Newsletter 1:
6 November 2015

Dear Beef Genomics Program Participant (BGP)

Background

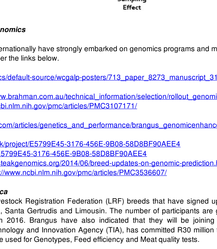
The USA Hereford story
Colleagues, as a matter of interest below the link to the USA Hereford Annual report as part of our first Genomics Newletter as it tells a compelling story of the move from pedigrees, to EBV's to genomics. Two decades ago the USA Hereford had lost 15-20% of its registrations. They turned around the ship by appointing a top Breed Director in Craig Huffines. He knew that the days of selling a bull on a pedigree certificate was outdated and initiated a program called TOTAL HERD PERFORMANCE RECORDING (TPR) http://hereford.org/node/22. After initial resistance, over 70% of producers now subscribe to the TPR system, and most breeds in the USA have now adopted a similar system. On average in the USA, members pay per capita of $16 per animal in the TPR system, but all cows and calves must be registered and recorded for growth, fertility, body condition, udder and teats and scan data. Non TPR members pay $25 for nominated calves to be registered for a certificate but do not receive EBV's. Craig focused very heavily on fertility and a complete cow inventory system had to be kept. The Simmental and Simbra in Southern Africa have now adopted a similar system. Unfortunately for USA Hereford, Craig has moved on to greener pastures and has joined the quarter horse association, that is 4 times larger than Hereford. However, he leaves behind a strong legacy as per their annual report and Craig will fall into the category of being a great leader whom was prepared to take his Society where they ought to be, and not where the majority of members dictated where they should go by sticking to the selection of only on pedigrees which would have ultimately been the death knell for the Society.

http://www.hereford.org/static/files/1115_AnnualReport.pdf

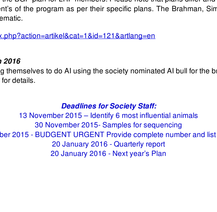
Below, Craigs email to Derik le Roux, when invited to comment on a Limousin Strategy session:
"Dear Derick, It would be my pleasure to help you if I can. Registrations of livestock are the lifeblood of any breed society. Overtime, the genetic predictions using EBVs have become even more valuable than the pedigree themselves, but of course it's the pedigrees that also drives the EBV evaluation. I know I'm preaching to the choir, but having registered livestock is certainly critical to maintaining a good performance program which is the ultimate service we provide to our respective commercial beef industries constituents."

From Pedigrees to EBVs to Genomically enhanced EBV's

In much the same way that performance testing and the selection of animals using objective performance criteria has become the norm, the move over the last decade is to include genomic information into estimated breeding values. Genomic information is especially important for the difficult to measure and lowly heritable traits, such as fertility, feed efficiency, meat quality and maternal traits such as milk production and calving ease of daughters. The move to genomics in the beef industry has adopted a similar path to the adoption of the internet industry. At first there was a lot of hype, a period of disillusionment when results didn't quite match expectations and then a phase where we became enlightened of the advantages of the technology to the extent that we are now entering the plateau of productivity as per the illustration below.



At the moment we assume that the breeding value of the progeny of an animal is simply half the expected parental difference. Genomics will ultimately enable us to find the true breeding value for the progeny as per the illustration below.



International progress in genomics

All leading breed societies internationally have strongly embarked on genomics programs and many now routinely include them into their EBV runs, as per the links below.

• Braford https://asas.org/docs/default-source/wcgalp-posters/713_paper_8273_manuscript_313_0AAAA39E69AF2.pdf?sfvrsn=2
• Brahman Australia http://www.brahman.com.au/technical_information/selection/rollout_genomic_values.html
• Brahman USA http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3107171/
• Brangus USA
http://www.southernlivestock.com/articles/genetics_and_performance/brangus_genomicenhanced_epd_program_announced-11012-sls
• Limousin http://gtr.rcuk.ac.uk/project/E5799E45-3176-456E-9B08-58D8BF90AEE4
• http://gtr.rcuk.ac.uk/project/E5799E45-3176-456E-9B08-58D8BF90AEE4
• Santa Gertrudis http://blog.steakgenomics.org/2014/06/breed-updates-on-genomic-prediction.html
• Simmental International http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3536607/

Developments in South Africa
For this financial year the Livestock Registration Federation (LRF) breeds that have signed up for the program include the Brahman, Simmental, Simbra, Santa Gertrudis and Limousin. The number of participants are growing and we expect to be completely oversubscribed in 2016. Brangus have also indicated that they will be joining in 2016. The South African government through the Technology and Innovation Agency (TIA), has committed R30 million for the program over the next three years. The money will be used for Genotypes, Feed efficiency and Meat quality tests.

We envisage that the program will run for a period of 10 years but will need to secure additional funding after the three year period. The goal of the program has been to collect very good phenotypic data, to increase the accuracy of the EBV's and also include other traits such as feed efficiency into the analysis. The end of the pipeline will be genomically enhanced EBVs but producers will see immediate benefits through improved herd linkages, better contemporary groups, increased accuracies and EBV's for more traits.
Below a link to a schematic of the BGP plan for LRF members. Please note that plans differ and some societies have opted to only include certain component's of the program as per their specific plans. The Brahman, Simmentaler and Simbra will run the whole plan as per the schematic.

http://agribsa.co.za/FAQ/index.php?action=artikel&cat=1&id=121&artlang=en

December Breeding Season 2016
Producers should be preparing themselves to do AI using the society nominated AI bull for the breeding season. Please contact your society manager for details.

Deadlines for Society Staff:
13 November 2015 – Identify 6 most influential animals
30 November 2015- Samples for sequencing
13 November 2015 - BUDGENT URGENT Provide complete number and list of animals
20 January 2016 - Quarterly report
20 January 2016 - Next year's Plan