

50<sup>th</sup> BIF CONGRESS LOVELAND JUNE 2018. PART 1. (LLEWELLYN ANGUS Pr. Sci. Nat.)

The Beef Improvement Federation Congress is held every year in the USA and moves around from state to state with a university with an animal science division hosting the congress. The format is very similar to our well-known Aldam Stockmans School. I can describe it as a Stockman's School on steroids. This year there were over 500 delegates. It was held in Loveland, Colorado and hosted by Colorado State University animal sciences division. The main theme was "Elevating the Industry". The ARC sponsored my and Sanele Mbhele's trip as part of the 2017 ARC National Beef Cattle Improvement Herd Award and Emerging Beef Farmer Award.

The buzzwords at this Congress were single-step ebv evaluations and GEBV enhanced EBV's. The difference between most breeds in the USA and ours is that they already have these GEBV's with relatively high accuracies. Good clean performance data was also emphasised. To implement good genomics one needs good phenotypic data to back it up with. As they say in Afrikaans: "die een hand was die ander een." The emphasis in USA stays very much on early growth but also on meat quality aspects where the Angus plays a huge role. Reproduction GEBV's are starting to kick in.

REPORT ON NUMEROUS PRESENTATIONS. (PART 1)

GROWSAFE SIMPOSIUM.

REPRODUCTION BENCHMARKING. DR CLIFF LAMB. TEXAS A AND M UNIVERSITY

The % cows that calve in the first 30 days of the season should be 60%. This implies nearly 60% cows should be pregnant after the first 21 days of breeding. Pregnancy rate has a 4X greater economic impact than any other trait, growth rate coming in second. To achieve this heifers should calve easily at 24 months under high nutrition levels. If you want say 70 replacement heifers in your herd keep say 90 and select 70 on early pregnancy. Breeding season length must come down to at least 72 days and even 65 days. With early calving weaning weight increases and so does reconception rate.

Synchronisation and AI aids in increasing the pregnancy rate in the first 30 days of the season. Culling or attrition rates of non-pregnant animals is high when making the breeding season shorter. Make sure you have surplus females when starting this high selection intensity on fertility. Mating heifers 20 days before cows remains a good practice for better reconception in the second calving season. Regarding Growsafe the ideal is to put as many bulls and heifers as possible through the test before breeding them.

THEME: POSITIONING FOR THE FUTURE OF BEEF PRODUCTION.

1. EFFICIENT RED MEAT PRODUCTION. MICHAEL GENHO. ELANCO ANIMAL HEALTH

The important traits are calving, early growth traits, reproduction, ultrasound, mature cow weights and condition scores, actual carcass characteristics and actual feed intake. They need to be measured, stored, BLUPed, reported and marketed. This is incredibly similar to the BGP program in South Africa and its goals.

2. FOCUS ON QUALITY. MARK MCCULLY. VICE-PRESIDENT CERTIFIED ANGUS BEEF.

It is pretty clear that customer satisfaction improves with % marbling. The question is whether feedyard performance is being sacrificed in the pursuit of quality.

### 3. FOCUS ON SUSTAINABILITY. DR SARAH PLACE. DIRECTOR SUSTAINABLE BEEF PRODUCTION RESEARCH. NCBA

A great presentation. She clearly showed that beef is wrongly shown as one of the big culprits in carbon emissions as their efficient beef or protein production is not brought into the equation.

Also in terms of net protein contribution beef generates 2.3 times more high quality protein than used, broiler chickens have a value of 0.85 and pork a value of 0.70. The main reason for this is that cattle can convert plant pastures that are of relatively or very low feed value into quality protein through their ruminant digestive system. Interesting is that Americans consume the same amount of beef as in 1909 but 500% more chicken.

Dr Place summarises: “ The fundamental value proposition of beef in the food system is the transformation of lower value resources (plants, land bases) to higher value protein, micronutrients, and ancillary products. What can we do to enhance this upcycling value while minimizing unwanted negative outcomes and increase social acceptability? “

### 4. FOCUS ON TRAITS NOT CONSIDERED. DR DORIAN GARRICK. PROFESSOR MASSEY UNIVERSITY

“ There is inadequate consideration of: reproduction, eating quality, human healthfulness, disease resistance, feed intake and efficiency, lifetime performance, welfare traits, environmental attributes. All these characteristics exhibit phenotypic variation and are heritable so they can be included in breeding programs. “

This may all be so but I have a query regarding the complexity of measuring all these attributes and combining them into two or three breeding objective dollar or rand indexes. My take on this is to concentrate on the economically most important ones BUT we need to know which ones they are. It's a sort of catch 22 situation.

### 5. BRINGING IT ALL TOGETHER. DR JOHN POLLAK EMERITUS PROFESSOR CORNELL UNIVERSITY

He states that we need to improve the efficiency of beef production in reproduction traits and birth to finishing. Many traits are not being adequately considered. Selection is a proven and cost-effective mechanism for improvement.

“ Selection needs to be based on whole-system indexes. It must comprise EBV's for economically relevant traits based on sensible phenotyping strategies combined with the use of genomics. It will need to be led by innovative new breeders. “

This is the first in a 3 part series covering the BIF Congress and the post-congress tour.

