Why Genomic selection.

Genomic selection is an ‘extra’ tool added to the arsenal of animal breeders to assist in making the correct decisions when selecting animals as parents for the next generation. Tools used over time, and that are still being used to a bigger or lesser degree are: visual assessment, recording and comparisons within contemporary (treatment) groups, indices (or sometimes called ‘ratios’), progeny comparisons (in one or other form) and BLUP breeding values.

BLUP breeding values started a new revolution for the accurate prediction of genetic merit in farm animals. The methodology combined a few very important sources of information into a single figure.

These sources are:

• Pedigree information.
  Based in the fact that related animals share common genes, pedigree information serves as the ‘perfect’ link among all these related animals and enables BLUP to make a comparison over time (animals born and recorded in different birth years) and space (animals born and recorded on different localities, eg farms or contemporary groups).

• Performance differences among animals.
  The crux is the difference in performance among animals that were subjected to exactly the same (environmental) conditions. The principle is that any differences would then mainly be due to genetic differences among them. The key equation is: \( P = G + E \) (the recorded value for a trait equals the genetic merit of each animal plus the effect of the environment on the expression of the particular trait).

• What part of the differences among the performance of animals can be attributed to the part that can be transferred to their progeny.
  In genetic terms, this is defined as the ‘heritability’ of the particular trait.

• What the effect the genetic differences among animals for one trait will be on other traits of economic importance.
  In genetic terms, this is defined as the ‘genetic correlation’ among traits.

BLUP is therefore a complete system where all possible information of an animal is taken into consideration.
OPWINDEND EN NUUT
TOP GENETIKA
Hoogste prys bul Oos-Vrystaat Veldbulveiling.
Gemiddelde prys behaal R45 000

Besoek ons webwerf by:
www.blinkmeneerbeefmaster.co.za

Skakel:
Dirco - 082 228 8625
Robyn - 082 654 1404
It is a combination of a pedigree selection index, performance test system and a progeny test, all in one.

The question can therefore rightfully be asked: ‘why then also add molecular genetic information to the already very accurate BLUP breeding values?’

This can mainly be answered in view of the fact that BLUP primarily relies on the, so called, quantitative aspects of genetics. In short, BLUP uses ‘average assumptions’ based on what one will expect in family selection. Based on the (phenotypic) performance of an animal and its relatives, in comparison with their respective contemporaries, the probability of having a specific genetic merit is calculated for each animal. Obviously, once an animal is measured for the specific trait (within a contemporary group) and especially if many of its progeny are also measured (as an indication of the breeding ability as reflected in the progeny’s performance relative to the progeny of other parents), the accuracy of prediction increases.

The inclusion of genomic information, if based on the correct assumptions, is a move closer to a step where the specific sample of genetic material (in effect a part of the chromosome) an animal has ‘inherited’ from its parents will be known at a younger age (even before an own measurement or progeny are recorded).

The real value for using Genomic Selection is therefore to identify what unique genetic merit within the family a specific animal (family member) received without having to first test it’s (own and) progeny performance. These ‘early predictions’ are especially useful where:

- The measurement of a trait was not possible (for any reason, such as non-testing in a growth test or not subjected to certain environmental constraints like a disease or parasite challenge).
- The measurements of the trait is limited to one of the sexes (examples are female fertility, mothering ability or semen quality).
- A trait can only be measured very late in life (for example, ewe or cow productivity, longevity, retention of progeny and productive herd life).
- Traits can not be recorded on live animals (eg. carcass or meat quality traits).
- A decisive decision is to be made on picking (selecting)

an animal early in life that will have a big impact on a breed (eg. decision on a male to be included in an artificial insemination program, a female as ovum donor or a bull/ram mother).

Two distinct sources of information combined

Although some factors become known about the molecular genetic difference among animals, the exact link between that what is known on each animal’s chromosome and its true genetic merit for the traits of importance is not yet established. Knowing the sequence on the chromosomes is only one (important) source of information. The other extremely important source is the relationship between the molecular genetic values of the animals and the value of these animals as breeding animals (breeding values). This relationship is best established by comparing the molecular genetic values of animals that already have many measured progeny. In other words, animals with very reliable BLUP breeding values.

This relationship holds the key for future use of Genomic Selection.

Put in other words. Animals with many measured progeny are used to find the key between the sequence on their chromosomes and their breeding values, as predicted by using mixed models (BLUP). These males are called the reference population and are usually at least one thousand animals per breed.

Once this relationship has been established, the calculated ‘key’ needs to be validated for accuracy of prediction. This is usually done by testing the predicted genomic values against a new set of animals (the validation population), also with very accurate BLUP breeding values.

The following should be kept in mind:

- The genomic information is basically useless for selection purposes if the relationship with accurate BLUP breeding values is not yet established.
- The genome information is no indication of specific genes of major influence as it is not a real map of

continue on page 31
AMBERDENE
Beefmasters

The Cattle with the a whole lot more
Virulent Redwater & Gallsickness veld

50 BULLS

East coast bull sale: 08 September 2016
Tomorrow’s Beefmaster, TODAY!

Address: PO Box 16, Komga, 4950 | E-pos: Amberdene@hazeldean.co.za | Cell no.083 652 5190
genes. It is purely a sequence of, so called, single nucleotide polymorphisms (SNPs). Normally these ‘road markers’ are listed at regular intervals on the chromosome and is not a complete set of all the information on the nucleotides.

- There are different ‘SNP Chips’ available on the market that varies in ‘denseness’ (more or less of the total genome described), usefulness for information exchange (the exact location on the chromosomes described and intervals between these points) and usefulness in combining with other more (or less) dense chips (making use of the ‘partial’ information from cheaper, less dense chips to ‘predict’ [impute] the values on the more dense [and more expensive] chips).

Combining the different sources and the ultimate use of Genomic Selection is illustrated in Figure 1.

