Breeding a sustainable Jersey for Africa

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SA Stud Book

LOGIX

INTRODUCTION

Cows differ in ability to cope with environmental disturbances:

- Pathogens
- Heat waves
- Feed composition
- Feed quantity

Resilience : Capacity to respond and overcome disturbances
Safeguard ability to contribute genes to the next generation
Renders sustainability to the breed for long-term survival

The “Silent” Cow

Lifetime resilient cows:

- Completing multiple lactations
- Exhibit good productive and reproductive performance
- Face few health problems that are easily overcome
- Efficient and consistent in their milk production

Improvement of Resilience

Improves on-farm productivity

Improves animal health

Improves welfare of the animals

Reduces environmental impacts

Reduces need for antibiotic and medicinal intervention

Easy to manage and healthy herds

Breeding for Resilience

Focus of Selection and Breeding

Improvement of milk yield for many decades

Deterioration in solid percentages, health, fertility, udders, feet & leg traits, longevity

Total merit indices now also include fertility, disease resistance, conformation traits, efficiency, calving traits, survival

CAN + NLD : Resistance to heat stress

Research on adaptive changes of cows to variation in feed & forage - affects productivity and fertility

Breeding for Resilience

Precision Livestock Farming Technology

Precise insights in cow behaviour, health and activity

More effective management of herds

Diagnosing and treating cows quicker

Keeping costs down

Signalling insemination times

Supports improved health, productivity and fertility aiding in the sustainability of populations

Breeding for Resilience

A sustainable Jersey for Africa

Impaired resilience negatively impacts reproductive performance

Ability of cow to re-calve is validation of resilience

- Calving events
- Age at first calving
- Inter-calving Period
- Number of inseminations of last lactation
- Penalizations for curative treatments
- Penalizations for each day culled before 100 days in milk

Lifetime Resilience Score

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Breeding for Resilience

A sustainable Jersey for Africa

Impaired resilience negatively impacts reproductive performance

Ability of cow to re-calve is validation of resilience

- Calving events
- Age at first calving
- Inter-calving Period

Birth Notifications

- Number of inseminations of last lactation
- Penalizations for curative treatments
- Penalizations for each day culled before 100 days in milk

Farm Software info pipelined to SA Stud Book

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Breeding for Resilience

A sustainable Jersey for Africa

Variance of daily milk yield

Shows response to environmental disturbances

Cows with lower variance – better udder health, less ketosis, better longevity

Heritability of 0.20 – 0.24 : selection response expected

Favorable genetic correlations with functional traits

Information Available to SA Breeders

Herd Management Reports

Management Information

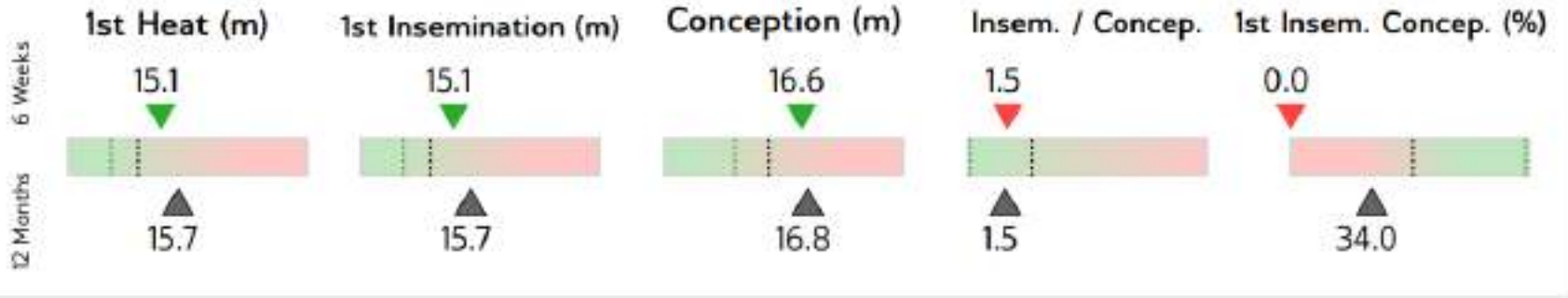
Herd Overview

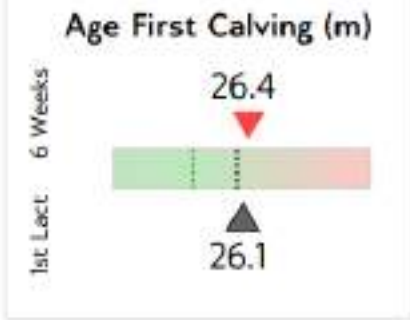
Heifer & Cow Stats

Births	Heifer Mortalities	Pregnant Heifers	Pregnant Cows	Lactations Completed	Cow Erosion
1821 +15	10.0% +0 3.8 m	26% +0 26.1m AFC	54% +30 388d ICP	1543 +8 306 DIM	219 +1 216 DIM

