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STOCK FARM

Cattle • Sheep • Goats • Game • Ostriches

The magazine for livestock farmers

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Value chains and competitive advantage

ISSN 2221-7304

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Focused on scientifically founded content

Stockfarm is a magazine for the livestock industry with scientifically based content at the heart of its editorial policy. It speaks to the soul of who *Stockfarm* is, which has been the case since the first edition was published in 2011.

This means that many 'interesting', 'inspiring' and 'unbelievable' articles haven't been covered by us because they could not be scientifically verified. While this has sometimes made us unpopular, it has afforded us the ability of sleeping soundly, knowing that we are not sending anything into the world that we cannot verify.

Beware of old wives' tales!

Although the breeding industry is scientific, unscientific old wives' tales regularly make the rounds. We often receive calls about new breeds that are being developed, and new treatments based on the discovery of miracle cures or techniques which no one has thought of.

These stories always have a few common denominators. They are always controversial, and the parties involved are usually lone warriors fighting large corporations, or the unlikely genius who never had the opportunity to achieve greatness. When such a person has a vision that leads to a discovery, the discovery usually follows the above justification and rhetoric. The stories are always interesting, sensational and a major temptation to the media, because sensation sells.

It is a temptation we at Plaas Media have always resisted, because we realise that giving such an unbelievable story credibility, comes with great responsibility.

Why does this issue bother me? Because the saying that the shortcut would have been the highway if it was the better way, applies. Science is merely a way of thinking and acting. It is a discipline stating that a specific fact is not true if it has not consistently withstood the test of repetition.

Hence, scientists follow a certain protocol when they research facts and a certain practice is only accepted as true, if the same results are consistently achieved under controlled conditions. Whether the idea is cute, interesting or sensational is irrelevant to the process.

The role of science

Scientists are trained intensively over long periods and their research is time-consuming and expensive. Sometimes, science is the cold water on the fire when people taking shortcuts warm themselves, i.e. the spoilsport when something is not as simple as was initially suggested. As a result, science is often blamed as being a spoke in the wheel, when all it really did was eliminate coincidence and wishful thinking.

At *Stockfarm* we take our content and its accuracy seriously and we always ensure that what we write, is scientifically founded. We will continue to resist the temptation of publishing cheap sensation and fiction, and hope that farmers in South Africa will do the same. SF

Albert Loubser • 082 562 2188
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Theme of the month

In this issue, we look at the different value chains in the livestock industry. A value chain is a nice description of precisely how value is added to a product when it leaves the farm on its way to the consumer. The value of the product can multiply up to five times. Although *Stockfarm's* main focus remains primary production, we also offer perspective on how the primary product fits into and adds value to the value chain.

