle breeders strive to produce a product that is in demand by our markets. The attributes that create a *recurring* demand include the performance and quality of the product, our cattle, further enhanced by the *predictability* of these attributes. To instill this predictability in a herd and genetic program, a proven multi-generational cow family is the essential foundation.

ALAN GOODE

The development and advancement of a purebred operation is a continuous process. The most enduring component of the process are the generations of females that are the nucleus of our herds. Sires are selected and introduced for a number of priorities: growth rates, carcass traits, etc. Donors, herd cows and replacement heifers that we select are the most valuable due to the extended contributions they make to fertility, longevity and ultimately profitability.

Now many successful and noted cattlemen and women may counter that bulls contribute more to genetic improvement than do females. Certainly, individual bulls may make a larger genetic contribution to the next generation than do individual females. However, the cow herd is the most important factor affecting genetic improvement, or lack thereof, for at least two reasons. First, the most important traits in the cattle business can only be measured in a female, these being her reproduction cycle and lifespan. Secondly, bulls and their genetic contribution can be changed rather easily, whether raised, purchased, or used by artificial insemination. However, it can take most of a lifetime to develop a truly productive and profitable cowherd. Although individual cows don't typically produce as many direct offspring as individual bulls, their impact over multiple generations should be considered equal if not greater.

Determining the generational cow families that work best with certain sire and sire lines is a method to developing predictability. Establishing a nucleus of proven cow families that include matriarch dams, daughters and granddaughters and blending the generations with targeted sires will result in a product with higher level of predictability.

It is important to be aware of the probability of inbreeding, especially as sons of the core cow families are retained. This threat must be heeded by, again, paying close attention to the genetic results and phenotypic outcome of each generation. When the rate of advancement towards the objective(s) established for a program begins to wane, it may be time to expand the genetic base. This should be done with an eye to preserving the traits and phenotype a program has developed while injecting enough new blood that will reinvigorate the gene pool.

As stated above, the advancement of a genetic program is a continuous process. This requires adopting an objective and impartial view to the trends of a program. Having this will provide the realization of when it is time to introduce new genetics into the gene pool, either from new sires or maternal blood lines, if not both.

Focusing solely on the sire half of the equation is a shotgun approach that will yield a wide range of results. This maybe a method to test sires. However, when the objective is a predictable product, a herd built on a nucleus of generationally tested and proven cow families will provide a more calculated outcome.

Across the Brangus world, country by country, it may be observed that a core set of sires are broadly used for several

generations. Then a new set of genetically superior sires are developed and bred to. However, what is not as widely recognized globally are the cow families that developed each subsequent generation. The significance that the cow family contributes in the development of an animal may be observed in the naming and identification of an individual. In the United States and the International Brangus Breeders Association, each animal is assigned by the breeder a Private Herd Number (PHN), in addition to the association's unique registration number. The PHN becomes the herd brand or tattoo on the animal. The PHN is most often the cow family number followed by the year letter that the individual was born. This numbering methodology signifies the importance of the cow family and linking an individual animal back to a specific dam and family.

As all breeders of cattle know, the long term development of purebred cattle is a generational, multi-factored equation in which the weightings to each factor can change as environments and economics require. Whenever, we can begin strengthen the constants in the equation, such a with core cow families, we can more effectively affect changes and adaptions while still producing a high level of predictability.

ALLEN GOODE

Allen Goode is the managing partner of TRIO Cattle & Genetics. TRIO began raising Red Brangus cattle in 2004, building a brand that is recognized as provider of elite seedstock to Brangus breeders across Central and South America and South Africa. Based in Texas, the TRIO genetic program has been and continues to focus on elite donors and globally recognized sires. The TRIO program has produced six IBBA National Grand and Reserve Grand Champion Females and six IBBA National Grand and Reserve Grand Champion Bulls. Mr. Goode is a graduate of Texas A&M University with a Bachelor of Animal Science and a Masters of Business Administration. He enjoys evaluating cattle of all breeds and has been honored by the judging assignments received at all levels of livestock exhibitions.

TRIO Cattle & Genetics was founded on the principle of partnership and collaboration, and strives to develop partnerships across the Brangus world that advance and promote the great breed of cattle that are Brangus. Mr. Goode has attended the World Brangus Congresses in Paraguay, Australia, and Mexico and is looking forward to visiting South Africa. He serves as Vice President of the Board of Directors for the International Red Brangus Breeders to promote Red Brangus cattle, genetics and breeders. Actively involved in the International Brangus Breeders Association, he serves on the International Committee organizing the 2018 World Brangus Congress, the Show Committee, and the Board of Directors for the Brangus Foundation for the advancement of Brangus focused research.

BRANGUS, A BEEF BREED PHENOMENON

The Brangus breed has become a beef breed phenomenon around the world, especially in countries with hot climate and tough environments.

The breed´s present is really remarkable in South America where the increasing in heads and popularity is amazing. Since the first matings between Brahman and Angus cattle were made back in 1912, actual days are probably the best of times for the Brangus breed and the future looks brighter.

The key of this great success is without any doubt the amazing adaptability and high beef productivity in hot climate, tough environment including insects, hard grass and diseases.

The breed´s versatility and ability to produce and adapt to almost any kind of land and limitations in hot subtropical climate, including temperatures up to 50 degrees Celsius is hard to beat.

To keep the breed moving forward it is a must that Brangus breeders put a lot of selection pressure on their cows on fertility, longevity and high beef production levels. They need to be mated to the most efficient and best genetics carrier's bulls available in the breed.

I have been honored in the last three years as a judge of most of the top Brangus shows in the world. Judging Houston (United States), Palermo (Argentina), the World Brangus Congress (Mexico), Asunción (Paraguay), Esteio (Brazil), Expobra (Argentina) and the Champion of the World gave me the chance to evaluate on firsthand the most valuable genetic tools in the industry.

With this experience on my back and a lot of trips visiting ranches and A.I. studs in different countries I can assume that the breed is in an extraordinary position and the future is bright and promising.

I´m very excited about being the judge of the World Brangus Congress next May in South Africa. I heard a lot of good things about the quality of the cattle and the knowledge and compromise of the breeders of this beautiful country.

"I have been involved in the cattle business for 35 years, more than 70 percent of my lifetime," Ojea said.

CARLOS OJEA RULAN

The Brangus cow is one of the most perfect and dependable beef producing machines.

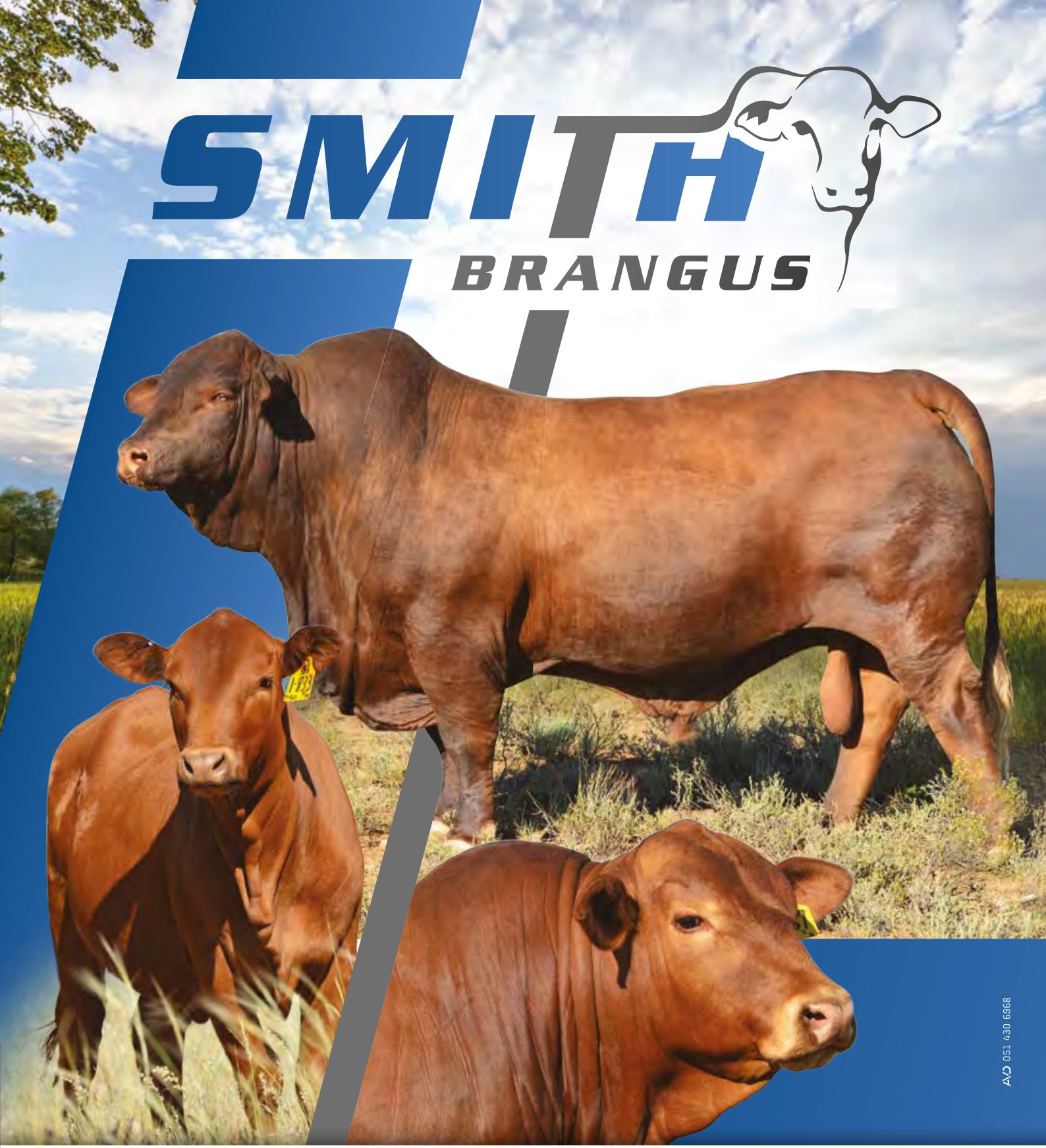
- She can produce normally in temperatures over 35 degrees Celsius, where other breeds ´cows decrease their production.
- Adapts perfectly well to tough environment.
- Notoriously long-lived production with the capacity to produce for up to 40% more time than other breeds.
- Maternal ability.
- Calving easy.
- Short gestation periods.
- Excellent relationship between cow´s weight and calf´s weaning weight.
- Extraordinary functionality.
- Powerful and athletics feet and legs that allow to walk long distances.
- Pigmented hoofs and mucous membrane.
- Short, retractable, glossy and straight hair.
- Cutaneous muscles developed to promote skin´s easy movements.
- High intake volume.
- High digestibility coefficient.
- Excellent feedlot performance.
- Good quality meat, tender, with adequate percentage of fat and excellent flavor.

