Annual Beef Bulletin
Jaarlikse Vleisbees Bulletin

2022

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agriculture, land reform & rural development
Department:
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Nasionale Vleisbeesaantekening en -verbeteringskema

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- **Farmer's Days** with stakeholders
- **Data available for research** purposes and technology development
- **Central bull testing facilities** and technical staff for regional support
- **On-farm Phase D bull testing**
- **Accredited technicians** for **Real-time Ultrasound** Scanning for carcass traits
- **Services comply** with internationally accredited standards
- **Affordable fees** (subsidised by government)
- **Training courses** in beef herd management, BLUP, performance testing and the auction catalogue
- **Affordable on-farm consultation fee**

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For more information:
Dr Ben Greyling
012 672 9052
ben@arc.agric.za

AVO 082 7711 637

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ARC-Animal Production / LNR-Diereproduksie
Private Bag / Privaatsak X2, Irene, 0062, RSA
Tel: +27 12 672 9087 **Fax:** +27 12 672 9002
Email: ben@arc.agric.za

Editors:
Dr Ben Greyling and Zelda King

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Dr Ben Greyling
Research Team Manager
ARC-Animal Production, Irene
ben@arc.agric.za

Farming requires partnerships with both nature and the human world

Forging of partnerships is of particular importance when it comes to agriculture, an industry that plays a central role in food security, poverty alleviation and job creation. It is in fact a prerequisite if we want to unlock the full potential of our industry. Many positive indicators highlight the success of partnerships, one of which is the fact that our agricultural industry grew by 8.3% in 2021. The Gross Value of Production (GPV, an indication of economic performance of a sector) of beef also rose by 9% in the same year. According to predictions, the demand for beef will increase by 13% over the next decade, which furthermore sketches a picture of growth that will also create many opportunities for all the role players in our beef value chain, in particular the farmers, our primary producers.

Many other statistics also highlight the importance and considerable contribution that the agricultural sector makes to our country's economy, including foreign exchange earnings by means of agricultural exports. Our partnership with nature, which links on to our ability to export our products, has been in the news for some time in view of the tremendous impact the Foot and Mouth Disease had on the value chain and in particular on farmers as the primary producers of beef. A very positive development in this regard is the recently launched Livestock Identification and Traceability System South Africa (LITS-SA) that aims to address the many challenges (especially diseases) that affect access to the value chains of our export markets.

Despite the many positive outlooks, our country's poverty status remains a huge challenge. Currently, the food poverty line is R663 per person per month (August 2022). This refers to the amount of money that an individual needs to afford the minimum required daily energy intake. This is also commonly referred to as the "extreme" poverty line and it is very disturbing to take note that it has been estimated that 13.8 million people in South Africa live below this food poverty line. Thus, the agricultural sector in particular has a very important and urgent elephant in the room to address! At the end of the day, we need to transform our industry to ensure we enhance the competitive capabilities of all our farmers, and in our case, our beef farmers in particular. This will necessitate pooling and sharing of our resources, taking hands and addressing our challenges together. In addition, of course, also stimulating continuous investment in our industry. A very positive development in this regard is the recently developed Agriculture and

Agro-processing Master Plan (AAMP) that aims to stimulate growth by unlocking our industry's potential by addressing our opportunities and challenges as a team. The plan was devised by a team that included government, business, labour and civil organisations in the agriculture and agro-processing sectors. The expectations are that the plan will initiate sustainable solutions for our agricultural industry.

In terms of local production vs. imports, an interesting paradox is observed regarding our beef value chain. While approximately 70% of marketed meat is produced in highly commercialised production systems, we also imported >11000 tonnes of bovine meat and over 348 000 live weaners during 2021 alone. Again, the demand for beef stresses the opportunity to expand and stimulate local production. One of the priorities in this regard is to transform and develop our smallholder farming sector. A significant portion of this sector is operated within informal production systems, often only focusing on household use with small surpluses sold into informal value chains. It has been said that this sector could be under-estimated by more than 20% and it has been estimated that if we could increase productivity by 8% in the emerging/ subsistence sector, it may translate into a 44% growth in production.

Information dissemination and technologies to the rescue?

Many individuals, from both the scientific arena and in particular service providers and primary producers agree that there is a lot of room for improvement when it comes to communication and the exchange of information. Scientists in particular should focus stronger on this aspect and convince stakeholders of the opportunities created by the availability of technologies and products of research. This will also ensure we do not re-invent the proverbial wheel. We should never stop learning form others on the one hand while on the other teaching and guiding those that need it. The overall mandate of the ARC's National Beef Scheme is to share information and technologies (developed over many decades) and assist with its adoption and implementation. These technologies (in particular performance recording), focusing on the genetic improvement of our national herd, have been instrumental for many decades in enabling producers, across the production spectrum, to enhance their profitability and sustainability. It has also been proven to be worth the investment - international predictions have shown that the positive return when investing in genetic improvement of animals can be as high as 1:18. This in itself is a huge incentive for implementing performance testing, a basic but very powerful and proven technology that has been a game changer worldwide in unlocking and enhancing the potential of our beef industry.

All this supports the saying that ***"we don't use technology, we live it"***.

My wish is that we should all embrace technology with the aim of unlocking the huge potential of our industry in the years to come.

The South African Red Meat Industry Strategy 2030

Gerhard Schutte

Chief executive officer, National RPO

gerhard@rpo.co.za

The South African red meat industry has the potential to grow by more than 20% above a "business as usual" scenario, adding more than R12 billion in real terms to South Africa's agricultural GDP per annum by 2030.

Beef, which traditionally constitutes around 80% of total formal red meat production value, will likely contribute the bulk of this value. With approximately 40 to 50% of the national herd in the hands of communal and smallholder farmers, the sector can become a dynamic driver of inclusive growth, rural development, employment, and wealth creation for more than one million households involved in livestock production, largely in the poorest and most neglected regions of the country.

However, any form of growth for the developed commercial or the struggling informal sector will have to overcome limitations that include sporadic foot-and-mouth disease outbreaks, insufficient and failing public sector animal health and disease services, constrained implementation of sanitary and phytosanitary systems, collapsing vaccine development and provision capacities, and lack of an enforceable identification and traceability system.

Many of these limitations fall under the responsibility of the state and need to be addressed by the state, but it is also true that due to limited funds and capacity, it is unlikely that the state will be able to provide more comprehensive and effective services on its own in the near future.

For the industry to flourish, to the benefit of large-scale and small-scale farmers and South Africa as a whole, industry and government will have to collaborate. Public-private partnerships are required, where resources will have to be aligned on common prioritised goals to advance the industry. Cohesion, leadership, structure, and diligent execution of a coordinated strategic plan are required to propel the industry from a fragile marginal surplus producing sub-sector, exporting roughly 5% of beef production, to inclusively growing the sector towards a sustainable and competitive industry that exports closer to 20% of beef production by 2030, with food security benefits for local consumers.

Although the red meat statutory levy provides some form of financial support, it is important to note that even a substantial increase in the levy will not result in sufficient funds to cover the full spectrum of public good services required to make the red meat industry a profitable, growing, and inclusive industry. To this end, red meat value chain actors and all spheres of government have to reach strategic alignment concerning priority actions and services, roles, and funding.

The South African Red Meat Industry Strategy 2030 consists of the following three main phases:

- Development of a road map with a common vision, objectives and focus – The vision sets a common goal for the industry, with key objectives. By prioritising four strategic focus areas, the industry can grow towards the common vision and objectives.

  The roadmap aims to lead the industry along the path of change management, where firstly, cohesion is required to action the restructuring process, with the end goal being the implementation of a red meat industry value chain strategy aligned to the common vision whilst monitoring the execution of the proposed interventions. Secondly, to agree and conclude on the common industry vision, objectives and key outcomes that can address the high-priority cross-cutting constraints and activate inclusive growth.

  Taking the common vision and key focus areas into consideration within the context of the high-priority constraints, the roadmap illustrates the required actions and timelines towards strategy, structuring, implementation, and continuous monitoring of progress/ impact/ constraints/ bottlenecks of the Red Meat Industry Strategy 2030. Decisive and focused interventions require well-coordinated, objective and value chain driven thought processes and actionable tasks. All possible structures, resources and capacities need to be aligned to these common prioritised goals and tasks to reach the intended vision.

- Industry restructure - A revision of the current red meat forum structure is proposed to optimally implement the industry's strategic vision, addressing the issue of "who". Without an empowered industry strategy champion to operationally drive the industry's focus area actions and outcomes, the industry vision will not be realised.

  There are many red meat industry organisations acting throughout the value chain, but few with an actionable mandate and industry wide strategic impetus. Since the vision of the sector is to inclusively grow production towards exports, value chain led objectivity, supported by apolitical execution would be required to benefit all actors in the value chain.

- Implementation plan - The final step requires active implementation. The interventions tables identify activities/programmes that require a driver & funding.

  The key industry organisations identified four focus areas, namely animal and public health, inclusive growth, market access, and competitiveness and sustainability.

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The ARC National Beef Performers

Virtual Awards 2022

Zelda King
Frans Jordaan & Ben Greyling
ARC-Animal Production, Irene
Zelda@arc.agric.za

Recognising and awarding the achievements of our farmers is but one of the many goals of the ARC's National Beef Recording and Improvement Scheme. This is in line with its primary mandate, which is to facilitate the adoption and implementation of technologies that are aimed at enhancing the production efficiency of our national herd, to enable farmers to produce more profitably and in a sustainable manner in order to increase their contribution to national food security. This of course will also contribute towards the socio-economic well-being of our nation. The Scheme has been collaborating for many decades with stakeholders of industry and research institutions to address their demands and to ensure we adapt to a changing industry. One of the ultimate indicators of whether the Scheme is successful includes the growth and development of our farmers and the impact they are making. The Scheme annually hosts it national awards to recognise and award the exceptional advances that farmers have made, making use of performance recording and related technologies and it covers the entire spectrum of the production industry. The Scheme thus puts a high premium on collaboration with farmers across all sectors, government and other stakeholders in agriculture in order to strengthen our collective effort to enhance production and access to our country's beef value chains.

This year the awards consisted of seven categories

1. The ARC National Best Elite Cow Awards *sponsored by Farmer's Weekly*
2. The ARC National Platinum Bull Awards *sponsored by GMPBasic*
3. The ARC National KyD Province of the Year Award *sponsored by Molatek*
4. The ARC National Emerging Beef Farmer of the Year Award *Sponsored by Plaas Media*
5. The ARC National Mentor of the Year Award *sponsored by Molatek*
6. The ARC National Special Performance Test Class *sponsored by Plaas Media*
7. The ARC National Beef Cattle Improvement Herd of the Year Award *sponsored by Plaas Media*

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Category 1

Sponsored by: farmer's weekly

This award category only considers actual performance data of participating cows. Participating cows should exhibit exceptional reproduction figures and other economically important traits such as maternal ability and pre-weaning growth rate (weaning weight). This award category is also contested, as in the past, among cows across all breeds and only one cow per breed will be crowned as the top female of each participating breed. Our valued partner, Farmers Weekly, have been the sole sponsor of this award category for 44 years in a row, which in itself is indeed praiseworthy.

Both registered and commercial cows are eligible to participate and specific qualification criteria include age at first calving; the average inter-calving period; days since the last calving; the completeness of records for weaning weights; performance records (Breeding Values) regarding wean direct and wean maternal; birth direct (where available) and the number of calves with reliable weaning weights.

For commercial cows where no BLUP breeding values are available, the criteria evaluated include, in addition to criteria already mentioned, the weaning index of the cow's calves individually as well as for all calves weaned. Additional criteria used to identify the best performing cow per breed include breeding values for birth and weaning; average efficiency index (if available); approval ratio (percentage of her progeny approved for registration by the relevant breeders' society); reproduction index and the percentage of performance tested calves.

Table 1 lists the 22 Best Elite Cows with their respective performance figures, while Table 2 lists the owners of these cows.

Table 1: 2022 ARC National Best Elite Cow Awards *sponsored by Farmer's weekly*

Breed	Cow Id	Age (Years)	Number calves	Age 1st calving (months)	Avg ICP[1] (days)	Avg weaning index[2]	Birth weight EBV (kg)[3]	Weaning weight EBV (kg)[4]	
							Dir[5]	Dir[6]	Mat[7]
Afrikaner	MC 11 0035	11	9	30	361	-	0.24	9.1	3.69
Afrisim	JVR 08 0058	14	10	36	388	-	2.51	8.8	1.30
Ankole	DT 07 0025	15	9	25	351	-	-	-	-
Beef Shorthorn	NMS 11 0017	11	8	29	365	103	-1.18	4.4	3.20
Bonsmara	V 10 0249	12	10	23	344	100	-0.96	9.0	8.70
Boran	BAR 12 0147	10	7	34	339	103	0.13	6.7	6.50
Braford	BB 11 0011	11	8	36	369	-	0.90	9.0	2.00
Braunvieh	N12 0029	10	8	26	364	112	2.11	14.6	5.70
Charolais	ESS 13 0013	9	7	33	330	107	2.28	17.6	5.10
Dexter	TM 12 0001	10	9	20	349	-	1.39	8.8	0.20
Drakensberger	CL 09 0069	13	10	31	371	-	0.84	7.5	13.8
Limousin	LR 05 0007	17	14	32	373	-	2.10	18.0	7.00
Nguni	AVM 06 0368	16	15	26	330	102	-0.27	4.3	1.10
PinZ²yl	PZ 11 0193	11	8	37	363	104	0.49	4.3	5.00
Romagnola	DT 10 0102	12	9	36	358	107	2.20	8.0	4.60
SA Angus (Black)	WB 12 0107	10	8	24	390	104	2.38	34.8	13.20
SA Angus (Red)	ACM 12 0010	10	7	27	356	103	0.19	20.7	11.60

Breed	Cow Id	Age (Years)	Number calves	Age 1st calving (months)	Avg ICP[1] (days)	Avg weaning index[2]	Birth weight EBV (kg)[3]	Weaning weight EBV (kg)[4]	
							Dir[5]	Dir[6]	Mat[7]
Santa Gertrudis	SS 13 0009	9	8	20	355	-	0.50	19.0	4.00
Simmentaler	JS 10 0015	12	12	23	338	-	1.50	22.0	10.00
South Devon	BG 11 0027	11	9	23	365	-	-0.57	7.2	2.80
Sussex	JVJ 13 0020	9	7	28	342	105	0.04	12.2	9.60
Tuli	R 11 0015	11	9	26	358	115	0.92	3.1	6.80

1. Avg ICP - Average Inter-calving period
2. Avg weaning index - Average Weaning Weight Index on calves
3. Birth weight EBV - Estimated Breeding Value for Birth Weight
4. Weaning weight EBV - Estimated Breeding Value for Weaning Weight
5. Dir - Estimated Breeding Value for Birth Weight Direct
6. Dir - Estimated Breeding Value for Weaning Weight Direct
7. Mat - Estimated Breeding Value for Weaning Weight Maternal

Table 2: The owners of the 2022 ARC National Best Elite Cow Awards

Breed	Cow Id	Owner	Town	E-mail	Cell no
Afrikaner	MC 11 0035	Pierre-André Cronje	Theunissen – Free State	bobcronje@gmail.com	083 629 3491
Afrisim	JVR 08 0058	Hentie Jansen van Rensburg	Noordbrug – North West	obgynae@icon.co.za	082 825 2168
Ankole	DT 07 0025	Paul de Wet	Bethlehem – Free State	pembenzuriankole@gmail.com	082 468 0024
Beef Shorthorn	NMS 11 0017	Neil Dry	Magaliesburg - Gauteng	niemen@skyafrica.co.za	083 778 8000
Bonsmara	V 10 0249	Hannes van den Berg	Reivilo – North West	hannes@kalkveld.co.za	082 925 4051
Boran	BAR 12 0147	Duane & Brandon Brooks	Polokwane - Limpopo	dbrooks@brenmill.co.za	084 657 1460
Braford	BB 11 0011	Lotie Gordon & Charlotte Schuite	Rosendal - Free State	heelbofarms@gmail.com	082 573 9377
Braunvieh	N 12 0029	André Reitsma	Klein-Boetsap – Northern Cape	andre.kainos@gmail.com	071 896 1466
Charolais	ESS 13 0013	Johannes Markram	Kuruman – Northern Cape	freddiemarkramjnr@gmail.com	082 920 8893
Dexter	TM 12 0001	Tom Heath, JL Botha & Mariette Heath	Bethlehem – Free State	tomardext@gmail.com	084 208 0559
Drakensberger	CL 09 0069	Carel Nel	Brandfort – Free State	carelnel02@gmail.com	082 828 1984
Limousin	LR 05 0007	AJ du Toit	Tulbagh – Western Cape	larhone@obiekwa.co.za	072 377 3792
Nguni	AVM 06 0368	Frik Geyser	Groblersdal – Limpopo	Jan@janjacobs.co.za	013 262 3388
PinZ²yl	PZ 11 0193	ZZ2 - Fanie Potgieter	Mooketsi – Limpopo	grootboom@zz2.co.za	082 336 7199
Romagnola	DT 10 0102	Dail van Rensburg	Delareyville – North West	dail@cluesnet.co.za	082 809 8841
SA Angus (Black)	WB 12 0107	Nico Steyn	Bashewa - Pretoria	nico.steyn@10tinvest.com	082 552 4347
SA Angus (Red)	ACM 12 0010	Andrew Masterson	Humansdorp – Eastern Cape	andrew@milagro.co.za	082 321 1462
Santa Gertrudis	SS 13 0009	Desmond Robertson	Brandfort – Free State	desmond@desley.co.za	082 494 7032
Simmentaler	JS 10 0015	Willem van Rensburg, Johan & Tielman vd Walt	Tosca – North West	willemvanrensburg25@gmail.com	079 581 1169 083 700 9636
South Devon	BG 11 0027	Gielie & Barrie van Zyl	Boshof – Free State	bfhboerdery@vodamail.co.za	083 459 7616
Sussex	JVJ 13 0020	Kiewiet van Jaarsveld	Reddersburg – Free State	kiewiet.marina@gmail.com	082 707 7954
Tuli	R 11 0015	Albie Rautenbach	Reitz – Free State	raueasy@telkomsa.net	082 959 5759

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Category 1

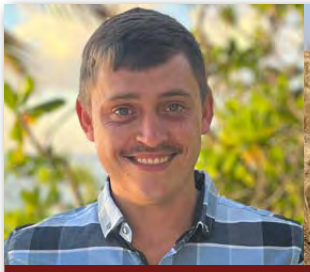
Afrikaner


Pierre-André Cronje — MC 11 0035

Afrisim


Hentie Jansen van Rensburg — JVR 08 0058

Ankole




Paul de Wet — DT 07 0025

Beef Shorthorn


Neil Dry — NMS 11 0017

Bonsmara

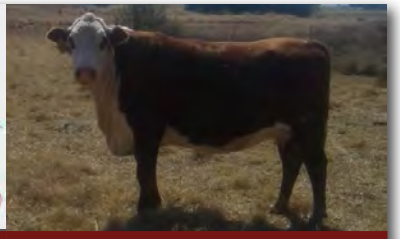

Hannes van den Berg — V 10 0249

Boran


Duane & Brandon Brooks — BAR 12 0147

Braford

Heelbo Boerdery



Lotie Gordon & Charlotte Schuite — BB 11 0011

Braunvieh


André & Annemarie Reitsma — N 12 0029

Category 1

Charolais


Johannes Markram — ESS 13 0013

Dexter


JL Botha Mariëtte Heath
Tom Heath — TM 12 0001

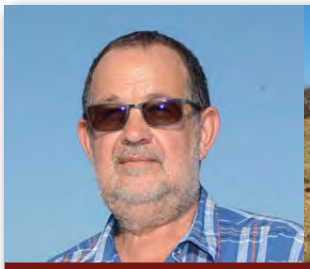
Limousin


AJ du Toit — LR 05 0007

Drakensberger

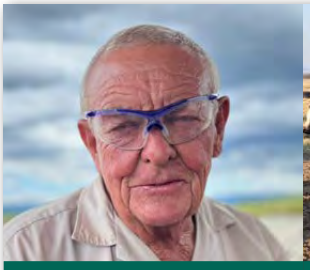

Carel Nel — CL 09 0069

PinZ²yl




Fanie Potgieter — PZ 11 0193

Nguni



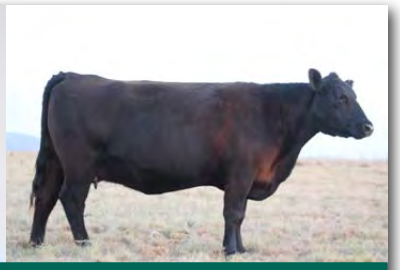

Frik Geyser — AVM 02 0368

Romagnola


Dail van Rensburg — DT 10 0102

Category 1

SA Angus (Black)

Nico Steyn — WB 12 0107

Simbra


Andrew Masterson — BW 12 025A

Santa Gertrudis

Desmond Robertson — SS 13 0009

Simmentaler

JS 10 0015

South Devon


Gielie van Zyl — BG 11 0027

Sussex


Kiewiet van Jaarsveld — JVJ 13 0020

Tuli


Albie Rautenbach — R 11 0015

Category 2

Sponsored by:

Besides having exceptional performance figures themselves, bulls can only qualify for this award if they were bred from an Elite cow, therefore the saying that it is the "best from the best" award category. More than one bull per breed can be eligible for this award, although as a rule very few bulls qualify due to the stringent adjudication criteria. Eligible bulls must have received a Gold Merit certificate when they completed a Phase C test of the ARC and its dam had to receive her Elite cow status during the year in which the bull received his Gold Merit award. Eligible bulls also had to complete their Phase C tests between 1 January 2021 and 31 December 2021. GMPBasic, one of the ARC's valued partners, has been sponsoring this award category for eight years in a row now, a category that has been contested for 27 years already.