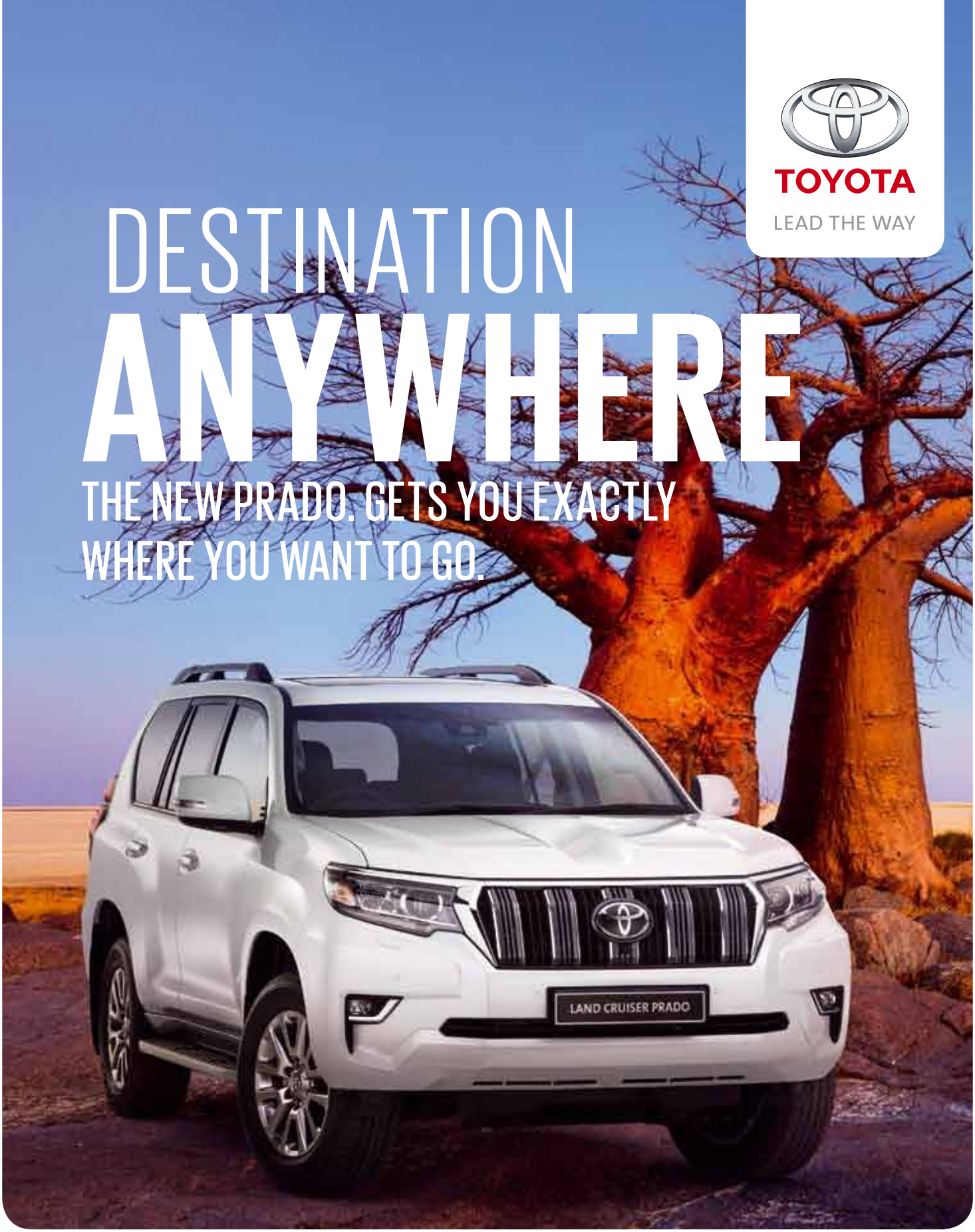
Stockfarm staff

We welcome another new face at Plaas Media. Michelle Verster joined us as our marketing assistant in April. She will no doubt become well-known among our readers and especially at Plaas Media events. We welcome her in our midst.

Events of the month

May equals Nampo, which means that all other agricultural events take somewhat of a back seat. No other industry event in South Africa deserves and receives so much international recognition. Nampo is not only a top-class showcase of what South African agriculture has to offer, but also an event that brings farmers together.

Another highlight is the Royal Show at the end of the month. This is one of the few shows globally still carrying the name 'Royal Agricultural Society', and is most certainly a feather in agriculture's cap.



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On the cover: More and more livestock farmers are considering the prospect of rounding off animals for the market themselves to put more profit in their pockets. Read more about this on page 23 of this edition.
(Photograph by Izak Hofmeyr)

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What's Up?

Japan biggest US beef export market

Japan has now become the leading export market for beef in the United Stated (US). According to the United States Department of Agriculture (USDA), Japan imported 307 559 metric tons of US beef, which resulted in a 19% increase year-on-year (y/y). Chilled US beef exports saw a growth in Japan, up 32% in volume and 37% in value on the 2016 figures, which accounted for more than half of chilled beef in Japan.

US exports of pork to Japan in terms of volume, overtook that of Hong Kong and China in January 2018, making Japan the second-largest market for US pork exporters after Mexico. – *Global Meat News*

Carnivores could help farmers

Carnivores are incredibly important to ecosystems as they may provide services such as biodiversity enhancement, disease regulation and improving carbon storage. But convincing people to conserve wildlife based on these indirect benefits can be challenging – particularly in the case of farmers, since carnivores pose a threat to livestock.