50<sup>th</sup> BIF CONGRESS LOVELAND JUNE 2018. PART 2. (LLEWELLYN ANGUS Pr. Sci. Nat.)

This year there were over 500 delegates. It was held in Loveland, Colorado and hosted by Colorado State University animal sciences division.

In this section we discuss one of the emerging technologies and the selection and mating decisions workshop.

THEME: POSITIONING FOR THE FUTURE OF BEEF PRODUCTION.

1. EMERGING TECHNOLOGY: DEVELOPMENT OF GRAZING DISTRIBUTION PHENOTYPES. DEREK BAILEY. NEW MEXICO STATE UNIVERSITY

Grazing distribution of livestock is a critical trait. Trials have clearly shown that certain cattle of the same breedtype, herd and production stage consistently like grazing in lower-lying areas and others in high-lying areas (bottom and top grazers). Considerable variation occurs between cattle. This terrain use data is a summary of lots of tracking data. It is not related to many production traits as was assumed, for example, maybe bottom grazers producing heavier weaners due to better quality bottom grazing or having a higher body condition score.

Selection of beef cattle for terrain use has the potential to resolve important grazing management issues in the United States. This terrain use preference appears relatively consistent in most ranches evaluated. Obviously this can become a valuable selection trait in many western ranches.

SELECTION AND MATING DECISIONS AND WORKSHOP. DR BOB WEABER (CHAIR) KANSAS STATE UNIVERSITY

1. IMPACT OF SINGLE-STEP EVALUATIONS ON SELECTION INDEXES. DR MATT SPANGLER. ASSOCIATE PROFESSOR. UNIVERSITY OF NEBRASKA-LINCOLN

It is clear that trying to blend classical EBV's with genomic values into 2 step GEBV's is problematic. With single-step evaluations the genomic evaluations get plugged into the genetic evaluation at the same time resulting in more accurate GEBV's. There is no bias towards the EBV or the GBV side. The BOLT system is the preferred choice. He ended his talk by stating: "Remember that phenotype and good phenotypic data is still the key to successful GEBV's".

In plain language, do not rely on genotypic data to give you GEBV's, but do accurate performance testing of all the most important weights and traits with correct management groupings. The combination of this "good,clean" data with the genotypic data will give the desired GEBV's.

2. NEW INTERNATIONAL GENETIC SOLUTIONS (IGS) EBV's ARE REALLY BETTER. DR LAUREN HYDE LEAD GENETICIST IGS. IOWA STATE UNIVERSITY

IGS is used by 13 USA breed societies to do their genetic evaluations. The need for improving EBV accuracy drives genomic evaluation innovations. Single-step Super Hybrid Model is a breakthrough

genomic model in accuracy improvement. The new IGS GE-EBV's for growth traits are more accurate than the previous IGS EBV's. Validation for other traits is continuing.

### 3. BULL SELECTION WORKSHOP DR MATT SPANGLER ASSOCIATE PROFESSOR OF ANIMAL SCIENCE UNIVERSITY OF NEBRASKA.

A breeder must first have specific breeding objectives for bull selection to be implemented successfully. Identify the selection index that most closely matches your breeding objective. Be cautious of traits in the index you are using that don't have an economic value to your production system.

Traits that you use in your system that are not in the index must be selected for in tandem with the selection index. Also remember traits have thresholds to bear in mind so look at cut-offs for individual traits. Once bulls have been ranked on paper they are visually appraised for structural correctness and other visual aspects.

This is the same approach our Dr Michael Bradfield uses, that is select first on selection indexes then look at individual traits for cut-off's. Only after ranking takes place are the ranked bulls visually appraised. Johan Styger, one of our prominent Simmentaler breeders, advocates this approach for some time now.

I was really thankful to be spot-on in the practical evaluation at the end of the workshop. The exercise was to select bulls for various scenarios with differing breeding objectives. (Probably Michael and Johan's influence!!)

In summarizing this workshop Dr Weaber suggested that commercial cattlemen should focus on both additive and non-additive gene effects and selection. Results of additive genetic value would be selection indexes and EBV's and non-additive are gene combination effects such as heterosis or hybrid vigour.

Seedstock producers, on the other hand, should focus on additive genetic merit and putting it in a package for the commercial man to exploit through straight breeding and also through crossbreeding or heterosis.

This is the second in a 3 part series covering the BIF Congress and the post-congress tour.

The third and final part covers the Leachman Cattle Company's unique approach, a visit to Five Rivers Cattle Company with a total feeding capacity of 980,000 head – the largest in the world, and the historic Cherokee Cattle Ranch (Santa Gertrudis).

50<sup>th</sup> BIF CONGRESS LOVELAND JUNE 2018. **PART 3.** (LLEWELLYN ANGUS Pr. Sci. Nat.)

This year there were over 500 delegates. It was held in Loveland Colorado and surrounding area, and hosted by Colorado State University animal sciences division.

