

# BREEDPLAN

THE WORLD'S MOST WIDELY  
USED GENETIC EVALUATION  
SYSTEM FOR BEEF CATTLE

PRESENTED BY DR MICHAEL BRADFIELD



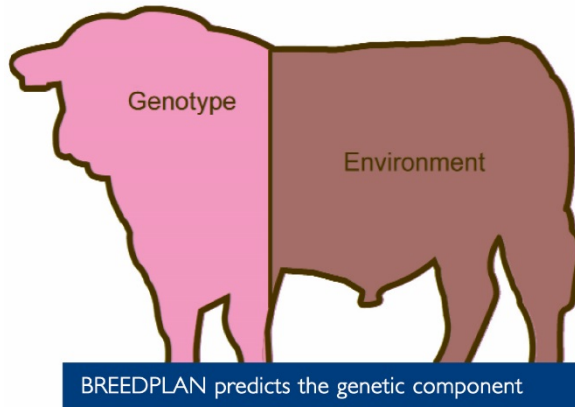
# Requirements for a Traceability system

- An authority
- A Database
- Means of identifying animals
- Creating the necessary documents
- Required legal framework
- Educates industry participant's
- Monitoring, enforcement and evaluation procedures
- Query system

# BREEDPLAN<sup>®</sup> Genetic Evaluation

- BREEDPLAN<sup>®</sup> is the world's most widely used genetic evaluation system for beef cattle
- Developed in Australia
- Used by:
  - 44 breeds
  - 100+ breed associations
  - across 15 countries
- Growth, carcass and fertility EBVs are evaluated together in a multi trait model + calving ease + other traits
- Database over 40 million animals

# BREEDPLAN<sup>®</sup> Separates Genetics from Environment



When you look at an Animal's weight

- 70% of what you see is the contribution of the environment (feed quality, disease, management)
- 30% is due to genetics

The genetic component is transmitted from one generation to the next.

It is the genetics that makes an animal valuable for BREEDING.

# Heritability

## Heritabilities

Milk	10%
Gestation length	22%
Weaning growth	20%
Marbling	20%
Eye muscle area	25%
400 day weight	30%
Fat depth	30%
Birth Weight	40%
Scrotal size	42%

- Heritability is the proportion of genetic superiority or inferiority that an animal passes on to its progeny
- Heritabilities vary with traits and breeds. Some commonly used values are given



# Conducting Genetic Evaluations in 16 Countries



**BREEDPLAN<sup>®</sup> is used in many countries  
by some breeds - for example:**

<b>Breed</b>	<b>No. of Countries</b>	<b>Countries</b>
Hereford	7	Australia, New Zealand, UK, USA Canada, Argentina & Uruguay
Brahman	4	Australia, USA South Africa, Namibia
Simmental	5	Australia, New Zealand, UK South Africa, Namibia
Limousin	4	Australia, New Zealand South Africa, Namibia

# ABRI/BREEDPLAN Services in Southern Africa

Agent in Botswana Government support

20 Breeds +  
100% of  
National Market

28 Breeds

- Beef Cattle
- Sheep
- Goats
- Horses
- Dairy

80% of National  
Market

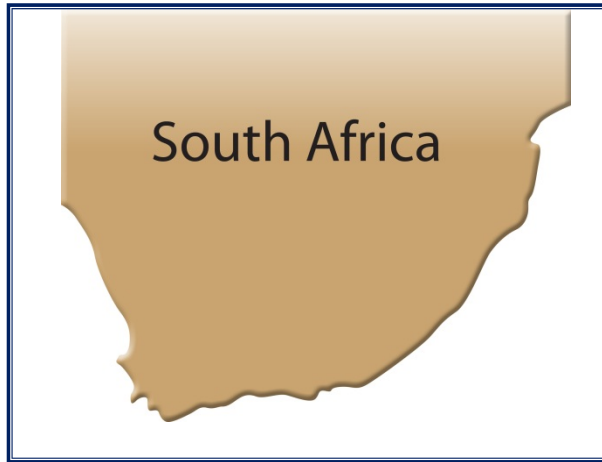


Seven Major Beef  
Breeds (40% of  
National market)

- Game register



# LRF Provides High Research & Development Support Through it's Strategic Alliances



<b>Agricultural Research Council</b>	<b>9</b>
<b>Livestock Registering Federation</b>	<b>4</b>
<b>University of Free State</b>	<b>3</b>
	<hr/>
	<b>16</b>