The 7 Platinum Award bulls are listed in **Table 3** and the owners in **Table 4.**

Table 3: 2022 ARC National Platinum Bull Awards *sponsored by GMPBasic*

BULL					DAM							
Breed	Bull Id	ADG index	FCR index	Adjusted Scrotum circum.	Dam Id	Age (yrs)	Calvings	AFC (months)	Avg ICP (days)	Birth weight EBV (kg)	Weaning weight EBV (kg)	
										Dir	Dir	Mat
Afrikaner	MC 20 0666	100	126	336	MC 12 0247	10	7	28	396	-1.05	7.7	10.7
Bonsmara	EHE 20 0188	120	114	347	WAT 08 0145	14	11	23	402	0.52	11.9	13.8
	NFS 20 0063	109	113	342	NFS 09 0062	13	10	29	386	1.00	13.2	7.3
Boran	BG 20 0097	105	113	258	CI 11 0021	11	8	33	367	0.42	3.2	10.7
	DE 20 0719	125	108	334	CTM 12 0041	10	8	32	360	0.94	7.1	2.2
Limousin	YF 20 0001	104	115	290	LR 09 0067	13	11	31	401	1.10	16.0	10.0
Santa Gertrudis	SS 20 0147	104	108	308	CR 12 0014	10	7	26	412	3.10	27.0	4.0

Table 4: The owners of the 2022 ARC National Platinum Bull Awards

Breed	Bull Id	Owner	Town	E-mail	Cell no
Afrikaner	MC 20 0666	Pierre-André Cronje	Theunissen – Free State	bobcronje@gmail.com	083 629 3491
Bonsmara	EHE 20 0188	Daan Viljoen	Bethlehem – Free State	dirk@dirkvil.co.za	083 630 8302
	NFS 20 0063	Nick Serfontein	Edenville – Free State	pieter@sernick.co.za	082 384 0020
Boran	BG 20 0097	Gerrie Oelofse	Louis Trichardt – Limpopo	gerrie@gerbenborane.co.za	084 208 5319
	DE 20 0719	Alpheus Denga	Louis Trichardt – Limpopo	alpheus@dengainc.co.za	083 456 1840
Limousin	YF 20 0001	Johan Fourie	Nylstroom – Limpopo	johan.allphase@gmail.com	082 093 7650
Santa Gertrudis	SS 20 0147	Desmond Robertson	Brandfort – Free State	desmond@desley.co.za	082 494 7032

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011 954 4445

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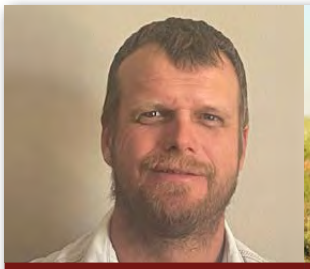
Category 2

Afrikaner




Pierre-André Cronje — MC 20 0666

Bonsmara


Daan Viljoen — EHE 20 0188

Bonsmara


Nick Serfontein — NFS 20 0063

Boran


Alpheus Denga — DE 20 0719

Boran


Gerrie Oelofse — BG 20 0097

Limousin


Johan Fourie — YF 20 0001

Santa Gertrudis


Desmond Robertson — SS 20 0147

ARC National KyD Province of the Year Awards

Category 3

Sponsored by: MOLATEK

The objective of this award is to recognise the province with the highest number of participating farmers in the scheme (KyD). These farmers must be registered on INTERGIS and must have loaded data on the database between March of the year preceding the award and April of the year of the award.

The three provinces with the highest number of participating farmers will receive the accolades Platinum, Gold and Silver respectively. This award was only introduced in 2016.

This year's finalists for the KyD province of the year are:

Eastern Cape, KwaZulu Natal & North West

The ARC National KyD Province of the Year Award for 2022 was awarded to

Platinum Award:

Kwa-Zulu Natal

Gold was awarded to:

North West

Silver was awarded to:

Eastern Cape

Category 4

Sponsored by:

Home of: Veeplaas STOCKFARM

This is another flagship award of the ARC that acknowledges emerging beef farmers that are members of the Kaonafatso ya Dikgomo (KyD) Scheme of the ARC and that have excelled when it comes to how they manage and improve their herds and enterprises making use of record keeping, amongst others. This award category commemorates its 20th anniversary this year. Finalists, aiming to become fully-fledged commercial farmers, from each of our country's provinces are identified and they ultimately contest for the title of National Winner. The Kaonafatso ya Dikgomo Scheme focuses on assisting emerging cattle farmers to apply beef recording and improvement technology to facilitate accurate selection for economically important traits and increased productivity and profitability of their herds. Emerging farmers serviced and developed through the KyD Scheme are also registered on the INTERGIS (national database) and to date more than 8000 emerging farmers are members of KyD.

Purpose:

To acknowledge members of the Kaonafatso ya Dikgomo Scheme who perform well on specific criteria related to recording, management and performance of their herds.

1. To encourage emerging cattle farmers to improve their standard of living through higher returns from animal production and job creation;
2. To promote participation in the Kaonafatso ya Dikgomo Scheme;
3. To promote sound breeding and management principles in the beef industry; and
4. To demonstrate the benefit of performance testing, practically by identifying outstanding herds.

The provincial winners for 2022 are listed in Table 5.

Table 5: 2022 ARC National Emerging Beef Farmer of the Year Awards: Provincial Winners ***sponsored by Plaas Media***

Province	Breed	Herd size	Name	Farm name	Town	Contact nr
Eastern Cape	Bonsmara	224	Mthobeli Dintsi	The Tower Hill Farm	Cathcart	072 708 2402
Free State	Bonsmara	113	John Mabizela	Telegraaf Paul Roux	Paul Roux	082 661 4414
Gauteng	Bonsmara	70	Selina Hlabedi	Bakwa-Hlabedi in Farming Pty/ Ltd	Vanderbijlpark	082 839 4436 079 456 2635
KwaZulu-Natal	Boran	50	Rodney Mbuyazi	Concur Farm	Mpangeni	073 639 9462
Mpumalanga	Bonsmara	132	Lenox Simelane	Ndlebe Zikhanyilanga Coop	Barberton	082 478 7940
North West	Brahman & Nguni	254	Gladwin Mosene	Randor	Morokweng	072 728 4080

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- We use scientific methods to select animals and help you grow your livestock enterprise
- We have proven track record of success
- We offer advice on livestock marketing
- Over 7 000 emerging/smallholder farmers are benefitting under the scheme

Eligibility and Participation

Any emerging/smallholder calttle farmer can participate in the scheme and it is operational in all nine provinces.

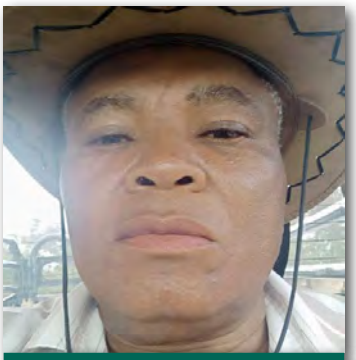
For more information about the scheme, contact

012 672 9111

Human Communications 129321

For more general information about the Agricultural Research Council, please visit our website at www.arc.agric.za

Eastern Cape



Mthobeli Dintsi

Free State

John Mabizela

Gauteng

Selina Hlabedi

Kwa-Zulu Natal

Rodney Mbuyazi

Mpumalanga

Lenox Simelane

North West

Gladwin Mosene

The winner of the 2022 ARC National Emerging Beef Farmer of the year Award was awarded to Selina Hlabedi from Gauteng

Selina Hlabedi

Bakwa-Hlabedi in Farming Pty/Ltd
Vanderbijlpark I 082 839 4436 I 079 456 2635

Category 5

Sponsored by: MOLATEK

The primary aim of this award category is to acknowledge farmers with exceptional leadership skills and efforts in building capacity and skills through information dissemination, mentoring and assisting fellow farmers to adopt and implement the relevant technologies and management skills to enhance their productivity and sustainability. In short, this award category assesses how a farmer ploughs back his/her skills, knowledge and experience to the benefit of others. Farmers who enter this category should have a record of accomplishment that attests to their efforts to train and mentor others and very importantly to show the impact of their actions and mentoring initiatives.

The ARC National Mentor of the Year award for 2022 was awarded to

Mpho Munyai
Vhanyai Boran - 078 099 8874

Gert Brits
Santa Gertrudis - 076 097 2548

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MOLATEK
Partnering performance

Category 6

Sponsored by: Plaas Media | Home of: Veeplaas STOCKFARM

Running for over four decades, this award category aims to recognise bulls with exceptional performance traits. Bulls which were awarded Gold or Silver merit certificates when they completed a standardised growth test (Phase C) of the National Beef Recording and Improvement Scheme during 2021 are eligible to compete in this award category. Residual Feed Intake or RFI, a trait that describes a bull's ability to utilise feed efficiently, is also considered. Only one bull per breed is eventually identified to represent the entire breed and adjudication criteria includes both performance traits and functional efficiency. Every bull that participates on behalf of its breed is thus crowned as the overall national winner within the participating breed.

Table 6 lists the 13 bulls with their respective performance figures. **Table 7** lists the owners of the bulls and their contact details.

Table 6: 2022 ARC National Special Performance Test Class Awards *sponsored by Plaas Media*

Breed	Bull Id	Birth date	Centre Tested	ADG		FCR		RFI	Adjusted Shoulder *Hip Height (mm)	Adjusted Body Length (mm)	Adjusted Scrotum Circum. (mm)
				(g)	Ind	Kg/kg	Ind				
Afrikaner	JEV 20 0151	24/11/2020	Glen	1598	113	5.72	111	-	1192	1395	331
Boran	ZIP 20 0041	03/05/2020	Glen	1623	133	5.20	119	-	1143	1329	314
Braford	GM 20 0043	02/06/2020	Sernick	1899	108	4.28	120	-	*1208	1411	325
Brahman	H2O 20 0013	06/05/2020	Bufland	1795	144	4.77	120	-2.208	*1245	1356	261
Brangus	WW2 20 0031	12/12/2020	Glen	2102	125	4.90	120	-0.704	*1276	1438	341
Braunvieh	DEK 20 0053	11/11/2020	Vryburg	1918	105	4.91	118	-	1248	1397	353
Charolais	DS 20 0511	03/10/2020	Glen	1896	105	5.32	108	-	*1294	1458	319
Hereford	DVB 20 0047	30/04/2020	Elsenburg	1969	109	4.15	126	-	*1339	1464	343
Limousin	YF 20 0090	14/11/2020	Irene	1661	96	5.62	108	-1.897	*1231	1429	284
Nguni	EX 20 0251	12/05/2020	Elsenburg	1433	114	5.10	109	-	1201	1352	329
SA Angus (Black)	FG 20 0782	07/07/2020	Elsenburg	1936	102	5.49	108	-	*1287	1447	362
Santa Gertrudis	SS 20 0146	31/08/2020	Glen	1763	101	5.29	109	-1.565	*1248	1395	331
Sussex	CC 20 0028	09/07/2020	Glen	1872	105	5.50	110	-	*1273	1467	326

Table 7: The owners of the 2022 ARC National Special Performance Test Class Awards

Breed	Bull Id	Owner	Town	E-mail	Cell no
Afrikaner	JEV 20 0151	Jannie Visagie	Kimberley - Northern Cape	jannie.visagie@vodamail.co.za	082 788 5510
Boran	ZIP 20 0041	Zippo Lamprecht	Dewetsdorp - Free state	bloodlineboran@gmail.com	082 396 9071
Braford	GM 20 0043	Gert vd Merwe & Johan de Jager	Bethal - Mpumalanga	de.jagerskraal@gmail.com	060 966 3693
Brahman	H2O 20 0013	Justin du Bruyn	Polokwane – Limpopo	justin22.jdb@gmail.com	082 895 1065
Brangus	WW2 20 0031	Myburgh Wessels	Reddersburg - Free state	myburgh@nexia-sabt.co.za	082 333 3396
Braunvieh	DEK 20 0053	Erik de Klerk	Boshoff - West Free state	erik@airportn8.co.za	082 787 5859
Charolais	DS 20 0511	Dami Stemmett	Senekal – Free state	dami@luidkeels.info	083 264 1231
Hereford	DVB 20 0047	Danie van Breda	Riebeek Kasteel - Western Cape	danie@orcrest.co.za	082 850 6101
Limousin	YF 20 0090	Johan Fourie	Nylstroom - Limpopo	johan.allphase@gmail.com	082 093 7650
Nguni	EX 20 0251	Hannes Eksteen	Piketberg - Western Cape	exteen@telkomsa.net	082 946 2157
SA Angus Black	FG 20 0782	Fredericksburg Landgoed	Franschhoek - Western Cape	stefan@fredericksburg.co.za	082 610 5397
Santa Gertrudis	SS 20 0146	Desmond Robertson	Brandfort - Free state	desmond@desley.co.za	082 494 7032
Sussex	CC 20 0028	Carlé Cillié	Bloemfontein - Free state	ccillie@bfn.co.za	083 388 0830

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Category 6

Afrikaner


Jannie Visagie — JEV 20 0151

Boran


Zippo Lamprecht — ZIP 20 0041

Braford


Gert vd Merwe & Johan de Jager — GM 20 43

Brahman


Justin du Bruyn — H2O 20 0013

Brangus


Myburgh & Tewie Wessels — WW2 20 0031

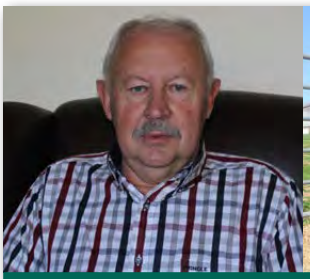
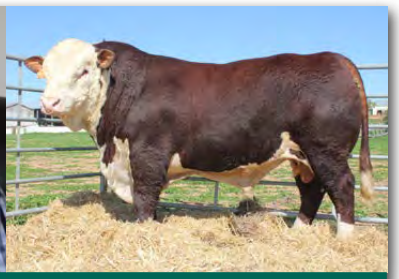
Braunvieh


Erik de Klerk — DEK 20 0053

Charolais


Dami Stemmett — DS 20 0511

Hereford

Danie van Breda — DVB 20 0047

Category 6

Limousin


Johan Fourie — YF 20 90

Nguni


Hannes Eksteen — EX 20 0251

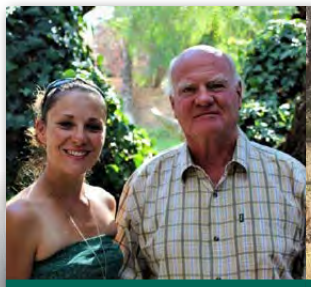
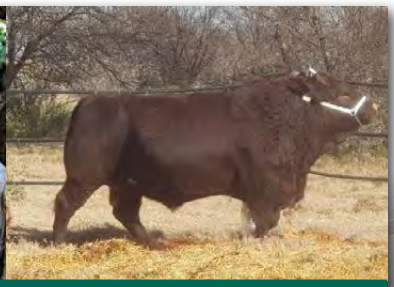
SA Angus Black


Stefan Terblanche - Fredericksburg Cattle Stud Manager — FG 20 0782

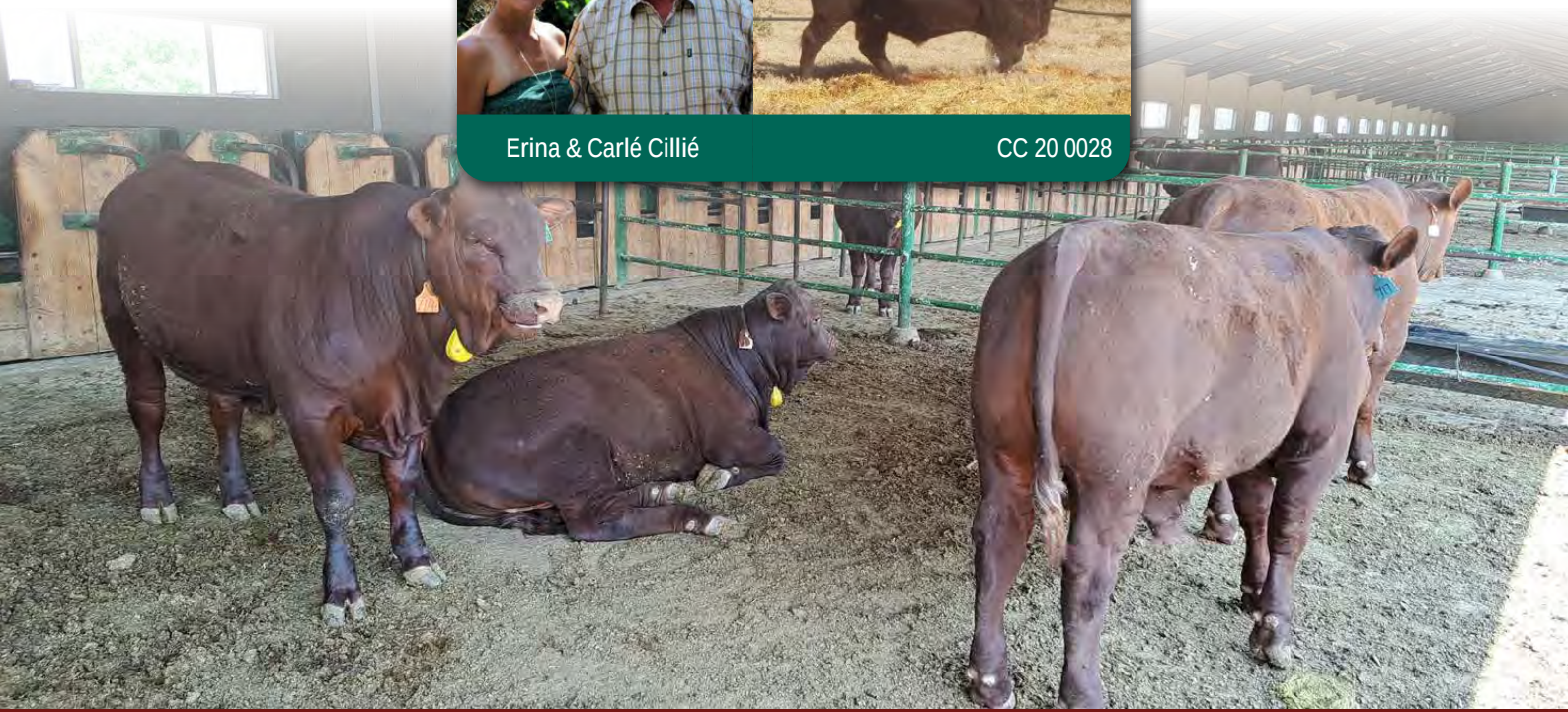
Santa Gertrudis

Desmond Robertson — SS 20 0146

Sussex

Erina & Carlé Cillié — CC 20 0028



Category 7

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To be eligible as a nominee for this category, a farmer had to excel in a number of performance traits of his or her herd. It has become one of the most prestigious award categories that also adjudicate the level to which the nominee is involved with industry, his or her interaction with their fellow farmers and their efforts to build and add value to the beef production industry. Breeders and herds across breeds in southern Africa can enter this award category. Traits that are assessed that relates to the performance of the herd itself includes the level of reproduction of the herd; overall participation and implementation of performance testing as a tool for improvement; cow efficiency in the herd (including post-weaning performance); the completeness of performance records; the size of the cow herd (must consist of at least 50 cows); the calving performance of the herd; genetic trends and progress in the herd and the application of modern scientific breeding techniques. The contributions and reputation of the participating herd owner is also considered, in particular regarding his or her leadership and guidance to other farmers and stakeholders.

The 2022 ARC National Beef Cattle Improvement Herd of the Year finalists are presented in **Table 8**.

Table 8: 2022 Finalists for the ARC National Beef Cattle Improvement Herd of the Year Award

Herd Name	Owner	Breed	Town	Cell no	E-mail
Bodeel Angus	Johannes Botha	Angus	Bothaville – Free state	083 272 6338	bodeel.botha@outlook.com
D'Hofstee Drakensberger Stoet	Jan Dhooge	Drakensberger	Heidelberg – Gauteng	082 892 5762	Jandhooge67@gmail.com
Donkerhoek Tuli Stoet	Ben Raath	Tuli	Britstown – Northern Cape	083 468 6176	braath@isat.co.za
Eksteen Nguni's & Sanga's	Hannes Eksteen	Nguni & Sanga	Piketberg – Western Cape	071 987 8257	exteen@telkomsa.net
Fredericksburg Angus/Wagyu Stoet	Cattle stud manager: Stefan Terblanche	Angus/Wagyu	Franschoek – Western Cape	082 610 5397	stefan@fredericksburg.co.za
Ja-Niel Herefords	Danie van Breda	Herefords	Riebeek Kasteel – Western Cape	082 850 6101	danie@orcrest.co.za
Kolskoot Borane	Gideon Botha	Boran	Luckhoff – Free State	082 386 7724	kolskootborane@gmail.com
PG's Borans	Pieter & Janneman Genis	Boran	Vryheid – Kwa-Zulu Natal	082 899 1502	pietergenis@pgsborans.co.za
RAT Brahmane	Riaan Theron	Brahman	Koppies – Free State	082 921 2347	riaan@rsms.co.za
Santarific Santas	Desmond Robertson	Santa Gertrudis	Brandfort – Free State	082 494 7032	desmond@desley.co.za
Sizalo Bonsmara	Lucas Msiza	Bonsmara	Rust de Winter - Limpopo	083 375 2596	admin@sizalogroup.co.za

Category 7

Bodeel Angus

Johannes Botha

D'Hofstee Drakensberger Stoet

Jan Dhooge

Donkerhoek Tuli Stoet

Ben Raath

Eksteen Nguni's & Sanga's

Hannes Eksteen

Fredericksburg Angus/Wagyu Stoet

Stefan Terblanche

Ja-Niel Herefords

Danie van Breda

Kolskoot Borane

Gideon Botha

PG's Borans

Pieter & Janneman Genis

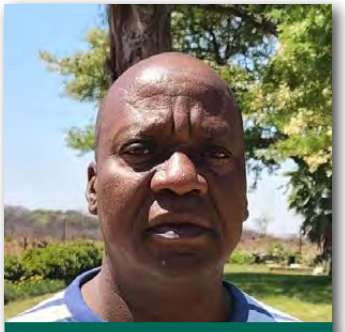
RAT Brahmane

Riaan Theron

Santarific Santas

Desmond Robertson

Sizalo Bonsmara



Lucas Msiza

The winner of the ARC National Beef Cattle Improvement Herd of the Year for 2022 was awarded to

FREDERICKSBURG ANGUS/WAGYU STUD of L'ORMARINS (PTY) LTD

Cattle stud Manager: Stefan Terblanche

Franschoek

082 610 5397

agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

Process flow on importation and exportation of live animals and related genetic materials under Animal Improvement Act, 1998 (Act 62 of 1998)

Importation and Exportation of animals and genetic materials, as per Section 16 and 17 of the Animal improvement Act, 1998 (Act 62 of 1998)

The facts:
- Anybody may import animals and genetic material of a recognised breed.
- An applicant does not have to be a member of the relevant breed society-but:
- Such applicants will not be able to register any animals or progeny.
- All will be referred to the relevant breed society if it involves an animal, or if the import is for genetic material from a donor that has been previously screened and approved by the society.