Recent research has shown that carnivores can help control rodents on farms. Farmers need to control rodents because they destroy 15% of the crops. Research was done to find out whether carnivores that eat rodents are found naturally on smallholder farms. Seven species of carnivores were found that feed on rodents and it is likely that they can contribute to controlling rodents that would otherwise damage crops. – *The Conversation*

Angus breeding programme planned in China

A town in northern China has teamed up with some big corporate names to build an Angus breeding programme from scratch, to a 100 000-strong herd within five years. Officials from Sunwu County signed finance deals with Haier, China's white-goods maker and Beijing based Xin-Mao Hua Import and Export Trading Co, a government linked entity that is licensed to import cattle and semen.

The initial deal is to set up a 30 000-cow herd in Sunwu, increasing to 100 000 by 2022. Angus beef has become a marketing phenomenon in Asia due to marketing and dining trends in Japan. – *Global Meat News*

Increased feedlot production necessary

The new committee of the SA Feedlot Association was announced during its annual general meeting. Henriette Breedt of Verbreed Voerkrale was elected as chairperson and Callie Calitz of Vencor as vice chairperson. Robin Watson, previous chairperson, will remain on the committee with Gert Blignaut of Beefmaster and Willie Wethmar of Chalmar Beef. Dave Ford remains the executive director.

Prof Ferdi Meyer of the Bureau for Food and Agricultural Policy (BFAP) discussed the outlook for the red meat industry. He said the real price for meat will start declining in the next ten years, and it is necessary to take note that productivity will need to increase to remain competitive in the market. Grain prices will also decline, and grain producers need to use technology to produce more with less input. – *Ursula Human, Stockfarm*

Blue mark for Class A goats' meat

The Department of Agriculture, Forestry and Fisheries (DAFF) has granted an application by the Red Meat Producers' Organisation (RPO) and the SA Goat Breeders' Association for Class A goats (kids) to be roller-marked with blue ink instead of orange ink as prescribed by the regulations.

The department decided to implement the request via dispensation, until it can be formally captured in the regulations. The changeover from orange to blue ink will be fully implemented no later than 1 May 2018. However, it may be withdrawn at any time, should a valid complaint be received.

All abattoirs slaughtering goats automatically indemnify the Directorate Food Safety and Quality Assurance and DAFF from any detrimental effect, financially or otherwise, which could emanate as a result of this permission. – *RPO newsletter*

Two in a row for Parmalat

Parmalat's ten-month Mature Gouda, made especially for Woolworths, was crowned the South African Dairy Product of the Year for the second year in a row at the Agri-Expo Qualité awards gala dinner on 23 March 2018 at Grand West. This achievement is a first for the SA Dairy Championships, celebrating its 185th year of existence.

The Gouda, an aromatic and full-flavoured cheese, was one of 945 dairy products from 83 producers that vied for the attention of the 84 judges ranging from food technologists to cheese retailers, and food bloggers to chefs. From the magnitude of entries, only eighteen were honoured with the Qualité mark of excellence and 105 were named SA Champion.

"For a product to be chosen as Dairy Product of the Year in a competition of this nature is a long and difficult journey and the dream of every dairy technologist," says chief judge and international dairy expert, Kobus Mulder. – *Press release*

World's first floating dairy farm

The construction of the world's first floating dairy farm is underway in Rotterdam in the Netherlands. This innovative farm will be home to 40 dairy cows when completed. The developers say the idea is that the farm will supply the city with fresh dairy products every day, 'in an animal-friendly and circular manner'.

The cows able to use a 'cow garden' at the top of the structure, with a soft floor which will have the feel of a natural living environment. There will be trees and bushes available to offer shade and the roof of the cow garden can be entirely opened. Urine produced by the cows will drain through the floor and into an air-tight storage facility. – *Dairy Global*

FMD spreads further in Zim

Stakeholders in the livestock sector met in early February to review an outbreak of foot-and-mouth disease (FMD) in Mashonaland East and West provinces. The area veterinary extension worker reported a suspected outbreak in Chegutu on 17 January and a full inspection was carried out. However, some cattle from the affected Chegutu herd had already been moved to sale pens in Harare and Macheke and, after further investigations, an outbreak of FMD was confirmed in Macheke.

An FMD committee has been established in the wake of the spread of the disease in the country and will meet weekly to monitor the situation on the ground and to strategise on the way forward. – *The Herald*

By WA Lombard, Department of Agricultural Economics, University of the Free State

Value chains and competitive advantage

All of us are part of a value chain in one way or another. We can be involved in a product or service as producers, consumers, processors, dealers or financiers. Value chains cannot be seen with the naked eye, but they are a rather simple and easy way of understanding the world of production, processing and trading.