CARLOS OJEA RULAN

A fifth generation producer from Argentina, Carlos Ojea Rullan and his family have been involved in the cattle business since 1878. One of the world's most prestigious cattleman, Ojea has chosen the Brangus breed as a personal investment.

Ojea manages or consults 17 other cattle companies as well as his own family's operations. In the last 20 years, these ranches have collectively obtained the world record of 124 Grand Champions, Reserve Grand Champions and Third Best bull or female titles in the prestigious global Palermo Show in the Angus, Brangus, Hereford, Braford and Shorthorn breeds. Ojea has also served as a respectable judge in numerous show rings around the world. In the last six years, he has judged 18 of the most prestigious shows in for the Brangus, Angus, Hereford and Braford breeds. Having judged shows in the United States, Canada, Brazil, Argentina, Mexico, Paraguay and Colombia, his extensive experience and knowledge makes him one of the most demanded judges in the world.

SMITH BRANGUS



KONTAK KOSIE SMITH 082 800 2947 • **NICO SMITH** 082 800 2944

GENELINK

Bulle beskikbaar

NASIONALE VEILING: 11 Augustus 2016

GENELINK VEILING: 16 September 2016

SYNCHRONISATION OF OESTRUS IN BEEF CATTLE ON EXTENSIVE PASTURES AND FIXED TIME ARTIFICIAL INSEMINATION IN RSA:

7 KEY AREAS WHERE WE NEED TO FOCUS TO ENSURE SUCCESS

DR WILLEM A. SCHULTHEISS
Ceva Animal Health (Tel: 082 323 7019)

Success of a synchronisation and fixed time artificial insemination (FTAI) protocol means that, on Day 1 of the breeding season, one achieves at least 40% conception, but preferably closer to and exceeding 60%, from the semen of a bull with superior genetics that will increase the beef production per hectare grazing in a sustainable way.

Success is largely determined by the metabolic and reproductive physiological status the female is in at the time of synchronisation. Needless to say: We cannot blindly synchronise any animal and expect superior results.

Success is not only limited in the percentage females that conceive (the higher the conception, the lower the bull costs per calf born/ weaned), but more importantly synchronisation & FTAI also allows for the following 7 advantages: -

- Shortening of the inter-calving period (ICP) of the beef herd
- Earlier calving during the calving season,
- Heavier weaning mass if weaning time remains the same, or, earlier weaning (shorter lactation) to allow time for the dam to regain body condition to the target of 3.0 at the next calving
- Longer recovery periods to re-breeding – especially for first calver cows which then conceive better
- A concentrated calving season where attention to calf survival can be focussed over a shorter time span. This allows for targeted pre-partum supplementation for colostrum quality
- Infusing the herd with superior genetics that are in line with the herd objectives for sustainable production of kilograms beef per hectare grazing land. Heifers not retained in the herd and pregnant from proven, valuable sires, are expected to fetch a higher price when sold as pregnant heifers to other producers
- Given the poor sensitivity of the diagnostic test for *Tritrichomonas foetus* and poor control of biosecurity in extensive regions in SA, the use of FTAI and shortening the contact of females with bulls will decrease the risk of introduction and spread of this serious venerial disease

THE 7 KEY FOCUS AREAS FOR SUCCESS ARE:

1. PREPARE THE FEMALE HERD TIMELY:

a) Adequate dry matter intake (DMI) from pasture with appropriate supplementation is critical from about 100 days before anticipated synchronisation and artificial insemination. This co-incides with the peri-partal period. Females should not be losing excessive body condition before calving (>0.5 score on a scale of 1-5; one score resembling about 50kg burned fat of which the byproducts, fatty acids, have to be "detoxified" by the liver – resulting in fat inflitration of this organ that is pivotal in energy metabolism.

b) Heifers: Body mass (at least 70% of adult mass) and reproductive tract development must be complete (i.e. cycling). Focus to achieve these targets one month in advance of the regular breeding season of primi- and multiparous cows

c) Females must be used to handing in a crush. Wild females will have an adrenalin/ cortisol release at the time of AI which will yield poor conception results

d) Cows: Must be more than 60 days after calving & already starting to gain in body condition – even if it is from a relatively low base of > 2.0

e) Bull semen: Choose a bull(s) that fit(s) the frame size of the adapted adult females which are those that calf early in the calving season.

f) Make the females used to handling and the handling facilities. Wild animals and rough handling lead to adrenalin and cortisol release which increase the risk of non-conception. Preferably inseminate cattle in a facility that they do not associate with unpleasant experiences.

2. CHOOSE THE ANIMALS TO SYNCHRONISE WISELY OUT OF THE TOTAL FEMALE HERD:

a) Given that the heifers are supposed to be the best genetic material, it is obvious that animals from this group are eligible for synchronisation and fixed time artificial insemination (FTAI) – preferably one month in advance of the regular breeding season to allow longer recovery time after earlier calving until the next breeding.

b) Cows that have calved during the first half of the previous calving season are most likely those best adapted (right frame size) to the environment because they cycled early during the breeding season – essentially selecting for the more "fertile" cow.

3. USE A PROVEN PROTOCOL TO I) CONTROL THE FOLLICULAR WAVE AND TO II) SYNCHRONISE OVULATION:

Feed (ample grazing and adequate supplements) availability during the window from one month before anticipated calving until a month after calving is critical for oocyte health and reconception during the NEXT breeding season.

This dictates that **TIMING** of a synchronisation protocol for FTAI is critical. Having run out of sufficient grazing / dry matter during the previous peri-partal period, will make all the hard work undone during the follow-up synchronised breeding season.

Synchronising and FTAI too early can lead to body condition loss before, during and after the calving period - increasing the risk of poor reconception results. On the other hand, when the FTAI occurs too late, females may be calving on abundant grazing with neonates having access to too much milk which they cannot utilise appropriately – contributing to diarrhoea

a) *Day 0:* i) Insert the **Prid®Delta** (Reg. no. G4037; Act 36/1947) intra-vaginal device. Disinfect the introducer in F-10 disinfectant between cows to prevent possible spread of venereal disease and bacterial infections. Use more than one introducer. Lubricate the introducer using Acriflavine & Glycerine. Place the **Prid®Delta** device as deep as possible close to the cervix and ensure that the tail is pulled tight and emerges from the vagina; ii) Inject 2mg Oestradiol benzoate (EB); iii) In Zebu type cattle, especially heifers, use Prostaglandin F2α (Estrumate, MSD or Lutalyse, Zoetis)
b) Because EB and ECP are not registered per se in South-Africa, these need to be compounded as per veterinary prescription (V-Tech). In this regard the veterinarian, inseminator, semen company and farmer need to be aligned regarding oestradiol requirements for the planned herd synchronisation
c) *Day 8*: i) Remove the **Prid®Delta** device; ii) Inject Prostaglandin F2α; iii) Inject Oestradiol cypionate (ECP, V-Tech), and iv) inject 300 IU Equine Chorionic Gonadotropin (eCG or PMSG, Chronogest, MSD Animal Health)
d) In terms of handling the EB and ECP protocol dictates that handling of the herd to be inseminated only takes place three times (FTAI included) as opposed to an extra handling when EB has to be used at 24 hours after **Prid®Delta** removal, instead of ECP administration at **Prid®Delta** removal.

4. ENSURE ARTIFICIAL INSEMINATION IS PERFORMED TIMELY

a) Day 10: Inseminate heifers and cows respectively 48 and 56 hours after **Prid®Delta** device removal
b) Where large groups of females have been synchronised, one must ensure that the FTAI takes place as close as possible to the recommended time elapsed since removal of the **Prid®Delta** device
c) The net logistics is that with this protocol the cattle are handled only three instead of four times – the latter when Oestradiol benzoate (Cidirol, Zoetis) only is used.

5. CHOOSE BULLS WISELY

a) If the female replacement offspring has the frame size that resembles that of the adapted dams that conceive and calve earliest, we need to choose a bull with similar frame size.
b) Remember that the frame size of female off-spring retained for replacement in the herd determine the production and reproduction efficiency of the future cow herd. Use a bull that fits that frame size. This prerequisite is superior to any other trait that one may wish to increase genotypically in the herd, even through the use of genomics
c) The use of sexed semen: Female sexed semen always to be used on the heifers and best adapted, older cows that have proven themselves in a particular environment by having calved earlier; Male sexed semen may be considered on cows that calved later and preferably not on heifers to avoid calving difficulties

6. INSEMINATION PROFICIENCY

a) Thaw straws at 35°C for 20 seconds; do not thaw more than 5 straws at a time
b) Warm the pistolette before loading
c) Use sanitary sleeves
d) Deposit the semen in the anterior cervix
e) Handle cattle as calmly as possible during the process: No whips, prodders or dogs
f) A single inseminator should not perform more than about 40 inseminations in succession. He / she should take a break before carrying on. It is unacceptable if one person attempts to perform 200+ inseminations on one day/ part thereof, and then allows the bull in immediately afterwards To cover up the poor AI conception results due to inseminator fatigue.