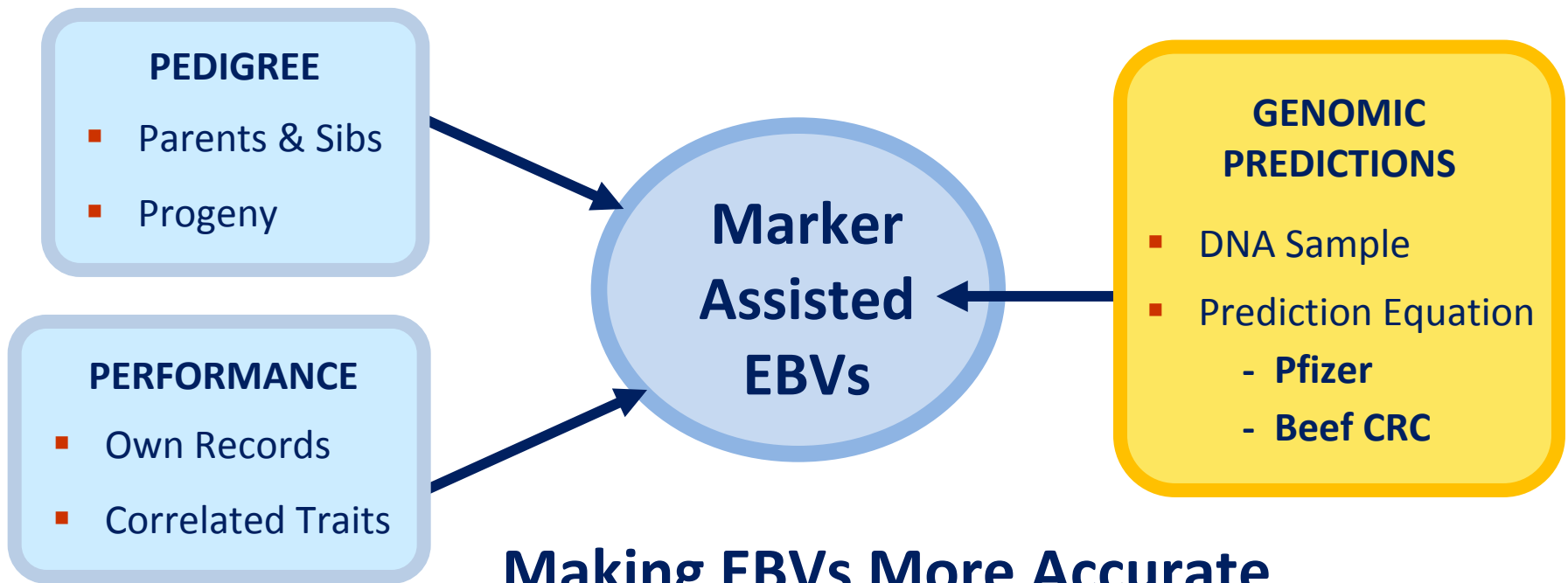
<b>Animal Genetics Breeding Unit</b>	<b>20</b>
<b>Agricultural Business</b>	
<b>Research Institute</b>	<b>5</b>
	<hr/>
	<b>25</b>

**TOTAL = 41 Scientists**

# Traits For Which BREEDPLAN EBVs/EPDs Are Produced

Growth	Fertility/Birth	Carcase	Other
Birth Weight Growth: <ul style="list-style-type: none"> <li>▪ 200 Day</li> <li>▪ 400 Day</li> <li>▪ 600 Day</li> </ul> Maternal (Milk) Mature Cow Weight	Scrotal Size Days to Calving Gestation Length Calving Ease <ul style="list-style-type: none"> <li>▪ Direct</li> <li>▪ Daughters</li> </ul>	Carcase Weight Eye Muscle Area Fat Depth: <ul style="list-style-type: none"> <li>▪ Rump</li> <li>▪ Rib</li> </ul> Intramuscular Fat Retail Beef Yield	Docility Net Feed Intake Flight Time Shear Force Structural Soundness

# BREEDPLAN Is Producing Marker-Assisted EBVs



# Routine Across-Country Evaluations

## Analyses are run on combined datasets

- Australia and New Zealand\*
- South Africa and Namibia
- Pan American Hereford - USA, Canada, Uruguay and Argentina
- Murray Grey - Australia, NZ, USA, Canada and UK
- Limousin – Namibia, South Africa, Australia and New Zealand

Preparation of a multi-country evaluation for Brahman is underway

**Comparable EBVs/EPDs to identify and more readily use the elite genetics**

*\* Commenced in 1990*

# Suite of Genetic Improvement Tools

A number of  
complementary  
decision making tools  
can be interfaced with  
BREEDPLAN

- **BreedObject**
- **TakeStock**
- **MateSel**
- **Quality assurance products**
- **GeneProb**
- **Internet Solutions**