Just like in the production of any product and the supplying of any service, there are also value chains in the agricultural sector. If producers understand these value chains correctly, they can benefit by creating advantages in the right manner.

Several activities

Just like other businesses, farming enterprises are a composition of activities that are taking place in a bid to develop, produce, supply and support a product. All these activities can be portrayed in a value chain as is illustrated in *Figure 1*. In this figure Porter (1985) illustrates a generic value chain.

It is important that a value chain for individual producers is depicted per industry they are producing in. Competitors in the same sector's value chain should be similar, but not necessarily identical. If we were to generalise, the competitive advantage of the various producers will become hidden while it is precisely these competitive advantages that enable one producer to perform better than his or her competitors.

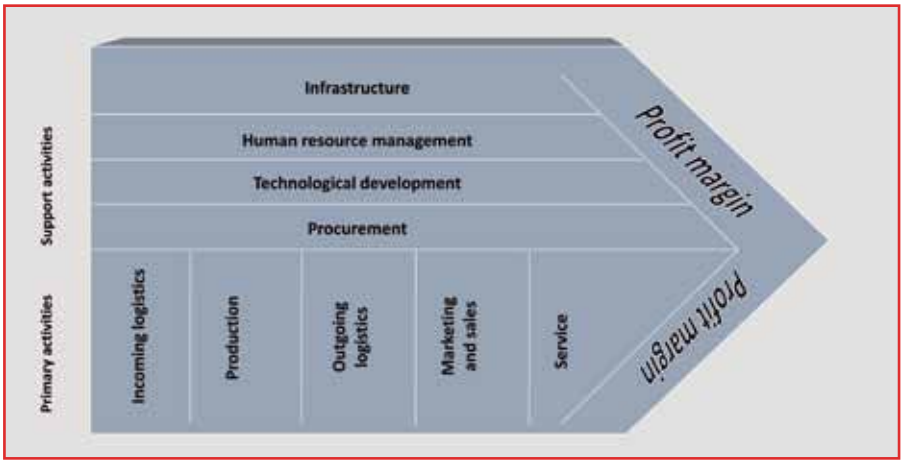
Primary activities

According to the generic value chain, primary business activities consist of five categories (Porter, 1985):

- **Incoming logistics:** All activities associated with receiving, storing and distributing inputs, e.g. how inputs are handled and stored, and when transport is scheduled.
- **Production:** The process during which inputs are converted into the final product and can refer to the composition, packaging or testing of a product.
- **Outgoing logistics:** The activities associated with the produced product. This relates to the storage and distribution of the final product.
- **Marketing and sales:** The activities associated with the manner in which the buyer is offered the opportunity and encouraged to buy the product.
- **Service:** The activities during which services that are provided, offer value to the client. This includes, among others, activities such as installation, repairs and training.

Each of these categories can in turn lead to a competitive advantage, depending on the industry in which producers are competing for market share. The model for agricultural activities will be specified later in the article.

Figure 1: Porter's generic value chain (1985).



Support activities

Apart from the primary activities, there are support activities which are divided into four categories:

- **Procurement:** This specifically entails the process of procurement and not the purchased inputs. An improvement in procurement practices can lead to lower input costs or better-quality inputs. Keep in mind that the cost of procurement usually forms a very small portion of the total costs, but it usually has a major influence on the general costs and differentiation of the business.
- **Technological development:** All activities involved in attempts to improve the product or production process.
- **Human resources management:** All activities that not only refer to the appointment and recruitment of staff, but also training, development and remuneration of the staff.
- **Infrastructure:** The infrastructure of a business consists of various activities such as general management,

planning, finance, accounting and quality control.

These categories are not necessarily involved in all businesses when setting up their value chains.

Agriculture-related value chains

If we were to adjust the generic value chain to be more agricultural-specific, it will look pretty much like the chain illustrated by *Figure 2* (Effredi *et al.*). In this model the core activities are divided into four categories:

- **Pre-production:** The selection of varieties, breeds, feed selection and procurement, as well as fertilisers, equipment and land.
- **Production:** All activities in the production process of the specific product, such as preparation of the soil, the growth process and harvesting.
- **Processing:** The activities associated with product development, processing and packaging.
- **Marketing:** The last step in the value chain, which has to do with how the business's product is marketed, distributed and sold. It is also associated with the product's brand if it is not only sold as commodity.