Figure 1. Illustration of how different sources of information are combined for GEBVs

Figure 1 illustrates the following:
- The top left corner represent a whole population (breed), already dead (parents and other animals in the lineage) and current animals, with and without recordings for the traits of importance and BLUP breeding values predicted for each animal. The accuracy of the BLUP breeding values vary from very accurate (for animals with many measured progeny) to fairly inaccurate (animals without own recordings, no progeny and from families with very few recordings). Among the population is also young animals that were not yet recorded and therefore their BLUP breeding values are based on parent average predictions.
- Among the population, as mentioned, are animals with high accuracy BLUP breeding values. The figure illustrates the actions taken by genotyping a portion of this group with a fairly dense SNP (150K) chip to build up a reference population. This is illustrated at the top right hand corner of Figure 1. Two very important sources of information is therefore known for this particular group of animals, namely their genetic merit (based on very accuracy BLUP breeding values) and information obtained continue on page 32
from genotyping a biological sample (blood, semen or other body tissue) from each animal.

- By combining the information for these animals a relationship ("correlation") is calculated between the information from the genotype techniques and the genetic merit. This ‘key’ is first of all verified with a different portion of the population and is then ready to be used in unlocking information to assist in predicting genetic merit for young animals.
- The prediction of genetic merit for young animals is illustrated on the bottom left hand corner of Figure 1. Biological material from young, potential breeding animals from the population are obtained and the genotypic information measured against the now known key. This genotyping is usually done on a cheaper, less dense SNP Chip as a service to breeders or other industry role players.
- The last, very important step is to combine the newly predicted Genomic value (Direct Genomic Value or DGV) with the parent average BLUP breeding value to predict the genetic merit (breeding value) for these animals. This prediction is called a Genomically Enhanced Estimated Breeding Value or GEBV.

Common questions and answers.

There are so many terms and acronyms used in breeding value predictions, what are their meanings and what are the differences among them?

Acronyms and terms in breeding value predictions usually refer to the method or the available information used in the prediction of the breeding value. A brief explanation of some of the most important terms and acronyms:

**Breeding value**

Could be described as the value of an animal as a parent, therefore the difference in performance of its progeny compared to the progeny of other parents. The true breeding value is never known and accurate prediction depends on the value and amount of useful information used in the prediction. A (predicted) breeding value is also dependant on the population it is expressed in. In breeding and genetics a breeding value is also referred to as the additive (genetic) value as it only involves additive genes.

**EBV**

This term refers to the “estimated breeding value” (in some circles “expected breeding value”) and is the outcome of applying mixed model methodology (BLUP) in the prediction of breeding values. The synonym of EBV is PBV (predicted breeding value) that is very seldom used. Please note that the EBV refers to the genetic merit (breeding value prediction) of the animal itself and not the expected progeny difference (half the EBV).

**Reliability and accuracy (of breeding value prediction)**

The reliability of breeding value prediction refers to the relationship between the number of (reliable) sources of information, heritability of the trait and the error (pev = prediction error variance) associated with the prediction. Reliability and accuracy are different sides of the same coin (reliability is accuracy squared). A property of breeding values predicted with mixed models (BLUP) is that predictions with (very) low reliability will regress to the parent average. In applying mixed model (BLUP) technology, three major sources of information (besides genetic parameters, namely heritabilities and genetic correlations, and pedigree information) are the recordings (measurements) of an animal’s parents, the animal itself and its progeny. The only source of information on a young, un-recorded animal is therefore the information from its parents, limiting the reliability of the prediction until such time as an own recording and that of its progeny is considered in the breeding value prediction.

**Parent average and Mendelian sampling**

Parent average refers to the average breeding values of the parents of an animal. Where an animal has not yet been measured (or a measurement is not possible, such as milk production or maternal value for bulls or rams) and no progeny recordings are considered, the parent average is used as the EBV. The Mendelian sampling refers to the random sample of genes each of the progeny of a specific sire and dam will receive.
We concentrate on:

- BREEDING TOWARDS THE LIMIT OUR ENVIRONMENT CAN OFFER
- THE SIX ESSENTIALS (SINCE 1989)
- BEEF OFF GRASS

DOMINANT FOR FERTILITY, ADAPTIBILITY, GROWTH AND HETEROSIS

BULLS “ON GRASS” SALE
19 August 2016

Llewellyn Maclean | Queenstown Eastern Cape
Tel: 045 839 3214 | 083 668 8952 | E-mail: mac.fordyce@eci.co.za
BenguFarm™
now with sister modules for
Sheep, Goats, Pigs and Game

BenguFarm™
BEEF
ADVANCED BEEF CATTLE
MANAGEMENT SOFTWARE

Comprehensive herd management programme - covers from mating to marketing

• Equally suitable for both commercial and stud herds
• MS Windows 10 compatible
• Afrikaans, English, Spanish and Portuguese language options
• Install on more than one computer at no additional costs
• Use for more than one herd at no additional costs
• World wide support and training
• User friendly menu, shortcuts and step-by-step Help functions
• Performance data processing according to the SA Stud Book’s Beef Scheme
• Support SA Stud Book, ARC, BreedPlan, NSBA’s protocol and formats
• Extensive data verification functions
• Easy electronic data sending of all animal registration and performance test data
• Logix Direct functions – easy sending and importing of Logix data
• Import weights from electronic scales
• 50+ standard and user-defined reports
• Stock registers for animals, semen, embryos, vaccines, medicines, etc.
• Backup and restore functions, incl. backup reminders
• Continuous user-driven development
• Easy updating via the internet
• Free BeefCattleTrader module to advertise animals on the internet
• Comprehensive user-defined management calendar and diary
• Sheep, Goats, Game, Pigs and Genetics modules also available - same look and feel.

Now with Logix Direct communication with SA Stud Book

Endorsed by 19 SA Breeders’ Societies

Afrikaner, Angus, Bonsmara, Boran, Beefmaster, Braunvieh, Charolais, Drakensberger, Gelbvieh, Hereford, Hugenoot, Nguni, Pinzgauer, Red Poll, Santa Gertrudis, Senepol, South Devon, Sussex, Tuli

My pa het my altyd gewaarlik teen die ‘boekwerk’ van stoetboerdery. Met BenguFarm™ BEEF is hierdie frustrerende ‘boekwerk’ egter omseep in ‘n magtige bestuursprogram. Ek is seker dat as ek my pa kon wys hoe maklik kuddebestuur nou is, hy sou saamstem dat die BenguFarm™ BEEF sagteware seker die handigste stuk gereedskap op enige beesplaas is - stoet en kommersiëel.