7. ACTIONS AFTER INSEMINATION

a) Prevent any stressful actions for the first 3 weeks after FTAI: Heat stress, herding, co-mingling, applying home-mixed, agricultural pyrethroied dips. All these affect embryo survival through recognition of pregnancy by the dam – resulting in early embryonal deaths and return to oestrus later on in the breeding season.
b) To distinguish between FTAI conceptions and follow-up bull conceptions, one need to allow a period of at least 10 days after FTAI before bulls are introduced
c) Use 1 follow-up bull to 20 cows. More cows per bull may lead to lower conception on the first synchronised oestrus after FTAI. In this regard bull breeders (stud) need not be concerned that FTAI will erode on bull sales or bull value.
d) Perform pregnancy diagnosis, preferably by ultrasound from Day 25 after FTAI to evaluate the success of FTAI
e) Evaluate the return on investment (ROI): The value of genetic improvement is difficult to communicate monetarily, but it should at least increase the beef yield per hectare grazing.

In summary, the five main aspects which help ensure conception and which are intimately related with each other, over which we have to take firm control, and which ultimately determine the net result of FTAI, are the following:

- **Female fertility** in terms of ovulation of a healthy oocyte and a receptive healthy endometrium at the time of implantation
- **Synchronisation** of the time of ovulation (LH peak) to be as tight as possible using an appropriate protocol and performed at the right time of year/ season
- **Sperm health** post-thaw or in extended fresh semen
- **Inseminator** proficiency & insemination technique
- **The 2 weeks post-AI** are most critical to ensure recognition of pregnancy by the dam.

Rayvor BRANGUS

MMmm they good

Melmoth, KZN ⭑ Contact: Alistair McMurray
073 231 6785 ⭑ mcmurray@mweb.co.za
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THE CANGO CAVES are a series of dripstone caverns in Oudtshoorn, Western Cape that open into vast halls of towering stalagmite formations with names like 'the bridal couple', 'glass flower fantasy', 'weird cango candle' and 'the hanging shawl'.

GENETICS

BEEF CATTLE SELECTION USING DNA MARKERS

JOHN RAFFERTY

1. INTRODUCTION

In order to attain Genetic Progress, a few aspects must be applied constantly to a population of Beef Animals. The traits should be economically linked, be heritable and they should be measurable. The traits in question should also be correlated to other traits that are being selected for.

Using DNA Markers allows us to select accurately for specific genetic variations which are associated with specific traits. Often there are many gene markers that contribute to a specific trait. The occurrence of other unidentified markers and the production environment will determine whether the animal actually displays the desired phenotype. Economically valuable examples of these traits include weaning weight, Milk production or even intramuscular fat.

2. SELECTING FOR TRAITS

When making selection decisions EBV's should be considered, even in the presence of marker data, as they estimate the breeding value of all the unmarked genes that contribute to the specific trait. Marker assisted selection should be seen as a tool to assist with, and not replace the traditional selection techniques.

3. GREATEST BENEFITS WHEN USING MARKERS

Potential benefits when using markers are greatest for traits that have low heritabilities, or where the predicted values are poor predictors of breeding value. Traits that are expensive to measure such as Residual Feed Intake are also included. Some traits can only be measured until much later, such as meat tenderness and some fertility measurements. Advantages can be gained when selecting for traits that carry correlations with traits that you do not wish to increase.

The following categories of traits are likely to benefit most from marker assisted selection:

1. Simply inherited traits
2. Carcass Quality traits
3. Fertility of reproductive efficiency
4. Carcass Yield
5. Maternal ability
6. Growth performance

4. IDENTIFIED MARKERS

Genetic markers associated with marbling and tenderness have become available. These markers are associated with only one or few of the genes that contribute to the traits. Cattle can be genotyped for the desirable form of the marker by analysing DNA collected from hair tissue or semen samples.

5. RECENT DNA DEVELOPMENTS

DNA testing has moved from marker tests involving a handful of markers explaining about 10% of the variation to panels involving thousands of markers. Most traits of interest to Beef producers are likely to be controlled by large numbers of genes. These high density evaluations will enable Breed Societies to include the DNA estimates into their Estimated Breeding Values.

The eventual value of the DNA test will be dependent on how much the DNA test improves the accuracy of the EBV.

6. THE NEED FOR MANY MARKERS

Initially it was thought that a few markers would be sufficient to identify a significant portion of the genetic variation in economically important traits. It is now apparent that this concept was oversimplified and many hundreds or thousands of markers will be required to adequately identify enough of the genes that account for a significant portion of the genetic variation. The key will be to validate these markers in a well recorded current cattle population to determine how much of the genetic variation they explain within the population for economically important traits. If they account for a significant amount of the variation, then gene markers can be used in isolation to confidently select genetically superior cattle.

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3. Marker Assisted selection in Beef Cattle. Allison Van Eeneman.

JOHN RAFFERTY

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He's been working in the agricultural industry since 1984 and has been the Breed Director of the Brangus Cattle Breeders Society since 2013.

COMBINING THE EYE AND THE WEIGHT SHEET TO CREATE MAGIC

JOHN RAFFERTY | BREED DIRECTOR: BRANGUS

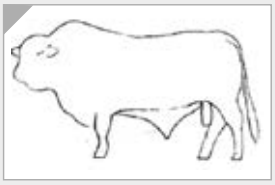
"Just as Leonardo Da Vinci brought different Paints and Canvass Together to create Magic so must the Breeder bring his Stockman Instincts and the Breeding Values together to Create the Magic "

INTRODUCTION

All too often the Stockman and the Animal Geneticist see each other as threats. Whether or not they wish to understand each other's differences, the truth is that they need each other if performance progress though genetics is to be secured. Putting these two so called partners in opposite corners of the boxing ring may well be comforting in the very short term but certainly not in the interests of progress in the long term.

THE EYE

Evaluating cattle by using only visual appraisal certainly has its uses, but on its' own it remains at best a very crude tool that is clouded with subjectivity. Where visual appraisal has a role to play is in the elimination of poor traits that effect the performance of the animal itself and secondly to avoid the chances of the poor trait being passed on to offspring. Let us mention functional failures among some of the attributes currently viewed as cull traits: Straight Hocks (seriously affects walking ability), Very Long Sheath on a Bull (leads to complications later), Undershot Jaw (inability to use veld properly), Shallow or Grown Out Hooves (compromises walking),



When judging merit of performance by visual appraisal, only the subjectiveness of the action does not result in steady and constant pressure on breeding objectives. This results in haphazard progress.

TO PROGRESS BEYOND THE EYE ONLY METHOD WE NEED TO TAKE COGNISANCE OF THE FOLLOWING THREE ASPECTS:

1. THE HERITABILITY OF THE TRAIT

The heritability of any trait is determined by the mathematical reappearance of that trait in the offspring. This is influenced by accuracy of measuring, the strength of the environment on the expression of the trait and ultimately the DNA actually reappearing in the offspring. Often these can be classed in to Low, Medium or High heritability which can range from 0.5% through approximately 60%.

Heritability measures the fraction of phenotype variability that can be attributed to genetic variation. Both genes and environment (this includes management as well) may influence a particular characteristic. The balance of genes vs. environment is expressed in the heritability estimate. If the influence of the gene component is only as large as 10% vs. the 90% of the environment then the heritability estimate of the trait in question is 10%.

Genetic progress is more marked where the heritability is higher. When the heritability of a trait is low it may be easier to focus on associated traits with higher heritability.

2. CONSTANTLY APPLYING BREEDING OBJECTIVES OVER SEVERAL GENERATIONS

Selecting for fewer traits of higher heritability will guarantee faster selection progress in those traits. When setting breeding objectives, prepare to select for repeated generations to guarantee progress in the particular characteristics. Selecting for too many traits will result in little real progress over generations for any particular trait. Breeding Objectives should be in writing and also measurable. A recommendation from literature is then to select a few traits of economic relevance, weigh the different values in comparison to each other, and then form a mathematical index to rank animals. The top listed animals are the chosen individuals to breed with over generations.

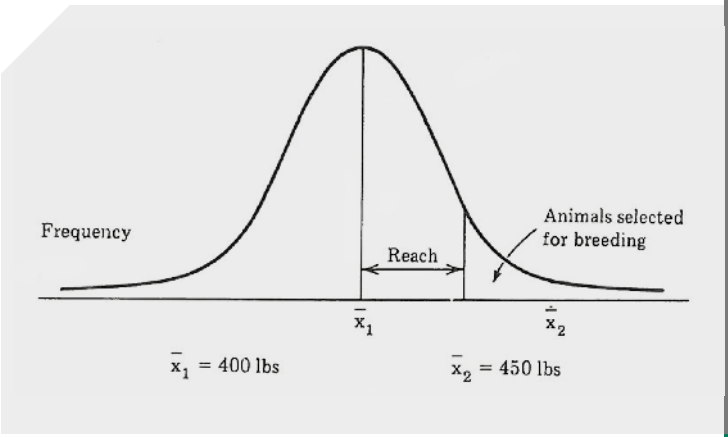
An Example May be: To select for Milk, Weaning Mass and to discriminate against extremes in Birth Mass and Mature Cow Weight. Step one is to attribute the proportion of 100 to each of the traits. See the Table below:

Milk	+25%
Weaning Mass	+40%
Birth Mass	-10%
Mature Cow Weight	-25%

Using these values rank to potential sires according to the formulae and constantly use sires that rank highest in the index. This counts for own bred, bought in sires and potential sires together.

3. CONSISTENT CULLING OF FUNCTIONALLY INEFFICIENT ANIMALS

Certain undesirable phenotypic traits or undesirable genetic variations should be defined and constantly applied. Removing these individuals from the breeding list will not only prevent farming with these animals but also not breeding with them. Most heritabilities of visual appraised traits do not have high heritabilities because of the error in the scoring of these traits. The best recipe for these traits is the chopping off of the tail principle which should be used prior to the appllist will not only prevent farming with the animals but also not breeding with them. Most heritability of visual appraised traits do not have high heritability because of the error in the scoring of these traits. The best recipe for these traits is the chopping off of the tail principle which should be used prior to the applying of the selection index.