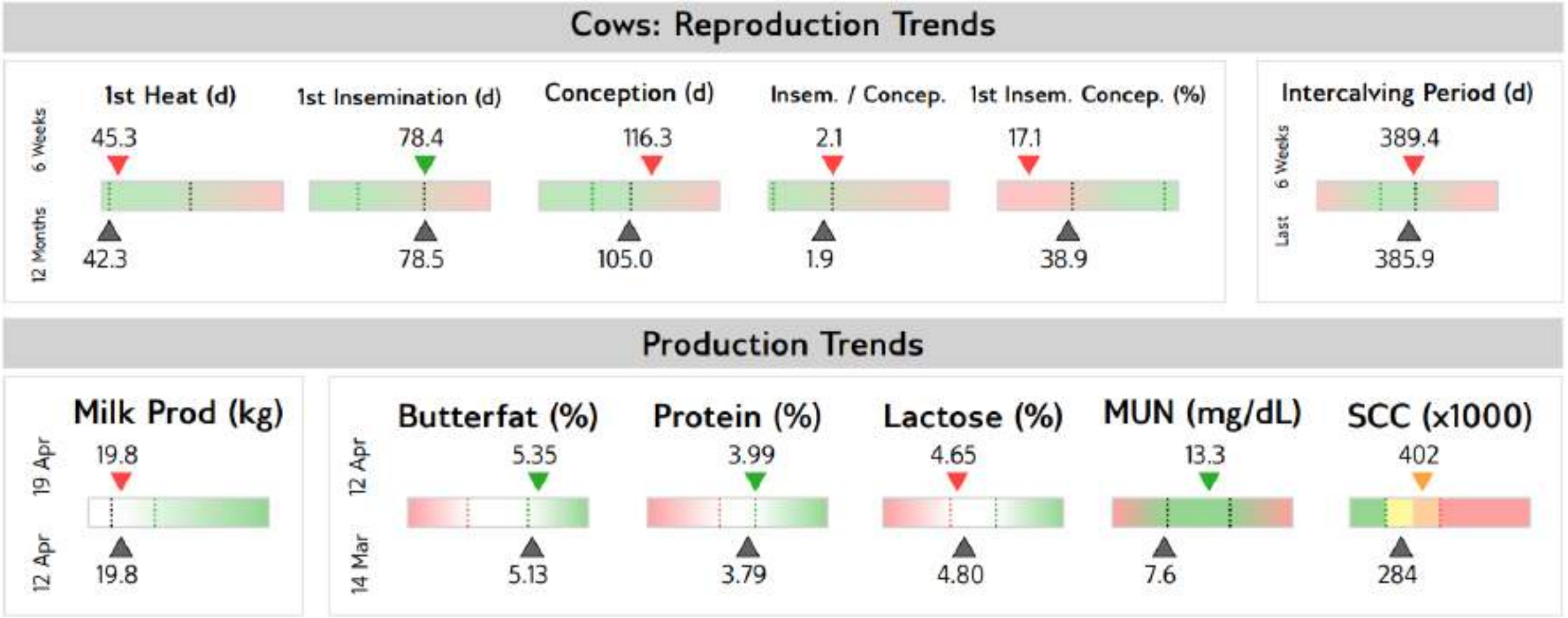
Number of Births, Lactations Completed and Cow Erosion based on last 12 months. Percentages for Heifer Mortality over and pregnancies based on current active animals. Percentage pregnant heifers only includes heifers 6 months and older.