Mnr Gerrit van Zyl, Hanzyl Bonsmaras, Dewetsdorp
& VOERMAIL NATIONAL BEEF CATTLE FARMER OF THE YEAR 2012

BenguFarm™ BEEF is a module of

BenguFarm™
ADVANCED LIVESTOCK MANAGEMENT SOFTWARE
BEEF • GAME • SHEEP • GOATS • PIGS • GENETICS

www.bengufarm.co.za
Contact Leslie Bergh: Tel +27 82 801 2026 Email leslie.bergh@vodamail.co.za
Yes, but only if included in the local evaluation system. Many countries have joined exchange programs to share SNP information of prominent animals with other countries. The information is then used as part of building up the correlation with local EBVs in the case where the bull or ram has many measured progeny locally or to use the SNP information to obtain GEBVs (on the local scale) for young breeding animals. Please note that the raw information is exchanged and NOT the genomic predictions from the country of origin. Due to standardising the exchange of (raw) genomic information, the global community had to decide on one format (and specific SNP positions on the chromosomes).

Can SNP chips of varying density be used in genomically enhanced breeding value predictions?

Illumina (the company manufacturing the SNP chips) has also developed other SNP chips of varying density (number of SNPs and therefore the distance between SNPs). The advantage of using a less dense chips, is the lower cost of analysis but unfortunately results in giving up some predictive reliability. Scientists have developed mathematical methodology to predict profiles resembling higher density chips for analyses carried out with lower density SNP chips. This methodology is called imputing. The accuracy of imputing relies on the number of family members with known genomic profiles. Typically the lower density SNP chips will be used on young males and females to search the population for prospective AI bulls or bull mothers. Once young males of merit have been identified, they will be tested with a denser chip. The Figure 3 gives an illustration of the comparisons among results from using SNP chips of varying density, as well as the use of imputing to derive at values of higher density but using a less dense SNP chip.

Figure 3. Illustration of the information recorded on the same genome using different density Illumina SNP chips.
at conception. Figure 2 depicts the expected outcome where two parents, differing in EBVs, are mated.

The first EBV prediction on a young animal is therefore the parent average. This prediction will be altered as more information becomes available, either as a result of an own recording and/or recordings of progeny. The use of molecular (genome) information, also assists in predicting the Mendelian sampling, but do not negate the parent average value.

Figure 2. Expected EBV of progeny born from parents differing in EBVs

If applied properly and in the population where the Reference Population has been established, the reliability of the GEBV might be as high as the same level where 10 progeny (daughters in the case of dairy bulls) were recorded. The GBV or direct genomic value usually refers to the genomic value without taking the parent average into account and therefore has a lower reliability of prediction (compared to the GEBV). As in the case of the GEBVs, the GBV values can only be used for comparison within the population where the Reference Population has been established. Obviously, as more daughters of a male are recorded, the value of genomically enhanced EBVs becomes less.

**Can the GEBV or GBV values for young bulls from one country directly be used in another country?**

**No,** even if the genomically enhanced breeding value predictions of the original country are based on the best methodology and built on a sound Reference Population, *breeding value predictions can never be directly compared over countries* as the correlation among populations in different countries is always less than one (100%). The only basis for comparison of young animals is to apply the internationally (like the Interbull conversions for dairy cattle) developed conversion factors based on a regression. If the parents of such animals have already been included in the receiving country’s EBV predictions, the parent average value can also be included with the converted value.

**Services are often rendered where direct genomic values are predicted without any reference to a (local) population. Are these predictions of any value?**

**No, there are no short cuts.** The only way to apply genomically enhanced breeding value predictions, is to apply the principles of first using performance recordings based on local animals, predicting breeding values and comparing the reliable EBVs with the SNP information. Research has shown that there is a very poor, if any, correlation between animal populations. This means that SNP results from one country or breed cannot be used for another.

**Can the SNP (raw) values estimated elsewhere be used locally?**

continue on page 39
PETANA BEEFMASTERS

9de Produktsieveiling

10 Aug 2016

11h00 Wolmaransstad Skousaal

Peet 0827737389
Petie 0827737390
Connie 0823734833
Johannes 0823330919

www.petana.co.za
Maak landswyd staan op volgeweke kwaliteit diens in die afslaersbedryf. BKB, BKB Louw, BKB VAN WYK en BKB Wildlife verskaf die wydste afslaersinfrastruktuur in die Suid-Afrikaanse landboubedryf. Ons besigheid fokus op die suksesvolle waarneming van uit-die-hand-verkope, spesiale en vastepuntvellings, Internet- en videovellings, asook algehele uitverkopings, boedel, produksie, stoetvle - en wildevellings.
How many genome profiles of animals are needed for a Reference Population?

The general rule is to have as many as possible. Some global groups have built up Reference Populations of several thousand (within a breed) through cooperative agreements. If possible, a Reference Population of more than a thousand animals of the same breed is needed if based on a fairly dense SNP chip. In the BGP project plan for the South African Beefmaster breed, this can be reached in three years time.

How can the South African livestock industry ensure that genome information can become part of breeding value predictions in future?

Collecting and storing biological material

Countries that use genome information successfully have been collecting biological samples (semen, hair follicles, blood and/or other tissues) from animals of significance. The focus is mainly on animals with many recorded (measured) progeny. South African breeders’ societies should all engage in actions to firstly identify these animals by using progeny lists and then actively start to source samples from them. A rule of thumb would be to target males with more than 50 recorded progeny and even cows that impacted significantly in a breed.

If hairs are collected it is suggested that at least 40 tail hairs with very distinct follicles are stored. One frozen semen straw also contains an adequate amount of DNA. It is suggested that at least two semen straws of prominent males (especially in AI programs) are kept for this purpose. Blood could also be stored. Fresh blood should be kept frozen at minus 40°C until the DNA extraction can take place. An alternative is the use of FTA® cards where blood can be stored at room temperature for many years without any harm to the DNA. Other body tissue, such as notches from ears should also be kept deep frozen (like fresh blood) at minus 40°C.