Copies of all import authorizations are also sent to the relevant breed society and this information could be used to recruit new members.

Applying to import or export an animal or genetic material:
- Apply on the prescribed form that is available from the office of the registrar or at the breeders' society.
- Ensure that either proof of payment of the prescribed administration fee or actual payment is included.

Note that all imports are subjected to positive identification.
This includes full DNA for all genetic material (for Semen, Embryo and live Animals).
If the exporting country does not have such a service, this can be done locally before release from quarantine.

IMPORTING ANIMALS FOR OTHER PURPOSES

This includes shows, breeding and veterinary treatment and normally applies more to equine industry:
- All animals must be positively identified in accordance with the Animal Identification Act, 2000 (Act 6 of 2002) or in accordance with the bylaws of the relevant Society.
- Where applicable, animals must have a country identification mark.
- The relevant forms obtainable from the registrar's office or departmental website must be completed.

EXPORTING ANIMALS AND GENETIC MATERIAL
- Nobody may export any animals or genetic material without an animal improvement authorization.
- No applications are processed without an inspection report from the relevant Breeders' Society. This report will certify that the animals are either registered or non-registered and that they comply with the minimum standards for the breed.

For further information on the imports and export of live animals and related genetic material, please contact:

Director Animal Production (Registrar of Animal Improvement)
Tel: 012 319 7597, Email: Joelm@dalrrd.gov.za

Deputy Director Regulatory Services
Tel: 012 319 7424, Email: MmaphutiS@dalrrd.gov.za

Animal Production Regulatory Support Offices
Tel: 012 319 7486/7576/7590/7474
Email: AIApermits@dalrrd.gov.za

Guidelines on leasing of Beef Bulls: Lessor & Lessee

Dr Baldwin Nengovhela
DALRRD-Animal Production
NkhanedzeniN@dalrrd.gov.za

Introduction

South Africa livestock farming is anchored well to achieve genetic improvement. Animal recording and improvement is legislated by the Animal Improvement Act of 1998. The Act guides Animal Improvement schemes that support beef, dairy, small stock, poultry and pigs. The international pigs and poultry conglomerates dominance led to redundancy of these sectors national schemes. South African stud breeders mainly drive the beef, dairy and small stock sectors' genetic improvement. Since the establishment of these schemes about 40 years ago, herds' genetic improvement has been vast.

The challenge in the country's breeding is the flow of good genetics to the lowest end of the commercial and emerging farmers. This applies within most beef and wool breeds. Access to good genetics is something known to lead to huge improvements that are permanent. South Africa has a history of implementing projects that try to supply small farmers with bulls, embryos and semen. These efforts seem to lack sustainability, as they are not commercially driven. The idea to look at ways to help farmers' access good genetics in programs that are of commercial value to the bull's farmers, was planted when it was noted that the Wagyu Breed Society had a social development project that leased bulls for four months to smallholder farmers. This article's aim is to provide some guidelines for those who might want to try to start leasing out bulls and those who may want to try to lease rather than buy.

Leasing Bulls

Leasing of bulls is not a common practice in South Africa. Leasing makes economic sense for a farmer interested in genetic improvement, access to unique genetics, reduction of capital investment and operating expenses when buying and keeping a breeding bull. Leasing allows a producer to use bulls that have superior genetics for the portion of the bulls' worth. Bulls are expensive to buy and they are expensive to keep. There are situations in which it is uneconomical to own a high value bull especially in the smallholder/ emerging sector of South Africa. The bulls are expected to work for three to four months of the year, and then spend the rest of the time as a liability of the enterprise. Producers leasing don't have to worry about death, loss or injured bulls, and they don't have to keep bulls around in the winter time. These are some of the reasons considered by WagyuSA to opt for facilitation of a short-term bulls leasing program to ensure access of Wagyu genetics by the emerging farmers. This should apply in any breed with highly priced bulls.

Lease Agreement Guide

The agreements are not expected to be the same, but this part of the guide is to stipulate major issues to be covered. The agreement will still be based on trust between the recipient farmer and the stud farmer. It is considered critical that there be a written document signed by both parties. The document should cover the following aspects:

Identification of animals: The lease should be clear on which bull(s) are subject to the lease. If the bull is registered with the breed society, it is recommended to include the breed registration number and a copy of the registration paper as an addendum. A photograph of the bull to confirm its identity and to illustrate his condition on or around the date of delivery. The lessee must provide a list of cows to be served by the bull(s). The lease agreement should show the location at which the bull will be used during the signing.

Establish if the bull is reproductively healthy: Bulls older than 18 months should be examined for breeding soundness. The semen samples should be collected and evaluated fully. It is recommended that a local veterinarian test bulls for venereal diseases. The reports should be made part of the agreement. The lessee must also test their cows and heifers for reproductive diseases.

Insure the bull: Once the bull is identified and its value determined by the owner it can then be insured. The bull may be insured to cover risks relating to the death, injury or illness. The insurance policy must cover the bull regardless of his address and should cover liability.

Delivery: The agreement should cover well the transition of the bull from the stud to the participating farmer. Bulls must be delivered a month before the commencement of a breeding season and it is advisable that it be put under quarantine for biosecurity sake and then other bulls before breeding time if in multi-sire herds.

Term: The term of the lease and procedures for extending the term should be clear. Farmers without capacity to feed animals during winter are encouraged to use one breeding season – thus lease a bull for a period of four months. Those running two breeding seasons – may enter into a full year lease with the stud farmer. Those not practicing a breeding season may also negotiate a lease for a full year. In some cases, a fodder flow plan will be required from a lessee farmer to substantiate farming without following a breeding season.

Payment terms: The lease should have unambiguous payment terms. What is the rate, timing for payment, payment method(s) and instructions, and penalty for late payment, including interest. A security deposit may be considered to help organise emergency care or ensure the delivery of a healthy bull at the end of the term. The agreement should stipulate if the bull is available to the user to buy and keep.

Record-keeping: Are there any record-keeping requirements under the lease? For example, is the lessee required to keep any feeding, treatment or breeding records? Does the breeder have to supply the bull owner with any data on the progeny, such as weaning weight, yearling weigh or genetic DNA markers?

Veterinary care: The issue of veterinary care should be addressed in the bull lease. It is recommended that the lessee be required to call the bull owner immediately if a medical issue ensues. Do the parties have a list of approved veterinarians? If there is an emergency, can the breeder use any available veterinarian?

Care of the bull: Parties to a bull lease should consider adding language concerning the care of the bull. Is the breeder required to use certain management techniques or nutrition programs? Is there a penalty if the bull is delivered back to the bull owner malnourished at the end of the lease term or has experienced a significant loss of weight? Unless otherwise agreed, there should be a clause restricting the lessee farmer from taking the bull to another stud farmer or collecting his semen.

Legal considerations

- **Risk of loss, injury or illness:** Who is bearing the risk of loss, death, injury or illness?
- **Warranty/guarantee:** Is either party making a warranty or guarantee? Perhaps the bull owner wants to give a warranty that the bull is of a certain breed and free of genetic birth defects.
- **Termination:** Under what circumstances can either party terminate the bull lease?
- **Confidentiality:** This issue of confidentiality should be discussed when negotiating a bull lease.
- **Dispute resolution:** Parties should consider having a mediation clause requiring the parties to a bull lease to use an experienced agriculture mediator to help facilitate a settlement of the dispute.
- **Relationship of parties:** In most cases, the contract should be clear that the bull owner and farmer are not forming a partnership, joint venture, agency, or any other formal business association.

Conclusion

Leasing of bulls need to be an option for the commercial and the smallholder producer. The advantages are vast to both the lessor and the lessee. One advantage that favours both sides is use of more improved genetic material every year by lessee and information feeding back into the genetic evaluation of those bulls. Leased bulls may be in three or more different herds very early in their lives. This will provide more information of the bulls' performance across different farms and their management. The biggest advantage will be facilitation of flow of good genetics to more herds that do not afford bulls of high genetic merit. If all advises on the husbandry practice are implemented the lease system will help deliver well-prepared bulls for the lessee every breeding year which is likely to improve pregnancy and reproductive rates. The call is for stud, commercial and smallholder to use their calculators to calculate leasing profitability and take decisions.

The Relationship between the Stud Breeder, Commercial Breeder and Emerging Breeder

Llewellyn Angus
(Pr.Sci.Nat.)
Stud and commercial breeder, mentor and consultant
langus@vodamail.co.za

Are stud breeders partners with commercial and emerging breeders or are they neutral towards them? Or are they opponents in the beef breeding game? The answer to this question will determine the approach a stud breeder has to his bull and female buyers.

Remember that over 90% of the bulls that a stud breeder sells go to the commercial and emerging farmers. These farmers or breeders are the stud breeder's "bread and "butter". The stud breeder has an obligation to supply the correct genetic material to these breeders for their breeding objectives

Breeding systems and breeding objectives

Most commercial and emerging cattlemen have a self-replacing weaner system meaning they sell their bull calves as weaners and retain a percentage of their heifer weaners for replacement heifers. They therefore want bulls that are easy calving with calves and that grow rapidly to weaning. Thereafter they also want the replacement females to grow reasonably quickly to "bulling size". This is when they are ready to go to the bull. This "bulling size" is usually around 65% of their mature mass. Assuming the mature cow size is around 500kg the heifers must then weigh 325kg or more when mated to the bull. One also assumes the commercial and emerging cattleman does not want a large framed mature cow as they have higher maintenance requirements. The 500kg cow would fit into this picture (depending on the breed).

It is the responsibility of the stud breeder to produce bulls with EBV's (estimated breeding values) that fit into the above picture for the commercial and emerging cattleman. These bulls would have birth weight EBV of around breed average or below,

calving ease EBV of breed average or better, 200 day or weaning weight EBV of preferably above breed average and mature cow mass EBV of around breed average or lower. Fertility EBV's like days to calving and scrotum size should be at around breed average or better. Remember that fertility is always by far the most important economic factor in cattle farming.

If bulls are bought for terminal sire breeding, in other words all calves are slaughtered at weaning or later, then bulls should be used that have positive growth EBV's and still acceptable ease of calving and birth mass EBV's. It is the obligation of the stud breeder to supply the "right" bull to the commercial or emerging farmer. It is also the obligation of the bull buyers to ask the stud breeder which bulls he recommends for which production system. Another example would be bulls for opening heifers only. Here ease of calving and birth mass EBV's would be very important to look at.

There are Rand index values available for different production systems and these should be used by the buyer to assist him in his choices e.g. weaner system or a self-replacing feedlot system where heifer calves are retained. Once choices have been made on the grounds of EBV's and Rand indexes the buyer then assesses the bulls visually. Structural correctness, muscling and masculinity would be the main attributes. Always try to assess bulls from the hooves and legs upwards to make sure about structural correctness as a starting point.

Communication

I think one of the problems that stud breeders and the buyers of bulls have is a lack of openness. Sometimes commercial breeders and especially emerging breeders see stud breeders as "well known and respected people" who they don't have the confidence of approaching for advice. Remember you as bull buyers are going to put down money for bulls so you have the right to ask questions. When buying a bakkie for the farm you ask the sales person relevant questions. The same applies to buying a bull.

The biggest thrill I as a bull seller get is when an old customer phones and asks me to select two or three bulls for him. He sometimes doesn't even give criteria and says "you know what I look at and what I like visually". That puts pressure on me to be sure he gets what he wants. I would maybe ask him two or three questions just to make sure we are on the same page.

Stud breeder obligations

The obligations of stud breeders regarding testing their sale bulls for bull fertility and for sexually transmitted diseases, especially if the bulls have been used for mating, are non-negotiable. Trichomonas and vibriosis are two disease that have a huge impact on herd fertility. Keeping bulls away from boundary fences, whether they are with cows or on their own, is an excellent preventative measure regarding these two diseases although this is not always possible.

Giving advice to their buyers, especially the emerging farmers regarding animal health programs for inoculation, dosing and dipping, is worth a lot to these buyers. It must be remembered that emerging or new farmers do not have the experience and knowledge of older established breeders. So too would advice on supplementary feeding of licks and veld management be of good value.

Periodic farmer's days by stud breeders go a long way to get good advice across.

Start with the pastures

Actually one cannot be a good commercial beef farmer if your veld and pasture management is not up to scratch. If you are a good commercial beef farmer you could then become a good stud breeder. It doesn't always work the other way around. The two critical factors in veld management are stocking rate and periodic full season rest of all the veld. Stud cattle should be reared and bred under similar conditions as your bull buyer's cattle. "You cannot breed adaptable cattle out of a bag".

Lots to learn from commercial/emerging cattlemen

Remember stud breeders, you very often have a lot to learn from commercial and emerging breeders so listen carefully and implement what you learn from them. Try to find out what they require instead of telling them what they require. I have noticed over the years that stud breeders who come out of a commercial cattle farming background are often more tuned in to reality. Stud breeders who are commercial breeders as well definitely do have an advantage over pure stud breeders in understanding the beef cattle industry better.

So the bottom line is that stud, commercial and emerging farmers all need each other along the breeding chain. There is a symbiosis that takes place when they communicate with each other to the benefit of all. Let's all keep helping each other, especially in this difficult FMD period, to everyone's advantage.

GrowSafe water intake analysis for young Afrikaner and Nguni bulls during summer

Georgette Pyoos
& Prof Michiel Scholtz
ARC-Animal Production, Irene
PyoosG@arc.agric.za

With the media often reporting alarming figures on the water use of farm animals, without putting the methods and context of the calculations into perspective, many consumers have the perception that meat consumption is harmful to the environment. However, it is important to consider the wider context of animal production under extensive conditions.

Figures quoted about the water footprint of farm animals are unrealistic. For example, it is claimed that the water footprint of beef is 15,500 litres of water per kg of meat. The problem with these figures is that they are based on incorrect assumptions.

The example below demonstrates the assumptions. If 10 mm of rain falls on one hectare then it is 100 kilolitres. If 10mm of rain falls on a 3000-hectare farm, then it is 300,000 kilolitres. If the average rainfall is 450 mm per year then the total amount of water that fell on the farm is 135,000,000 kilolitres. If the carrying capacity is 6 hectares per Large Stock Unit (LSU), the farm can support 500 LSU's. This means 270,000 kilolitres of water per livestock unit per year. Remember a LSU is the equivalent of a 450 kg ox that gains 500 grams per day. These are the type of calculations that are made to claim that 15,500 litres of water are used to produce 1 kg of meat.

The reality is that cattle only used a fraction of this water, and this brings us to the concepts of "green and blue" water. Green water is the water absorbed by the soil and used by plants to grow. It cannot be used for anything else. Blue water is the water in dams, rivers, and underground, which in addition to the fact that it provides drinking water for humans and animals; households, industries and mines also use it. It is estimated that the blue water footprint of beef in South Africa varies between 250 and 450 litres per kg of meat depending on the production system and calf percentage.

Observations made by the ARC showed that the average water intake of Bonsmara heifers was around 23 litres per day, which increased to 56 litres per day after the calving during the suckling of calves. In feedlot conditions, the daily water intake varied between 6% and 9% of body weight, depending on the temperature.

The water intake of 13 young Afrikaner bulls and 15 young Nguni bulls were measured over a period of 28 days during the summer of 2020/2021 in the GrowSafe system at the ARC-Irene. The daily water intake (average for the animals in the pen) and weights per week for the Afrikaner bulls are indicated in **Figure 1** and that for the Nguni in **Figure 2.**

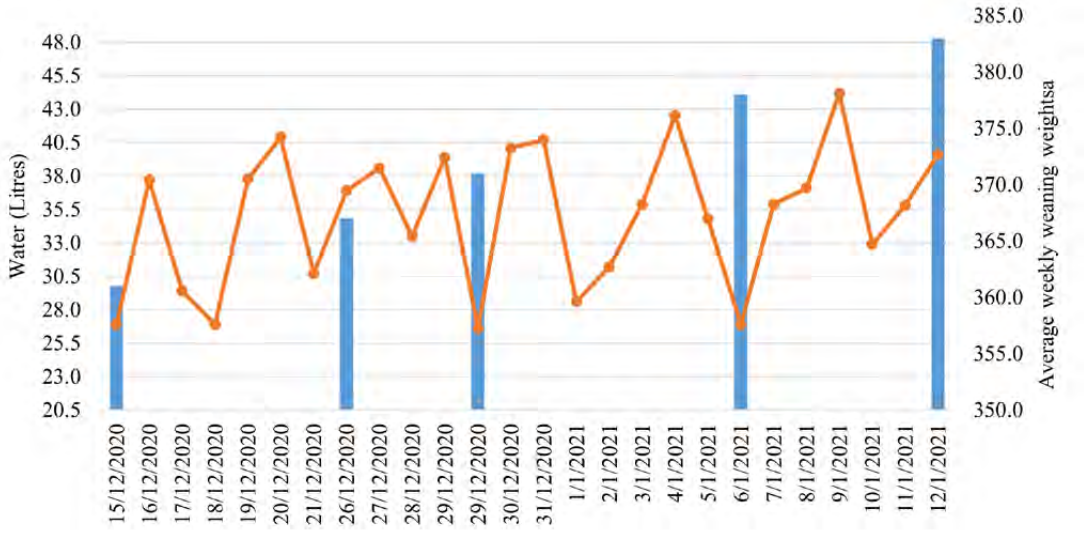


Figure 1: The average daily water intake and weaning weights per week for the Afrikaner bulls

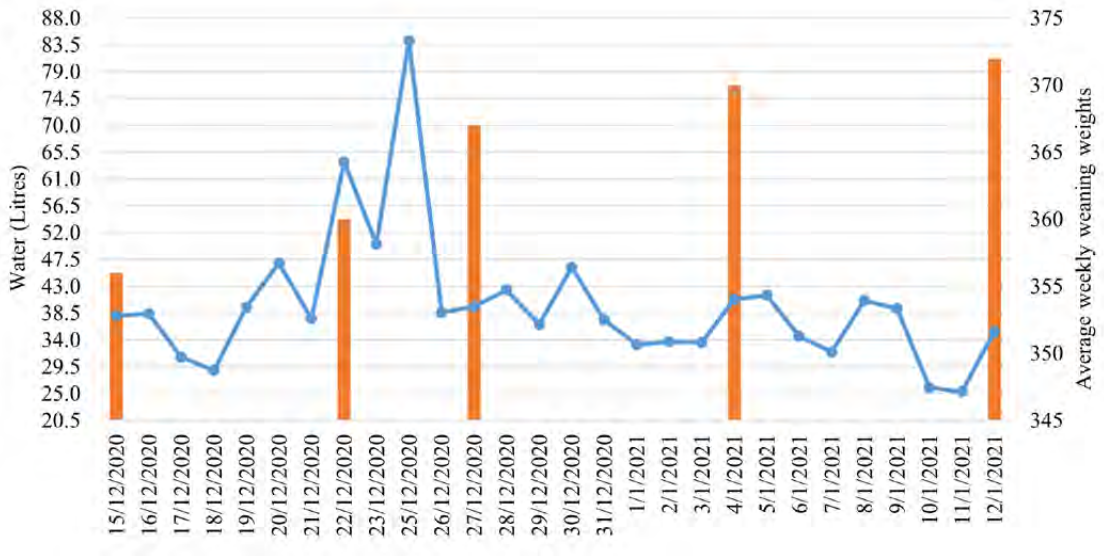


Figure 2: The average daily water intake and weaning weights per week for the Nguni bulls

In **Figure 3**, the daily water intake of the two breeds is combined. Both breeds gained weight during the period of evaluation.

Furthermore, it is clear that the water intake of the Afrikaner is more stable than that of the Nguni. The weekly water intake of the Afrikaner varied between 7.45% and 9.35% of body weight and that of the Nguni between 9.52 and 10.72%, which was surprising to note as it is percieved that the Nguni may be a slightly more adapted breed to heat, than the Afrikaner.

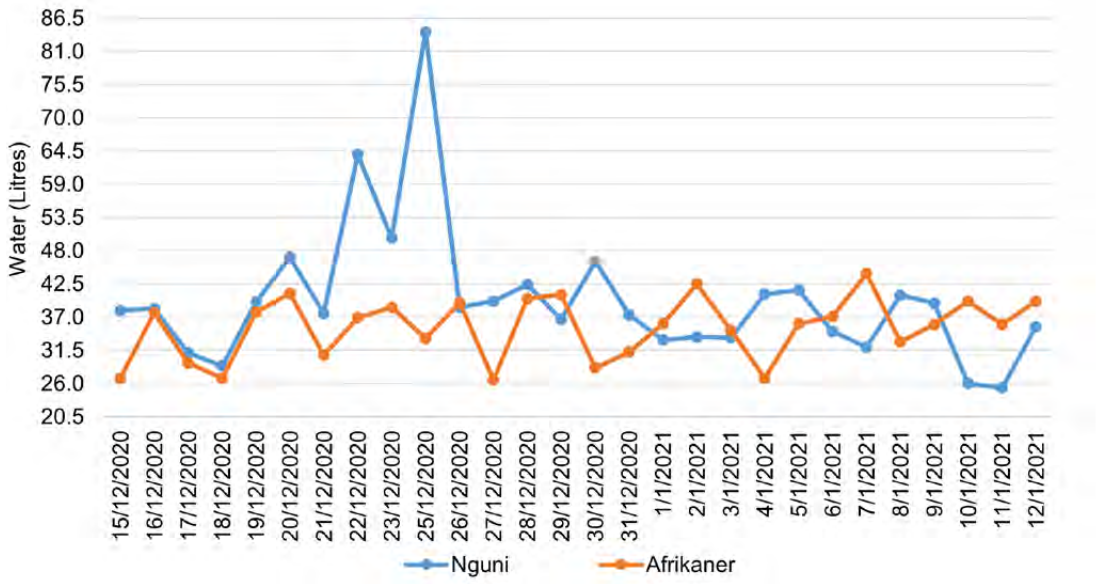


Figure 3: The average daily water intakes for the Afrikaner and the Nguni bulls

The drastic increase in the water intake of the Nguni bulls is possibly due to weather changes, specifically heat waves. The GrowSafe system will pick up individual animal water frequencies and show errors for certain individual animals, if it behaves abnormal or it is ill. However, nothing was recorded during this period and it is assumed that the water intake of the group of Nguni bulls was influenced by heat waves.