Heifers: Reproduction Trends

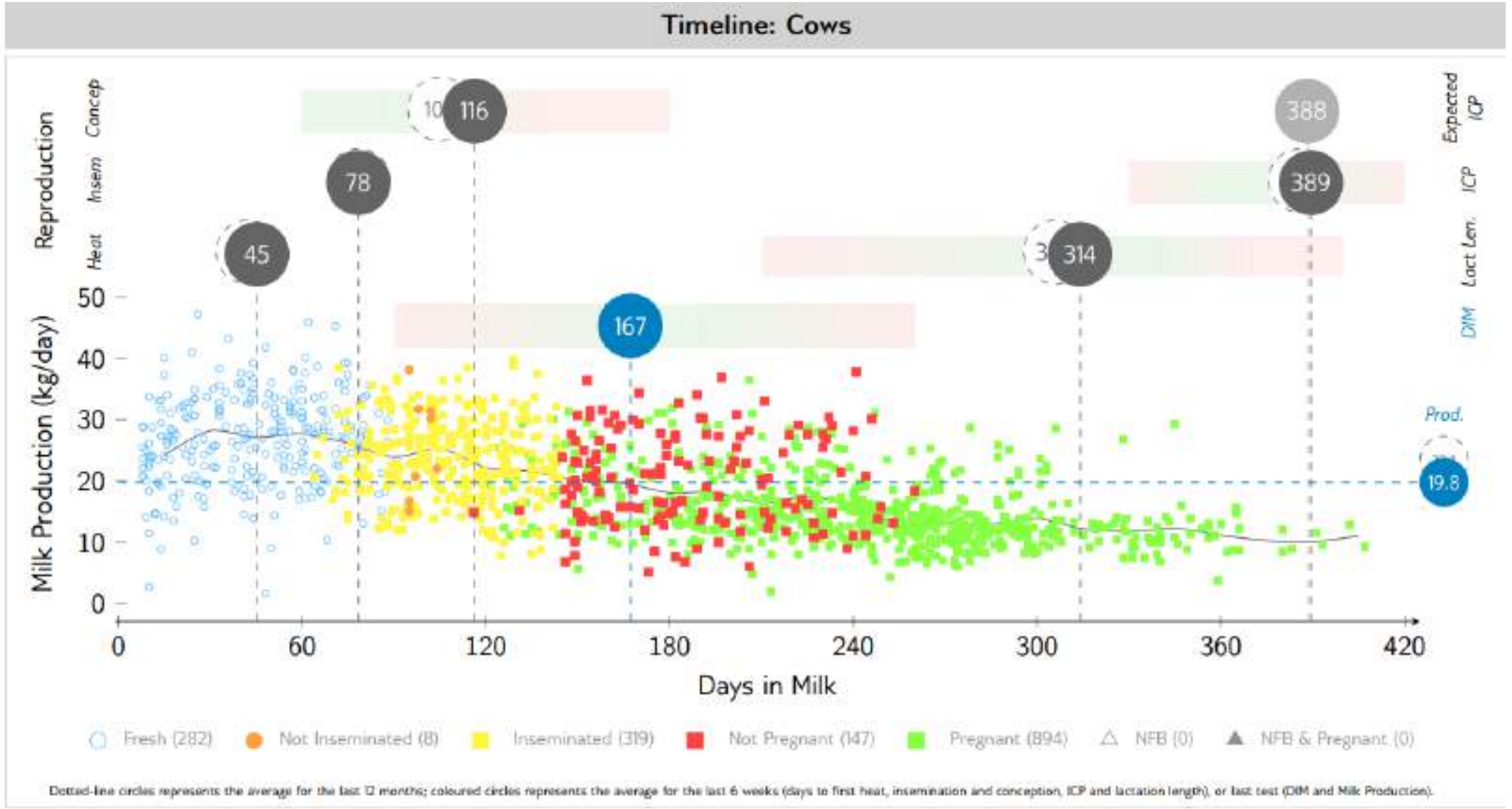




Management Information

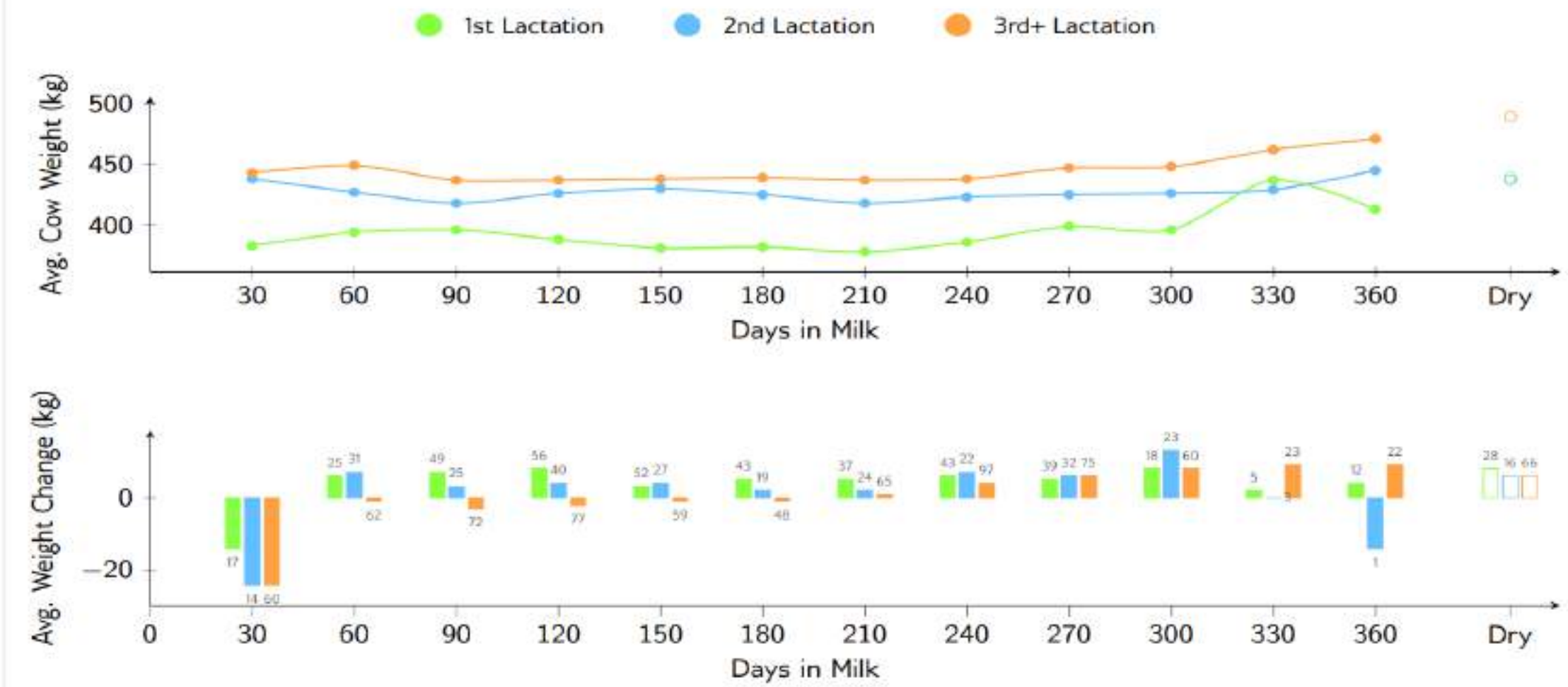


Management Information



Management Information

Cows: Average Weights



Management Information

Heifers: Older than 2 Years

	Farm Number	Age (months)	Last Insemination	Insem. Nr	Pregnant?	Exp. Calving Date
	Heifers aged between 2 and 3 years					
1.	20266	34.8	2022-07-22	2	✔	2023-05-01
2.	20343	33.6	2022-07-22	2	✔	2023-05-01
3.	20397	32.7	2022-09-27	2	✗	
4.	20450	32	2022-07-24	2	✔	2023-05-03
5.	20461	31.8	2022-09-12	2	✔	2023-06-22
6.	20574	30.2	2022-02-23	1	✔	2022-12-03
7.	20584	30	2022-07-13	1	✔	2023-04-22
8.	20590	29.9	2023-01-19	3	✔	2023-10-29
9.	20619	29.3	2023-01-06	3	?	
10.	20675	28	2022-05-20	2	✔	2023-02-27
11.	21010	27.7				
12.	21020	27.5				

Action Lists

Ready for PDs