Currently Logix Bio (where Stud Book keep hair samples on behalf of breeders) is a reliable system.

Establishing a permanent work group of local scientists in collaboration with the livestock industry; the BGP (Beef Genomics Project).

Currently there is new direction in applying genome information in breeding value predictions.

The outcomes anticipated from this project include:

There is a common understanding among scientists in the use of this technology.

The industry will be guided in the future (and current) use of genomic information.

Current practices by other countries will be better utilised, these include the application

The ultimate use of this technology to enhance the accuracy of breeding value predictions, especially for young animals and for traits only measurable in one of the sexes and difficult to measure traits or only measurable late in life.

In some cases breeders, AI companies and other groups are already testing local animals to obtain genomic information. What data and information should be made available to be of any value?

Current Genome testing only have value of these tests are carried out with acceptable and exchangeable SNP information on chips based on the Illumina SNP chips, the GBV expressed on the scale of one of the countries with a proper genome based breeding value system AND the GBVs converted (where needed) to the South African scale by making use of the Interbull conversion factors (only available for dairy cattle).

In all other cases the value of the genome based breeding value predictions are in serious doubt (non-exchangeable SNP information, eg. where raw data are not supplied by the laboratory, analyses are not based on Illumina SNP chips, no referral to a well-defined reference population is done and direct genome values are not converted to the local breeding value prediction system).
Surviving The Financial Squeeze: Beefmaster

It was in exactly the same economic times as we are facing today that Tom Lasater, 80 years ago, took the decision to stop farming for sentiment and ego and started farming, not only to survive, but to make money.

Lasater had three stud herds, namely Brahman, Shorthorn and Hereford and he was battling to make ends meet coming out of the Great Depression of 1933. He mixed all his herds together and started selecting for only those traits that put money in his pocket. He decided these traits were fertility, hardiness, weight, temperament, milk and adaptability. His philosophy was always to stick to these and to always keep things simple. The more traits you select for, the more you compromise the important ones that put money in your pocket.
Breeding cattle today should be no different. To survive in these tough economic and drought stricken times, one needs numbers (economies of scale) in order to overcome the rising overhead costs and the costs forced on us by beaurocratic red tape. What is this economy of scale? This is simply maximizing your output from your management unit without compromising your efficiency and without incurring additional cost i.e. The greater the number of goods produced, the lower the per unit fixed cost. Variable costs can also be decreased because of greater efficiencies.

Beef farming has to be based on rands per hectare return to survive long term. Land is our biggest capital cost and should be used as effectively and efficiently as possible. Your best return on capital is thus realised by maximising your return per hectare of land utilized. Whatever your production system preference, be it a weaner system or raising oxen or any other system, this needs to be your focus.

Why Beefmaster makes sense in the light of the above is that officially, for a number of years now, Beefmaster cows’ efficiency indices have been better, by some margin, than any other breed. Beefmaster calves wean at approximately 48% of their mothers’ weight across the whole breed. This makes the return of beef per intake of the cow extremely lucrative.

Another huge advantage of the Beefmaster is that they can adapt anywhere in the country. This adaptability makes them low cost, easy-to-maintain cattle that can perform in all conditions. Fertility has also been a huge problem in South Africa with our national re-conception figure running at about 65%. Because Beefmaster cows are expected to give a good calf every year or forfeit themselves, fertility has been naturally selected for since the early 1930’s.
RESULTAAT-GEDREWE

Beesvet 33+ is ’n konsentraat wat met die laagste koste per kg die meeste vleis produseer! Dit is ’n spesifiek-geformuleerde probleem-konsentraat wat lei tot ekonomiese vleisbeesfronding. Beesvet 33+ bevat ’n groeihoofonderaar wat voeromset en groei in jou beeste bevorder, asook voedingsturnisse en koksidoese teenwerk om maksimum wins te verseker. Maak seker jou dier geniet hierdie seisoen Beesvet 33+ - jy sal die verskil sien en aan jou sak voel!

Groei jou wins aansienlik met die tegnologie van Beesvet 33+

WESTSTREEK

Henk van der Westhuizen
Snorplan Bestuurder
0827714033
vanderWesthuizen@tbs.co.za
Bloemhof

Koos van Rensburg
Tegniese Verkoopassessor
0823782123
vRensburg@tbs.co.za
Keerboom

Willie Raath
Tegniese Verkoopassessor
0823782222
raath@tbs.co.za
Wintershof

Nardus van Wyk
Tegniese Verkoopassessor
0827756023
vWyk@tbs.co.za
Lichtenburg

Kudu van Aswegen
Tegniese Verkoopassessor
0823786994
vAswegen@tbs.co.za
Piet Plein

Janmanie Aucamp
Tegniese Verkoopassessor
0823782123
aucamp@tbs.co.za
Schweizer Reneke

Paul van der Merwe
Tegniese Verkoopassessor
0823782123
pVanderMerwe@tbs.co.za
Hoopstad

Gerrit Naude
Tegniese Verkoopassessor
0827783827
naude@tbs.co.za
Uisington

SENTRALSTREEK

Dev Olivier
Snorplan Bestuurder
0828955700
dev@tbs.co.za
Krugersdorp

Dani Fourie
Tegniese Verkoopassessor
0824517573
fourie@tbs.co.za
Ritz

Gavie Gertenbach
Tegniese Verkoopassessor
0827738402
gertenbach@tbs.co.za
De Wetveld

Arno Ferreira
Tegniese Verkoopassessor
0829295887
ferreira@tbs.co.za
De Wetveld

Frikkie Nel
Tegniese Verkoopassessor
0827714033
nel@tbs.co.za
Senekal

Stefan Cronje
Tegniese Verkoopassessor
0827714033
cronje@tbs.co.za
Kloostad

Pierre Marais
Tegniese Verkoopassessor
0828419616
marais@tbs.co.za
Elofson

Fanie Van Jaarsveld
Tegniese Verkoopassessor
0823255674
fanie@vaasveld@tbs.co.za
Vivo