This third and final part covers the Leachman Cattle Company's unique approach, a visit to Five Rivers Cattle Company with a total feeding capacity of 980,000 head – the largest in the world, and the historic Cherokee Cattle Ranch (Santa Gertrudis).

MAIN THEME: POSITIONING FOR THE FUTURE OF BEEF PRODUCTION.

LEACHMAN CATTLE COMPANY FORT COLLINS COLORADO. JIM LEACHMAN.

Jim started up in Colorado in 2003 after moving from Montana. Some will remember his presentations at our Stockman's School a few years back.

In 2018 they will test and sell over 1800 bulls. They select Angus, Red Angus and Stabilizer bulls for maternal traits maximizing cow/calf profitability. Charolais bulls are used for terminal traits. Bulls are produced through a network of 42 co-operatives (9000 cows) plus ET. Twelve annual sales are held. Three profit indexes are used \$ Ranch, \$ Feeder and a combined \$ value. The \$ Ranch relies on profit from birth to weaning and uses fertility, milk and growth traits. The \$ Feeder relies on profit from weaning to harvest and uses feed conversion, carcass value and carcass weight traits. The typical cow they use in their analysis is  $\frac{3}{4}$  Angus  $\frac{1}{4}$  Simmental. This implies that by far the most popular commercial female has this make-up.

Leachman's seedstock producers measure 16 traits, there are weekly EPD runs (our EBV/2). The database is nearly one million animals with 31,000 calves recorded in the last 12 months. A regular sire summary on all system bulls, complete autonomy and rapid selection progress are key aspects.

Cow herd genetic profit drivers are summarized as: output being calf weight and \$ worth, reproduction being calving ease and live%, breeding at 15 months, early breeding back, longevity and cow cost being how much she eats.

The stabilizer composite sires are used to blend British and Continental breed traits. Complementarity of parent breeds is utilized: Angus for marbling, calving ease and convenience, Gelbvieh for sexual maturity, cow/calf efficiency and early growth, Simmentaler for growth, milk, muscle, marbling? and carcass weight, South Devon for maternal, disposition, feed efficiency and marbling.

Pure and Stabilizer bulls were on display with full data on the older bulls.

KUNER FEEDLOT COLORADO FIVE RIVERS CATTLE COMPANY.

Five Rivers operate 12 feedlots from the Texas panhandle north and west across 6 states into Colorado. Total capacity 980,000 cattle making it the biggest feedlot in the world. The starter ration comprises 35% steam flaked corn, 25% corn silage, 25% ground hay, 5% dried distillers grain and 10% liquids. They move to an intermediate ration comprising 45% steam flaked corn with the finisher ration made up of 60% steam flaked corn, 25% corn silage, 5% distillers grain, 10% liquids and 0.01% micronutrients throughout.

Their Aspen Ridge “Natural” Beef Program means NO hormones, no antibiotics or ionophores, no animal by-products (tallow), sick animals removed from program, a producer signed affidavit and 3<sup>rd</sup> party verified. The “natural” steers gain 1.27 kg over a 184 day feed period compared to traditional steers’ 1.59 kg over a 168 day feed period with a dry matter conversion of 7.5 compared to 5.8. “Natural “ end weight is 617 kg compared to traditionally fed steers’ 644 kg. Even with this BIG difference in performance the premium price for their “natural” beef more than makes up for it! 40% of the Kuner feedlot produces “natural” beef and it is expanding slowly.

In South Africa our natural beef would be regarded as coming off veld or pasture with a certain amount of finisher ration allowed. The American natural beef is feedlotted. There is a very small amount of young beef coming off pasture that is comparable to our grassfed beef. Zilmax-type hormones are illegal and regarded as taboo with Five Rivers although ionophores and “weaker” type licenced hormones are used in the traditional program.

#### CHEROKEE RANCH SANTA GERTRUDIS AND CASTLE

This stud and castle were established in the 1950’s by a Scottish aristocratic lady by the name of “Tweet” Kimball. These cattle were brought up from Texas and are well adapted in traditional “Angus” country. They infuse a portion of their herd with Red Angus cattle with very good results in terms of growth and meat quality. This castle has an awesome view of the Northern Rockies. John Ford, Executive Director of Santa Gertrudis International from Kings Ranch Texas, gave an overview of the American Santa mentioning that the breed already have GEBV’s in place.

In summarizing the visit from a South African point of view: Our cattle breeds are visually and structurally as good as anywhere in the world. We are behind with breed trends for traits and economic indexes and with GEBV’s. Some of our SA breeders are on the right track with trait collection and the BGP project that will eventually result in GEBV’s. Far more SA breeders should be recording traits and eventually be doing genomic SNP tests.

We need to use available technology from Australia and USA to catch up. The USA mindset of utilizing EBV’s and GEBV’s for more profit and to stay abreast with the newest technology will have to become part of our thinking in order to survive as a beef industry.

On the subject of GEBV’s: We must be very careful who the genomic data, and more specifically the SNP results of animals, belongs to and who has access to that data. The “ownership” of gene markers for certain economically very valuable traits, for example residual feed intake, could become a big issue if contracts between parties are not in place. The breeder and his breed society should be the rightful owners.