The lessor variation in daily water intake by the Afrikaner may indicate that the breed is more adapted to hotter days. More studies may be undertaken in future to look at water efficiency; as a measurement of water intake as a percentage of body weights for different beef breeds under heat stress.

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Efficiency in beef cattle: Is it important?

Prof Michiel Scholtz,
Dr Michael MacNeil, Frans Jordaan, Georgette Pyoos
ARC-Animal Production, Irene
GScholtz@arc.agric.za

Why is feed efficiency important to beef producers? Feeding accounts for approximately two-thirds of the cost of the cow-calf production cycle, and considerably more in cases where the reproduction rate is low. After the calves are weaned, feed represents a further 60% of the cost of preparing them for slaughter. Commercial feedlots know that feed efficiency is the single biggest determinant of profitability. This is also the reason why feedlots discriminate against certain genotypes or breed types. In a country like South Africa, feeding is further limited in most of the extensive areas where beef cattle are farmed with. It is also important to mention that feed efficiency is linked to greenhouse gas emmisions from cattle. More efficient cattle produce less greenhouse gases per kilogram of product.

In 2020, the ARC conducted a study to determine the profitability of seven different beef cattle genotypes (four crosses and three pure breeds) under feedlot conditions. Daily feed intake and growth rate were determined using the GrowSafe system. The young bulls were fed for 98 days. The feeding cost was R3.75 per kilogram and the price per kilogram of live weight used in this study was R26.32 per kilogram.

The results of the study are shown in **Table 1**. The profitability depends on the feed and meat prices. It was calculated that when the feed conversion ratio (FCR) is more than seven (R26.32/3.75 = 7.02), it is no longer economical to feed the young bulls. Note, this will vary from case to case depending on the feed and meat prices.

Table 1: Average Daily gain (ADG), feed conversion ratio (FCR) and profit per genotype after 98 days in the feedlot

Genotype	ADG (kg)	FCR	Profit at 98 days
Cross 1	2.06	5.14	R1 424
Cross 2	1.95	5.39	R1 168
Pure breed 1	1.99	5.51	R1 105
Cross 3	1.71	5.35	R1 054
Pure breed 2	2.30	5.80	R1 020
Cross 4	1.84	5.81	R819
Pure breed 3	1.63	6.21	R607

After 98 days in the feedlot, the FCR of animals in this study varied from 5.14 to 6.21 and profit varied from R1 424 to R607 between the different genotypes. The difference in profit between the best and worst genotype was a phenomenal 245%. It is also important to note that the genotype with the highest average daily gain (ADG) of 2.30 kg was not the most economical one. The most economical genotype was cross 1 which had a ADG of 2.06 kg with a FCR of 5.14. Feedlots are well aware of these differences between genotypes.

Growth rate and feed intake

Both ADG and daily feed intake, influence efficiency as can be seen in Figure 1. The figure shows the phenotypic relationship between ADG and feed intake. Each point on the chart represents a bull. If a vertical line is drawn on the graph at the average feed intake of all these bulls and a horizontal line at the average of the ADG, the figure is divided into 4 quadrants. The quadrant on the top left is the efficient quadrant. The bulls that lie in this quadrant are mostly the desirable

bulls from a feed efficiency perspective. However, the animals in the red circle are more efficient than the animals in the green circle. The animals in the green circle are nearly average for both intake and ADG, whereas the animals in the red circle or also nearly average for ADG, but far better for feed intake, indicating the complexity of a ratio trait.

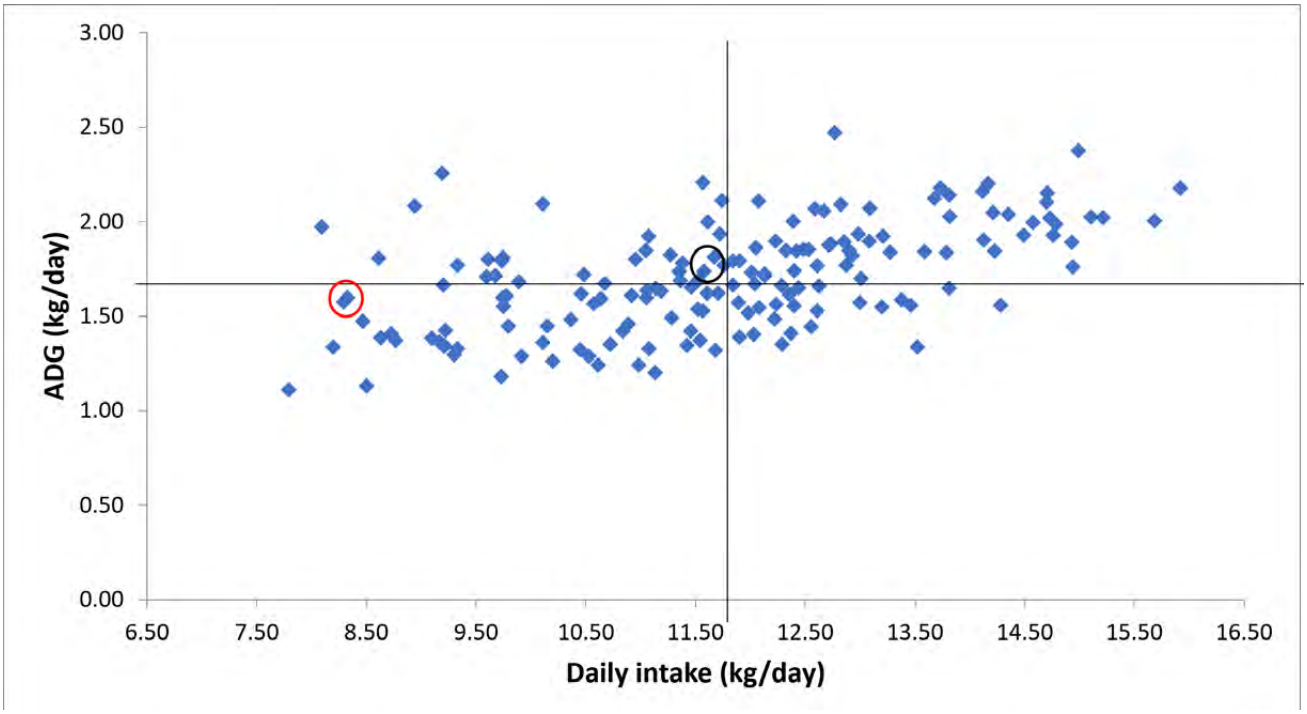

Figure 1: The relationship between growth rate and daily feed intake of young bulls

Efficiency is traditionally expressed as the ratio between feed intake and growth rate or as the reverse (growth rate / feed intake). One problem with ratios is that one does not know whether the numerator or the denominator or both are changing. For a given value of the feed efficiency ratio, feed intake can be reduced for one bull, a second bull can have increased growth rate and in the third bull both can be changed. It is therefore not clear how much emphasis is placed on the two component traits (feed intake and weight gain). The second issue with FCR is that it implies that a bull that maintains its body weight eats nothing or conversely a bull that eats nothing does not change in body weight. Everyone that has ever tried to loose weight is aware of the fallacy of this assumption. Still, FCR is widely used as an indicator of efficiency.

This uncertainty led to the development of "new" traits such as net feed intake (residual feed intake), net growth rate (residual growth rate), and residual intake and gain. Net feed intake is the difference between an animal's actual intake and the expected (predicted) intake, based on the animal's weight and growth rate over a specific period. Thus, it assumes a constant growth rate and body weight for all of the animals that are being compared. Just as net feed intake can be calculated, net growth rate can also be calculated. Net growth rate is expressed as a deviation from the growth rate expected, based on the animal's intake, and it assumes that the intake of all animals is constant. A high net growth rate animal is an animal that grows faster on a given amount of feed than expected. Residual intake and gain is produced by expressing net feed intake and net growth rate on the same scale (standard deviations) and subtracting the standardized net feed intake value from the standardized net growth rate value. The residual intake and gain value is preferable because it allows variability in both feed intake and gain to influence efficiency. Breeders and breeders' societies must take note of these new developments. However, the prerequisite is that the individual feed intake of animals must be measured. In South Africa this can be done through the Calan gate system, which has already been used for more than 45 years (Photo 1), or through the more recently developed GrowSafe system which is now also available in South Africa (Photo 2).

Photo 1: The Calan gate system consists of feeding troughs with doors that are opened with unique signals. Each bull has a sensor key around his neck that can only open his feed bowl. The feed is regularly weighed back and thus individual feed intakes are determined

Photo 2: The GrowSafe feed bunker stand on weighing cells so that feed intake can be measured. The animals have electronic tags and the animal that eats is identified and also how much it ate. In this way, feed intake of individual animals that are in a group can be measured

Conclusion

Firstly, feed intake is without doubt an economically important trait – feed costs money. By far, the most effective way to change it genetically is to measure and evaluate it. Secondly, feed efficiency is a metric that is calculated from its component traits (growth and feed intake). It is not a single trait and indeed cannot be measured.

From a selection standpoint there is no added value to be gained from calculating a feed efficiency value from its component traits. It is therefore better to evaluate growth and intake separately and combine them in a selection index. Organizations that evaluate traits for breeds and formulate breeding goals should take note of this.

Selecting for profit making use of the National Database (INTERGIS)

Frans Jordaan,
Prof Michiel Scholtz & Dr Ben Greyling
ARC-Animal Production, Irene
ARC-Animal Production, Irene

Background

Farmers have numerous challenges to become fully commercial or if already farming as a fully commercial enterprise, in their quest to be more sustainable and profitable. The current higher inflation rates means an increase in input costs which creates a more challenging environment to become sustainable. Management is always one aspect of farming to improve on whether it is just improving on-farm bio security to protect your herd from external diseases. We recently experienced the negative impact of foot and mouth disease on the industry. However, good management can also include good decision-making or selection of good genetics to improve your herd's performance. In fact, selection of good genetics is central to a profitable enterprise. Selection for profit may however exclude the "good looking" cow that does not calf every year!

Photo 1: The Afrikaner stud herd at ARC Irene campus serves as a demonstration herd during farmer's days and the application of INTERGIS reports as selection tool in this herd will be briefly discussed.

Traits that have an influence on profitability

The Integrated Registration and Genetic Information system (INTERGIS) offers assistance to the farmer in the format of reports on herd and individual animal performance. Interpretation of these reports will assist the stud and commercial farmer to not just increase his profit, but also decrease some expenses. These reports assist the breeder to make selection decisions on which animals are suitable for breeding and also identify animals, which are not suitable for breeding. The unproductive cow can also be a cost driver if she does not produce a calf per year!

The commercial farmer needs to produce the optimal number and weight of weaners, per number of cows mated and at the lowest cost possible, to be commercially profitable. Profit drivers such as fertility and growth and cost drivers, for example feed expenses need to be included in breeding objectives for your herd. The goal is to improve on profit drivers and limit cost drivers to improve profitability.

Breeding season and adapt to nature to save on feed costs

The majority of beef farmers in South African farm in an extensive environment on natural grazing. Nature offers us good quality feed at no cost, but the availability is seasonal and dependent on rain of course! The farmer needs to adapt to his farming environment and strive to utilize this seasonal grazing to his own benefit. Breeding with a well-adapted breed, which is suitable for his environment, is also very important. If the availability of natural resources are limited with extreme heat conditions it will not be sensible to breed with large frame animals, especially European breed types that are not always well adapted to our harsh South African conditions. South Africa has extremely diverse climatic conditions hence the importance of an adapted breed for a specific environment. The well-adapted Afrikaner breed is ideal as a dam line with cross breeding as a profitable option for commercial producers.

Practice a well-defined breeding season, usually during mid-summer when the optimum natural summer grazing capacity is available. This will ensure cows that are in the best possible condition to maintain a good conception rate. This ensures a calving season during spring and can also limit costs on additional feeding. The goal is also to ensure the optimum number of calves born from cows mated during the preceding breeding season.

Most summer rainfall areas has seasonal grazing capacity in summer and low quality grazing during winter months. Ensure a well- defined weaning season just before winter in an attempt to limit the herd size on farm during the harsh winter months. The ideal is just a winter lick as supplement feeding to compensate for seasonal mineral deficiencies.

Photo 2 & 3: Example of a cow on the left that calved in season and ready to calf again in spring. On the right a heifer bought pregnant at an auction, calved in winter and the calf still suckling through winter. The difference in body condition is obvious.

Which measurements are important?

Fertility is the most important trait of a cowherd and although difficult to measure, one calving per cow per year is a benchmark to evaluate cow fertility. The cow has no excuse not to calf every year, if the general herd management is on an acceptable level, of course. The farmer can send his birth notifications to the INTERGIS team in Bloemfontein who captures the birth of the calf and a unique identification number is assigned to the calf on the system. The reproduction records of each cow in his herd is updated with every calf born and information is immediately available on system.

Photo 4: Supplement feeding may become essential towards the end of our harsh winters to ensure the condition of the cows are maintained till the summer months and first summer rains.

Growth

As mentioned growth is also an important profit driver, especially if the farmer sells his weaner calves to feedlots. The farmer is paid per kilogram and depending on the weaner price at the time the optimum average weaning weight has a direct influence on profit. If variation in weaning weight between the same calf-crop is observed , despite treated the same regarding season, management and feeding, it is important to see which cows frequently weans calves below average and replace those cows with good quality heifers. Selection for growth should also be included as a breeding objective for the herd.

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Wean Test Report

National Beef Recording and Improvement Scheme

IRENE ANIMAL PRODUCTION
PRIVATE BAG X2
IRENE
CENTURION
0062

Participant No : 8522944AFR
Beef Test No : A21AFR202202

Date Processed : 06/09/2022 10:23:36

Animal Details				Recording Details					Test Results			Breeding Values		
				Date		Age	Weight		Weight Adj	ADA	Index	DIR	MAT	DIR
ID No	Sex	Sire ID No	Dam ID No	Birth	Wean	P-Wean	Birth	Wean	100D	P-Wean	P-Wean	Birth		Year
Comp No	Grp	Comp No	Comp No	Pre-Wean		Wean	P-Wean		205D	Wean	Wean	Wean		18 M
IDI 220001	M	VZI 150076	MC 170091	01/01/2022	05/08/2022			237				0.01 49	0.40 38	10.7 44
5513640291	M11	0083241653	5508800090			216			238	1000	129	8.3 53	2.6 39	14.2 38
IDI 220002	M	VZI 150076	NW 170112	05/01/2022	05/08/2022			151				0.47 55	0.27 37	5.1 34
5513640309	M11	0083241653	5508635546			212			147	556	72	4.6 53	1.9 43	8.0 37
IDI 220004	M	VZI 150076	MC 170131	13/01/2022	05/08/2022			180				0.46 48	0.19 38	8.2 44
5513640325	M11	0083241653	5508882023			204			192	776	100	7.6 54	1.4 44	11.3 40
Group Summary :						0	0	189	0	0				
No of Animals : 3						211	0		192	777				
Test Summary :						0	0	189	0	0				
No of Animals : 3						211	0		192	777				

Photo 5: Wean test report

In the above wean test report are three bull calves in the same age group but the weaning weights vary from 151kg to 237kg and the difference in income per calf is R3 225 at the current weaner calf price of R37.50!

Testing of bulls

Performance testing of young stud bulls as potential breeding bulls are extremely important. Testing of

bulls are a quality control check to ensure just the best performing bulls are eventually purchased at auctions by commercial farmers. These tests include growth ability such as average daily gain and also feed conversion ratio, a measurement of how efficient they convert feed to live weight, over a specific period. (Similar to a feedlot scenario). The centralized growth tests also known as "phase C" simulate a feedlot scenario and both profit- and cost drivers are evaluated for each bull. As we know feed costs is the major cost driver on –farm as well as in feedlots. Bulls with good feed efficiency performance data is important for the commercial market that produce weaner calves for the feedlot. Each bull is also inspected at the completion of each test by the relevant breed inspectors to ensure minimum breed specific standards regarding functional efficiency.

Photo 6: A young Afrikaner bull in test at Irene bull testing facility

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Groei Toets Verslag

Nasionale Vleisbeesaantekening en -Verbeteringskema

IRENE FASE C1 SENTRUM
PRIVAAT SAK X2
IRENE
0062

Deelnemers No : 0545619MIX **Toets No :** C12AFR202207 **Datum Verwerk :** 23/09/2022

Dier Besonderhede				Aangetekende Data							Toets Resultate										
				Datum			Oud		Gewig		Resultate				Indeks				MT	Opmerkings	
ID No / Rek No	Ges	Vaar ID No / Rek No	Moer ID No / Rek No	Geboorte	Speen Aanp.	Begin Eind	Speen Aanp.	Begin Eind	Geb. Speen	Begin Eind	Speen GDO	GDT DVI	VOV KV	RFI	Speen GDO	GDT	VOV KV	SO SO Agp			
BA 210093	M	CI 170200	JN 110025	03/10/2021	13/05/2022	30/06/2022	222	270	34	250	888	1172	7.67		95	93	91	310	Gewoon	Pass	8
5513054691		5511557588	0074284506		02/06/2022	22/09/2022	242	354	223	352	899	8.99	14.73		99		91	309			
BA 210094	M	CI 130052	HP 150001	04/10/2021	06/05/2022	30/06/2022	214	270	35	224	780	1203	7.52		92	95	93	320	Gewoon	Pass	8
5513069582		5511643479	0081569543		02/06/2022	22/09/2022	242	354	202	325	822	9.05	16.01		90		99	327			
BA 210102	M	NV 170260	BA 170001	16/10/2021	13/05/2022	30/06/2022	210	258	35	242	951	1048	7.79		101	83	89	300	Geen Merite	Pass	8
5513135896		5508956314	5508639274		02/06/2022	22/09/2022	230	342	223	329	863	8.16	13.5		95		84	306			
BA 210105	M	CI 120100	WH 160697	18/10/2021	06/05/2022	30/06/2022	200	256	39	243	912	1343	6.47		108	106	108	310	Goud	Pass	8
5513138270		5508272605	0084474444		02/06/2022	22/09/2022	228	340	221	357	937	8.69	16.24		103		101	308			
BA 210117	M	CI 130052	GVZ 130443	01/11/2021	13/05/2022	30/06/2022	194	242	40	242	971	1022	8.24		104	81	82	280	Afgekeur	Rejected	
5513202589		5511643479	0079039962		02/06/2022	22/09/2022	214	326	227	337	915	8.42	12.53		100		78	284			
IDI 210002	M	VZI 150076	ANP 160142	29/09/2021	10/05/2022	30/06/2022	224	274		262	907	1235	7.69		93	97	90	310	Gewoon	Pass	17
5513190826		0083241653	5511728247		02/06/2022	22/09/2022	246	358	235	369	940	9.5	15.09		103		94	305			
IDI 210006	M	VZI 150076	ANP 160208	24/10/2021	10/05/2022	30/06/2022	198	250		277	1034	1439	6.71		106	114	104	340	Silwer	Pass	17
5513190867		0083241653	5511728213		02/06/2022	22/09/2022	222	334	238	395	1088	9.66	15.9		119		99	328			
Opsomming van Groep									37			1209	7.44	0.00							
Aantal Diere :		7					343				923	8.92	14.86								

Tien Jaar Gemiddelde :	Geslag	GDO	GDT	KV	VOV	SO
Ras : AFR	M	911	1267	16.13	7.01	285
Aantal Diere :		58	58	58	58	

*) Indekse GDO, GDT, VOV & KV uitgewerk op tien jaar gemiddelde per ras en toets sentrum.
**) 'N Negatiewe RFI-waarde is meer wenslik as 'n positiewe RFI-waarde aangesien dit aandui dat die dier meer doeltreffend is as die gemiddelde

Photo 7: An example of a final phase C test report

Feed is a cost driver

Although the phase C testing of bulls simulates a feedlot scenario it has the advantage of measuring individual feed intake. Therefor individual feed conversion ratio is measured and from the above example, it is obvious that variation between performances of these bulls emphasize the importance of bull testing. One of the bulls in the test consumed 8.24 kg of feed to gain 1 kg in live body mass. At a feed cost of R 3.50 per kg, it means R28.84 to gain 1 kg of live mass. Another bull in the same group consumed 6.47 kg of feed to gain 1 kg in live mass. A difference of 1.77 kg of feed/kg of live mass may sound negligible but the one bull saves you R 6.19 on feed cost to gain 1 kg in live weight. A live weight gain of 118 kg, in this case, resulted in a saving of R 730.42 in feed cost difference between the two bulls. (As indicated in the report the bad performing bull was rejected.) Just imagine if the bull was not performance tested and was just selected on physical appearance as a breeding bull!

Growth is a profit driver

It is worth mentioning that the one good performing bull gained 118 kg during test whereas the worse performing bull only gained 95 kg during the testing period. At the current, wean price of R 37.60 a difference of R 864.80 in income between the two bulls. If you have a group of 50 bull calves this variation in profitability can be a substantial amount.

Bull test reports can be valuable as an unbiased indication of performance within a herd. Additional to feed consumption and growth ability several other traits are also measured during a growth test. Scrotum circumference, which is an indication of semen quantity, is also measured and the bulls need to comply with the minimum breed standards to pass the test. Scrotal circumference, as an indication of bull fertility is heritable and therefor an important additional trait to select for when purchasing a potential breeding bull from an auction.