André Killian
Tegniese Verkoopassessor
0825252047
andile@tbs.co.za
Heidiberg/Teutonic

Leon Riekert
Tegniese Verkoopassessor
0827714032
riekert@tbs.co.za
Rietfontein

BESIGHEID NR BESIG-HEID VERKOOPSPE

Sakkie Luther
Akselera Verkoopbestuurder
0828956425
sakkie.luther@tbs.co.za
Boschendal

Caitlin Oosthuizen
Akselera Verkoopbestuurder
0714019883
caitlin.oosthuizen@tbs.co.za
Pretoria

Michael Lloyd
Seisstekwinklig Bestuurder
0827743547
Michael.Lloyd@tbs.co.za
Pretoria

Lucia Myburg
Seisstekwinklig Bestuurder
082297843
lucia.myburg@tbs.co.za
Witpoort

Berlin
Seisstekwinklig Bestuurder
0828956425
berlin@tbs.co.za
Leeuwenhof

Süwet Speciaal Vakantie
Wes-Kaap
Beefmaster calves are small at birth (very few calving problems) and they grow extremely quickly from then on. This makes the calves very sought after by the feedlots, who often pay good premiums for quality Beefmaster calves.

Another factor often overlooked by beef producers is the quality of bulls that they buy. The bull you use will contribute 50% to the calves you sell or keep as replacements. If the bull can up your weaning percentage by 10kg per calf on average at R20 per kg this is an extra R200 per calf per year. Don’t lose sight of the fact that the opposite is true and suddenly a cheap bull can become a very costly one. Please be selective when investing in a bull. It is not a cost but an investment in your future. Do not be tempted to buy from anyone who sells cheap bulls. Do your homework, know who you are buying from. Do his cows run under similar conditions to yours? Does he have records and integrity? These are all important points to ponder when buying a bull. I would like to close with two very good quotes make by the late Tom Lasater. Firstly, “Cattle breeding is simple, the hard part is keeping it simple.” Secondly, “Your mind is like a parachute, it functions best when it is open.”

Get advice from people who “walk the talk” – in other words, align yourself with people who are making a success out of their farming and not those who have a recipe for every occasion but nothing to show for it. Aim to be in the top ten percent of beef producers. The predators always prey on the stragglers. Please contact our Beefmaster office on 083 417 7047.

By Pierre Hart – Amberdene Beefmasters

continue on page 39
Belangrike en Veilingsdatums - 2016

<table>
<thead>
<tr>
<th>DATE/DATUM</th>
<th>PERSON/ PERSOON</th>
<th>CELL/TEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEI 2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 - 20 MAY</td>
<td>Nampo</td>
<td></td>
</tr>
<tr>
<td>27 MEI - 7 JUNIE</td>
<td>Royal Skou</td>
<td></td>
</tr>
<tr>
<td>JUNIE 2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 JUNIE</td>
<td>Milestone Beefmaster Inligtingsdag - Morgenzon</td>
<td>Johan Pretorius</td>
</tr>
<tr>
<td>JULIE 2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 JULIE</td>
<td>Raadsvergadering en Algemene Jaarvergadering - Parys</td>
<td>Beefmaster Kantoor</td>
</tr>
<tr>
<td>04 JULIE</td>
<td>Inligtingsdag</td>
<td>Beefmaster Kantoor</td>
</tr>
<tr>
<td>06 JULIE</td>
<td>Nasionale Veiling / National Auction - Parys</td>
<td>Beefmaster Kantoor</td>
</tr>
<tr>
<td>07 JULIE</td>
<td>Gholfdag Parys Gholf</td>
<td>Beefmaster Kantoor</td>
</tr>
<tr>
<td>06 JULIE</td>
<td>Noord - Natal - Ram en Bulveiling - Natal</td>
<td>Stoffel</td>
</tr>
<tr>
<td>12 JULIE</td>
<td>Nooitverwag Beefmaster Veiling - Plaas de Vereeniging - Ermelo</td>
<td>Kerneels v Rensburg</td>
</tr>
<tr>
<td>13 JULIE</td>
<td>Budler Beefmaster Sale - Tarkastad</td>
<td>Hal Budler</td>
</tr>
<tr>
<td>14 JULIE</td>
<td>Noordwes Klubveiling – Lichtenburg</td>
<td>Jan du Toit</td>
</tr>
<tr>
<td>19 JULIE</td>
<td>Makiti Veldbul Veiling - Makiti - Frankfort</td>
<td><a href="mailto:jaco.booyesen@gmail.com">jaco.booyesen@gmail.com</a></td>
</tr>
<tr>
<td>19 JULIE</td>
<td>Schyff Beefmaster Inligtingsdag - Bultfontein</td>
<td>W van der Schyff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CJ van der Schyff</td>
</tr>
<tr>
<td>20 JULIE</td>
<td>Milestone Beefmaster Veiling - Morgenzon</td>
<td>Johan Pretorius</td>
</tr>
<tr>
<td>21 JULIE</td>
<td>Elmic Beefmaster Inligtingsdag - Brakvlei - Vrede</td>
<td>Mike Nicolau</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Corne Nicolau</td>
</tr>
<tr>
<td>26 JULIE</td>
<td>Alzu Beefmaster Veiling - Middelburg</td>
<td>Leon du Toit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Johan van Gas</td>
</tr>
<tr>
<td>27 JULIE</td>
<td>Human Beefmaster Veiling - Steynersrus</td>
<td>Piet Human</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wiese Human</td>
</tr>
<tr>
<td>27 JULIE</td>
<td>Oos Transvaal Alleras Bulveiling - Ermelo</td>
<td>Vleissentraal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sonet</td>
</tr>
<tr>
<td>28 JULIE</td>
<td>Elmic Beefmaster Veiling - Brakvlei – Vrede</td>
<td>Mike Nicolau</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Corne Nicolau</td>
</tr>
<tr>
<td>29 JULY</td>
<td>Shawe Beefmaster Viewing Day - Dundee</td>
<td>George Shawe</td>
</tr>
</tbody>
</table>

continue on page 47
Veilings datums:

- 12 Februarie 2016  Limpopo veiling
- 6 Julie 2016  Nasionale veiling
- 13 Oktober 2016  Kalahari veiling Vryburg
Breeding the right type, the right size cattle for South African conditions
### AUGUSTUS 2016

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Contact Person 1</th>
<th>Contact Person 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 AUGUSTUS</td>
<td>Schyff Beefmaster Veiling - Bultfontein</td>
<td>W van der Schyff</td>
<td>083 951 2196</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CJ van der Schyff</td>
<td>082 306 1799</td>
</tr>
<tr>
<td>03 AUGUSTUS</td>
<td>Alzu KZN Beefmaster Veiling - Vryheid</td>
<td>Dantus Theron</td>
<td>082 895 7343</td>
</tr>
<tr>
<td>03 AUGUSTUS</td>
<td>Beefmaster Alliance Ope Dag / Besigtigingsdag - Nigel</td>
<td>Tony da Costa</td>
<td>083 254 1847</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gideon Brits</td>
<td>082 457 2816</td>
</tr>
<tr>
<td>03 AUGUSTUS</td>
<td>Petana Boeredag - Wolmaransstad</td>
<td>Connie van Vuuren</td>
<td>082 373 4833</td>
</tr>
<tr>
<td>04 AUGUSTUS</td>
<td>Beefmaster Alliance Veiling - Nigel - 30 ste</td>
<td>Tony da Costa</td>
<td>083 254 1847</td>
</tr>
<tr>
<td></td>
<td>Produktsieveiling</td>
<td>Gideon Brits</td>
<td>082 457 2816</td>
</tr>
<tr>
<td>05 AUGUST</td>
<td>Super Beef Beefmasters &amp; Vova Genetics Production Sale - Underberg</td>
<td>C P Dwen</td>
<td>082 652 1217</td>
</tr>
<tr>
<td>10 AUGUSTUS</td>
<td>Petana Beefmaster Veiling - Wolmaransstad</td>
<td>Connie van Vuuren</td>
<td>082 373 4833</td>
</tr>
<tr>
<td>10 AUGUSTUS</td>
<td>Ottershaw Beefmaster Veiling - Tweespruit</td>
<td>Arthur Gilbert</td>
<td>082 578 0801</td>
</tr>
<tr>
<td>11 AUGUSTUS</td>
<td>Open Range Beefmaster Veiling - Devon - Delmas</td>
<td>Jan van Heerden</td>
<td>082 772 2836</td>
</tr>
<tr>
<td>11 AUGUST</td>
<td>Shawe Beefmaster Sale - Dundee</td>
<td>George Shawe</td>
<td>082 579 5996</td>
</tr>
<tr>
<td>11 AUGUSTUS</td>
<td>Kandys Beefmaster Veiling - Theunissen</td>
<td>Werner Shawe</td>
<td>071 384 3631</td>
</tr>
<tr>
<td>16 AUGUSTUS</td>
<td>Sandspruit en Amakosi Beefmaster Veiling - Ladysmith</td>
<td>Charles Campher</td>
<td>083 631 3790</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gert Campher</td>
<td>083 632 4392</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Martie Campher</td>
<td>083 631 3791</td>
</tr>
<tr>
<td>18 AUGUSTUS</td>
<td>Bos Blanco Beefmaster Veiling - Kroonstad</td>
<td>Dennis Staal</td>
<td>082 828 1082</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Danie Rohland</td>
<td>082 828 6892</td>
</tr>
<tr>
<td>18 AUGUST</td>
<td>Southern Natal BMA Sale - CCM Farm CC - Sale - Swartberg</td>
<td>Clark Rattray</td>
<td>072 185 4571</td>
</tr>
<tr>
<td>19 AUGUST</td>
<td>Eastern Cape Bulls on Grass Sale - Queenstown</td>
<td>L Maclean</td>
<td>083 668 8952</td>
</tr>
<tr>
<td>23 AUGUSTUS</td>
<td>Rockvalley Beefmaster Veiling - Potchefstroom</td>
<td>MJV Lourens</td>
<td>083 279 1206</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Willem Odendaal</td>
<td>082 214 6300</td>
</tr>
<tr>
<td>24 AUGUSTUS</td>
<td>W O Beefmaster Veiling – Vrede</td>
<td>Frans Odendaal</td>
<td>082 348 9555</td>
</tr>
<tr>
<td>25 AUGUSTUS</td>
<td>Trimaster Veiling - Heilbron</td>
<td>JH Zietsman</td>
<td>084 513 8616</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Louis Kleynhans</td>
<td>082 770 1112</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jannie Naude</td>
<td>082 571 5183</td>
</tr>
</tbody>
</table>

### SEPTEMBER 2016

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Contact Person 1</th>
<th>Contact Person 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 SEPTEMBER</td>
<td>Oos Vrystaat Veldbulkclub Veiling - Vrede</td>
<td>Piet Human</td>
<td>082 417 8981</td>
</tr>
<tr>
<td>06 SEPTEMBER</td>
<td>The Cattleman en Benchmark Beefmaster Veiling - Grahamstad</td>
<td>A van Niekerk</td>
<td>082 445 8953</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mark Ford</td>
<td>082 577 0817</td>
</tr>
<tr>
<td>07 SEPTEMBER</td>
<td>Sarwipi Beefmaster Veiling - Greylingstad</td>
<td>Willem Pieterse</td>
<td>082 880 7172</td>
</tr>
<tr>
<td>07 SEPTEMBER</td>
<td>Iwukile Beefmaster Veiling - Aliwal Noord</td>
<td>De Klerks</td>
<td>087 550 0589</td>
</tr>
<tr>
<td>08 SEPTEMBER</td>
<td>Quardsen Beefmaster Veiling - Senekal</td>
<td>Riana Gildenhuys</td>
<td>082 770 2757</td>
</tr>
<tr>
<td>08 SEPTEMBER</td>
<td>East Coast Sale - Amberdene , Impact and Hart - Komga</td>
<td>Graham Hart</td>
<td>083 659 8171</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pierre Hart</td>
<td>083 652 5190</td>
</tr>
</tbody>
</table>