ACHIEVING THE MAGIC

Being constant in the application of defined breeding objectives and combining the EYE for removing the undesirable traits with the most accurate evaluation of economic traits namely EBVs, will bring any breeder closer to achieving Breeding Magic. Using a well measured track record, setting achievable goals, and continued measuring can result in a predictable future performance.

"The truth and consistency of your selection will determine the level at which your stud will pitch one day "

JOHN RAFFERTY

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Malherbe & Roberts

17de Jaarlikse Stoetveiling

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THE FUTURE OF RFI

BRANGUS SA

INTRODUCTION

Selecting cattle that consume less feed without production losses can increase the profitability of the cow calf producer by reducing costs. Genetic selection based on historical measures of feed efficiency or feed to gain ratios is unable to improve this trait because of correlations between feed efficiency and weight gain. Residual Feed Intake (RFI) is an alternative measure of feed efficiency that is independent of body weight and growth traits. RFI is the difference between an animal's actual feed intake and expected feed intake.

IMPROVEMENTS

Stud Breeders sell bulls to cow/calf producers. These cow/calf producers select bulls that are perceived to have the greatest potential to improve the genetics of breeding cows and their offspring.

Pharmaceutical technologies have improved the performance of feedlot cattle and increased the health and performance of cow herds. The major long term improvements of animal efficiencies lie in the field of genetics. Two factors determine whether it is worth spending effort on a performance and they are variance in the trait and secondly is the trait heritable.

FEED INTAKE

Recently beef genetic selection has focussed on growth and then carcass attributes. Feed Efficiency and Feed Conversion Ratio are defined as the amount of feed required by an animal to gain a kilogram of weight. In feedlot cattle on high concentrate diets the ratios average approximately 6Feed ratios have improved over time though the use of feed additives. The selection for improved ratios have indirectly selected for faster gaining larger animals.

Residual Feed Intake is an alternative measure of feed efficiency and is independent of growth traits. RFI is calculated as the difference between an animals' actual feed intake and it's expected feed intake necessary to meet requirements for maintenance plus growth or production based on body size and average daily gain.

THE CALCULATION OF RFI IS PERFORMED USING THE FOLLOWING STEPS:

The initial BW and ADG are predicted from a series of actual body weight measurements recorded periodically through a test period. Metabolic weight is computed following the predicted initial BW and is multiplied by the predicted ADG and number of days on feed to estimate a final weight. RFI is a measure of the variation of feed intake beyond that which is needed to meet maintenance and a specified growth rate. Computing RFI for small numbers of animals within a breed can present flawed values.

Metabolic weight is used to predict RFI because it is a more accurate estimate of feed consumption by an animal, and is proportional to maintenance feed intake.

A positive RFI indicates an animal is consuming more feed than is expected and is, therefore not feed efficient. A negative RFI indicates an animal is consuming less feed than is expected and is therefore feed efficient. A zero RFI indicated the animal is consuming an amount of feed that the animal is expected to consume. Heritability estimates for RFI indicate a range from 0.16 to 0.43 which represents a moderately heritable trait. Carcass traits such as rib-eye area (0.70) and intramuscular fat (0.50) are considered highly heritable traits. Selecting for lower RFI cattle has the potential to decrease feed intake in cows and pre-fed cattle without compromising mature cow size, cow performance, or feedlot growth performance. Improvements in feed efficiency can have a considerable economic impact. Feed savings in terms of grazing may also be realized by selecting for more efficient cows.

USING BULLS TO DRIVE YOUR PROGRESS

The majority of genetic improvements in the cattle industry occur through bull selection. Bulls are valued for their expected value in production. To help producers evaluate bulls, EBVs (Estimated Breeding Values) have been developed. These are based on heritable characteristics that are passed onto their offspring.

While RFI has the potential to benefit the cattle industry, Genetic selection strictly on the basis of RFI, could be counterproductive. The majority of genetic progression in cattle production occurs through the use of bulls or bull semen. Bulls are selected for a mix of performance, efficiency and other traits to maximise profitability. Therefore identifying correlations between RFI and other economic traits could be valuable to cattle producers. Studies on the effects of RFI on meat quality have found no difference between high and low RFI animals. Minimal correlations between RFI and body composition have allowed researchers to develop multi-trait economic indices to aid producers in selection of feed efficient genetics. The ultimate goal of RFI research is to use DNA or other predictive markers to identify genes that carry this feed efficiency characteristic.

Bulls EBVs have been used in the beef industry to facilitate genetic section. An emphasis is placed on bull genetics because they represent 50 % of the genetics of the calf crop and 90 % of the genetic change in cow herds for producers who retain replacement heifers. The value of a bull can be determined by the length of time a bull is to be used and measured physical attributes such as temperament, fertility, structural soundness, age , birth weight, number of offspring and EBV performance traits. Most producers consider the purchase of a bull a long term investment and plan to use a bull based on physical soundness.

CONCLUSION

Historically bulls were selected using visual appraisals which included structural soundness appearance conformation breed and temperament and reputation of the breeder. Bull prices can also have positive correlations to calf prices and cow inventory. Positive correlations to EBVs can also be found with weaning mass and milk production.

References
The Economic Value of RFI TJ McDonald

TOVIC BRANGUS

JOHAN BLOMERUS | 082 550 7622 | JOHAN@TOVIC.CO.ZA
HANO BLOMERUS | 072 356 8481

TOVIC

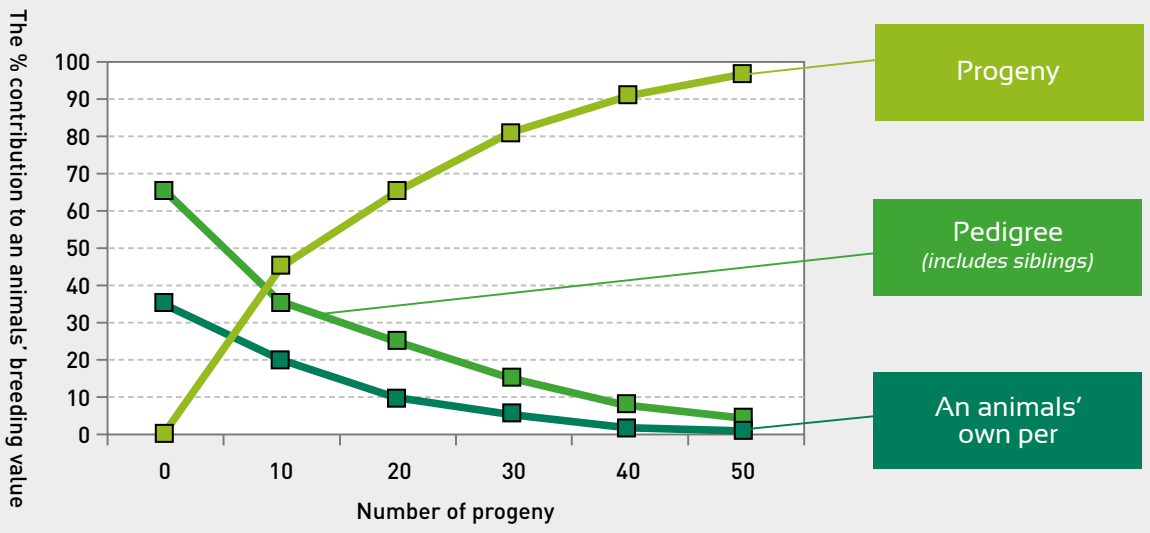
IF IN DOUBT, REQUEST A DIAGNOSTIC

DR MICHAEL BRADFIELD
Breedplan SA

An Estimated Breeding Value (EBV) is without doubt the best predictor of an animal's genetic worth for economically important traits such as growth, fertility, efficiency and carcass. It is now used by all leading producers and Societies internationally for the selection of animals.

An Estimated Breeding Value uses all sources of information and starts with information from the pedigree. How well mom and dad performed is a good start of how we can expect the progeny to perform. However, because of the way that genes segregate the accuracy is still reasonably low. When the performance of the animals itself is added to the equation the accuracy of the EBV increases. Once the progeny start accumulating we really have certainty of the "real" breeding value of the animal. The relationship between traits is another source of information that increases the accuracy of an animals breeding value. Figure 1 shows how the sources of information are partitioned over time.

EBV's uses 3 main resources of information



Progeny is the ultimate test of an animals' genetic worth

ENSURING FAIR COMPARISONS BETWEEN ANIMALS

When doing a diagnostic, the first step is to compare the animal's performance with that of his contemporaries. In all analyses the first step is to adjust the performance of an animal according to age and age of the mother. Animal are then compared to one another based on performance. The recording of performance information in a properly formed contemporary group is one of the most important aspects of any genetic evaluation. If the contemporary groups are not correctly formed, the EBVs calculated will be less accurate and will probably be misleading.

Most of the misleading EBV provided relate to the incorrect information for a contemporary group.

The breeder has a major influence on deciding which animals will be directly compared within each contemporary group. This influence is through both their on farm management and the submission of management group information to the Society. In this manner, it is vital that breeders understand the factors that influence the formation of contemporary groups to ensure they maximise the effectiveness of their genetic evaluation. **BREEDPLAN** automatically creates the contemporary groups of animals for comparison based on criteria similar to that outlined in the Table below. The exact criteria used will differ depending on the trait being analysed.

AUTOMATIC	AUTOMATIC, BUT CAN BE BREEDER INFLUENCED	BREEDER SUPPLIED
1. Herd 2. Calving Year 3. Sex of Calf 4. Twins/Single 5. Birth Status (ET) 6. Dam Age	7. Breed 8. Weight Date 9. Calf Age (Slicing)	10. Breeder Defined Management Groups - birth - post-birth

THE FOLLOWING SECTION PROVIDES MORE DETAIL REGARDING EACH OF THESE CRITERIA

1 HERD

Only calves bred and weighed in the same herd will be directly compared in the same contemporary group.