Photo 8: The Irene Afrikaner herd breeding bull. The bull was selected on reproduction information from the dam (Inter Calving Period), his own breeding values for growth, milk and scrotum circumference.

It is important to note that the phenotypic wean index is not always a real indication for genetic superiority within the whole breed since it only reflects the performance of an animal within a small contemporary group of animals.

An animal with a good phenotypic index (e.g. for wean), may in fact, when compared to the whole breed in terms of breeding values, not compete well in relation to the rest of the breed.

Breeding values should be the ultimate selection criteria for genetic improvement. Breeding values are also expressed as indexes to improve the interpretation of breeding values on auction catalogues for commercial buyers.

Summary

Record keeping is essential to identify productive cows to enhance profit margins. The focus needs to be on traits of economic importance and breeding goals should be set accordingly. When purchasing a bull at an auction, keep these traits in mind to ensure the bull will support these important traits. A performance tested bull limits the risk of unknowns and the auction catalogue provides the information needed to first select bulls that support your breeding objectives and physical appearance should be secondary in selecting a good breeding bull, although functional efficiency is also important. The influence of a breeding bull is enormous especially if his daughters are selected as replacement heifers in your herd.

INTERGIS (Integrated Registration and Genetic Information System)

Corrie van Zyl
& Graham Buchanan
ARC-Animal Production, Irene
VanZylC@arc.agric.za

The Animal Production Unit of the Agricultural Research Council (ARC) is based in Irene (Pretoria). It is primarily a research institution that endorses record keeping and uses traits and measurements to calculate breeding values for the purpose of livestock improvement.

The Beef Cattle Performance Scheme of the ARC in collaboration with our research unit uses the INTERGIS (computer system) which houses the national animal database as their information source. The system also has an interface to capture and process animal information and breeder details, which ultimately form the basis of the scheme. Data and numerous reports are available to enable animal selection in a simplified manner and maintain better herd management practices.

ARC • LNR

Body Measurements

National Beef Recording and Improvement Scheme

INTERGIS 2000

GLEN FASE C1 SENTRUM
PRIVAATSAK 01
GLEN
9360

Participant No : 0545662MIX
Beef Test No : C50SIM201706
Date Processed :25/08/2017

Animal Details				Recording Details						Test Results			
ID No / Comp No	Sex	Sire ID No / Comp No	Dam ID No / Comp No	Birth Date / Final Date	Age	Birth Wght / Final Wght	Shld H / Hip H	Body Length	Scr Cir / Skin Thk	SH/HH Adj	Body L Adj	Scr Cir Adj	L/H Ratio
LN 160124	M	UG 120232	UG 070217	31/07/2016	389	37		1360	330		1342	330	
0102971108		0102561123	0101828249	24/08/2017		477	1170		12	1156			1.16
LN 160134	M	UG 120144	LN 140108	10/08/2016	379	35		1430	340		1420	343	
0102971272		0102443635	0102797446	24/08/2017		461	1300		12	1292			1.1
LN 160138	M	UG 120232	UG 070191	10/08/2016	379	48		1530	380		1520	364	
0102971256		0102561123	0101757316	24/08/2017		559	1350		13	1342			1.13
LN 160139	M	UG 120144	LN 140103	10/08/2016	379	42		1500	390		1490	384	
0102971298		0102443635	0102727328	24/08/2017		508	1320		13	1312			1.14
LN 160140	M	UG 120232	UG 070042	12/08/2016	377	46		1540	370		1531	366	
0102971330		0102561123	0101720926	24/08/2017		494	1350		12	1343			1.14
LN 160145	M	UG 120144	LN 140144	12/08/2016	377	45		1410	410		1401	415	
0102971371		0102443635	0102853785	24/08/2017		450	1290		13	1283			1.09
LN 160159	M	LN 140024	PR 1064	20/08/2016	369	42		1540	315		1537	337	
0102963004		0102669645	0102208847	24/08/2017		359	1190		13	1188			1.29
LN 160160	M	LN 140024	LN 1387	20/08/2016	369	42		1430	330		1427	342	
0102982998		0102669645	0102644168	24/08/2017		413	1240		13	1238			1.15
LN 160164	M	UG 120232	AVA 0926	26/08/2016	363	46		1420	350		1422	353	
0102983053		0102561123	0102111638	24/08/2017		460	1320		12	1321			1.08
LN 160168	M	UG 120144	LN 140114	28/08/2016	361	43		1560	380		1563	386	
0102983095		0102443635	0102727393	24/08/2017		442	1270		14	1272			1.23
LN 160195	M	LN 140024	UG 13217	04/10/2016	324	42		1360	340		1391	359	
0102983319		0102669645	0102641420	24/08/2017		376	1250		13	1275			1.09
LN 160203	M	UG 120232	UG 120134	28/10/2016	300	45		1490	320		1539	338	
0103005831		0102561123	0102442983	24/08/2017		382	1230		13	1269			1.21
Summary of Group					364	43	0	1464	355	0	1465	360	0.00
Number of Animals :		12				448	1273		13	1274			1.15

An example of one of multiple reports

The system is also compatible with various farm software programs, which means that data can be exchanged.

Where necessary, statistics and information are also provided to other role players in the industry for the improvement of animal breeding. This includes data for the calculation of estimated breeding values for the benefit of the breed in question.

The INTERGIS also offers registration services to stud farmers at a very competitive rate. Several Cattle Breeders' Societies already make use of our registration & recording services. Commercial breeders also use our services and there is especially a lot of interest among the emerging cattle farmers who mainly participate in the Kaonafatso ya Dikgomo scheme (KyD).

INTERGIS (Integrated Registration and Genetic Information System)...continued

In addition to the Beef Cattle Performance Scheme, the INTERGIS is also the host of Dairy Cattle Performance, KyD and Small Stock Performance Schemes.

ICAR
CERTIFICATE OF QUALITY
Valid up to April 2024

The system has also been accredited by the International Committee for Animal Recording (ICAR), which is valid until 2024.

Follow this link "INTERGIS" and get all the information you want to know about the system. It gives a comprehensive explanation of what the system entails, definitely worth a read. You can also visit the ARC's website and follow the links from there to obtain the relevant information.

The INTERGIS computer system, which is based at the ARC's head office in Hatfield, Pretoria, is operated by the ARC on behalf of the Department of Agriculture, Land Reform and Rural Development, The system's operational department is based in Bloemfontein.

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Using partial body weights in performance testing

Dr Michael MacNeil,
Prof Michiel Scholtz & Georgette Pyoos
Delta G, Miles City, Montana, USA
macneil.deltag@gmail.com

Information on body weight and average daily gain (ADG) of growing animals is a key not only to monitoring performance, but also for use in genetic evaluations in the pursuit of achieving sustainable genetic gain. Accurate calculation of ADG, however, requires serial measures of body weight over at least 70 days. This can be resource intensive and thus alternative approaches to predicting individual animal ADG warrant investigation. One such approach is the use of continuously collected individual animal partial body weights.

Researchers have conjoined a weighing scale with a watering device to facilitate the recording full body weight in real time. However, this apparatus did not achieve widespread use until GrowSafe developed a system to capture partial body weight in real time as a means of increasing the frequency of observations that can be used to predict full body weight and ADG. Today, multiple companies market systems that are capable of passive capture of body weight or partial body weight.

The objective of the present study was to determine the utility of partial body weights in predicting both full body weight and ADG. The dataset used consisted of partial body weights, predicted full body weights and recorded body weights recorded for 8,972 growing cattle from a range of different breed types in 35 contemporary groups. The GrowSafe system used by the ARC also contributed to the dataset that was used in this study. The relationships among partial body weight, predicted full body weight, recorded actual chute body weights at the beginning and at end of a performance test were determined and calculated ADG per animal from each body weight measure were also compared.

Partial body weight is measured with the front feet on a scale and the hind feet on the ground. While this is not exactly comparable to weighing the front quarters of the animal, it should be noted that within- and across-breed variation exists in the relative weights of fore- and hind quarters of beef animals.

Photo 1: A weighing platform conjoined with a water trough to weigh the front half of an animal multiple times per second as it drinks. An electronic ID tag links the animal to the weights that are captured

It can be concluded that for greatest accuracy in the prediction of recorded chute body weight during a Phase C test, calibration of the relationship between partial body weight and predicted full body weight with recorded chute body weight should be specific to the contemporary group. These calibrations are properly done using linear regression and not using a multiplicative adjustment factor. However, it should be noted that several phenotypes and estimated breeding values, such as residual feed intake and residual intake and gain can be calculated directly using the partial body weights without implementing the extra step of calculating a full body weight or ADG.

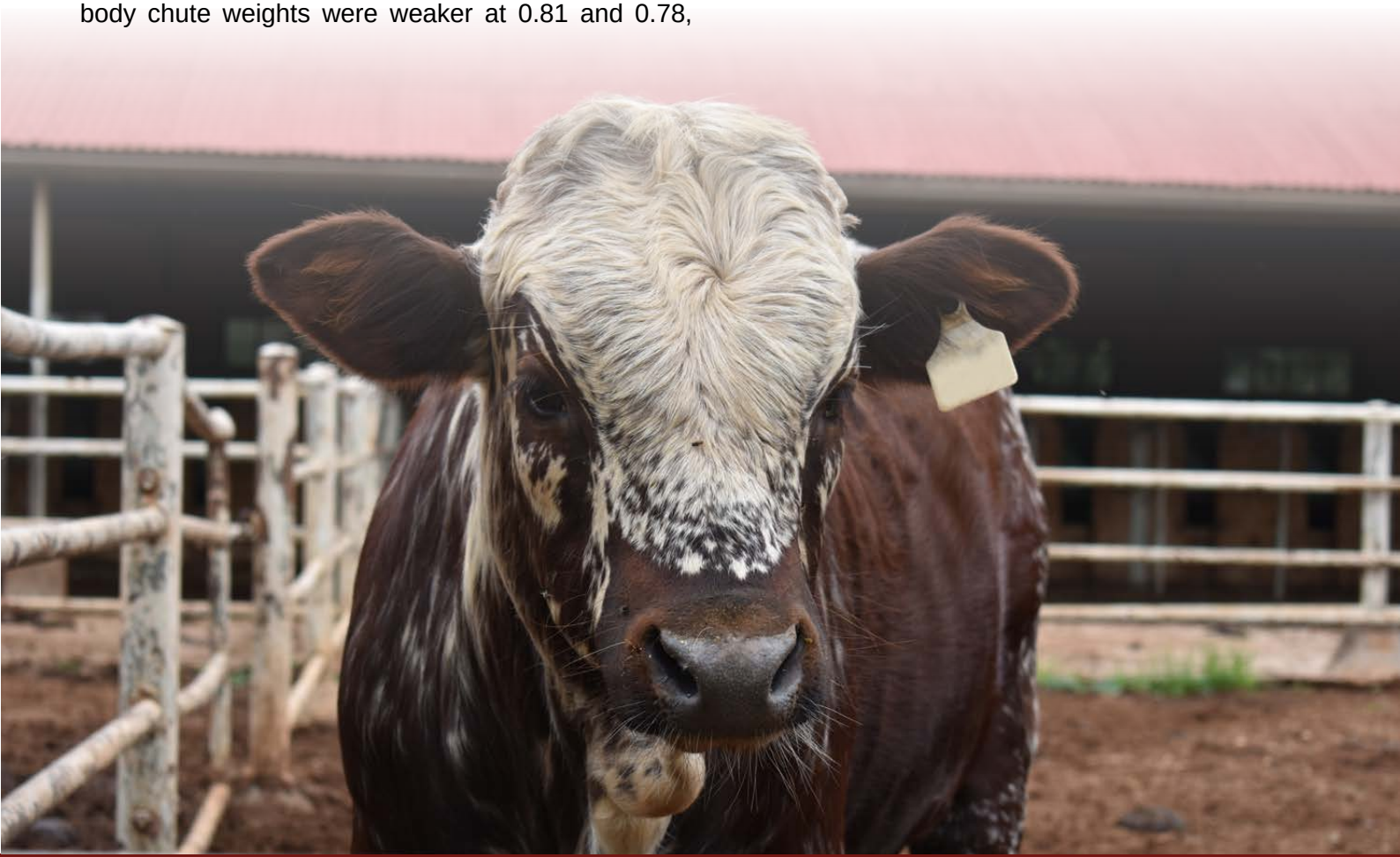
In a recent study, on average, partial body weight explained 91% of the variation in recorded body chute weight at the beginning of the postweaning gain test and 88% of the variation in recorded body chute weight at its end. The GrowSafe proprietary algorithm to predict full body weight from the partial body weight strengthened these coefficients of determination to 95%.

The ADG calculated from the partial body weight or from the predicted full body weight were very strongly correlated (r = 0.95); correlations between these ADG values with those calculated from the recorded body chute weights were weaker at 0.81 and 0.78, respectively. For some applications, ADG may be measured with sufficient accuracy with a test period of 50 days using partial body weights.

With any technology the individual researcher/bull test operator needs to be cognizant of potential for error in measures of body weight. When the capacity of the facilities is the limiting constraint on the number of animals that can be tested, a 50-day test and testing more animals is likely to be a better alternative than testing fewer animals over a longer period of time. A shorter test period may also reduce the per animal cost of testing. However, if the number of animals that are available to test is the limiting factor, then a longer test is probably preferable. Predicting full body weight from partial body weight is likely to have acceptable accuracy in most applications, recognizing that there will be some degree of prediction error.

A full scientific article discussing the work that is reported herein can be found at:

MacNeil, M.D., Berry, D.P., Clark, S.A., Crowley, J.J. & Scholtz, M.M., 2021. Evaluation of partial body weight for predicting body weight and average daily gain in growing beef cattle. Translational Animal Science 5:1-12. https://doi.org/10.1093/tas/txab126 2021



Comparison of methods for the selection of carcass composition traits

Freek Botes,
Jurgen Hendriks & Tinus Viljoen
ARC-Animal Production, Cedara
BotesF@arc.agric.za

Animals of all species vary considerably in body composition as a result of their stage of growth, nutrition, and their genetic make-up. This is of concern to livestock producers, the meat industry, and consumers because the economic value of a meat-producing animal depends greatly on its body composition. It is important to measure carcass composition traits accurately, as they might influence selection decisions, and or market readiness. It is therefore important to use selection methods that will reliably predict body composition because of its contribution to the total worth of meat-producing animals.

A prerequisite of a reliable method would be to accurately measure fat and muscle to determine the variance within a group for the calculation of accurate estimated breeding values.

There are basically three methods being used for selecting cattle for carcass composition traits, Progeny Testing, Subjective Evaluation and Real Time Ultrasound (RTU) scanning.

Below is a short description of these three selection methods for carcass composition traits and the advantages and disadvantages of each will be discussed.

Progeny Testing

Progeny testing is a method sometimes used in cattle breeding programs that relies on the phenotypic assessment of an individual's offspring to make decisions regarding genetic selection. In the case of carcass composition traits, the average performance of an individual's offspring serves as a good measure of the individual's genetic merit i.e. carcass composition. Thus, the parents of progeny with higher performance for desired traits are selected for future breeding.

Even though it presents accurate information of the body composition of the progeny of a particular sire, it is a long and expensive process. It also presents a scenario where potential breeding stock might be slaughtered to collect the data of a particular sire.

Subjective or Visual assessment

Most producers and buyers of livestock in South Africa today prefer the use of live weight and visual assessment methods for estimating body composition because of their practicality, low cost, and rapidity in scoring the animals. This method endeavours to describe the shape of cattle independent of the influence of fatness. The assessor seeks to determine the degree of thickness or convexity of an animal relative to its frame size after adjustments have been made for subcutaneous fat. This of course is done subjectively, merely by observing the shape of the animal and its muscle development.

As animals grow their carcass composition changes and the proportion of fat increases at the expense of muscle and bone. When comparing animals of similar type grown in the same environment, there is a strong association between live weight and fatness.

A study done in the 1960's reported on the extent to which carcass traits can be predicted from live characteristics in beef cattle; they concluded that subjective live scores can account for only 20 to 40 percent of the variation in carcass traits and are of moderate value in ranking individual animals for selection from a breeding population.

A major problem with visual (subjective) evaluation is distinguishing between muscling and fatness, particularly in the case of an inexperienced assessor. Visual assessment of muscling are therefore likely to be more effective as indicators of muscle deposition within a narrow range of fatness, and particularly when fat levels in the group is low.

Muscle scoring is a subjective skill, which needs to be honed by continual practice and evaluation against

an experienced assessor. The skill of the assessor is particularly important because muscling can be confused with fat.

Real Time Ultrasound Scanning

Real Time Ultrasound (RTU) scanning is a fast and objective method to collect accurate data for carcass composition traits using ultrasound technology. RTU can accurately measure a wide range of variation within carcass composition traits that makes it a suitable method to collect carcass composition data for the calculation of Estimated Breeding Values. RTU measures fat thickness on the rump and fat thickness on the P12-13 rib, as well as the eye muscle area independently from one another and the scores combined gives an accurate indication of meat percentage in the carcass. Because these traits are measured independently, fat cannot be confused for muscling. There is much literature available that describes the moderate to high heritability of the carcass composition traits measured by RTU scanning, as well as the positive correlation between measurements taken on the live animal compared to the actual measurements on the carcass.

A typical RTU scanning report provided by the Agricultural Research Council for a group of animals scanned includes the actual Rump Fat measurement, the Rib fat measurement and the Eye muscle area. The accuracy of RTU measurements is negatively influenced if the animals scanned are not used to being handled and restrained and by ineffective handling facilities.

Conclusion

Visual assessment of muscling is effective as an indicator of carcass composition only within a narrow range of fatness and particularly when the fat level of animals scored are low. Assessors must also be experienced!

RTU scanning must be done when animals are in good condition ensuring that there are sufficient variation present in the animals to identify genetic differences in fat depth and marbling. EBV's are the most accurate form of selection for body composition traits as it takes into consideration the heritability of the traits and the carcass composition data of all the performance-tested relatives of a specific animal. The more performance-tested relatives of an animal is included in an analysis, the more accurate the EBV's will be!

The RTU resulting data are less expensive and time consuming to collect compared to the actual harvest of carcass composition data from beef carcasses as in the case of progeny testing.

Improvement of production efficiency in beef cattle: Artificial versus natural selection

Prof Michiel Scholtz,
& Dr Michael MacNeil
ARC-Animal Production, Irene
GScholtz@arc.agric.za

There is the argument that nature - and not man - should decide which beef cattle should be farmed with. This means that natural selection and not artificial selection should be used to select breeding animals. It appears that this view has its origin in the fact that no clear distinction is made between genetic change and genetic improvement, which can be achieved with selection

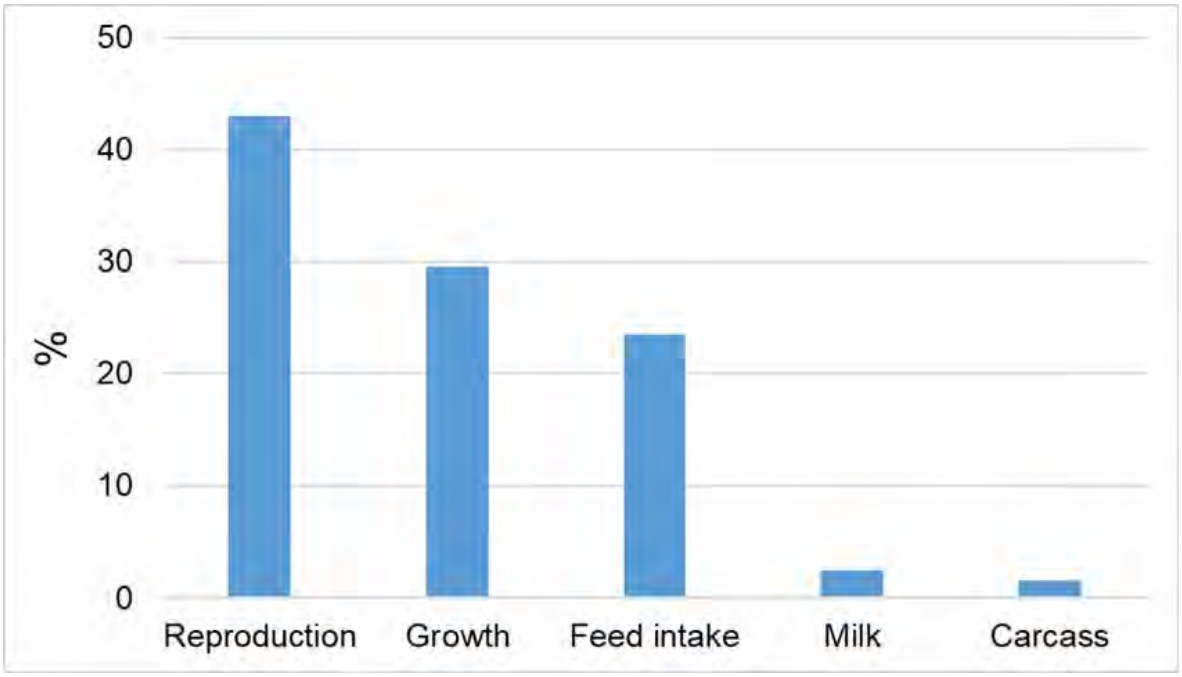
It is important to identify breeding objectives that can improve production efficiency of beef cattle. Variation between animals, between breeds and over time, offers the potential for improvement through artificial selection. Natural selection depends on the same differences. There are many results suggesting that artificial selection for genetic improvement under extensive conditions actually leads to selection for adaptability. This was confirmed in a recent study in the Afrikaner cattle breed. It was observed that selection for growth rate in stressful environments was achieved by an increase in the genes for resistance to environmental stress. The Afrikaner cattle breed was therefore indirectly selected for adaptability. This may also apply to other indigenous breeds of Southern Africa.