All cows and heifers that were inseminated atleast 32 days ago.

HEIFERS

	Farm Number	Age (m)	Prev. PD	Last Insemination	Days since Insem.	Insem. Nr	Last Bull	Pregnant	Open	Cull
1.	21596	16.3		2023-03-25	32	1	NA	☐	☐	☐
2.	21583	16.6		2023-03-25	32	1	NA	☐	☐	☐
3.	21575	16.8		2023-03-24	33	1	NA	☐	☐	☐
4.	22012	15.5		2023-03-22	35	1	NA	☐	☐	☐
5.	21589	16.4		2023-03-22	35	1	NA	☐	☐	☐
6.	21598	16.2		2023-03-22	35	1	NA	☐	☐	☐
7.	21591	16.4		2023-03-20	37	1	NA	☐	☐	☐
8.	21587	16.5		2023-03-18	39	1	NA	☐	☐	☐
9.	21588	16.4		2023-03-17	40	1	NA	☐	☐	☐
10.	21586	16.5		2023-03-17	40	1	NA	☐	☐	☐
11.	21573	16.9		2023-03-15	42	1	NA	☐	☐	☐

Management Information

Action Lists

Cows: Not Inseminated

All uninseminated cows beyond 100 DIM.
Change in cow weight/BCS, when available, is calculated as the difference between the average for the last 2 weeks and 2 weeks prior to that.