2 CALVING YEAR

Only animals born in the same "calving year" will be compared together in the same contemporary group.

Usually the calving year is the same as the year of birth of the calf. However, for herds whose calving period runs into the next calendar year (eg. from November through to March), "calving year" can be specified to span the period running across two different calendar years. This may be applicable to herds in northern Australia that calve over the summer months. In these cases, a financial year is more appropriately used as the "calving year".

3 SEX OF CALF

Only calves of the same sex at measurement will be directly compared in the same contemporary group (ie. bulls with bulls, heifers with heifers, steers with steers).

Note that males that are weighed initially as bulls and then castrated will have their first weight compared with all the other males and their second weight only with the steers.

4 NUMBER IN BIRTH (SINGLES/TWINS)

Only calves of the same birth number will be compared together in the same contemporary group. In other words, single calves will not be compared with twins.

While twins can potentially be compared with other twins, the low occurrence of twin births generally means that very little performance information from twins is used in the BREEDPLAN analysis.

5 BIRTH STATUS (ET/NATURAL)

Calves conceived naturally or by AI will be directly compared together in the same contemporary group but they will not be compared with embryo transfer (ET) calves. In other words, ET calves will be analysed in a separate contemporary group.

6 AGE OF DAM

The birth performance records for calves out of first calf heifers (up to 3.5 years of age) are not compared with birth performance records for calves out of other cows.

7 BREED %

In the Brangus analyses, only the performance records for calves of the same breed percentage will be compared together in the same contemporary group.

8 MEASUREMENT DATE

Only animals measured on the same date will be compared together in the same contemporary group. In addition, only animals with the same measurement history will be directly compared.

9 CALF AGE AND SEASONAL SLICE

Only animals of similar age will be directly compared in the same contemporary group.

When all the other criteria have been used to place animals into a contemporary group, the group is divided (sliced) into animals of similar ages. "Slicing" is done to ensure that the calves being compared have been run under comparable seasonal conditions.

For example, if the age slicing for 200 day weight is 45 days. The first calf born in the group is the start and the contemporary group will include all animals born in the next 45 days. After this the next calf is found and this becomes the start of the next contemporary group.

NOTE – This age slicing varies depending on the trait being analysed. In addition, the age slices used may vary from breed to breed. Table 2 provides an indication of the standard age slices used by **BREEDPLAN.**

Table 2: Standard Age Slicing and Ages for BREEDPLAN Traits

Trait	Age Range (days)	Standard Age (days) #	Slicing
+ Gestation Length	520-(20yrs)	-	6 months
Birth Weight	0	-	45 days
Δ 200 Day Milk	760 days-(20 yrs)	-	-
200 Day Weight	80-300	200	45 days
400 Day Weight	301-500	400	60 days
600 Day Weight	501-900*	600	60 days
Scrotal Size	300-700	400	60 days
+ Days to Calving	600-3650	-	6 months
Scan Fat	300-800	500	60 days
Scan EMA	300-800	500	60 days
+ Calving Ease	600-(5 yrs)≈	-	4 months

Each trait is adjusted to a standard age before comparisons are done.
+ These are measures on the **cow** when the calf is born.
≈ For calving ease, all cows older than 1900 days are treated as "mature cows".
Δ The 200 day milk EBV of the **cow** is estimated from the 200 day weight of the **calf**. Cows older than 12 years are treated as mature cows.

BREEDER DEFINED MANAGEMENT GROUP

Only animals in the same breeder defined "management group" will be directly compared in the same contemporary group. The Management Group" allows breeders to identify animals that have received different treatment or management at or following birth that has influenced their performance. This treatment may be deliberate (eg when some of your young bulls receive supplementary feeding and others do not) or accidental (eg if a calf is sick).

Providing **BREEDPLAN** with management group information is the responsibility of the producer. The key principle is that "like" must be compared with "like".

REQUESTING A DIAGNOSTIC

First have a look at the animal's performance relative to his or her contemporary group. In most instances this usually explains why an animal obtained a particular EBV relative to his/her peers. The diagnostic for Milk EBV's are more complicated because it relies on the performance of a bulls granddaughters to provide the required information. Speak to the office and request a diagnostic if you are unsure of why an animal obtained a specific EBV.

DR MICHAEL BRADFIELD

Dr Michael Bradfield obtained his BSc at the University of the Free State, MSc at the University of Edinburg (Scotland) and PHD at the University of New England in Australia. He heads up BREEDPLAN in Southern Africa and also works as an international consultant in partnership with ABRI in Australia for various International organizations.

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SW0930 "Diesel"
2015 Gold Medal: "Brangus - Champion of Asia/Africa"

L11304
2015 Silver Medal: "Brangus - Miss Asia/Africa"

PANANYAMA RANCH

Every country is Brangus country

AI CATALOGUE

MCR SUPER 250/4

Ideal sheath
Medium frame bull
out of Americal lines
Good walking ability
5 Generation pedigree

PEDIGREE

RR10099056 BKC LEGACY'S SUPERMAN 101U DDF
C10023034 CX PAYNASTER 54/J
RR602832 CX EXCALIBUR 1/M1
C10023175 MISS DOGWOOD CREEK 1/6
RR10025184 BCC NANCY'S BYTE 101R1
RR600936 CX CHIEF CARDINAL 847/G
RR603006 BCC MS BUFFALOE 101N
RR600938 CX MS. SUPERSENSATION 101G
MCR SUPER 250/4
RR600713 OAK CREEK'S JK 33D
RR602767 SUREWAY'S RED JACK MR 123L
RR601332 SUREWAYS MISS 214F
C10061226 [2/6] MARVEL'S RED GATOR 2/6
C10029942 [14/0] M & M MONUMENT 14/0
C10059124 [162P] R2 MS FH RED 162P
DAM: RR10181738 [41/0]
MISS MCDONALD 41/0

Spring 2015 Results

		C.E Direct	Birth Weight	Weaning Weight	Yearling Weight	Milk	Total Maternal	C.E. Maternal	Scrotal Circ	US REA	US % IMF	US F.T
Subject	EPD	2.4	1.7	12	11	6	12	3.6	0.11	0.03	-0.02	-0.047
	± Chg	6.7	2.2	11	17	9		5.9	0.54	0.28	0.14	0.014
% Ranked	ACC	0.20	0.23	0.19	0.09	0.07		0.11	0.16	0.09	0.06	0.07
vs. Non-parents	% Rank	90	70	95	>95	90	>95	60	85	>95	60	40
Sire	EPD	3.1	1.8	15	20	1	9	4.0	0.23	-0.15	-0.05	-0.050
	ACC	0.61	0.74	0.52	0.23	0.16		0.25	0.49	0.29	0.19	0.26
	% Rank	80	70	85	90	>95	>95	40	65	>95	70	25
Dam	EPD	1.8	1.6	8	3	10	15	3.0	-0.01	0.08	0.00	-0.040
	ACC	0.28	0.37	0.28	0.13	0.12		0.20	0.24	0.07	0.04	0.05
	% Rank	95	70	95	>95	45	18	80	85	75	40	80

HAMMER P124

Well balanced
Medium frame
Ideal sheath
Structurally very correct
black bull
Descendant of Sundance

PEDIGREE

MR CENTER RANCH
FERTILITAS 0453 DINGAAN
BAUMEISTER BM 9715
FERTILITAS 06102
ELANDSPRUIT 9703
ELANDSPRUIT 00210
LETUKA SC9261
PRESTIGE P124
SUNDANCE OF BRINKS 392G9
SUNDANCE
BULBRAN K2999 ELF
AVENANT A08255
STERKSPOOR 03711
AVENANT A06205
AVENANT A02611

APRIL 2016 South African Brangus GROUP BREEDPLAN EBVs

	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat Day Wt. (kg)	Milk (kg)	Scrotal Size (cm)	Days to Calving	Carcase Wt. (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF %
EBV	-	-0.6	+12	+13	+14	-	+6	-	-	-	-	-	-	-	-
Acc	-	71%	62%	55%	56%	-	40%	-	-	-	-	-	-	-	-
Breed Avg. EBVs for 2014 Born Calves Click for Percentiles															
EBV	-0.4	+1.3	+12	+18	+24	+25	+2	+0.3	-0.9	+14	+0.1	+0.0	+0.0	+0.3	-0.1

TRAITS OBSERVED: BWT, 200WT, 600WT (x2)

PEDIGREE

MR EXTRA'S 382/5
V5 97 005 OSCAR EXTRA
BRANSEL MISS 10 93
V5 99 103 EXTRA
MIDDLEDALE 58 85
V5 96 4
BRANSEL BS 86 787
WHYTE BANK 0752 DE KOCK
KEEVERSFONTEIN 91 28
KEEVERSFONTEIN KB 94 15
KEEVERSFONTEIN 89 94
T-X 0025
KATRUMA PC 157 92
T-X 97 19
T-X BLACK PRINCESS 94 22

DE KOCK WBF 0752

Medium frame bull with a good sheath

Structurally correct progeny

APRIL 2016 South African Brangus GROUP BREEDPLAN EBVs

	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat Day Wt. (kg)	Milk (kg)	Scrotal Size (cm)	Days to Calving	Carcase Wt. (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF %
EBV	-2.6	-0.9	+10	+13	+12	-1	+5	-0.6	-1.7	+10	+0.1	+0.0	+0.0	+0.3	+0.1
Acc	67%	96%	92%	91%	88%	84%	68%	62%	53%	76%	42%	49%	49%	40%	35%
Breed Avg. EBVs for 2014 Born Calves Click for Percentiles															
EBV	-0.4	+1.3	+12	+18	+24	+25	+2	+0.3	-0.9	+14	+0.1	+0.0	+0.0	+0.3	-0.1