continue on page 48
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Details</th>
<th>Contact Person(s)</th>
<th>Contact Number(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 SEPTEMBER</td>
<td>Rhenostervallei Beefmaster Stoetveiling - Bela Bela</td>
<td>Hendrik Meyer</td>
<td>082 458 8144</td>
</tr>
<tr>
<td>14 SEPTEMBER</td>
<td>Molopo Beefmasters - Charles Olivier</td>
<td>Charles Olivier</td>
<td>082 524 9091</td>
</tr>
<tr>
<td>16 SEPTEMBER</td>
<td>Barkly Beefmaster Veiling - C W Hardie - Barkly Oos</td>
<td>CW Hardie</td>
<td>083 320 6005</td>
</tr>
<tr>
<td>22 SEPTEMBER</td>
<td>V2 Beefmaster Veiling - Elliot / Barkly Oos</td>
<td>Jaco Vorster</td>
<td>084 602 9866</td>
</tr>
<tr>
<td>28 SEPTEMBER</td>
<td>Excel en Jalouma Beefmaster Veiling - Gerdau</td>
<td>Hans Coetzee</td>
<td>083 259 2503</td>
</tr>
<tr>
<td>29 SEPTEMBER</td>
<td>Van Pletzen Beefmaster Veiling - Jamestown</td>
<td>Niel van Pletzen</td>
<td>072 569 3539</td>
</tr>
<tr>
<td><strong>OKTOBER 2016</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06 OKTOBER</td>
<td>Rosbeef Beefmaster Veiling - Kimberley - (Nico Badenhorst)</td>
<td>Nico Badenhorst</td>
<td>083 429 1181</td>
</tr>
<tr>
<td>13 OKTOBER</td>
<td>Kalahari Beefmaster Veiling - Oktavia/Kaingo BMA Veiling/Vryburg/ Asook Agen en Diadem</td>
<td>Jan Schoeman</td>
<td>082 458 4158</td>
</tr>
<tr>
<td></td>
<td>Kaingo</td>
<td></td>
<td>083 230 3595</td>
</tr>
</tbody>
</table>

*In culling every female that fails to wean a calf every year, regardless of reason, we lose some good ones but we get all the lemons*

*Tom Lasater*
Kerneels & Gerrie van Rensburg
082 651 2783 - 082 929 3988
nootiverwagbm@gmail.com
071 658 0348

BESOEKERS ALTYD WELKOM

Elke koei moet elke jaar 'n goeie kalf speen.

Nooitverwag Beefmasters, waar net die beste (NB) goed genoeg is.

Jaarlikse Produksieveiling, Dinsdag 12 Julie 2016
Plaas De Vereeniging, Ermelo
Noordwes klubveiling

25 Uitstaande Bulle en 20 Vroulike diere sal op die veiling aangebied word.

Donderdag, 14 Julie 2016
om 11uur by die Lichtenburg Skougronde

Kontakpersones:
Ian Grobbelaar: 060 965 6207 (Afslaer)
Connie van Vuuren: 082 373 4933
Jan du Toit: 083 627 4402
John Tait: 062 572 3951
Dewald Scholtz: 082 819 8062

ANDRÉ PRETORIUS
083 236 5908
E-MAIL
andre@alpfotos.co.za
WEBWERF
www.alpfotos.co.za
Algemene oorsig oor sekere hoefeeienskappe by vleisbeeste

Inleiding

Die Beefmaster het definitiewe riglyne soos vervat in die Lasater-filosofie oor beesboerdery. “The hardy animal must perform with only the minimum amount of help. It is out of the question to trim an animal’s hooves. When a bull or a cow needs a foot trim we let the packer trim them”. Met die woord “packer” word hier verwys na die slagter.

Seleksie vir gesonde hoewe in vleisbeeste sluit alle aspekte van strukturele korrektheid in, sodat die dier optimaal kan produseer en reproduseer. ’n Gesonde hoef is anatomies korrek gevorm met ’n sterk hoefwand, hiele en sool. Gesonde hoewe is ’n voorvereiste vir vry en gemaklike beweging by albei geslagte. By bulle is veral die agterhoewe van kardinale belang as dit by dekvermoë kom. Die bouvorm van die dier het ’n direkte invloed op die konformasie van die hoef veral soos die dier ouer en swaarder word.

Hoefprobleme is baie ingewikkeld en is gewoonlik ’n kombinasie van meer as een faktor. Faktore wat hier ’n rol speel is die genetiese en fisiologiese samestelling van die dier wat veral beïnvloed word deur omgewingsfaktore soos bestuur en voeding. Die omgewing speel verder ’n groot rol in die vorm van die hoewe, dink hier aan intensiewe teenoor ekstensiewe produksiestelsels. Dan is daar die verskil tussen ranteveld teenoor die sandveld.

Dit is die plig van telers om wat hoewe aanbied, goeie genetiese materiaal aan die bedryf te voorsien om sodoende hoefprobleme te voorkom of te verminder. Dit is die plig van telers om wat hoewe aanbied, goeie genetiese materiaal aan die bedryf te voorsien om sodoende hoefprobleme te voorkom of te verminder.

Die oorsig gee ’n kort beskrywing van sekere hoefafwykings wat belangrik is vir die seleksie van vleisbeeste.

---

*It takes high hurdles to achieve high goals*

*Tom Lasater*

vervolg op bladsy 51
Die Normale Hoef

- moet vry wees van siektes en letsels
- moet groei teen ’n tempo van 6-7 mm/maand
- grootte moet voldoende wees
- beide kloue, binne en buite, moet ewe groot wees, dus bilateral simmetries.
- die kloue moet teenmekaar wees
- die hiele moet diep wees
- die koot moet die regte helling hê
- die hoefwande moet dik en hard wees

Die Kleur

Beeshoewe is oor die algemeen donker met variërende skakerings van wit tot swart. Dit is wetenskaplik bewys dat wit hoewe dieselfde tekstuur en hardheid het as donker hoewe. Die hoefkleur is afkomstig van die pigment melanien. Daar is egter by telers kleur voorkeure. By beeste is die donker kleure meer gewild.