	Farm Number	Parity	Calf Date	DIM	Weight Change (kg)	BCS Change	24h Milk Prod. (kg)
1.	18424	3	2023-01-15	100	9		38.2
2.	20662	1	2023-01-15	101	- 11 ▼		15.1
3.	20427	1	2023-01-15	101	- 10 ▼		16.6
4.	19626	2	2023-01-13	102	0		20.7
5.	17301	4	2023-01-12	104	- 20 ▼		31.7
6.	18647	3	2023-01-08	108	4		31.3
7.	18488	3	2023-01-08	108	+ 16 ▲		30.2
8.	20634	1	2023-01-06	109	5		22

Cows: >55d Dry

All cows more than 55 days dry. Days to expected calving date, where available, is calculated as 283 days after last conception days.

	Farm Number	Lactation Nr	Lactation Length	305d Milk Prod (kg)	Days Dry	Last Insemination Days	Last Insemination Nr	Last PD / Abortion	Days to Calving
1.	14116	6	400	8349	56	271	2	2022-09-20 ✔	12
2.	18018	3	360	6555	56	270	4	2022-09-20 ✔	13
3.	15354	5	350	7399	56	271	4	2022-09-20 ✔	12
4.	18084	3	294	6237	56	271	1	2022-09-20 ✔	12
5.	14479	6	313	6791	56	270	2	2022-09-20 ✔	13
6.	18149	3	325	6738	56	270	2	2022-09-20 ✔	13
7.	18090	3	338	7249	56	270	2	2022-09-20 ✔	13
8.	18055	3	293	6933	56	270	1	2022-09-20 ✔	13

Management Information

Cows: Long ICP

All cows with a previous ICP of 500 days or more. For cows that are pregnant, the expected ICP is calculated as days at last conception plus 283 days.

	Farm Number	Parity	Prev Lact. Date	Current Lact. Date	Last ICP	Prev Lact. Length	Prev. Days Dry	Expected ICP
1.	18486	2	2020-09-25	2022-02-08	501	441	60	457
2.	19088	3	2021-12-02	2023-04-18	502	438	64	
3.	18158	3	2021-05-05	2022-09-19	502	430	72	
4.	18082	3	2021-04-23	2022-09-07	502	421	81	446
5.	18012	3	2021-05-20	2022-10-06	503	433	71	
6.	17055	4	2021-07-06	2022-11-21	503	435	68	379
7.	19183	2	2021-05-15	2022-10-02	504	445	60	412
8.	18614	2	2021-03-20	2022-08-08	506	441	65	357
9.	18450	3	2021-09-16	2023-02-07	508	420	89	
10.	17003	4	2021-02-22	2022-07-16	509	441	68	478

Management Information

Cows: Under Pressure

Cows under pressure; these cows have an SCC above 500 and Lactose % below 4.6 on 12 Apr 2023.
Repeat cases are indicated with a • and chronic cases with a ●

		Farm Number	Lactation Nr	Lactation DIM	24h Milk Production Prev. Week	24h Milk Production Test Week	Production Lactose (%)	Production SSC (x1000)
	1.	10066	3	19	18.6	20.7	4.6	531
•	2.	11080	3	204	7.3	14	4.0	1388
•	3.	11163	3	102	18.7	18.9	4.3	2409
•	4.	11383	3	254	10.7	7.6	3.4	1507
	5.	11449	3	90	3	16.8	4.5	1464
•	6.	12006	3	257	11.3	6.3	4.2	554
	7.	12120	3	148	23.1	18	4.5	566
•	8.	12125	3	244	15.8	12.9	4.3	3316
●	9.	12154	3	324	2	3.4	4.2	517

Cows: Possible Acidosis

Possible cases of low butterfat; cows with a Butterfat to Protein ration below 1 on 12 Apr 2023.
Repeat cases are indicated with a ● and chronic cases with a ●

	Farm Number	Lactation Nr	Lactation DIM	24h Milk Production Prev. Week	24h Milk Production Test Week	Solids Butterfat (%)	Solids Protein (%)	Prot vs BF Ratio
1.	16322	3	130	38.2	35.5	3.2	4.1	0.77
2.	18176	3	143	14.6	17.4	3.8	4.1	0.92
3.	16483	3	89	29.6	34.9	3.6	3.7	0.98
4.	20401	1	205	14.1	19.6	4.2	4.3	0.99
5.	19554	2	120	28.7	21.7	4.2	4.2	1.00

Management Information

Cows: Possible Ketosis

Assist producers to act timeously and ensure sustainability of the herds

1.	[illegible]							
2.	[illegible]							
3.	[illegible]							
4.	20614	1	49	23.3	22	5.7	3.8	1.48
5.	17638	3	78	34.7	29.6	5.4	3.6	1.48
6.	16437	3	33	36.8	39.7	5.1	3.4	1.48
7.	14164	3	76	30.6	35.3	4.8	3.2	1.48
8.	16541	3	58	33.5	33.5	5.0	3.4	1.48
9.	16197	3	18	32.5	30.6	6.2	4.2	1.49