TRAITS OBSERVED: 200WT (x2) • **STATISTICS:** Number of Herds: 8, Progeny Analysed: 136, Scan Progeny: 10, Number of Dtrs: 13

PEDIGREE

V598126
V5 0250 THICKSET
V597161
V50786 THICKSET PREDOM
V5 97005 OSCAR EXTRA
V5 99107 PREDOMINANT EXTRA
V5 9546
AVENANT A1132 KALAHARI
DELTAQUE 01533
D 03783
DELTAQUE 00465 HESTRIE
AVENANT A 0721
AVENANT 02438

KALAHARI A1132

Strong Bull: 2014 Brangus National Champion
Trait leader Birth Wt.
200 Day Wt.
Very strong for growth

APRIL 2016 South African Brangus GROUP BREEDPLAN EBVs

	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat Day Wt.(kg)	Milk (kg)	Scrotal Size (cm)	Days To Calving	Carcase Wt. (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF %
EBV	-	-0.1	+18	+26	+32	+41	+6	-	+1.0	-	-	-	-	-	-
Acc	-	87%	80%	73%	72%	61%	42%	-	31%	-	-	-	-	-	-
Breed Avg. EBVs for 2014 Born Calves Click for Percentiles															
EBV	-0.4	+1.3	+12	+18	+24	+25	+2	+0.3	-0.9	+14	+0.1	+0.0	+0.0	+0.3	-0.1

TRAITS OBSERVED: BWT, 200WT, 600WT • **STATISTICS:** Number of Herds: 5, Progeny Analysed: 65,

PEDIGREE

STERKSPOOR 00438 POPEYE
STERKSPOOR L05808
L 96222
LABRAN 0942
LABRAN 0021
WYKING NVW 12303
T-X 98 73
LABRAN 0260
LABRAN J 17
WYKING 05303
WYKING 0341

TARZAN NVW 12303

Excellent Constitution
Combination of good figures and body length
Medium frame bull

APRIL 2016 South African Brangus GROUP BREEDPLAN EBVs

	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat Day Wt. (kg)	Milk (kg)	Scrotal Size (cm)	Days to Calving	Carcase Wt. (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF %
EBV	-	+0.5	+12	+16	+21	-	-	-	-	-	-	-	-	-	-
Acc	-	86%	66%	56%	61%	-	-	-	-	-	-	-	-	-	-
Breed Avg. EBVs for 2014 Born Calves Click for Percentiles															
EBV	-0.4	+1.3	+12	+18	+24	+25	+2	+0.3	-0.9	+14	+0.1	+0.0	+0.0	+0.3	-0.1

TRAITS OBSERVED: BWT • **STATISTICS:** Number of Herds: 1, Progeny Analysed: 25

APOLLO BM11159

Excellent Constitution
Combination of good figures and body length
Trait leader 400, 600 day Wt
Broad calves

PEDIGREE

CR COPPER 9T6/9
EL CID 52/U5
MISS 4J 52/2
BAUERMEISTER 08 136 VOORBLAD
KATRUMA PC3787
HARMONY HA 98385
HARMONY 92213
BM11159
DELTAQUE01 590
STERKSPOOR 04723 STRETCHER
STERKSPOOR 02 580
BAUERMEISTER BM 07161
ELANDSPRUIT 00 511
ROSE 0460
ROSEWALL 0142

APRIL 2016 South African Brangus GROUP BREEDPLAN EBVs

	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat Day Wt. (kg)	Milk (kg)	Scrotal Size (cm)	Days to Calving	Carcase Wt. (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF %
EBV	-	+3.5	+15	+25	+41	+44	+1	+0.1	-	+19	-	-	-	-	-
Acc	-	88%	80%	76%	71%	63%	39%	54%	-	61%	-	-	-	-	-
Breed Avg. EBVs for 2014 Born Calves Click for Percentiles															
EBV	-0.4	+1.3	+12	+18	+24	+25	+2	+0.3	-0.9	+14	+0.1	+0.0	+0.0	+0.3	-0.1

TRAITS OBSERVED: BWT, 200WT, 400WT, 600WT, SS • **STATISTICS:** Number of Herds: 2, Progeny Analysed 34

DIESEL SW0930

Excellent Constitution
Well balanced
Ideal sheath
Excellent depth and width
2015 Brangus Proven bull of the year

PEDIGREE

KATRUMA PC 1 89
KATRUMA PC 106 93
KATRUMA PC 9 87
STERKSPOOR 06887 KOPERKOP
WINCAC MR. PREDOMINANT 706/0
L96222
STERKSPOOR 91772
SW0930 DIESEL
V5 97 005 OSCAR EXTRA
V5 0501 105 EXTRA
V5 96 064
SMITH-BRANG SB07271
V5 98126
SMITH-BRANG 02 13
V5 94 240

APRIL 2016 South African Brangus GROUP BREEDPLAN EBVs

	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat Day Wt.(kg)	Milk (kg)	Scrotal Size (cm)	Days To Calving	Carcase Wt. (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF %
EBV	-	+1.5	+16	+20	+24	+25	+3	+1.7	-	+14	-	-	-	-	-
Acc	-	94%	88%	80%	82%	50%	39%	75%	-	67%	-	-	-	-	-
Breed Avg. EBVs for 2014 Born Calves Click for Percentiles															
EBV	-0.4	+1.3	+12	+18	+24	+25	+2	+0.3	-0.9	+14	+0.1	+0.0	+0.0	+0.3	-0.1

TRAITS OBSERVED: BWT, 200WT, 400WT, 600WT, SS • **STATISTICS:** Number of Herds: 5 , Progeny Analysed 117, Number of Dtrs: 2

BILLY BOY RCM1237

Excellent Constitution
Excellent depth
Exceptional width
Good walking ability
Combination of good figures and body length
Only AI sire from the Sonny Bill bloodline

PEDIGREE

DELTAQUE 00495
SMITH-BRANGUS SB05145
MAIZE VALLEY MV 20 98 F3
ROECHAMA SONNY BILL 08 34
ROECHAMA 99 131
ROECHAMA 0563
ROECHAMA 0180
ROECHAMA 1237
ROECHAMA 9630
ROECHAMA 99131
ROECHAMA RCM 9521
ROECHAMA 0714
ROECHAMA 9610
ROECHAMA 0162
ROECHAMA RCM 9113

APRIL 2016 South African Brangus GROUP BREEDPLAN EBVs

	Gestation Length (days)	Birth Wt. (kg)	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Mat Day Wt. (kg)	Milk (kg)	Scrotal Size (cm)	Days to Calving	Carcase Wt. (kg)	Eye Muscle Area (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)	IMF %
EBV	-	+0.9	+12	+17	+26	-	+2	-	-	-	-	-	-	-	-
Acc	-	90%	77%	66%	69%	-	40%	-	-	-	-	-	-	-	-
Breed Avg. EBVs for 2014 Born Calves Click for Percentiles															
EBV	-0.4	+1.3	+12	+18	+24	+25	+2	+0.3	-0.9	+14	+0.1	+0.0	+0.0	+0.3	-0.1

TRAITS OBSERVED: BTW, 200WT (x2) • **STATISTICS:** Number of Herds:5, Progeny Analysed 66:, Scan Progeny: 0, Number of Dtrs: 0

CRV
XSEED

BETTER COWS | BETTER LIFE
WWW.XSEED.CO.ZA

WE'VE GOT YOUR GENETIC NEEDS COVERED

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The **BLYDE RIVER CANYON** is a significant natural feature of South Africa, located in Mpumalanga, and forming the northern part of the Drakensberg escarpment. It is 25 kilometres (16 mi) in length and is, on average, around 750 metres (2,461 ft) deep.

BASIC STOCKMAN & ECONOMICS

WILL USA CHICKEN IMPORTS INFLUENCE THE RED MEAT MARKET?

BERTUS DE JONGH

The recent discussions around the agreement between the US and South African governments to resume the importing of chicken from the US and to restore market access, may harbour a number of unforeseen consequences which pose a serious threat to the South African livestock industry.

Underlying to the agreement is the threat that South Africa may lose its' participation in the re-authorised 2015 Africa Growth and Opportunity Act (AGOA), which was extended by the US congress for another 10 years. In short AGOA is a unilateral preferential programme covering slightly more than 6000 product/tariff lines which the US offers to 48 sub-Saharan countries. Both the South African and USA governments were excited by the agreement but the mere fact that the South African Poultry Association (SAPA) was bitterly disappointed should have raised a red flag immediately. On face value one may accuse SAPA of selfishness and protecting their own interest as the importation of large volumes of low price chicken will have serious consequences. As SAPA points out from a macro-economic point of view, this may lead to job losses, not only in the poultry industry but also in other livestock industries as well as up- and downstream industries. Unfortunately this argument has been used so often in the past that it is to be questioned whether the South African government still believes industries on this issue. However, statistics regularly released by government themselves continue to paint a bleak employment picture. Furthermore it is a well-known fact that consumer preferences in the US exclude certain chicken cuts and it is particularly these very same reject cuts that will be exported to South Africa at bargain prices. It is all good and well to have cheap food available, but consumers need money to buy these "bargains". For that they need to be employed. In addition, net trade figures between the two countries continue to favour the US. It is thus clear that something is wrong.

The consumer market for animal protein in South Africa can be compared with a giant reservoir. What you pour in on the one side, affects the level of the entire reservoir. Import parity in the poultry industry will also affect the price of other livestock protein sources. Chicken imports will obviously have a more direct effect on the chicken industry, more so because it appears from available statistics that local chicken is produced at prices higher than import parity. What the reason for this is may be difficult to establish but it has been argued by other industries that animal feed prices in South Africa are not competitive and poultry is a huge consumer of feed. It is therefore disconcerting when large players in the market quote in their annual financial statements that their poultry division has not performed well but that they were pulled through by the profits of their feed division. In the red meat and dairy industries, producers supply at prices under import parity, possibly because they have found ways to produce their own feed.