Dit is belangrik om daarop te let dat die bouvorm van beide die voor- en agterbene die vorm van die hoef beïnvloed. Sien Tabel.

<table>
<thead>
<tr>
<th>Hoefdefek</th>
<th>Beskrywing</th>
<th>Beenkonformasie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lang uitgegroeide kloue met krultoon</td>
<td>Tone draai op met te veel gewig op hiele</td>
<td>Sekelhak</td>
</tr>
<tr>
<td>Rolkhou (kurkdraaier) meestal in die agterbeen</td>
<td>Die wand van die buiteklou groei onder die sool in, die binnekou wand groei mediaal uit</td>
<td>Bakbene, meer gewig op buiteklou</td>
</tr>
<tr>
<td>Skêrkhou of krultoon</td>
<td>Kloue groei na buite en Boontoe en krul op</td>
<td></td>
</tr>
<tr>
<td>Klein hoewe</td>
<td>Die hoef word oorbelas en dra in verhouding swaarder</td>
<td>Groot raamwerk beeste met regop hakke</td>
</tr>
<tr>
<td>Ongelyke kloue</td>
<td>Swak hoefkonformasie</td>
<td></td>
</tr>
<tr>
<td>Uitdraai hoewe</td>
<td>Gewoonlik smal bors</td>
<td>Aankap knieë</td>
</tr>
<tr>
<td>Indraai hoewe (duiftonig)</td>
<td>Gewoonlik breë bors bors</td>
<td>Oormatige breë</td>
</tr>
<tr>
<td>Regop hakke en swak kote</td>
<td>Lei tot mankheid</td>
<td></td>
</tr>
<tr>
<td>Hoefkrake</td>
<td>Beide horisontale sowel as vertikale krake lei tot mankheid</td>
<td></td>
</tr>
</tbody>
</table>

Genetiese Riglyne

Stoettelers behoort beeste met beter hoewe te selektere. In die evaluering van faktore wat hoefgebreke kan beïnvloed is daar bevind dat laminitis en probleme met die hiele in ’n groot mate aan spesifieke rasse en ouderdom van die diere toegeskryf kan word. Omdat die Beefmaster ’n komposiete ras vervolg op bladsy 53
is, moet daar deeglik kennis geneem word van die hoefdefekte wat mag voorkom. As die voorkoms van so ’n hoefdefek in meer diere in die dieselfde kudde voorkom, moet dit geneties ondersoek word.

**Ander Oorsake Van Hoefdefekte Vir Oorweging**

Voeding speel ‘n belangrike rol in die verskillende groeifases van die dier. Dit is bekend dat makro- en mikroelemente ‘n groot effek op die ontwikkeling van die normale hoefgroei het. Beide koper en sink is al gekoppel aan hoefdefekte.

Laminitis is ‘n algemene probleem by diere wat hoë vlakke konsentraat gevoer word, veral diere op betonvloere. In voerkrale mag hiel-erosie en soolulsers voorkom. Waar diere voortdurend aan nat toestande blootgestel word, mag hoefprobleme ook voorkom. Diere wat onder hierdie genoemde toestande aangehou word se pote moet noodwendig reggesny word wat dan die seleksie van sulke diere tot ‘n groot mate kompliseer.

Dit is daarom baie belangrik om by hoefprobleme ‘nonderskeid te maak tussen diere wat onder ekstensiewe en intensiewe produksiesisteme aangehou word. Dit is te alle tye nodig om ‘n regverdige en ook akkurate evaluering van die probleemsituasie te maak.

**Samevatting**

Hoefeienskappe en probleme wat daarmee saamgaan, is in ‘n groot mate gekoppel aan omgewingsfaktore en veral voeding. Daar is ‘n definitiewe aanduiding dat daar wel genetiese verskille tussen diere is. Dit is belangrik dat telersgenootskappe riglyne moet neerlê vir die evaluering van hoefeienskappe om sodoende genetiese vordering te maak in die uitbou van ‘n ras. Alhoewel daar jare reeds besef word dat hoewe belangrik is by funksionele doeltreffendheid by beeste, is daar nog baie ruimte om die genetika en fisiologie van die hoef beter te verstaan.
ROCK VALLEY

Dinsdag 23 Augustus 2016 - 11:00
"Wildebeeslaagte", Potchefstroom.

ROCK 13 007
V: BOS 08 8466  M: ROCK 10 0141

ROCK 13 050
V: WO 04 0262  M: ROCK 06 0196

ROCK 13 033
V: BOS 07 7216  M: ROCK 06 0135

ROCK 13 166
V: BOS 08 8466  M: ROCK 10 0169

AANBOD:
35 3 JAAROUD BULLE
40 DRAGTIGE VERSE
40 JAAROUD VERSE

ROCK 13 126
V: BOS 09 9117  M: ROCK 06 0187
WWW.BEEFMASTERSA.CO.ZA
BEEFMASTER PRODUKSIEVEILING

ROCK 13 102
V: BOS 08 8470  M: ROCK 08 0457

ROCK 13 216
V: BOS 09 9778  M: ROCK 06 0511

ROCK 13 014
V: BOS 08 8466  M: ROCK 10 0197

ROCK 13 064
V: BOS 07 0131  M: ROCK 09 0497

ROCK 13 029
V: BOS 07 0229  M: ROCK 06 0114

NAVRAE:

VICTOR LOURENS:
083 279 1206

THYS LOURENS:
083 258 5901

JOHAN VAN DER NEST:
082 574 4220

SIMON HUGHES:
082 491 8286

Roete: Vanaf Potchefstroom: Ry op die Venterdorp pad (R53) vir 23km. Draai regs by plaas in.
Vanaf Venterdorp: Ry op die Potchefstroom pad (R53) vir 27km. Draai links by plaas in.
S26°30.985’ E026°59.639’