Information Available to SA Breeders

Genetic Herd Reports

&

www.SADAIRYBULLS.com

SADAIRYBULLS.com

Genomic Information

Genomic Parentage Verification:		Breed Relatedness:	100 %
		Level of Homozygosity:	26.22 %
		A2 Milk:	A2A2
Polledness (Celtic):	HH	Jersey Haplotype 1:	0
BLAD:	0	DUNPS:	0
DGAT1:	1	Yellow Milk Fat:	0
Weaver Syndrome:	0		

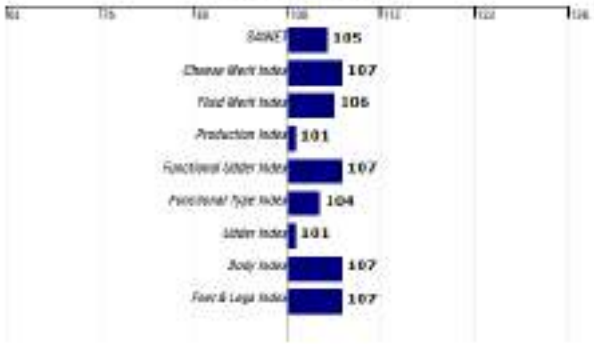
Three Generation Pedigree

Maximum Number of Generations 5 Generate Pedigree Tree

Genomic Breeding Information for GLYNTON LANDO WAVE

NAAB Number: -
S.A. Reg Number: 0092204833
Birth Date: 2021-08-05
International Number: JERZAFM000092204833

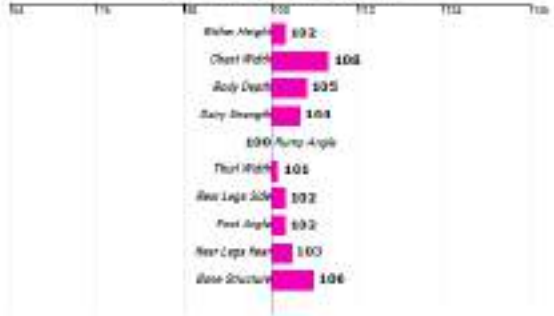
Selection Indices:



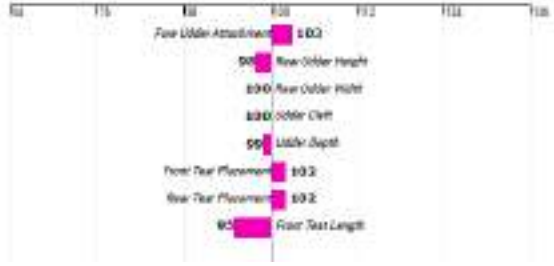
Production Traits:

Fertility and Longevity Traits:

Linear Type Traits - Structural:

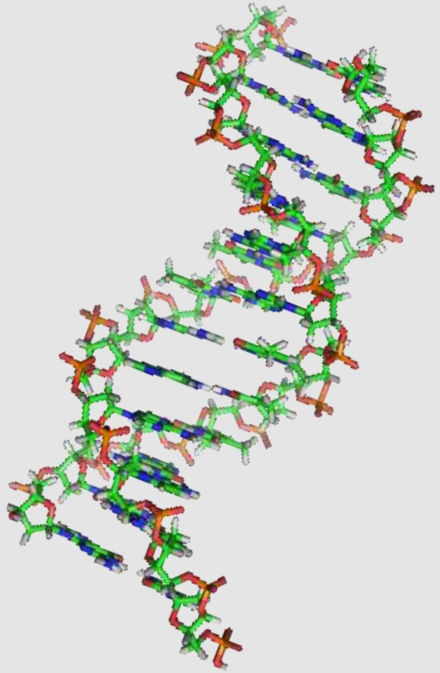


Linear Type Traits - Udder:



Genetic Information

A sustainable Jersey for Africa



SA has an established RefPopulation for Jersey

Single-Step GBLUP GE running since 2020

GEBVs and Gindices – accurate selection

Single Gene traits :

Beneficial:

- Beta & Kappa Casein
- DGAT1
- ABCG2
- Horns/Polled

Unwanted / Lethal genetic disorders:

- Mulefoot
- Weaver Syndrome
- Jersey Haplotype 1

Genome Wide Association Studies

Genetic Information

A sustainable Jersey for Africa

Genetic Efficiency Index

Indicator of adaptability and resilience of SA Jersey population

Accurate ranking of cows with regards to production of dense milk *versus* body size