In the model, inputs can be allocated according to the core activities for which they are used, e.g. waste management of byproducts or waste not needed during the pre-production activities, but that are required for the other three core activities.

There are references to cost and income as experienced at the levels of the different core activities. Note how, for instance, processing of the produced product leads to earning bulk trading prices as opposed to farm gate prices. In the same way, marketing offers an improvement in the prices earned.

Coordination or expansion

Coordination of value chains can occur horizontally or vertically. In cases where horizontal expansion takes place, a producer can either move forward (closer to the consumer) or backwards (produce own inputs) in the value chain. It can for example mean that a feedlot will erect its own abattoir and even butchery.

If expansion is vertical, it will mean that a producer will start producing more of his existing product (by cultivating more land, etc.), or vertical coordination can mean that role-players at the same level of production pool their resources with a view to higher production. The coordinated group can purchase their inputs as a group or sell products that can later lead to better prices for all members.

In competitive terms, value is the amount buyers are prepared to pay for the product (or service) supplied to them. Value is determined by total income, which is a function of the business's prices per product unit and the number of units sold. A business is profitable if the price its product enforces in the market, is more than the cost of the production of the product.

Competitive advantage

According to this principle, the purpose of any generic strategy is to create consumer value that exceeds its cost. Sustainable competitive advantage is the basis of a business's long-term above-average performance in an industry.

A business can have two basic competitive advantages, namely low cost and differentiation. If these advantages are aligned with a business's activities, there are three possible generic strategies to effect above-average performance in an industry. These strategies are cost leadership, differentiation and focus.

The goal of cost leadership is simple. The business wants to become the lowest cost producer in the industry. Hence, the company creates value for its clients by producing products at the lowest cost. The strategy can probably make use of economies of scale and preferential access to raw materials or other production factors.

Differentiation as a competitive strategy means that a business creates value for the consumer through the uniqueness of its product of service. This uniqueness should be of great value to the client and if the strategy is successful, the business will be rewarded by earning a premium for the product.

The focus strategy does not compete at the level of the first two strategies, but selects a focus area or niche market of consumers according to whose needs the product is customised. Therefore, the focus strategy strives to achieve a competitive advantage in its target market, even though it does not have a competitive advantage across the entire industry.

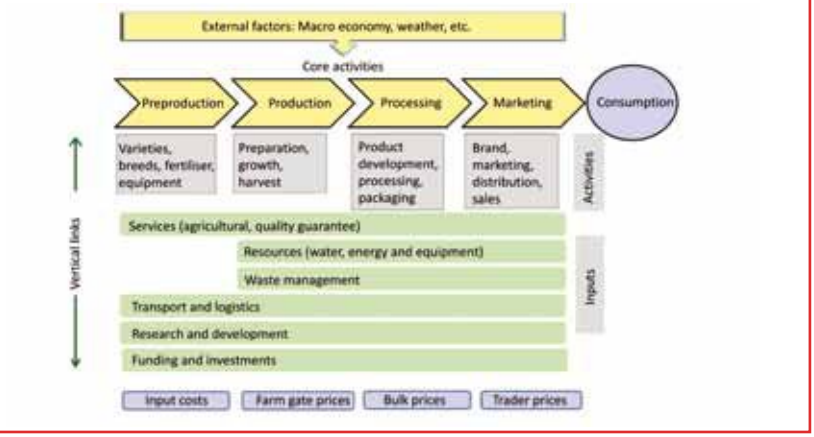
In conclusion

If producers get to know their value chain, it can give them a very good indication of where their strong and weak points lie. They can then decide which strategy they need to follow in order to gain a competitive advantage in their market. As farmer numbers in the country are decreasing, it seems as though most producers are pursuing the low-cost strategy by growing their farming enterprises and reducing their production costs per product unit produced.

There are fewer cases of producers increasing their value chain of the production of inputs up to the level where it is marketed and sold to consumers. This allows them to, instead of farm gate prices, earn dealer prices. One should also keep the disadvantages of such a vertically integrated value chain in mind. Such a value chain has to produce continuously, even if market prices are unfavourable, because all links must be kept alive. SF

For more information, send an email to wa.veeplaas@gmail.com.