# HERDMASTER

*Used in 12 Countries*



**Agricultural Business  
Research Institute**



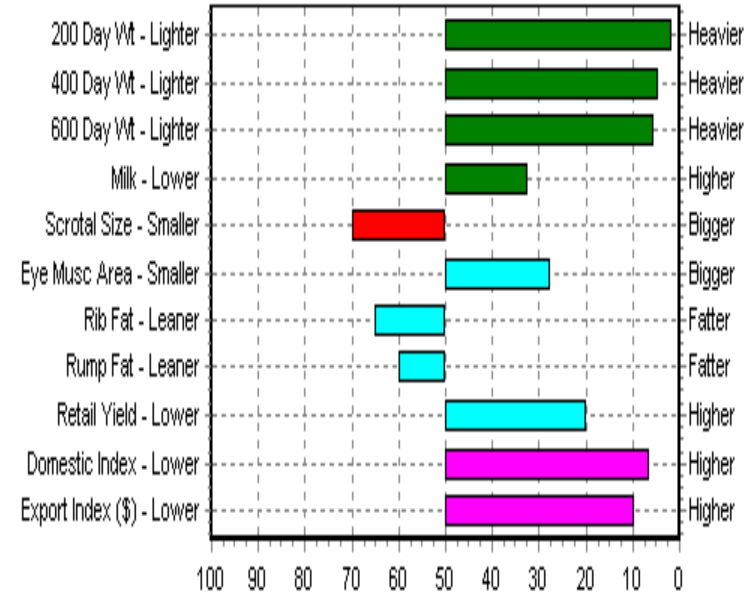
# INTERNET SOLUTIONS

**Stud Book No.:** 288717  
**Sex:** Male  
**Tattoo:** 1336  
**Birth Date:** 10/08/2009  
**Registration Status:** Classified  
**Classification:** Classified S on 04/03/11  
**Calving Year:** 2009  
**Status:** Active  
**Horn:** Horned  
**Sire:** [WATASANTA BIG BANANA \(P\)](#)  
**Dam:** [WATASANTA 703](#)  
**Breeder:** [WATASANTA](#)  
**Current Owner:** [WATASANTA](#)  
**PR Form No.:** 57857  
**Progeny:** [View All](#) [View by Herd](#)  
**Pedigree:** [View](#)



[View Larger Image: 110.3kb](#)

## EBV Percentiles for WATASANTA EARTHQUAKE 1336 January 2011 Santa Gertrudis GROUP BREEDPLAN

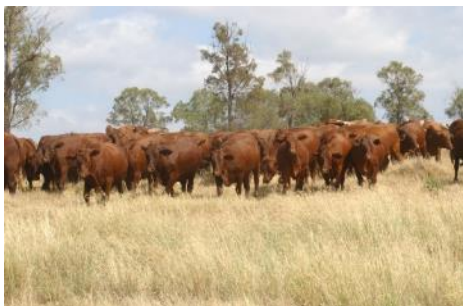


*50th Percentile is the Breed Avg. EBVs for 2010 Born Calves*

January 2011 Santa Gertrudis GROUP BREEDPLAN									
	200 Day Wt. (kg)	400 Day Wt. (kg)	600 Day Wt. (kg)	Milk (kg)	Scrotal Size (cm)	Eye Muscle Area (sq. cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield (%)
EBV	+18	+27	+34	-1	+0.2	+2.3	-0.1	-0.2	+0.9
Acc	64%	64%	60%	37%	68%	41%	45%	45%	37%
Breed Avg. EBVs for 2010 Born Calves <a href="#">Click for Percentiles</a>									
EBV	+5	+12	+15	-2	+0.6	+1.8	+0.2	+0.0	+0.5

Traits Observed: 200WT(x2),400WT,SS,FAT,EMA  
[Hide Index Values](#)

SELECTION INDEX VALUES		
Market Target	Index Value	Breed Average
Domestic Index (\$)	+\$ 23	+\$ 12
Export Index (\$)	+\$ 26	+\$ 14



**Agricultural Business  
Research Institute**

# BREEDPLAN International Summary

- Used by 100+ breed associations
- 44 breeds
- 16 countries serviced
- 60,000 users
- 460,000 beef registrations per year
- EBVs/EPDs produced on 22 traits
- Does across-country evaluations routinely
- Internet information system - 3 million pages per month
- DNA data included in marker-assisted EBVs
- Total database exceeds 40 million pedigree cattle
- R&D budget A\$12M - \$20M pa in period 2001 – 2012
- Interfaced to 6 genetic improvement tools

# ABRI & LRF Contacts

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**Visit the BREEDPLAN SA website:**  
**<http://www.breedplan.co.za>**