Data needed :

- Official milk recording: Milk, Bfat & Prot yields
- Linear Scores for BWC (Breed Society)
- Cow weights (farm software)

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Breeding for Resilience

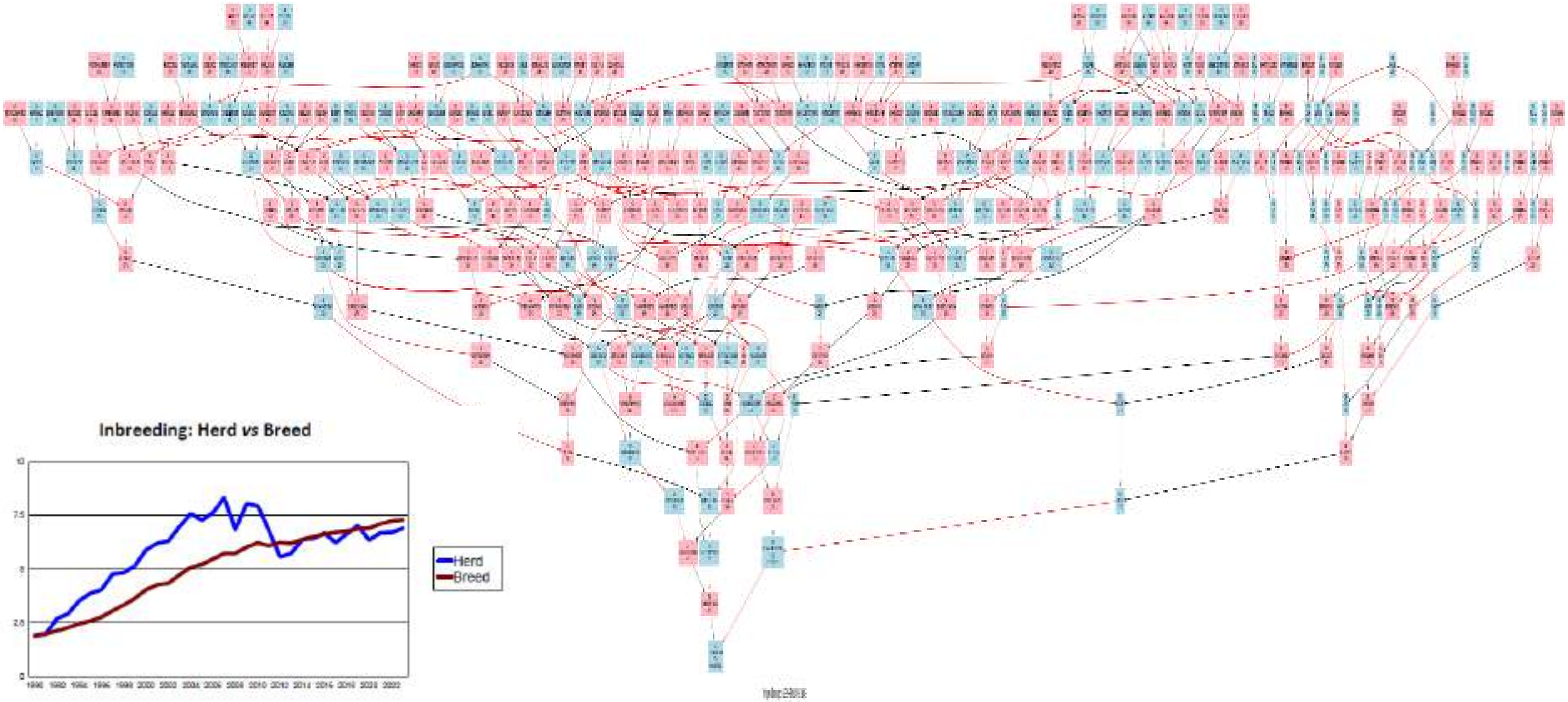
A sustainable Jersey for Africa

The Genetic Efficiency Index

Ample variation available for genetic improvement

	BREEDING VALUES					INDICES		
Cow	Milk	Bfat	Prot	Bfat%	Prot%	Dense Yield	Body Weight Composite	Efficiency
A	-532	2.7	-11.8	0.56	0.16	104	120	81
B	-244	6.0	0.0	0.33	0.16	106	107	100
C	108	30.2	16.1	0.41	0.20	120	104	128