Figure 2: Generic value chain for agriculture (Effredi *et al.*).



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By Koos du Pisanie

In the meat industry, the abattoir and producer are dependent on each other. This is why every abattoir should do its best to retain clients with good prices and good service.

Choose an abattoir that you can trust

Red meat producers are often troubled by topics such as abattoirs, meat prices and the marketing of meat. They say they do not get the prices they bargained on and the dressing percentage is often not what they expected.

Many of these issues have been raised in discussions with farmers and owners or managers of abattoirs. Some of these farmers are of the view that South Africa has too little slaughter capacity and too few animals to slaughter. Competition is especially fierce in the sheep industry and the abattoir needs to slaughter as many lambs as possible to keep head above water.

Owners and managers of abattoirs agree that it is not easy to keep an abattoir afloat. The profit margins are small, and the abattoir needs to slaughter at full capacity as often as possible to remain sustainable. To an abattoir there is virtually no difference between the cost of slaughtering a handful of sheep or a lorry load. This is why they must do everything in their power to slaughter as many animals as possible.

Are producers being exploited?

Some producers feel that they are being exploited by abattoirs and agents. However, it does not mean that all abattoirs or agents are dishonest. Many do their best to create a situation that benefits all. Some owners of smaller, private abattoirs go out of their way to negotiate the best prices for the farmer. Their documentation and payments are accurate and on time, and they create a special environment in which the farmer is part of the team.

One of the complaints often heard, is that some abattoirs do not provide a price in advance and no report after slaughtering. At these abattoirs, farmers are simply a number and not part of a team.

Petrus de Wet, an Eastern Cape farmer, says no proper measures are built into the meat value chain to protect breeders. He trusts abattoirs that are prepared to be honest with him. This is not always the case, though.

Referee and player

"The abattoir is the referee and a player on the field. The farmer has no assurance that the abattoir's scale is accurate, and there is no explanation as to why the animals lost so

Producers are entitled to visit the abattoir regularly to see whether the process is running smoothly.

much weight between the farm and the abattoir.

"Abattoirs should be prepared to show the farmer how many kilograms of the carcass was eventually sold onto the market. It doesn't matter how much was paid for the carcass, I only want to know how many kilograms of my meat were sold. Everything is on the computer. Each animal is given a number and the carcass retains that number until it is sold to the retail market. Yet very few abattoirs are willing to disclose these figures."

Around three years ago during a congress of the Red Meat Producers' Organisation (RPO), Eastern Cape red meat producers decided that the organisation should investigate the issue. Dr Pieter Prinsloo, then chairman, says the issue was investigated, but was found to have no merit. South Africa has a free-market system and his only advice to farmers is to become involved in the slaughtering process of their animals.

There are many variables in the slaughtering process that farmers can do nothing about. The transport of animals over long distances, the time the carcass needs to hang in the cold-room and the time of day when the animals are slaughtered, must all be considered. The breeder/producer should become involved in the abattoir. If he is not satisfied with the abattoir, he is free to take the animals to another abattoir to be slaughtered.

Check the price list

Petrus says he trusts abattoirs that pay you on time. "Having to wait for your money, should be a red flag. I prefer doing business with abattoirs that have stood the test of time. Farmers have a good idea of the current meat price and if someone offers you a 'very good' price, you must know there is something amiss."

Coetzee Reitz, manager of the Williston abattoir and himself a Dorper farmer, says producers should familiarise themselves with the abattoir's price list. "There are many catches, such as weight classes and prices for wool lambs and niche lambs. Some abattoirs weigh the carcass with the tail attached while others don't, or some weigh them with or without the kidneys.

"The highest price per kilogram for A2 and C2 is the prices that are compared, but the highest A2 price does not necessarily ensure the most money in your pocket. Abattoirs also advertise their prices per grade per kilogram cold weight. Cold weight means the lamb is slaughtered, the carcass is weighed within five minutes of the slaughter, and 3% is then deducted from the weight. So, has the animal been weighed again within five minutes and has the 3% been deducted?"