Under AGOA the US allows certain products from African countries to enter the US duty free. Unfortunately there is not a quota system which allows a like for like trade in products. Concessions allowed for one particular product such as chicken to be imported in to South Africa does not mean that the poultry industry will benefit when it comes to exports to the USA. This is where the threat lies for the South African agricultural- and more particularly for the livestock industry. US sanitary and phytosanitary measures may differ vastly from those in South Africa. Even if they are exactly the same, it is doubtful if South Africa will be able to comply, not because producers do not comply but mainly because government support systems are insufficient. The livestock industry is dependent on government standards, health, veterinary, municipal, and other services. Other countries covet their agricultural industries as is evident by the level of subsidies paid to producers in these countries compared to what their South African counterparts enjoy. It is easy to find reasons to disallow South African produce in their countries. Agreements such as AGOA have little benefit for South Africa if we cannot comply with the very strict standards as set mainly by western and first world countries. It only benefits developed economies which attracts lucrative one sided agricultural contracts with African countries under the guise of helping those countries and makes bureaucrats look good, if nothing else. This places most South African agricultural industries on the sacrificial altar. South Africa will be far better off signing trade agreements with African countries. They welcome South African produce which is generally of a far better standard than they are used to and the supply is more reliable. So far little has been seen of any such trade agreements with African countries.

A further threat which faces South African livestock industries is the fact that there appears to be a reluctance from governments' side to involve industries when trade agreements are negotiated, thereby losing valuable knowledge when it comes to negotiating terms. This means that invariably only other countries benefit when trade agreements are closed resulting in one directional trade with these first world powers.

In summary, there appears to be little benefit for the livestock industries emanating from AGOA. This may well apply to agriculture as a whole with the possible exception of a few small industries. Cheap chicken imports will affect all animal protein suppliers and lower the price of their product in the long run. Export opportunities to first world countries in general, and to the US in particular, will be minimal because of sanitary and phytosanitary regulations. Job opportunities for particularly lower skilled workers will be under threat and small scale farming will become even more unprofitable. The answer lies in Africa!

BERTUS DE JONGH

Bertus De Jongh was well known as the CEO of the Milk Producers Organisation for many years. He has worked in marketing and agricultural spheres for many years and has published over 200 articles in many publications. He was responsible for many innovations in the dairy industry including loyalty schemes and was representing over 90 % of all milk produced. He is also involved in Strategic Planning with Brangus SA. Bertus has a M.Comm from Unisa.

DO BEEF BETTER

INTRODUCTION

The concept of Do Beef Better was designed as a Beef Course to encourage the South African Beef Producer to up his game in some of the herd efficiency areas regarding his herd management. The course has been very well received on the Brangus Torch of Hope Tour by Beef Producers. The following notes are from the course as given on tour.

Bringing together Key Efficiency Indicators and quality Bull Selection decisions, the breeder can effectively strive towards a breeding objective which will enhance profitability.

JOHN RAFFERTY

1. KEY EFFICIENCY INDICATORS IN A HERD

AGE FIRST CALVING

The age at which beef heifers should be first mated depends upon the economics of management input against returns. When a heifer is first put to a bull, she should ideally weigh at least 65% of her expected mature weight. This will allow her to reach 80% to 85% of her expected mature weight when she calves down for the first time. Calving difficulty was commonly believed to result from mating heifers at too young an age. However, calving difficulty is now known to be a problem of first-calf heifers, whether they calve first at two years or three years. The biggest challenge to be considered in this decision is the reconception after the first calf. If this can be achieved at two years it holds many advantages, but in extreme ranching conditions, whether they be very dry or sour veld conditions the challenges of reconception may be too great.

INTER CALVING PERIOD

Herds should average below 400 days. The national average is probably in excess of 470 days. As a management tool the Inter-calving Period has been used for years and will be for time to come. The reproductive rate of the herd is a crucial indicator of good management and herd efficiency. As a pure evaluation of the fertility of the animal it may need some improvement. A management or environmental cause may cause a poor mark against the cow for the rest of her life, whereas she mat well still be genetically a very fertile animal.

DAYS TO CALVING

One of the most economically important traits in a beef cattle operation is the ability of a cow to get in calf every year, preferably early in the season. Days to calving is the time interval, in days, between when a cow is first exposed to a bull, under paddock mating, to when she subsequently calves. The quicker a cow is in calf, the more time she has to re breed at subsequent joining periods and the more advanced her calf will be at weaning. It is now being recognised as a better method of evaluating fertility potential of an animal ahead of Intercalving Period. Cows with short Days to calving are the best cows.

COW CALF RATIO

The cow calf ratio is measured at weaning. The mass of the cow and the mass of the calf at 200 days or 7 months. This is a measure of cow efficiency. A 520 kilogram cow weaning a 250 kg calf has a CCR => of 48%. A 650 kilogram cow weaning a 270 kg calf has a CCR => of 41%. Evaluating the weaning mass on its own is an exercise in futility. The larger cows also require higher maintenance nutrition than the medium framed cow. Cows with a cow calf ratio in excess of 50 % are deemed to be efficient cows.

UNDERSTANDING AN EBV

An animal's breeding value is its genetic merit, half of which will be passed on to its progeny. These estimates are called Estimated Breeding Values (EBVs). In the calculation of EBVs, the performance of individual animals within a contemporary group is directly compared to the average of other animals in that group. A contemporary group consists

of animals of the same sex and age class within a herd, run under the same management conditions and treated equally. Indirect comparisons are made between animals reared in different contemporary groups, through the use of pedigree links between the groups. EBVs are expressed in the units of measurement for each particular trait. They are shown as positive or negative differences between an individual animal's genetics difference and the genetic base to which the animal is compared. For example, a bull with an EBV of +30 kg for 400-Day Weight is estimated to have genetic merit 30 kg above the breed base of 0 kg.

HERITABILITY

Heritability is the proportion of the differences that we observe between animals that can be transmitted to their progeny. Heritability (h2) is usually expressed as a % between 0% and 100%. In general, fertility traits have low heritability, growth traits are medium to high and carcass traits are highly heritable.

2. BULL BUYING DECISION

THE FUNCTIONAL BULL

A Functional Bull has some responsibilities. Firstly a bull must impregnate cows . Secondly, he must improve the future females in the herd and Thirdly, he must produce decent weaners for sale purposes.

It has been shown that bulls with large testicles at an early age tend to have male offspring with larger testicles and female offspring that are more fertile than progeny from bulls with small testicles. Physical examination for abnormalities that could interfere with the desire and ability of the bull to breed. The bull should be observed while he is walking on a hard surface Libido, or sex drive, is an important and often overlooked component of breeding evaluations.

In beef cattle, there is a high correlation between scrotal circumference measurements in bulls and the age at which female progeny reach puberty. Females from sires with above average testicle size reach puberty at an earlier age. Semen evaluation. Sperm motility and morphology are the seminal characteristics that are most highly correlated with fertility and are the most easily repeated.

A STRUCTURALLY SOUND BULL

A bull must be able to thrive in his environment. Walkability, Constitution, Libido and Longevity are some of the requirements.

The structural soundness of bulls influence the ability of a bull to deliver his genetics.

'Eyeball', subjective or visual assessment selection of bulls, is still the most common procedure for many bull buyers.

A bull should be capable of walking long distances, especially in the extensive conditions of South Africa and be able to maintain his body condition. He should have the ability to detect females on heat, and be capable of serving females as they display oestrus. Soundness of limb and skeletal structure contribute to the bull's longevity and functional effectiveness

BUYING A BULL

How much do I spend or invest in a bull? Spending on a bull can be a Investment in your herd. At least 7 weaners for a bull is a good benchmark. The most expensive bull you can buy is a bull with no genetic records, and these bulls amount to "Genetic Rolette

JOHN RAFFERTY

Breed Director of the Brangus Cattle Breeders Society

B.Sc. (Agric), University of Natal: 1984

B.Sc. (Agric.) Hons, UOFS: 1986

B.INST.AGAR. Hons, UP: 1986

He's been working in the agricultural industry since 1984 and has been the Breed Director of the Brangus Cattle Breeders Society since 2013.

THE BUSINESS END OF THE BULL

SCROTAL SIZE

Improves the Bulls semen volume and quality. It leads to earlier puberty of the bull. It also leads to earlier puberty of the Bulls daughters. This in turn leads to greater lifetime production of his daughters.

ABNORMAL TESTES SHAPES

Wedge Shape, Twisted more than 45", Too Long, Cryptorchidism, Uneven and Undecended testes are undesirable. Signs of fat deposits are also undesirable.

SHEATH

Loose Skin with a gentle angle from the rear with a controlled sheath opening is desirable. Undesirable sheaths are too long and Y shaped and with a permanent prolapse of the prepuce. Fleshy Y shaped sheaths which hang low and a prolapse that hangs out for long periods of time are classed as undesirable.

CURVE BENDERS AND OTHER NORMAL BULLS

The perfect curve bender would have low birth weight (for calving ease), high weaning weight, high yearling weight, and low mature weight (for low cow maintenance cost). Genetic correlation between weaning weight direct (genetics for growth excluding maternal ability) and mature weight was 0.73. (There was essentially no correlation between mature weight and maternal ability.) So, genetics for growth to weaning was highly related to heavier mature weight.

THE MAGIC PROVIDED BY THE BREEDER

The breeder needs to evaluate the Functional Soundness of the bull, Combine the EBV values of the bull with his Pedigree Data, and then ensure that these decisions are in sync with his breeding objective of his herd.

Some breeders are excellent at this and some still need to improve.

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Bulle **altyd** beskikbaar

USE OF SELECTION INDEXES FOR GENETIC IMPROVEMENT

JOHAN STYGER

1. GENETIC IMPROVEMENT

Genetic Progress is achieved when the 'average genetic value of the offspring (e.g. your current calves) is higher than the average genetic value of the previous generation (from which the parents were selected). This implies **"the use of genetically superior animals as the parents of the next generation."** Genetic superiority is the function of many variables and will differ across breeds and even within breeds, depending on the breeding objectives, the production environment, and the demand of the markets supplied. Genetic superiority can be identified by an analysis of the potential profitability of the genotype for a given breeding objective and production system.