Photo 1: A study on the Afrikaner cattle breed confirmed that artificial selection for genetic improvement under extensive conditions, may ultimately also lead to selection for adaptability

Genetic change is easy to achieve. Genetic change occurs when animals that deviate from the average become parents for the next generation whether through natural or artificial selection. Genetic improvement in production efficiency is much more difficult to achieve than genetic change. Obviously, genetic improvement requires changes in several traits. Sometimes these traits are referred to as the economically relevant traits. For genetic improvement to occur requires that the total value of all favourable changes must exceed the loss caused by unfavourable changes. This summation of values is the quantification

of a breeding objective. Natural selection is focused entirely on differences in reproductive output. It favours those animals that leave the most copies of their genes in the generation that follows them, often due indirectly to differences in survival in a particular environment. It leads to the proportion of beneficial, heritable characteristics within a population increasing from one generation to the next.

The relative economic value of different groupings of traits is shown in Figure 1. This figure serves as a reminder that the success of a breeding program is not hinged solely on one trait, such as the easy to measure growth traits. While the data show growth to be an important contributor to the overall breeding objective, it is certainly are not the only trait to be considered. In a general purpose breeding programme, putting emphasis only on growth without any consideration of reproduction would be a huge mistake causing a breeder to suffer financial losses. With climate change producing stress on the animals, reproductive rate is most likely to suffer.



Figutre 1: Relative contribution of various traits to the profitability of beef production

It has been observed from time to time that relatively much attention is paid to the measurement of carcass traits, while the South African carcass classification system currently does not provide for quality. Likewise, the relative economic value of milk is low and yet sometimes a lot of attention is paid to it. Breeders should take note of the relative economic values of the traits as shown in Figure 1, and select accordingly.

The cow-calf component of the production cycle accounts for 72% of the nutritional inputs that are used from conception to slaughter. It is therefore important to optimize the cow-calf efficiency. Measuring efficiency in extensive cow-calf production systems is however not easy; but it is important to do so. Natural selection can also accomplish this, but it will take much longer than artificial selection, if applied correctly. It is therefore important to develop and use alternative selection indices that will enable the genetic improvement in cow efficiency.

The aim should be to improve the productivity of beef production per unit of feed used across the entire production system. In this case, efficient cows are going to be those cows that have lower maintenance requirements and the ability to convert the available energy (grass) into the kilograms of weaner calves, without increasing their mature weight (or the maintenance). If the goal is therefore to improve production efficiency, natural selection and artificial selection can complement each other.

It makes sense to increase production efficiency and therefore reduce the carbon footprint of beef production, to support climate-smart production. This involves reducing the total cattle numbers and increasing the production per animal. It seems preferable to keep 100 cows that calve every year than to keep 150 cows that

only calve every 18 months. Increased productivity generates less greenhouse gas emissions per unit of product. It is therefore increasingly important to define breeding objectives and to develop appropriate selection criteria and cross-breeding strategies to ensure that beef production is efficient and aimed at sustainable production (climate-smart production) in changing environments.

For some reason, the research on cow efficiency has faded to some extent and therefore cows are not directly selected for efficiency. A possible explanation for this is that with the developments in estimated breeding values and selection indices, the focus has shifted to the easily measured traits associated with production (i.e., output traits) and that efficiency of production is being neglected. With beef cattle, however, the "search" for the optimum cow is still ongoing and has become a "holy grail" for the stud cattle industry. The ideal beef cow should be the one that uses fewer resources to produce the same output in a sustainable environment. This would be a reflection of biological efficiency, which natural selection can also achieve in the long run. The historical definition of biological efficiency was defined as the kilogram of calf weaned per cow mated, but this is changing with the realization that it is important to have some input-output relationship, for example kilogram of calf weaned per Large Stock Unit, or kilogram of calf weaned per hectare.

There are numerous factors that can affect cow efficiency. These include, but are not limited to, cow maintenance, feed requirements during pregnancy and lactation, calf maintenance and growth requirements, and calf weight; and perhaps the most important one – reproduction.

It will become increasingly important to define breeding objectives and to develop appropriate selection criteria to ensure that breeding is efficient and aimed at sustainable production (climate-smart production) in the changing environments resulting from climate change. As already mentioned, animal breeding programs generally do not have a basic definition of breeding objectives. Maximum production is not the level of production that maximizes the efficiency of resource utilization nor is it the most appropriate production system for the South African situation. Optimal production systems that are in harmony with the environment and that use adapted genotypes must therefore be developed or implemented. This should include the definition of breeding objectives that can accommodate both tangible and non-tangible factors (adaptation) of climate-smart production systems in changing environments.

Improved production system efficiency must become the most important goal in the beef cattle stud industry. Traits currently measured by at least some breeders/societies explain a fairly large proportion of the variation in cow performance. The component traits that influence cow productivity are weaning weight of the calf, feed requirements of the cow-calf combination (the principle of a Large Stock Unit can be used as an estimate of feed intake); and the frequency at which a calf is produced (indicated by inter-calving period). The development of selection indices leading to maximum genetic improvement in cow efficiency is therefore suggested. The distinction between artificial and natural selection lies in the relative emphasis that is placed on reproduction in each system. With increased opportunities to mitigate the effect of the natural environment, producers attempt to reduce the attention given to reproduction and increase the emphasis on other traits in their artificial selection programs relative to natural selection wherein reproduction is everything.

The ARC Animal Production is developing and evaluating alternative selection indices that will facilitate maximum genetic improvement in cow efficiency for a specific breed. This information will be made available and the principles can be used by other breeds to develop alternative selection indices.

The research is financially supported by Red Meat Research and Development South Africa (RMRD SA) and the National Research Foundation (UID 135438).

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Genomically enhanced estimated breeding values for the Afrikaner cattle breed

News Flash

Delight Kgari
Prof Linky Makgahlela, Prof Michiel Scholtz & Dr Michael MacNeil
ARC-Animal Production, Irene
mmakgahlela@arc.agric.za

The Agricultural Research Council – Animal Production Campus, in its partnership with the Afrikaner Breeders' Society is pleased to announce the development of Genomically enhanced estimated breeding values for Afrikaner cattle.

Through the work of Ms Delight Kgari, genotypes for Afrikaner cattle collected as part of the Beef Genomics Program (BGP) were incorporated into the BLUP evaluation of Afrikaner cattle. This effort fulfils a promise of the BGP to enhance the genetic evaluation of beef cattle in South Africa through genomics.

The Genomically enhanced EBVs will enable Afrikaner breeders to advance their genetic selection programs more rapidly. As Afrikaner breeders have more animals genotyped, the EBV will become even more accurate.

The value and practical application of REAL TIME ULTRASOUND (RTU) measurements

Jurgen Hendriks,
Tinus Viljoen & Zelda King
ARC-Animal Production, Irene
HendriksJ@arc.agric.za

Introduction

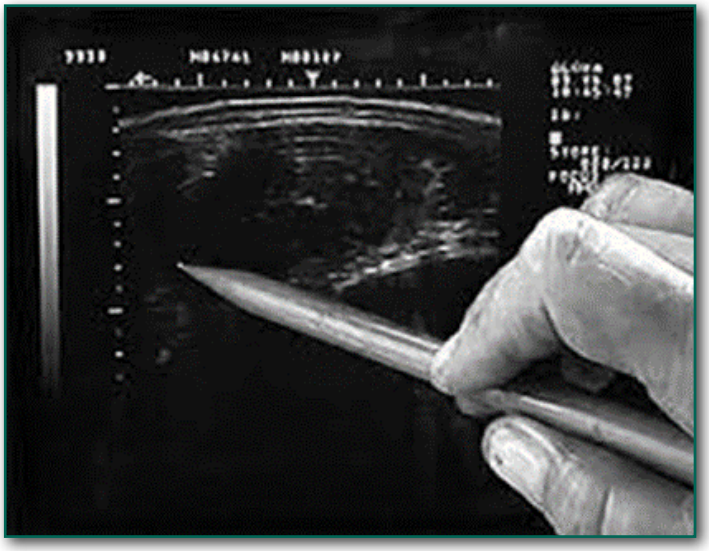
Breeders chase production primarily by two means; firstly through selection for female animals that rear calves more frequently (better reproduction) and secondly by selecting for higher growth rates (higher body weights). There is however a heightened interest in carcass traits, where selection is done for carcasses with higher percentages of saleable meat as well as better meat quality traits, as indicated by feedback received from processors and consumers. This is of particular importance where producers are vertically integrated into the value chain.

Breeders collect most of the performance data of animals on farm, with a few exceptions including carcass trait data. This is due to the nature and methodology involved in carcass data collection. A qualified person must collect this data either directly on carcasses, which usually does not involve large numbers since it is expensive, labor intensive and a complex operation. Another much more favorable and cost efficient option is to record and measure carcass trait data indirectly making use of real time ultrasound (RTU) scanning techniques on live animals. Much larger numbers of animals can also be assessed with this technique. Traits measured making use of RTU are subcutaneous fat (the ability an animal has to deposit fat; influences finishing ability), eye muscle area (positively connected to overall muscling and carcass beef yield) and marbling (intramuscular fat, a quality trait which influences the palatability of beef).

RTU scanning enables the measurement of these traits without the necessity of slaughtering animals, which enables the measurement of breeding animals. RTU scanning is however less accurate than taking actual measurement on carcasses but an acceptable correlation does exist between RTU and carcass data. The accuracy of RTU scanning is influenced by factors such as the facility where animals are scanned (the more convenient the better the quality of data), the skill level of the technician, breed and condition of the animal. Animals with high levels of fat may have data with a lower accuracy since these animals are more difficult to scan. Due to this fact, it is better not to make use of individual phenotypic data to make selections decisions, but rather to wait for estimated breeding values (EBV's) calculated from data collected on animals themselves and their relatives such as siblings and progeny.

How is RTU data collected?

The ultrasound machines used to collect data transmit sound waves at extremely high frequencies into the animal, and depending on the density of the tissue (muscle, fat, skin, connective tissue etc.) the sound will travel at different speeds. Using the speed at which the sound waves travel the RTU machine is able to depict an image where the different layers of tissue can be identified, making it possible to measure the desired traits (fat thickness, eye muscle area, marbling).



Accreditation of ultrasound scanning services rendered by the ARC

Technicians conducting RTU scanning have to comply to a certain standard set by ICAR (International Committee for Animal Recording), where data collected has to meet a minimum accuracy and repeatability. Every 3 years all technicians are put through an exercise where a total number of 20 animals are scanned twice for subcutaneous fat depth, eye muscle area and marbling. Following scanning of the live animals, they are slaughtered and the traits are measured again physically on the carcasses. Data collected by the technicians are then assessed through statistics making use of correlations and standard error of the difference to determine if measurements meet the minimum accuracy and repeatability.

The group of animals that formed part of the accreditation exercise consisted of bulls and steers of approximately 18 months of age from various breeds. Although animals were fed for an extended period of more than 6 months, less than adequate variation for marbling was available and this trait was thus not included in the accreditation process. After scanning, the animals were slaughtered at the Animal Production campus of the ARC and the relevant carcass traits were physically measured on the cold carcasses for comparison to RTU measurements. This was done by external independent and internationally recognized specialists, that included Prof. Phillip Strydom from Stellenbosch University and Dr Michael MacNeil from Delta G in the USA, both which worked closely with the Meat Science department of the Animal Production campus of the ARC.

Traits measured, scan sites and EBV's calculated

Breeding values are predicted using both RTU and/or information gathered from abattoirs for

- Subcutaneous rump fat (P8 rump fat)
- Subcutaneous rib fat (12/13th rib fat)
- Eye muscle area (EMA)
- Intra- muscular fat (IMF)
- Carcass weight (CWT)
- Percentage retail beef yield (RBY%)

Rib fat - subcutaneous fat measured on the eye muscle, three quarters down from the backbone between the 12th and 13th rib. The EBV is expressed in mm and depending on breeding goals, selection can be in either direction, where selection for lower fat values will result in leaner cattle and higher fat values in cattle depositing fat more easily.

Rump fat - subcutaneous fat measured where the vertical line running down from the third (high) sacral vertebra and the parallel line running from the pin bone crosses. Also expressed in mm, the breeding goal will once again determine in which direction to select for.

The difference between rib and rump fat can be used as an indication of fat distribution on the carcass that also forms part of our grading system. There is also a known negative relationship between subcutaneous fat and fertility, where animals selected for genetically low fat values may struggle to get pregnant especially in years of drought, which may be due to the fact that these animals might struggle to get into the correct body condition score before breeding. Caution should thus be taken when placing intense selection on lower fat values. Higher fat values on the other hand may lead to a decrease in beef yield, thus a midway between low and high values are usually chosen to ensure that carcasses comply to market specifications and demand.

Eye muscle area – measured between the 12th and 13th rib, close to where carcasses are usually quartered and expressed in cm2 and a higher value will indicate an animal with a better degree of muscling, subsequently selection is usually for higher values.

IMF% (intramuscular fat) – it should be noted that none of the ARC technicians are accredited to measure IMF% at this stage. It is the least accurate of all the traits measured through RTU and the measurement is taken parallel to the backbone and is measured between the 12th and 13th rib. It represents the expression (as a percentage) of fat deposited within the muscle and is of particular value where producers receive a premium for carcasses displaying marbling.

Carcass weight (CWT) and retail beef yield (RBY%) are probably the more important of the carcass traits measured through RTU scanning. They are calculated from known relationships that exist between fat depth, EMA and body weight and are thus estimates of the true measurements.

A CWT EBV gives an indication of the size/weight of the carcass produced and the RBY% an indication of the percentage of beef yielded from the carcass. Processors usually discriminate against either too big or too small carcasses and selection is usually done for carcasses that fall within this window. Selection for high carcass weights may lead to higher mature weights, while selection for RBY% is done for higher values as it will lead to carcasses with a bigger percentage of saleable beef.

Management/contemporary groups

It is very important that data is recorded for animals that fit into the correct and same management groups, for instance animals within a certain age group that also received the same treatment and management since birth. Contemporary groups should also be as large as possible and should include progeny from various sires. Animals should thus be scanned before breaking up contemporary groups and scanning should be executed when animals are in their best body condition, usually at the end of summer.

Conclusion

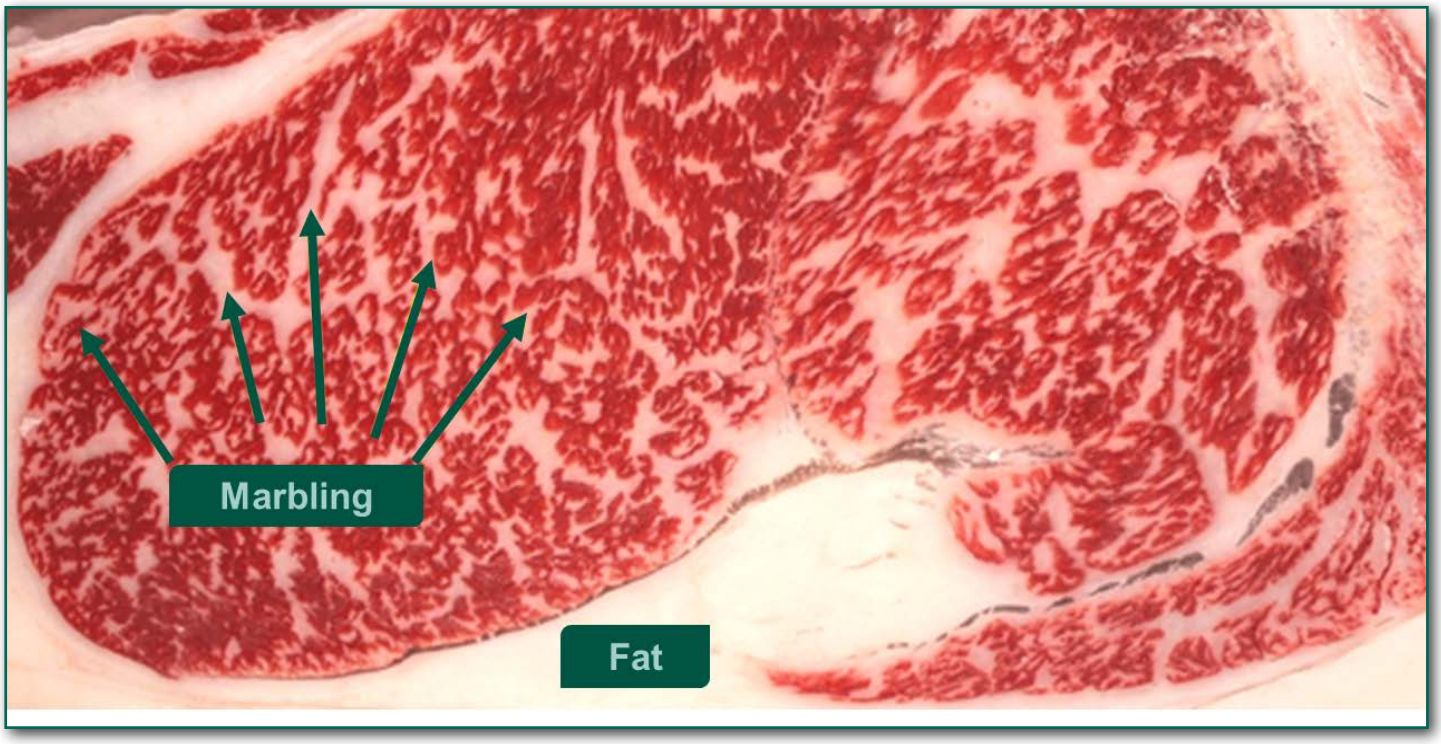
Carcass traits can be measured making use of RTU technology at relatively low cost, enabling selection and improvement since the traits are moderately heritable. Animals should also be in the best possible body condition to ensure enough variation exists in the traits that are measured to enable the identification of genetic differences. Contemporary groups should be as large as possible and all young animals should preferably be scanned each year if not scanned before which will eventually help build up genetic profiles that will ensure the accurate estimation of breeding values.

Let's talk about Marbling

Freek Botes
Jurgen Hendriks & Tinus Viljoen
ARC-Animal Production, Cedara
BotesF@arc.agric.za

What is Marbling and why is it important?

Marbling is the visible intramuscular fat that is observed as flecks of fat in the lean tissue. Marbling accumulates within the muscle and between the muscle fibre bundles. It is not the fat that is observed around or outside of the perimeter of the meat, but it is the fat present in the meat!



Marbling is important because research have shown that the presence of marbling has an extremely positive effect on the eating quality of beef, in terms of tenderness, juiciness/moisture and flavour. Beef with low levels of marbling will lead to meat that is perceived to be dry and less tasty.

Beef with higher marbling scores will also lead to meat that is softer, tender, and therefore easier to chew.

Different grades of marbling

There are various systems over the world that grade beef according to the degree or percentage of marbling in the muscle. The degree of marbling is generally known as Intra Muscular Fat Percentage and it is the primary factor for determining meat quality grade.

How does marbling form or develop in beef cattle?

Some of the contributing factors to marbling development are:

1. Age. Intramuscular fat percentage or marbling is a late maturing trait. Fat is deposited at a greater rate than lean tissue later in the life and development of an animal. It means that the concentration of fat in the muscle will inevitably increase later in an animal's life. The stage of development and condition of the animal greatly influence the development of marbling in the live animal.

2. The major nutritional and/or management tool for increasing the development of marbling is

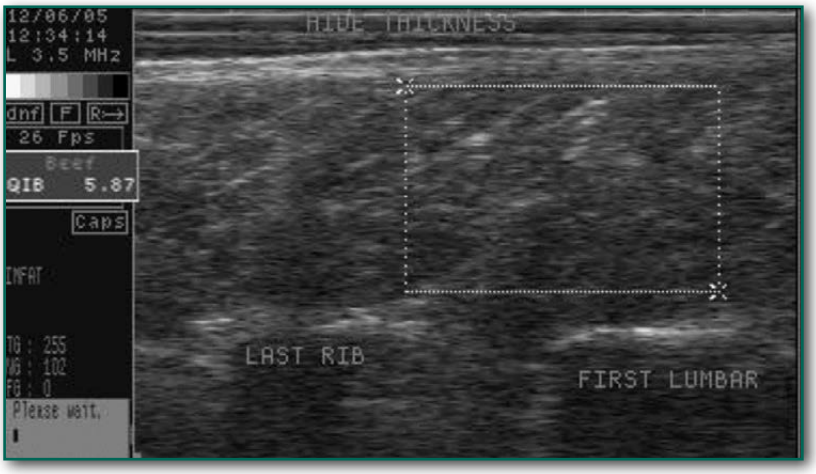
to maximise the availability of net energy (and glucose) for fat synthesis during the finishing phase. Any diet that does not provide excess energy for fat deposition will limit the development of marbling.

3. Selection for high levels of muscularity is known to reduce both fat percentage and intramuscular fat at a given carcass weight. Later maturing animals will therefore show marbling at an older age than early maturing animals.

How is marbling measured on the live animal?

Marbling can be measured by using RTU technology that are commonly used to measure carcass composition traits on live animals. Since RTU scanning give breeder's data about the marbling content of their breeding stock, more and more cattle breeders request RTU scanning for marbling.