The abattoir test

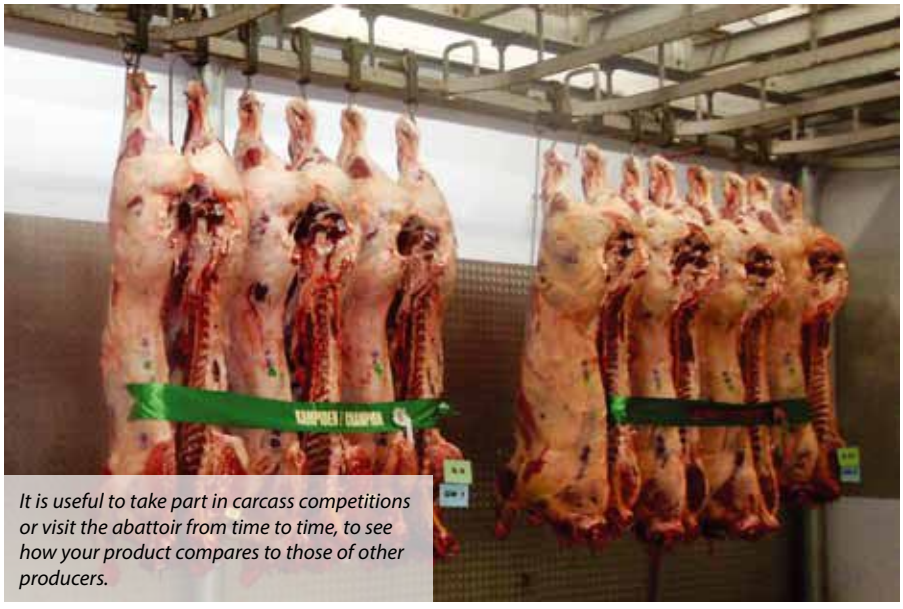
He recommends that producers test abattoirs from time to time to determine which one offers the best price. "Divide the lambs you regard as market-ready as evenly as possible into two or three groups. Weigh each lamb with a reliable scale and record each one's weight.

"Send each group to a different abattoir, but make sure the abattoirs are unaware that you are doing this test. Take the amount paid by each abattoir and divide it by the total live weight measured on the farm, to determine the average price of the group. The one with the best average price is the abattoir that paid the best price. No excuses, such as the distance covered or waiting periods, must be allowed. This test can be done from time to time to check if everything has remained the same."

Producers can also insist on the single weight of a group of lambs and to see the weight of the lambs when they were offloaded.

Coetzee says he will never allow his lambs to be loaded by an agent who is unwilling to provide the abattoir's original final statement. "It is important that producers regularly attend the slaughtering at their abattoirs. If the process runs smoothly, it will offer peace of mind. By being involved, the producer will be able to see what kind of product earns the highest price from consumers and compare his/her products to those of other producers."

Dr Prinsloo says farmers should become involved and if they feel they were treated unfairly, they can declare a dispute or enlist the help of a South African Meat Industry Company (Samic) agent. SF



It is useful to take part in carcass competitions or visit the abattoir from time to time, to see how your product compares to those of other producers.

For more information, phone Petrus de Wet on 082 575 3231, Coetzee Reitz on 082 334 3703, or Dr Pieter Prinsloo on 072 430 9474.

By Izak Hofmeyr

Early pregnancy tests lead to success

If you ask national cattle farmer of the year for 2017, Bertus Burgers, what he does differently from other cattle farmers, he summarises his strategy in one word: early.

"What I do differently from most other cattle farmers is that I conduct pregnancy tests very early. These tests are done on 31 January, and if a cow is not palpably pregnant, she is removed from the herd. This strategy has a wide range of implications, from marketing to better weaning weights."

Bertus farms in the Groenvlei area near Wakkerstroom, known for its exceptional but very short summers. The long winters, though, are a challenge, especially since the area is not known for grain production and there are relatively few fields. This has resulted in farmers selecting cattle that can survive on the veld.

Cattle receive hay and supplements in the form of licks when they calve, until sufficient summer grazing is available. The summer grazing will then compensate twice over for the condition the animals lose in winter.

Bertus says the secret of the area is to allow the cows to calve as early as possible and to assist them with supplements so that they are ready for mating when the short summer arrives. "To achieve this, your management needs to be fairly good. You should do everything at exactly the right time, because if you don't, the season will catch up with you."