Managing Inbreeding



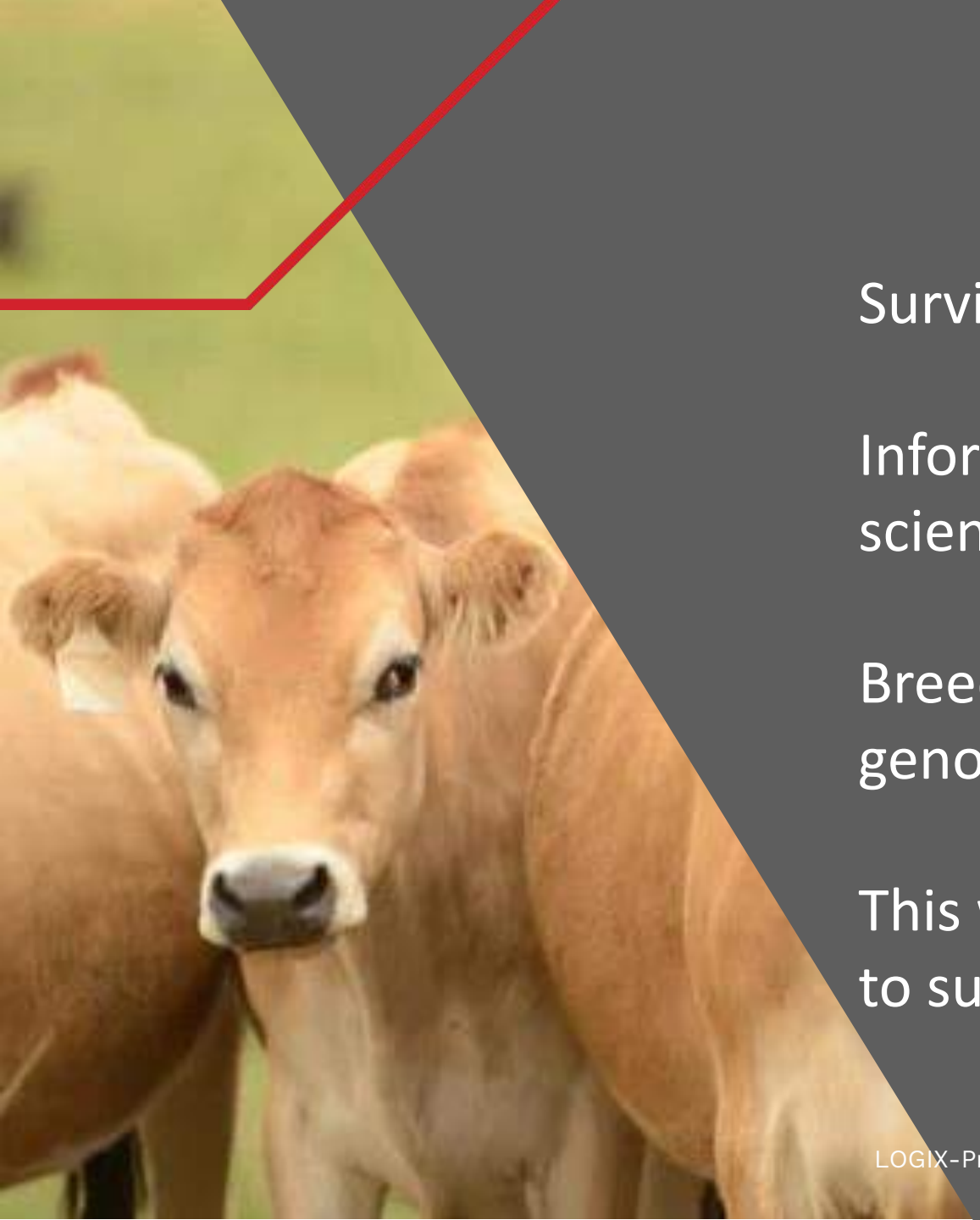
Breeding for Resilience

- SA Jersey population moved from TMR to more pasture based
- Breeding Objective already adapted to focus on more capacity to process forages efficiently, as well as sound feet & leg traits
- Medium frame with capacity makes them better adapted to SA's warm climate compared to the larger framed dairy breeds

Breeding for Resilience

Sustainability of SA Jersey assisted by:

- ✓ Faster genetic gain by using GEBVs and Gindices
- ✓ Inclusion of Efficiency in Breeding Objectives
- ✓ Precision breeding for milk quality traits
- ✓ Eradication of unwanted genes from the population
- ✓ Managing rate and level of inbreeding in herds



TO CONCLUDE

Surviving in a changing environment is a reality

Informed decision-making based on data and scientific evidence are essential

Breeders need to contribute phenotypes and genotypes of their animals to the SA database

This will allow for applied research and support to sustain the future of the Jersey breed in Africa

Thank You!!!