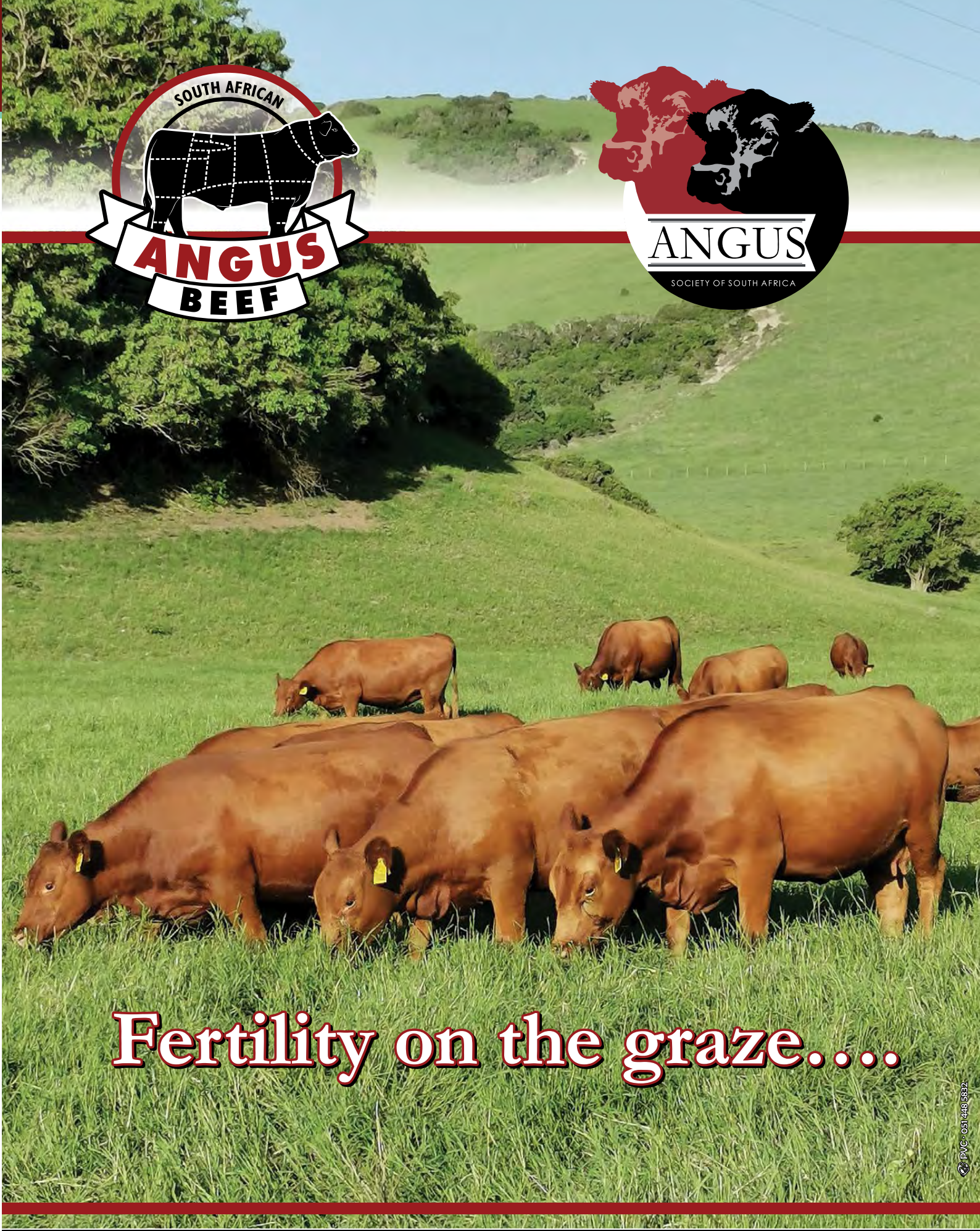
Marbling scores are taken over the 12th and 13th ribs, parallel to the backline of the animal.



The software associated with the scanner used will select a rectangular area on the ribeye muscle and will then determine the Intra Muscular Fat percentage for the area selected.

Summary

The best time to scan for marbling is later in life, about the time the animal is rounding off for slaughter on a diet that supplies surplus energy for intramuscular fat deposition! When the three factors discussed above are not met, coupled with the fact that marbling scores are the least accurate of all the RTU scores taken, then marbling scores should be used very conservatively for selection purposes!



www.angus.org.za
info@angus.org.za
051 447 9849
Breed advisor: Danie Dames, cell: 082 3069 358

An overview of the performance of Santa Gertrudis bulls during intensive feed tests over 20 years

Melville Ferreira
& Yolanda Venter
ARC-Animal Production, Armoedsvlakte
ferrreiram@arc.agric.za
Santa Gertrudis Cattle Breeders Society, Breed Manager
yolanda@santagertrudis.co.za

Background

Due to a continuous rise in the population that is associated with an increased demand for protein, sustainable beef production is also becoming more important to ensure the demand is met over the long term. Together with the rise in the population, the natural resources are also under pressure and beef producers need to produce the proverbial "more from less". In South Africa, livestock production contributes substantially to food security. The livestock sector is also a major role player in the conservation of biodiversity through a variety of well-adapted indigenous and non-indigenous breeds, as well as rare game species. The South African beef industry is challenged by globalisation, increasing volumes and competition, strong industrialization of the value chain, shortage of skilled staff and pressures to meet changing customer needs.

Over the past years, the beef supply chain has become vertically integrated. This is where the producer, feedlot, abattoir and wholesaler are linked together. There are different value and supply chains. The direct participants who play a role in delivering the product to the market are the producers (farmer), feedlot, abattoir, wholesaler, processor, distributor and retailer. There are also other participants and contributors in the beef value chain such as providers of hides and skin, meat processors, imports and exports, spices, packaging, etc. The supply chain is also determined by the characteristics of the beef product and is very competitive. The partners and role players in this chain are highly dependent on each other. In South Africa, like in other countries, the beef industry contributes to food security and the nutritional well-being of the population. The slaughtering, processing and preservation of meat are key components of the value chain of the meat industry. The combination of decreasing hectares available for crop production, increased utilization of grain for fuel, increased input costs and an increase in feed costs are some of the key factors that highlight the changing dynamics of agriculture.

Due to the high feed costs, it is important to have a positive feed margin. A positive feed margin can be influenced by the feed price and the efficiency of growth (gain/kg feed consumed). This can be achieved by improving the average daily gain (ADG) and reducing the feed costs by breeding animals that utilize feed more efficiently. Feed costs amounts to 55% – 70% of the total production cost, and a 10% improvement in feed efficiency of animals may result in a feed cost saving of several hundred million rand per annum for the industry as a whole. Measuring efficiency will assist in decisions that increase productivity without increasing costs of production and will result in greater profit margins. Feedlot studies in the USA demonstrated that a 10% improvement in ADG as a result of a 7% increase in intake improved profitability by 18%, whereas, a 10% improvement in feed efficiency returned a 43% increase in profits. By improving feed efficiency, it will thus significantly contribute to a more sustainable and profitable production system.

Feed conversion ratio (FCR) is defined as the amount of feed needed to gain one add a kilogram of live weight. FCR is one of the traits calculated at completion at the end of all Phase C tests at ARC test centres. Bulls

consume on average 3% of their body weight in feed per day and the average FCR in SA is 4.5 kg – 7.5 kg, which depicts the actual feed consumed to gain one kg in live mass. The less feed consumed by a bull to gain mass, the more efficient it becomes.

There is a highly negative (favourable) correlation between ADG and FCR (-0.60). The better the growth of the animal, the more efficient (lower) the FCR will be. When the feed intake of the animal increases, the rate of growth of the animal will also be enhanced, causing the correlated response in ADG. Genetic improvement in feed efficiency can be achieved through selection and in general, correlated responses in growth and other post weaning traits will be minimal.

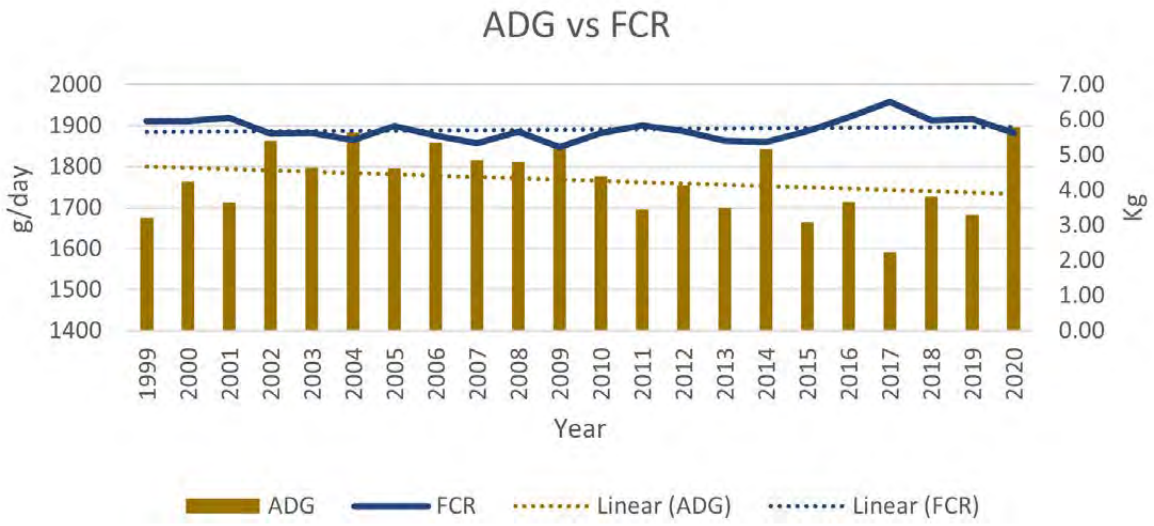
As feed efficiency is important to improve profitability, the feed efficiency in young animals may differ from the efficiency of older, fatter cattle on a high-energy feedlot diet. Feed efficiency is heritable and genetic improvement is thus possible through selection.

It should however be mentioned that when selecting for a low FCR and high ADG, over time your animals will become bigger, requiring more feed for gaining weight, growth and for maintenance. Since growth is of economic importance, e.g., weaning weight has a direct monetary value; farmers select for this trait to improve their profitability. Care should however be taken when selecting for higher weaning weights since growth traits are highly correlated. Care should also be taken to avoid heavier calves at birth since it may result in calving difficulties while heavier mature weights will require an increase in maintenance requirements. The feedlot industry produces approximately 75% of all beef produced in South Africa. This is approximately 1.35 million head per annum. Most of the meat consumed from the formal markets in SA, is produced from cattle in a feedlot system. A 1% improvement in feed efficiency has the same impact as a 3% increase in rate of weight gain. Improvements in efficiency of beef production are vital and necessary to sustain the cattle industry. The purpose of this study was to determine how the growth and efficiency of Santa Gertrudis bulls has changed over 20 years.

Research on Santa Gertrudis bulls under intensive conditions

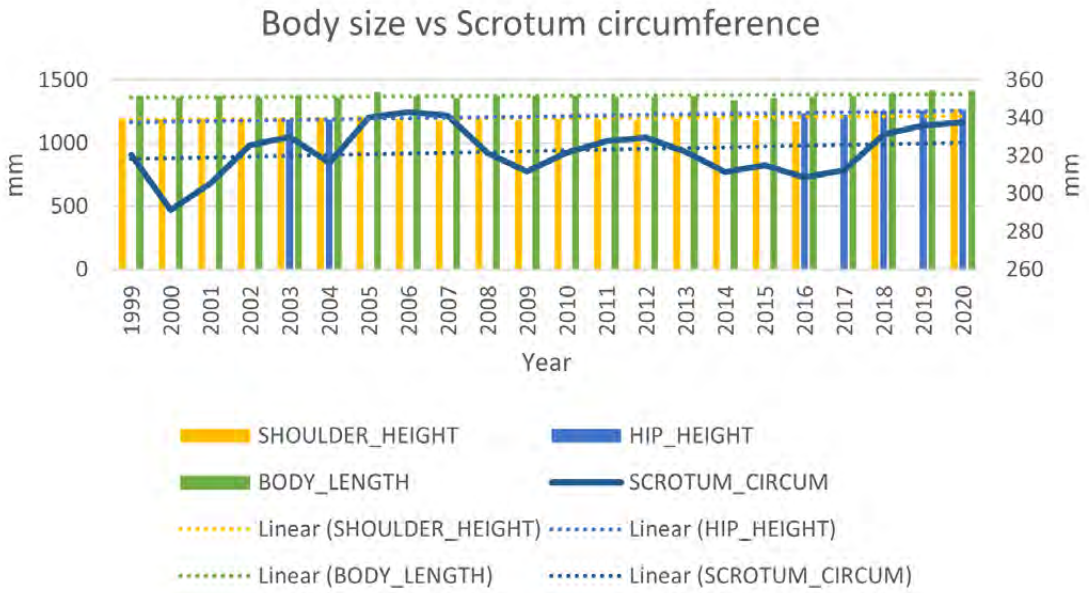
Bulls between the ages of 151 – 250 days are tested in a Phase C test. Performance data from four ARC centralized testing stations were analysed by the ARC in this study and Santa Gertrudis bulls tested during 1999 – 2020 were included. During the phase C test, the growth (ADG) and the efficiency (FCR) of bulls were measured. On the last day of the test, body measurements (body length, hip height, skin thickness and scrotum circumference are measured) were done. Breed inspectors also has to approve the bulls according to the breed requirements. Bulls are fed a standardized feed during the test period and receive feed ad libitum. Bulls were grouped according to the year within which their adaptation period of 28 days started. The reason why the bulls were grouped according to year was because most of them were not tested in groups. Data of 1 199 Santa Gertrudis bulls were analysed. The data was obtained from the INTERGIS. After the adaptation period of 28 days, bulls entered the intensive growth test stage for an 84-day period. At completion of the test, the results were compared to the 10-year rolling average for ADG and FCR per station and per breed. The 10-year rolling average, is the average of the performance of the bulls (within a breed) tested within the previous 10-year period. This is done to compensate for the environmental effect on performance. By comparing animals to the 10-year average, the effects of the environment are eliminated from the results. In addition, the management and feed ration are also standardized at all the central ARC testing centres.

In Graph 1, below the comparison between ADG and FCR is illustrated.



Graph 1: The relationship between ADG and FCR is illustrated. From the above graph, it must be mentioned that that ADG and FCR both changed over this period. ADG decreased marginally from 1.800kg / day to 1.720kg / day while FCR increased from 5.8 – 6.0kg. No significant differences were found for ADG and FCR (P>0.05).

In Graph 2, the comparison between scrotum circumference, shoulder / hip height and body length are illustrated

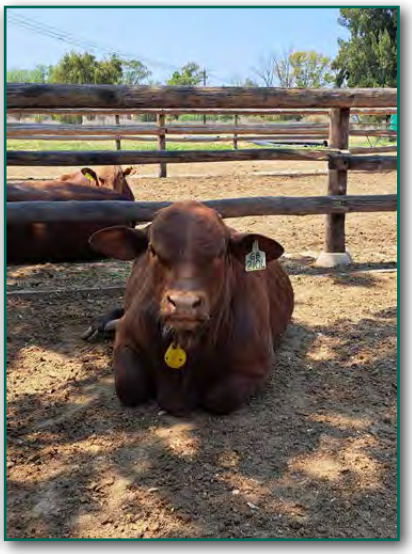


Graph 2: The relationship between scrotum circumference, shoulder / hip height and body length are illustrated. From this graph the body length, shoulder / hip height remained relatively unchanged. While the scrotum circumference increased in size (318mm – 324mm), it is 6mm increase in circumference. Scrotum circumference is highly positively correlated to fertility.

Summary

During 2014, the Santa Gertrudis Society moved away from measuring shoulder height to hip height.

The global trend is however to focus more on RFI (Residual Feed Intake) since it is phenotypically independent of growth and body weight. The trait is also moderately heritable (18-49%) which enable us to improve feed efficiency by selecting for efficient animals. RFI is the difference between actual and predicted feed intake. The latter is an animal's maintenance requirements in relation to its body weight and growth. It is suggested that it may be more desirable to select for a trait such as RFI, since, by selecting for high ADG and low FCR, will result in bigger animals with higher maintenance requirements. Producers should take note that the frame size of the bulls remained relatively unchanged during this period. As the average FCR increase by only 200 grams, it must be taken into account that there might be other factors that may also have had an influence, such as genetics, feeding practice, environmental control or health status. Although there was a slight decrease in the ADG in the period assessed, it must be managed, because the faster an animal gains weight, the quicker it is ready for market, which can decrease input costs. The scrotal circumference that increased is however a positive outcome. Scrotal circumference is correlated with sperm motility and morphology and a good indicator of daily sperm production, especially in young bulls.



These results were obtained over a 20-year period from different bull test centres and are clear indicators of phenotypic trends for the different traits that are of economic importance.

WHY Santa Gertrudis?

- Medium Frame
- Excellent adaptability
- Small calves with low birth weight and excellent post-weaning growth
- Excellent performance in feedlots, with above average ADG
- Above average dressing percentage
- Excellent for cross breeding

Santa Gertrudis

SANTA GERTRUDIS CATTLE BREEDERS' SOCIETY
OF SOUTH AFRICA
[t]: 051 444 2269

YOLANDA VENTER (BREED MANAGER)
082 853 8964
yolanda@santagertrudis.co.za
www.santagertrudis.co.za

THE FUTURE IS RED . . . SANTA RED

Economic evaluation of finishing Nguni steers on the veld and in the feedlot

Nkosinathi Bareki,
Mathuto Bareki & Khomotso Kgaswane
North West Department of Agriculture and Rural Development, Potchefstroom
nbareki@nwpg.gov.za

Introduction

The majority of the South African (SA) beef cattle farmers tend to use a single channel marketing strategy whereby weaned calves are destined for the feedlot. In contrast however, feedlot buyers often discriminate against Nguni and other Sanga type weaners at auctions because they are perceived to be poor performers in the feedlot. As a result, one of the biggest marketing constraints in farming with indigenous cattle today is the absence of market demand from feedlots for these usually small framed weaner calves. On the other hand, we have seen in recent times, a massive national drive to reintroduce indigenous cattle, particularly the Nguni back into the SA smallholder beef cattle farming sector. Such a drive is most probably ideal considering that, climate change is advancing increased environmental stress on livestock in the Southern Hemisphere. Luckily for SA, adaptation of our indigenous cattle to stressful environments is unparalleled. There is therefore a definite need to find and assess alternative low cost finishing systems for Sanga type cattle in order to produce the so-called "market required carcasses". In local studies that compare cattle finishing systems, we often neglect to focus on a system by profit function. It is therefore necessary to comprehensively evaluate the economics relating to the finishing of Sanga type cattle.

Nguni steers on the veld and in the feedlot – the setup: In an effort to test alternative low cost finishing systems for Sanga type cattle, the research unit of the North West Department of Agriculture and Rural Development undertook a study to evaluate the economics of finishing Nguni steers from dissimilar environments on a conventional feedlot and on veld with additional feeding. The study used a total of 50 Nguni steers aged approximately 12 months. The steers were sourced from several beneficiaries of the North West Nguni Cattle Development Project and the Highveld Nguni Club. The steers were randomly divided into two treatments of 25 animals each and stratified by body mass for finishing either on veld or in the feedlot for 140 days. Animals that were finished in the feedlot received a total mixed ration, while those that were finished on veld grazed freely with additional feeding, based on the feedlot ration (Table 1).

Table 1: Ration composition, feed intake, growth performance and dressing % of steers

Feedlot		On veld	
Beef fat 33+	14.6 %		16 %
Maize Meal	73.4 %		84 %
Silage	12 %	Roughage	Ad lib
Feed Intake	9.88a		7.44b
ADG	873.10a		724.83b
Dressing %	57.6 %		60.4 %
ADG –average daily gain; a, b differ row-wise - P < 0.05			

For economic evaluation, only costs directly allocable to each finishing system over the study period were considered and the final economic evaluation was determined using the Gross Profit Margin concept as follows:

$$\textit{Gross Profit Margin} = \frac{\textit{Revenue - COGS}}{\textit{Revenue}}$$

COGS = Cost of goods sold

So, exactly how did the two systems compare?

Regarding feed intake (Table 1), feedlot steers consumed 9.9 kg/animal/day with an average daily gain (ADG) of 873.10 g/d. This performance differed statistically to the 7.4 kg/animal/day (ADG - 724.83 g/d) for the steers that were finished on-veld. Even though the on-veld feed consumption did not account for grazing consumed, the opportunity cost of finishing the steers on veld as opposed to raising a cow and a

calf was however accounted for in the total variable cost. Given these reported intakes, the feedlot steers had a significantly better growth of 148 g/day more than the steers finished on veld. If we ignore the system by profit function, we could then say that according to the results, the feedlot finishing system performed better. On the contrary though, using a system by profit function approach we found that from the carcasses sold, the on veld system attained revenue of R216 743,40 vs R206 451,89 for the feedlot system. This means that a farmer that finishes their Nguni steers on the veld (and by extension, Sanga type steers) received an extra R10 291,51 in revenue. This result was influenced by higher dressing percentages (57.6 % vs 60.4 %) that were in favour of the on-veld system. For a clearer comparison, the net income per animal was R3 900,70 for the on-veld and R2 975,42 for the feedlot system.

What did all this cost?

The feedlot system incurred feeding costs which were higher than that of the on-veld system by R20 334,23 (R116 140,01 vs R95 805,78). Manual labour costs for silage and concentrate mixing at feeding troughs was also R2 397,27 more than that of the on-veld system (R2 615,20 vs R217,93). Similarly, the cost of machinery for feed mixing were slightly higher for the feedlot system (R6 814,24 vs R5 080,49) resulting in a cost difference of R1 733,75. Finally, after adding veterinary, transport and veld opportunity costs, the total variable costs were R119 225,80 for the on veld system and R135 275,72 for the feedlot system. The on-veld system was thus R16 049,92 cheaper than the feedlot system cost wise. This resulted in a gross profit margin of 45 % and 34 % for the on veld and the feedlot systems, respectively. This result implies that a farmer that finishes Nguni steers on the veld can retain about R0,45 from every rand value of revenue generated as opposed to that of R0,34 retainable by the feedlot system farmer. The difference was influenced largely by the dressing percentages, where the on-veld system attained R0,58/kg above the feedlot system. These outcomes suggest therefore that the on veld finishing system was more profitable, and economically efficient in attaining such profitability. It will not be an exaggeration to claim that such efficiency was also accomplished in a climate smart manner considering the breed used.

Conclusion/recommendations

Using the observed gross profit margin, these findings suggest that it will be more profitable to finish Nguni steers on the veld with additional feeding as opposed to a conventional feedlot. Such profitability would also be achieved more efficiently in a climate smart manner, even under resource constrained farming systems.

Dr Klaas-Jan Leeuw
ARC-Animal Production, Irene
Kleeuw@arc.agric.za

Fase C rantsoen 2022

Die voer wat by die LNR toets sentrums gebruik word, word volgens sekere riglyne saamgestel. Die riglyne is meer as 35 jaar terug opgestel en was hersien so 20 jaar terug. Huidiglik werk ons daaraan om ander nutriënte by te voeg (NDF en ADF, die ru-vesel vlak aanduiding is besig om in onbruik te raak). Ook wil ons nuwe by-produkte wat ontwikkel is in die laatste 20 jaar, insluit by die voer-bestandele lys (b.v. kanola olie koekmeel). Die riglyne is daargestel om variasie oor tyd in gemengde voere se samestelling tot die minimum te beperk. Die eerste riglyn is die nutriënt samestelling van gemengde voer, wat so konstant as moontlik gehou moet word, binne vasgestelde vlakke van elke nutriënt. Daar is so 27 nutriënte waarna gekyk word met elke nutriënt wat 'n minimum, maksimum of beide, insluit waarde het. 'n Aantal van hulle verskyn in tabel 1.