2. EBV SELECTION

The ideal EBV selection would be to select animals that excel in all traits but rarely will an animal be superior for all the available EBV's. So which traits should producers put most emphasis on for their specific breed objective?

Selection based on breeding values has pitfalls, mainly due to the antagonistic relationships between most EBV traits. EBV Selection remains difficult because of the number of published EBV's, where some are only indicator traits and others are economically relevant. As an example, overemphasis on growth will impact negatively on Mature Cow Weight (MCW) and Calving Ease Direct (CED), while singular focus on birth weights will influence Calving Ease Maternal (CEM) and growth. Single trait selection can sometimes cause the very problems we are trying to manage in the first instance. In order to give some selection guidance to breeders, Societies sometimes publish "ideal" EBV bands with little regard for the economic and genetic impact of such discrimination.

3. WHAT ARE SELECTION INDEXES?

Selection Indexes are utilised by livestock breeders of many species around the world and aid in the selection of animals for use within breeding programmes where there are several traits of economic or functional importance.

Selection indexes provide an overall "score" of an animal's genetic value for a specific purpose and are calculated based on weightings placed on individual traits that are deemed to be important for that purpose. Selection indexes assist beef producers in making "balanced" selection decisions, taking into account the relevant growth, carcass and fertility attributes of each bull to identify the animal that is most profitable for their particular commercial enterprise. Selection indexes reflect both the short-term profit generated by a bull through the sale of his progeny and the longer term profit generated by his daughters in a self-replacing cow herd.

BREEDPLAN has published the Breed Object Suite of software to produce easy-to-use, objective Selection Indexes. This process takes the Economic Relevant Traits (ERT) and the Indicator Traits into account, to produce these multiple trait selection instruments.

Different selection index values are calculated for the same animal for different production systems and market end points. Animals can rank quite differently in different production systems.

SELECTION INDEX INPUTS

The Breed Object tool requires a wide field of information to produce an animal's overall genetic merit for a production scenario. This information includes:

Market requirement at the end of the value chain:

- Carcass weight and fatness.
- Carcass quality and yield.

Production system:

- Harvest age (wean, yearling or mature).
- Grass-fed, or
- Grain-fed (number of days in feedlot).

What happens to the heifers?:

- Terminal system where all heifers are harvested at age.
- Self-replacing cow herd system where the heifers are the next generations' cows.

Production Costs:

- Cost of supplying extra feed to maintain the cow herd in winter.
- Level of supplementation and management.
- Cost of time taken to manage calving.
- Cost of non-survival due to calving difficulties, both calf and cow.
- Labour cost.

JOHAN STYGER has been involved in stud breeding since 1986. In 2004 he relocated his farming operations to the farm Schoemansfontein, District – Hartbeesfontein, where he farms with a 180 cow herd extensively, with shortened mating periods. Johan's herd has further received 5 consecutive Reproduction awards. The herd holds a Breedplan 4-Star Completeness of Information status.In 2014 and 2015 Johan was placed 3rd and 2nd respectively in the Breedplan Stud Breeder of the Year competition.

He lectures widely on the practical aspects of Fertility and Genetic Progress. He is also a member of the Simmentaler Technical Committee, specifically tasked with selection indexes.

4. SOUTH AFRICAN SELECTION INDEXES

BREEDPLAN currently publishes the following 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

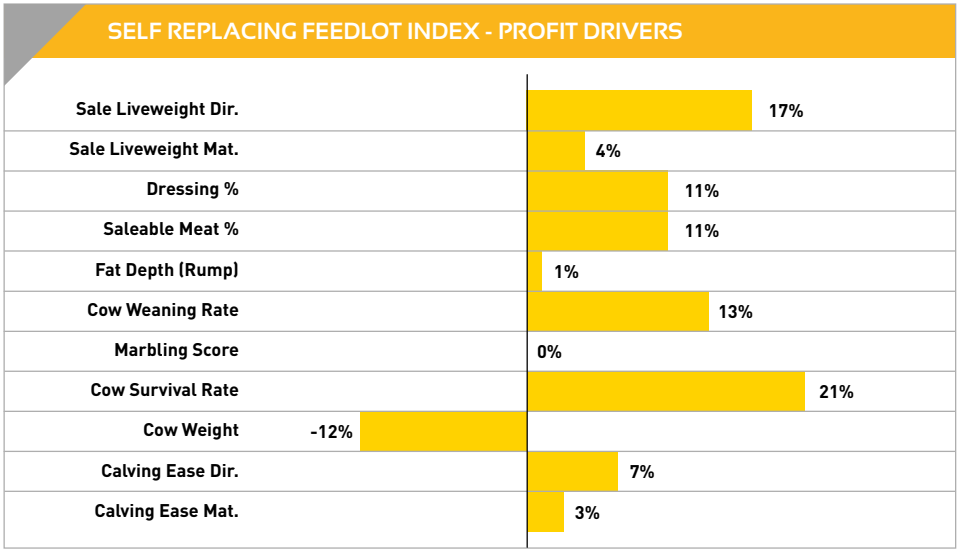
5. THE SOUTH AFRICAN SIMMENTALER EXAMPLE

One of the Selection Indexes calculated for animals within the South African Simmentaler BREEDPLAN analysis is defined as follows:

* Currently under review to meet the changing market.

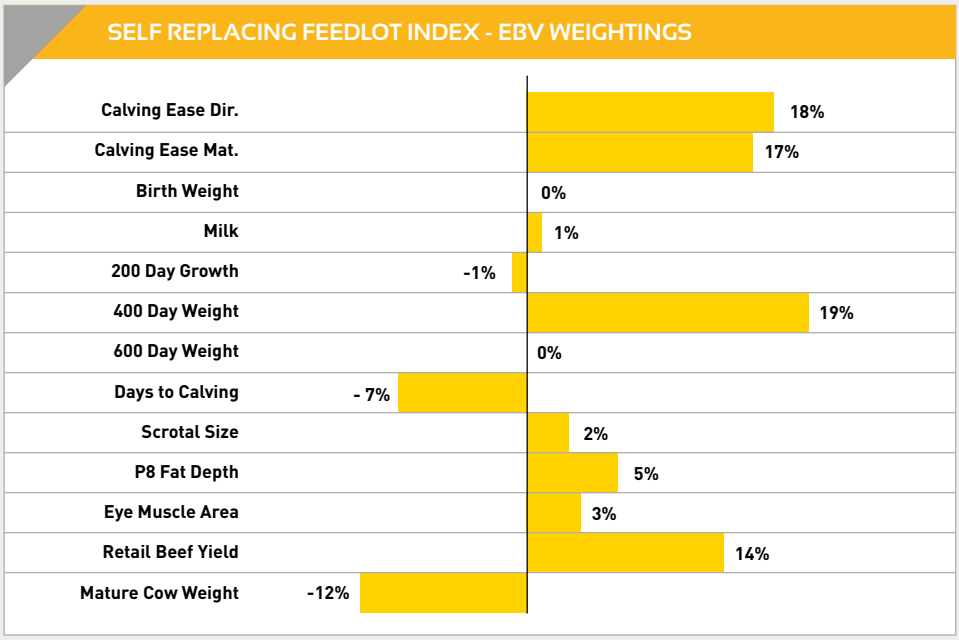
Simmentaler Feedlot Index*

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 430 Kg steer live weight. Significant emphasis is placed on calving ease, 400 day weight and carcass yield.



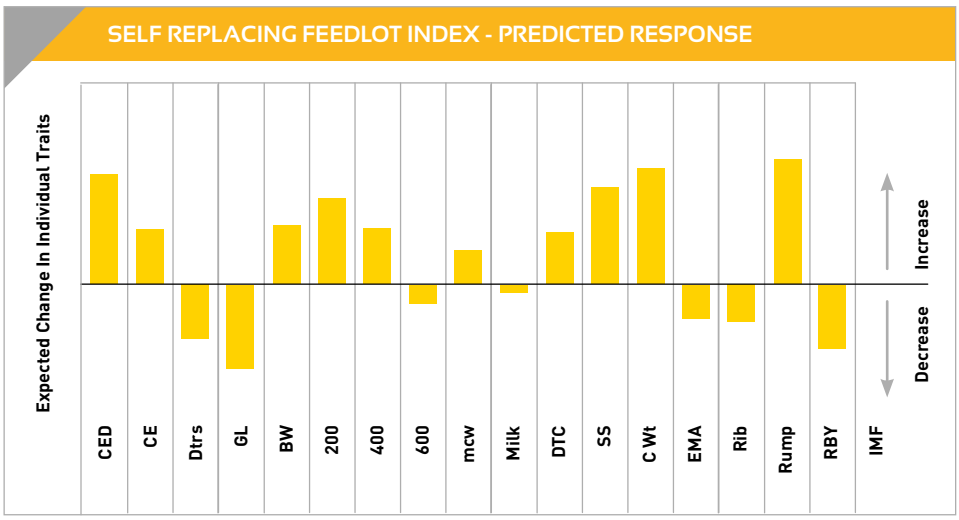
PROFIT DRIVERS

The graph below shows the key objective traits that are important in this Selection Index. The weighting of the profit drives is a product of the BreedObject tool



EBV WEIGHTINGS

Considering the genetic relationship between the breeding objective and the selection traits that are currently available, the graph below shows the BreedObject weighting that has been placed on each EBV to compile this Selection Index.



INDICATIVE RESPONSE TO SELECTION

A powerful output of the BreedObject generic merit took is a prediction of the change in individual traits, when this Selection Index is used.

References: BREEDPLAN, Australia: Manual | BREEDPLAN: Tip Sheets | BreedObject: www.breedobject.com
Introduction to Selection Indexes, Bob Weaber, PhD | Angus, Australia: Guide to Selection Indexes
Simmentaler, South Africa: Economic Selection Indexes

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