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The Impact of Genomic Selection on the South African Dairy Breeding Sector

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Outline

① Introduction

- South African Dairy Breeding Sector
- Genetic evaluation services

② Impact of Genomic Selection

- Farmers & Stud breeders
- Local AI business
- Service Providers

③ Recent Developments

④ Concluding Remarks

Introduction

The South African Dairy Breeding Sector

- 70% pasture based production
- 9 dairy cattle breeds
- Major breed is Holstein (~60%)
- 400 000 dairy cows
- ~20% cows milk-recorded
- 14 foreign AI companies
- 1 local AI company (Taurus)
~20% of market



Introduction

Taurus Progeny Testing Scheme

- 25 Holstein & 15 Jersey bulls tested per year
 - Mainly imported embryos
 - Selected on pedigree
 - No. has decreased since advent of GS
- Exports (**Insignificant**) – rest of Africa & Asia

Genetic Evaluation

- Country has generally kept pace with global advances in genetic evaluation technologies
- National & Interbull evaluations for **Holstein, Jersey, Ayrshire & Guernsey** breeds
- Implementation of GS constrained by:
 - high cost of setting up reference population
 - small breed populations

The Genomics era

Advent of genomics saw:

- Frenzy over the novel technology
- Unprecedented eagerness to adopt

However:

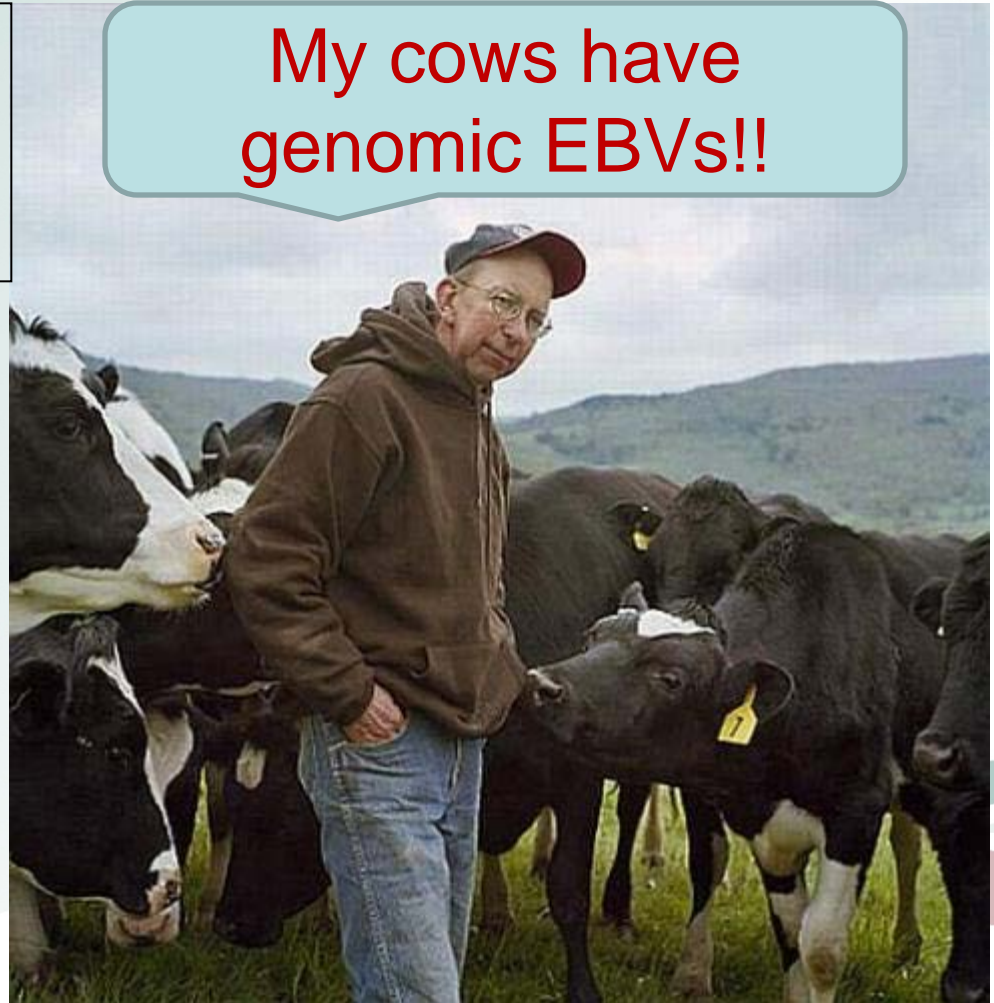
Concept of GS and benefits accruing to the various industry sectors not clearly understood

Impact on Farmers & Breeders

The BIG Misconception

It is genetically tested therefore it is genetically superior

My cows have genomic EBVs!!



Impact on Farmers & Breeders

- Large amounts of money spent on ‘genomic’ tests (commercial panels)
 - Tests not validated
 - High prices for ‘genomically tested’ animals
- Premium prices paid for imported semen of genomically tested sires

Impact on local AI Business

‘*Genomically tested*’ became best selling proposition for foreign AI companies, resulting in:

- Competitive advantage of foreign AI Companies
- Negative impact on sales of local semen
 - Local AI company had to change marketing strategy

Impact on local AI Business

New marketing strategy:

‘Genomically tested’ became selling point

“People are simply not excited about sires that are not genomically tested” - Taurus

Impact on local AI Business

DESERT STORM 2673

Grace Valley Shottle Desert Storm

2012474413

Breeder: Kevin Lang

30-12-2009

GENOMIC PROVEN



Desert Storm, already shows tremendous rib

Impact on local AI Business

- 60% of semen sales now from genomically tested sires
- PT candidate bulls selected on GEBVs
 - Based on foreign reference populations!
- No. of PT bulls reduced

Impact on service providers

Research Institutions

Universities

AI Company

Recording & Evaluation
Organisations

SA
Livestock
Genomics
Consortium

Breed
Societies

Laboratories

Impact on service providers

Livestock Genomics Consortium

- Set up in Feb 2012
- Inspired by concept of co-opetition
- Spearheading & co-ordinating national efforts to set up genomics programmes
 - particularly sourcing of funding

Concluding Remarks

- South Africa has kept abreast with technological advances in genetic improvement technologies
- Adoption of genomic selection has however been flawed
- The Livestock Genomics Consortium presents an opportunity to get the industry back on track

Food for Thought

Technological progress
is like an axe in the
hands of a pathological
criminal.



Albert Einstein

German Theoretical-Physicist
(1879-1955)

QuoteHD.com

**THANK YOU
FOR YOUR
ATTENTION**