Tabel 1: Nuriënt vlakke in 'n fase C rantsoen

Nutriënt	Eenheid	Minimum	Maksimum
Energie	MJ /kg DM	11.0	-
Ru-proteïen	%	13.5	15.0
Proteïen vanaf NPN (% van RP)	%	-	20
Ru-vesel	%	12.5	-
Ruvoer	%	20.0	-
Kalsium (Ca)	%	0.6	1.0
Fosfor (P)	%	0.3	0.5
Ca : P		1.5 : 1	2.5 : 1

Die energie vlak van fase C rantsoen het geen maksimum, dit om rede die hoë ruvoer vlak nie die moontlike hoeveelheid energie oor 11.5 MJ/kg DM sal laat gaan nie. Ook die sal die minimum energie vlak daarvoor sorg dat hoeveelheid ruvoer nie ver oor die 20% sal gaan nie. Die sal daartoe lei dat nutrient samestelling oor tyd bestendig bly. Die bestendigheid van die nutriënt samestelling oor die dekades maak dat daar ook binne 'n ras vergelykings oor tyd van getoetste diere gemaak kan word. Ander nutriënte waar ons na kyk is van die vitamiene, makro en mikro minerale.

Die volgende riglyn waarna gekyk word is die toelaatbare voer-bestandele. Die lys is meer dinamies en daar kan voer bestandele aan toegevoeg word. 'n Voorbeeld hiervan is Canola olie koek, die omdat in die laatste 15 jaar daar meer Canola geproduseer en verwerk word in veral die WP.

Daar is die aanname onder 'n aantal mense dat die bulle soos voerkraal diere gevoer word, hoewel daar beslis 'n verskil is vir vergeleke met 'n tipiese voerkraal rantsoen. 'n Fase C rantsoen het 'n hoë vlak van ruvoer (20%, tabel 1) en laër energie waarde (11 MJ/kg DM). 'n Voerkraal rantsoen (groei en afrond rantsoen) kan tussen 7 en 10% ruvoer hê en 'n energie vlak van 11.9 tot 12.2 MJ/kg DM. Waar mielie kuilvoer gebruik word, kan die ruvoervlak hoër wees in voerkraal rantsoene.

Daar is ook 'n lys van nutriënt samestelling van die aanbevole voer bestandele. Die lys is egter verouderd en word nie meer gebruik nie. Dit word verwag van voer verskaffers dat hulle die nutriënt samestelling van gebruikte bestandele op datum hou om by die voorgeskrewe nutriënt samestelling vir 'n fase C rantsoen te kom. Deur gewas verbetering, hoër opbrengs per ha en verbeterde gebruik van bemesting, het nutriënt samestelling ook verander.

Phase C ration 2022

The feed used at ARC bull test centres, is formulated according to well-established guidelines. These guidelines were developed over 35 years ago and updated 20 years ago. Currently we are working on including other nutrients (NDF and ADF, as these are more in use than crude fibre) as well as adding other feedstuffs (i.e. Canola oil cake meal). These guidelines were implemented to limit variation in the mixed feed over time. The first guideline we look at is nutrient composition of the mixed feed; this one needs to stay as constant as possible within the established bounds of each nutrient. There are 27 nutrients that are taken into consideration when evaluating a proposed phase C ration and each has either minimum, maximum or both, inclusion level. A selection of these appear in **Table 1**.

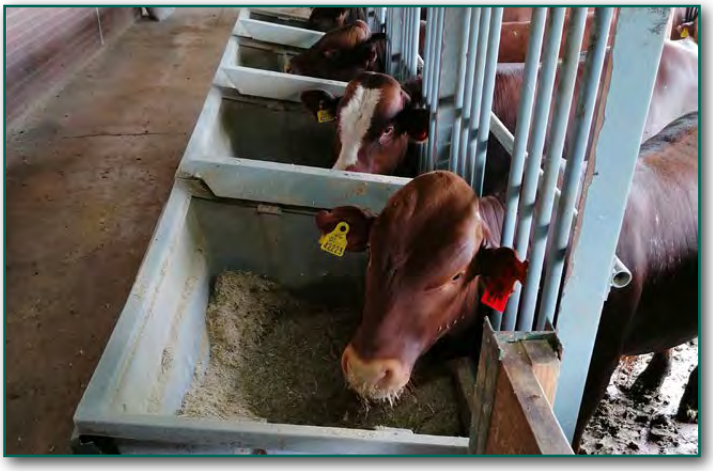
Table 1: A selection of nutrients and their levels in a Phase C ration

Nutrient	Unit	Minimum	Maximum
Energy	MJ /kg DM	11.0	-
Crude-protein	%	13.5	15.0
Protein from NPN (% of CP)	%	-	20
Crude fibre	%	12.5	-
Roughage	%	20.0	-
Calcium (Ca)	%	0.6	1.0
Phosphor (P)	%	0.3	0.5
Ca : P		1.5 : 1	2.5 : 1

The energy level of a Phase C ration does not have a maximum; the high level of roughage inclusion (Table 1) will limit the energy to a maximum of 11.5 MJ/kg DM). Also, the minimum energy level will insure that the roughage level will not to go much above the minimum of 20% roughage. Thus, these limitations will lead to stable nutrient composition of a phase C ration over time. The stability of the nutrient composition over the decades makes it possible to compare, within a breed, and over time the results of tested animals. Other nutrients that are evaluated are vitamins, macro and micro minerals.

The next guideline that is used for a phase C ration is a list of proposed feedstuffs and their minimum and maximum levels for inclusion. This list is more dynamic as feedstuffs can be added. An example of this is Canola oil cake, in the last 15 years more Canola is being planted and more oil cake is produced and made use of by animal feed manufactures.

There is a perception with some people that bull test centres feed bulls with a feedlot ration. However, the ration do differ from a feedlot ration. A phase C ration has a high level of roughage in the feed (20%, table 1) and a lower estimated energy value (11 MJ/kg DM). A feedlot ration (grower and finisher) may have between 7 and 10% of roughage and an estimated energy level of 11.9 to 12.2 MJ/kg DM. As a lot of feedlots use maize silage, their roughage level may be higher.



A table describing the nutrient composition of the recommended feedstuffs is also included in the guidelines. This list has aged and is not used. It is expected that suppliers of the Phase C rations to keep their nutrient composition of feeds used up to date and get to the recommended nutrient levels for the phase C Ration. Through crop improvements, higher yields per ha are obtained and through improved fertilizer applications, nutrient composition of crops have changed.

Why and what is the National Beef Recording and Improvement Scheme of the ARC (in a nutshell)

Johan Binedell
& Dr Ben Greyling
ARC-Animal Production, Cedara
BinedellJ@arc.agric.za

Introduction

Why so much emphasis on recording?

Improvement is almost impossible without recording, as reflected in the name of the Beef Scheme. So why do we put so much emphasis on recording and what value can a farmer, commercial or stud, gain from it? Fact of the matter is if you don't record, you don't know if your animal is performing well or bad. If your animal is performing badly and you don't know it, you are losing money! Thus, it's vital to record a minimum number of economically important traits of your animals, for instance how often do they calf (reproduction!), what were the birth weights and weaning weights of the calves etc. Performance testing is thus a powerful and proven selection- and management tool to enhance profitability of beef production. The main aim is to identify the best performing animals in order to make the right selection decisions to ensure a profitable and sustainable enterprise. Increased efficiency of production through genetic improvement means higher profit margins for your business and ultimately for the entire industry. This principle, making use of recording, to ensure genetic improvement, is used throughout the world today! • Buyers also tend to pay more for performance-tested animals and in this regard, performance testing serves as a value-added marketing instrument.

Who can benefit from the services provided by the scheme?

The scheme's services are available to all breeders and commercial producers of beef and dual purpose breeds. Performance testing is not only for stud farmers! Commercial farmers can increase their profitability by identifying, selecting and even buying animals that are superior performers. How do they know they are buying a superior performing animal? By making use of the auction catalogues, that outlines how well an animal performs for particular traits. Commercial farmers can also use performance figures to identify the best performing replacement heifers, which cows are the most printable. Of course, non-efficient animals can also be identified and sold or culled. The economic return from investment in performance recording and research (making use of the performance data) is summarized in a scientific publication that appeared in 2019. The researchers made use of performance recording data of the Scheme spanning from 1970 to 2014, obviously spanning millions of records! The rate of return from the investment was found to be 32%, which implies that South Africa received R32 for every rand invested towards the scheme. It was a sound motivation that the investment was worthwhile and it should motivate farmers and industry to continue investing in the Scheme.

Why the ARC's Beef Scheme?

The Scheme is run by the ARC who is also a member of and hold the Certificate of Quality of ICAR (International Committee for Animal Recording) and therefore, all data recording and processing conform to international standards. The fees charged by the Scheme are also subsidised by government and thus makes it highly affordable. The Scheme is furthermore supported by a large team of researchers and technicians who conduct ongoing research and development to ensure that the Scheme stay in line with international developments and the requirements and demands from our farmers and stakeholders.

Phases of the Scheme, what they measure and their benefits, in a nutshell

Reproduction Phase (Phase A1)

Two of the most important traits that influence the biological efficiency of a beef enterprise are reproduction rate and weight at wean of the calf. Reproduction rate is measured by inter calving period (ICP) and weaning weight by the standard 205 day weight. The reproduction and ease of calving traits of cows and bulls are evaluated in this Phase. The Phase also makes provision for the recording of mating and AI data, pregnancy diagnosis and body condition scoring.

Suckling Phase (Phase A2)

Maternal traits and efficiency of cows as well as growth tempo of calves during the pre-wean phase, are evaluated by recording cow weights and pre-wean and wean weights of the calves.

Post wean Phases:

On-farm measurements (Phase B)

Post wean growth tempo of young heifers, bullocks and oxen under normal on-the-farm environmental circumstances are evaluated by recording of weights at 12- en 18-months of age.

Central Performance Testing (Phase C)

Post wean growth tempo and feed efficiency of young bulls is evaluated by testing animals under standardized environmental conditions at central bull testing centres and by measuring individual feed intake of each animal.

On-Farm Performance Recording (Phase D growth test)

Post-weaning growth rate of young bulls is evaluated by means of performance recording under controlled conditions on the farm of a member or an organisation.

Additional Services rendered by the Scheme

- Ultrasound scanning (RTU) of live animals to assess specific carcasses traits
- On-farm consultations

Contact information

Johan Binedell: BinedellJ@arc.agric.za; 033 330-5668

Centralised growth test Schedules at ARC Test Centres for 2023

Melville Ferreira
ARC-Animal Production, Armoedsvlakte
ferrreiram@arc.agric.za

CEDARA BULL TESTING CENTER – TEST DATES 2023
CEDARA BULTOETSSENTRUM – TOETSDATUMS 2023

Test number Toets Nommer	Arrival Aankoms	Adaption Aanpassing	Test period Toets periode	Departure Vertrek	Born after Gebore na
1	28-12-22	04-01-23	01-02-23 / 26-04-23	03-05-23	29-04-22
2	25-01-23	01-02-23	01-03-23 / 24-05-23	31-05-23	27-05-22
3	22-02-23	01-03-23	29-03-23 / 21-06-23	28-06-23	24-06-22
4	29-03-23	05-04-23	03-05-23 / 26-07-23	02-08-23	29-07-22
5	26-04-23	03-05-23	31-05-23 / 23-08-23	30-08-23	26-08-22
6	24-05-23	31-05-23	28-06-23 / 20-09-23	27-09-23	23-09-22
7	28-06-23	05-07-23	02-08-23 / 25-10-23	01-11-23	28-10-22
8	26-07-23	02-08-23	30-08-23 / 22-11-23	29-11-23	25-11-22
9	23-08-23	30-08-23	27-09-23 / 20-12-23	27-12-23	23-12-22
10	27-09-23	04-10-23	01-11-23 / 24-01-24	31-01-24	27-01-23
11	25-10-23	01-11-23	29-11-23 / 21-02-24	28-02-24	24-02-23
12	22-11-23	29-11-23	23-12-23 / 20-03-24	27-03-24	24-03-23

For enquiries relating to the Cedara bull testing centre please contact

Johan Binedell: Tel: +27 (0)33 330 5668 I Cell: +27 (0)83 799 6600 I E-mail: binedellj@arc.agric.za

ELSENBURG BULL TESTING CENTRE - TEST DATES 2023
ELSENBURG BULTOETSSENTRUM - TOETSDATUMS 2023

Test number Toets Nommer	Arrival Aankoms	Adaption Aanpassing	Test period Toets periode	Departure Vertrek	Born after Gebore na
1	23-01-23	26-01-23	23-02-23 / 18-05-23	19-05-23	21-05-22
2	13-02-23	16-02-23	16-03-23 / 08-06-23	09-06-23	11-06-22
3	13-03-23	16-03-23	13-04-23 / 06-07-23	07-07-23	09-07-22
4	08-05-23	11-05-23	08-06-23 / 31-08-23	01-09-23	03-09-22
5	24-07-23	27-07-23	24-08-23 / 16-11-23	17-11-23	19-11-22
6	18-09-23	21-09-23	19-10-23 / 11-01-24	12-01-24	14-01-23
7	02-10-23	05-10-23	02-11-23 / 25-01-24	26-01-24	28-01-23
8	23-10-23	26-10-23	23-11-23 / 15-02-24	16-02-24	18-02-23
9	13-11-23	16-11-23	14-12-23 / 07-03-24	08-03-24	11-03-23

For enquiries relating to the Cedara bull testing centre please contact

Tinus Viljoen: Tel: +27 (0)21 809 3327 I Cell: +27 (0)72 470 8386 I E-mail: viljoent@arc.agric.za

Rodney Manyongwana: Tel: +27 (0)21 884 6002 I Cell: +27 (0)82 314 0508 I E-mail: ManyongwanaR@arc.agric.za

GLEN BULL TESTING CENTRE - TEST DATES 2023 GLEN BULTOETSSENTRUM - TOETSDATUMS 2023					
Test number Toets Nommer	Arrival Aankoms	Adaption Aanpassing	Test period Toets periode	Departure Vertrek	Born after Gebore na
1	08-09-22	15-09-22	13-10-22 / 05-01-23	12-01-23	08-01-22
2	06-10-22	13-10-22	10-11-22 / 02-02-23	09-02-23	05-02-22
3	03-11-22	10-11-22	08-12-23 / 02-03-23	09-03-23	05-03-22
4	01-12-22	08-12-22	05-01-23 / 30-03-23	06-04-23	02-04-22
5	29-12-22	05-01-23	02-02-23 / 27-04-23	04-05-23	30-04-22
6	26-01-23	02-02-23	02-03-23 / 25-05-23	01-06-23	28-05-22
7	23-02-23	02-03-23	30-03-23 / 22-06-23	29-06-23	25-06-22
8	23-03-23	30-03-23	27-04-23 / 20-07-23	27-07-23	23-07-22
9	20-04-23	27-04-23	25-05-23 / 17-08-23	24-08-23	20-08-22
10	18-05-23	25-05-23	22-06-23 / 14-09-23	21-09-23	17-09-22
11	15-06-23	22-06-23	20-07-23 / 10-10-23	19-10-23	15-10-22
12	13-07-23	20-07-23	17-08-23 / 09-11-23	16-11-23	12-11-22

For enquiries relating to the Glen bull testing centre please contact

Mohau Moshounyane: Tel: +27 (0)51 861 2144 I Cell: +27 (0)78 771 8646 I E-mail: MoshounyaneM@arc.agric.za

Tebogo Serapelwane: Tel: +27 (0)12 672 9499 I Cell: =27 (0)83 711 2224 I E-mail: Tebogo@arc.agric.za

Alternative you can contact

Tinus Viljoen: Tel: +27 (0)21 809 3327 I Cell: +27 (0)72 470 8386 I E-mail: viljoent@arc.agric.za

IRENE BULL TESTING CENTRE - TESTDATES 2023 IRENE BULTOETSSENTRUM - TOETSDATUMS 2023					
Test number Toets Nommer	Arrival Aankoms	Adaption Aanpassing	Test period Toets periode	Departure Vertrek	Born after Gebore na
13	16-11-22	17-11-22	15-12-22 / 09-03-23	16-03-23	13-03-22
1	02-01-23	03-01-23	31-01-23 / 25-04-23	02-05-23	29-04-22
2	25-01-23	26-01-23	23-02-23 / 18-05-23	25-05-23	22-05-22
3	20-02-23	21-02-23	21-03-23 / 13-06-23	20-06-23	17-06-22
4	22-03-23	23-03-23	20-04-23 / 13-07-23	20-07-23	17-07-22
5	24-04-23	25-04-23	23-05-23 / 15-08-23	22-08-23	19-08-22
6	31-05-23	01-06-23	29-06-23 / 21-09-23	28-09-23	25-09-22
7	03-07-23	04-07-23	01-08-23 / 24-10-23	31-10-23	28-10-22
8	26-07-23	27-07-23	24-08-23 / 16-11-23	23-11-23	20-11-22
9	28-08-23	29-08-23	26-09-23 / 19-12-23	02-01-24	23-12-22
10	04-10-23	05-10-23	02-11-23 / 25-01-24	01-02-24	29-01-23
11	23-10-23	24-10-23	21-11-23 / 13-02-24	20-02-24	17-02-23

For enquiries relating to the Irene bull testing centre please contact

Jurgen Hendriks: Tel: +27 (0)12 672 9260 I Cell: +27 (0)84 304 3904 I E-mail: hendriksj@arc.agric.za

VRYBURG BULL TESTING CENTRE - TEST DATES 2023 VRYBURG BULTOETSSENTRUM - TOETSDATUMS 2023					
Test number Toets Nommer	Arrival Aankoms	Adaption Aanpassing	Test period Toets periode	Departure Vertrek	Born after Gebore na
1	10-01-23	12-01-23	09-02-23 / 04-05-23	08-05-23	07-05-22
2	07-02-23	09-02-23	09-03-23 / 01-06-23	05-06-23	04-06-22
3	07-03-23	09-03-23	06-04-23 / 29-06-23	03-07-23	02-07-22
4	04-04-23	06-04-23	04-05-23 / 27-07-23	31-07-23	30-07-22
5	27-04-23	04-05-23	01-06-23 / 24-08-23	28-08-23	27-08-22
6	30-05-23	01-06-23	29-06-23 / 21-09-23	25-09-23	24-09-22
7	27-06-23	29-06-23	27-07-23 / 19-10-23	23-10-23	22-10-22
8	25-07-23	27-07-23	24-08-23 / 16-11-23	20-10-23	19-11-22
9	22-08-23	24-08-23	21-09-23 / 14-12-23	18-12-23	17-12-22
10	19-09-23	21-09-23	19-10-23 / 11-01-24	15-01-24	14-01-23
11	17-10-23	19-10-23	16-11-23 / 08-02-24	12-02-24	11-02-23
12	14-11-23	16-11-23	14-12-23 / 07-03-24	11-03-24	11-03-23

For enquiries relating to the Vryburg bull testing centre please contact

Tebogo Serapelwane: Tel: +27 (0)12 672 9499 I Cell: +27 (0)83 711 2224 I E-mail: tebogo@arc.agric.za

WINTER CASTLES BULL TESTING CENTRE - TEST DATES 2023 WINTER CASTLES BULTOETSSENTRUM - TOETSDATUMS 2023					
Test number Toets Nommer	Arrival Aankoms	Adaption Aanpassing	Test period Toets periode	Departure Vertrek	Born after Gebore na
1	16-01-23	18-01-23	15-02-23 / 10-05-23	11-05-23	13-05-22
2	13-02-23	15-02-23	15-03-23 / 07-06-23	08-06-23	10-06-22
3	13-03-23	15-03-23	12-04-23 / 05-07-23	06-07-23	08-07-22
4	10-04-23	12-04-23	10-05-23 / 02-08-23	03-08-23	05-08-22
5	15-05-23	17-05-23	14-06-23 / 06-09-23	07-09-23	09-09-22
6	19-06-23	21-06-23	19-07-23 / 11-10-23	12-10-23	14-10-22
7	10-07-23	12-07-23	09-08-23 / 01-11-23	02-11-23	04-11-22
8	14-08-23	16-08-23	13-09-23 / 06-12-23	07-12-23	09-12-22
9	18-09-23	20-09-23	18-10-23 / 10-01-24	11-01-24	13-01-23
10	16-10-23	18-10-23	15-11-23 / 07-02-24	08-02-24	10-02-23
11	13-11-23	15-11-23	13-12-23 / 05-03-24	06-03-24	10-03-23

For enquiries relating to the Winter Castles bull testing centre please contact

Brent McNamara: Cell: +27 (0)84 819 0291 I E-mail: Brent.Mcnamara@agriec.co.za

Tinus Viljoen: Tel: +27 (0)21 809 3327 I Cell: +27 (0)72 470 8386 I E-mail: viljoent@arc.agric.za

The site is located in Alexandria, Eastern Cape

PUTTER
VOERE

Manus Putter
057 733 2164
082 821 2590

Verskaffer van Fase-C rantsoen aan die LNR sedert 2004

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  - National Dairy Cattle Improvement Scheme
  - National Pig and Small Stock Improvement Schemes
  - Kaonafatso ya Dikgomo for smallholder farmers
- Quantitative and Qualitative **Analytical services for feed and food analysis**
- **Animal Forensic Services**
- **National Genetic Evaluation** of Livestock (e.g. BLUP Analysis)
- **Germplasm Conservation** of farm animal genetic resources
- Information dissemination through **training and capacity development**

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- Introductory and Advanced Meat Processing
- Pig Production
- Poultry Production
- Dairy Production and Processing
- Range/Veld and Pasture Management

Contact details:

Una-Lou Jordaan
Tel: +27 (0) 12 672 9111
Fax: +27 (0) 12 665 1563

Private Bag x2
Irene
0062

www.arc.agric.za

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