Beautiful calves with cows that have proven themselves in Bertus's system. (Photograph by André Pretorius Fotografie)

Looking at things differently

Bertus, who farms with Bovelders, has been a member of the Bovelder Cattle Study Group since 2008. He sold his entire Merino herd during the drought of 2015. Afterwards, he decided to look at his farming enterprise in two ways: On the one hand, he wanted to be part of an industry that builds assets, while on the other hand he wanted to generate cash flow.

"I decided to develop my cattle herd into an asset building industry by gradually improving my cow herd and making it more efficient. The sheep section, on the other hand, would in future be handled as a cash flow generator. Instead of building a ewe herd again, I would rather buy store lambs, grow them out on the veld and round them off in the feedlot."

Performance testing

On Bertus's cattle farm, performance testing centres around early pregnancy.

"Our early pregnancy tests mean that, although we record calving dates, I don't have to calculate an inter-calving period (ICP), since I know the ICP of the pregnant cows is below 400 days. Our heifers calve in July and August and the cows in August and September. No calves are born after 10 October."

The advantage of performing the pregnancy tests on 31 January, is that the condition of the veld is greatly improved by our prompt removal of the non-pregnant cows.

"By mid-January, our veld starts to deteriorate. By removing 5 to 10% of the cows from each herd in the first week of February, the weaning weight of your calves will be higher as you will bring noticeable relief to the grazing pressure. My average weaning weight last year, for example, was 263kg."

A new consignment of lambs arrive on the farm.

Since cows are examined early for pregnancy, Bertus has found an 88% conception rate to be quite satisfactory. He then reduces it by another percentage or three by removing those cows whose calves do not grow as desired, a clear indication that cows do not have enough milk. Hence, on 1 February, only approximately 85% of his cow herd is left. The others leave the farm.

"I usually keep 400 heifers from approximately 1 000 calves every year, but after each selection, which extends over the next two years, only approximately 27% of them remain in the herd as replacement heifers. The first selection, done by someone from the Bovelder Cattle Study Group, is during weaning. The heifers are kept through winter and are classed again after the next summer. All animals with poor growth performance or other visual defects are removed and sent to the feedlot.

Bertus Burgers.

> You should do everything at exactly the right time, because if you don't, the season will catch up with you.

"All remaining heifers are mated. We only retain those that conceive early; the rest are slaughtered. At that stage they fetch a fat AB-grading and yield excellent slaughter prices. The remaining heifers are left to calve. On 31 January these first-calvers must be pregnant again – with calves in excellent condition next to them. It is asking a lot, and we usually lose 12 to 13% of the cows. By the end of the season only 27% of the heifers remain in the herd."

In his system, Bertus markets groups of cattle in February (the not palpably pregnant cows), in April at weaning, at the end of May at his production sale, and in the first week of October, when he rounds off and sells the cows that are not suitable for the breeding stock auction.

"October is a difficult time, because summer licks must be purchased and winter licks still have to be paid, while there is no income. To increase cash flow, the sale of these fat cows, between 100 and 200 of them, generates a handy income. The aim is to secure a reasonable income from the cattle every three months."

Apart from his weaner calves, the rest of the animals are marketed when prices are traditionally high. To achieve the same with the weaner calves, he is considering a different route by first rounding off the weaner calves until prices are very high, or to feed them on the farm, depending on grain prices.

"It is true that I market weaner calves when prices are low, but my calves generate a good premium. Because I have heavy calves, I get just as much for them as a farmer who weans a light calf and rounds it off until prices are high."

Cash flow is important

"I have come to realise that cash flow is the number one priority in farming and that selling breeding stock is not necessarily the best way of keeping one's cash flow going. Nowadays, I buy store lambs and keep them in the hills (where I used to farm with sheep). Here they gain weight until they reach approximately 42kg before I bring them in and round them off. It means the sheep has already gained most of their weight in a very cheap manner and the feeding period to get them market ready, is short. My average dressing weight on these lambs is 24kg."

Another advantage of growing out animals on the veld, he explains, is wool growth – wool will grow 50mm in length during this period. In this way, a premium price can be generated before sheep are sent to the feedlot to be rounded off. "Adding to that, I start with a 100% weaning percentage." SF

For more information, phone Bertus Burgers on 082 550 0429.

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Through our hands

By Izak Hofmeyr

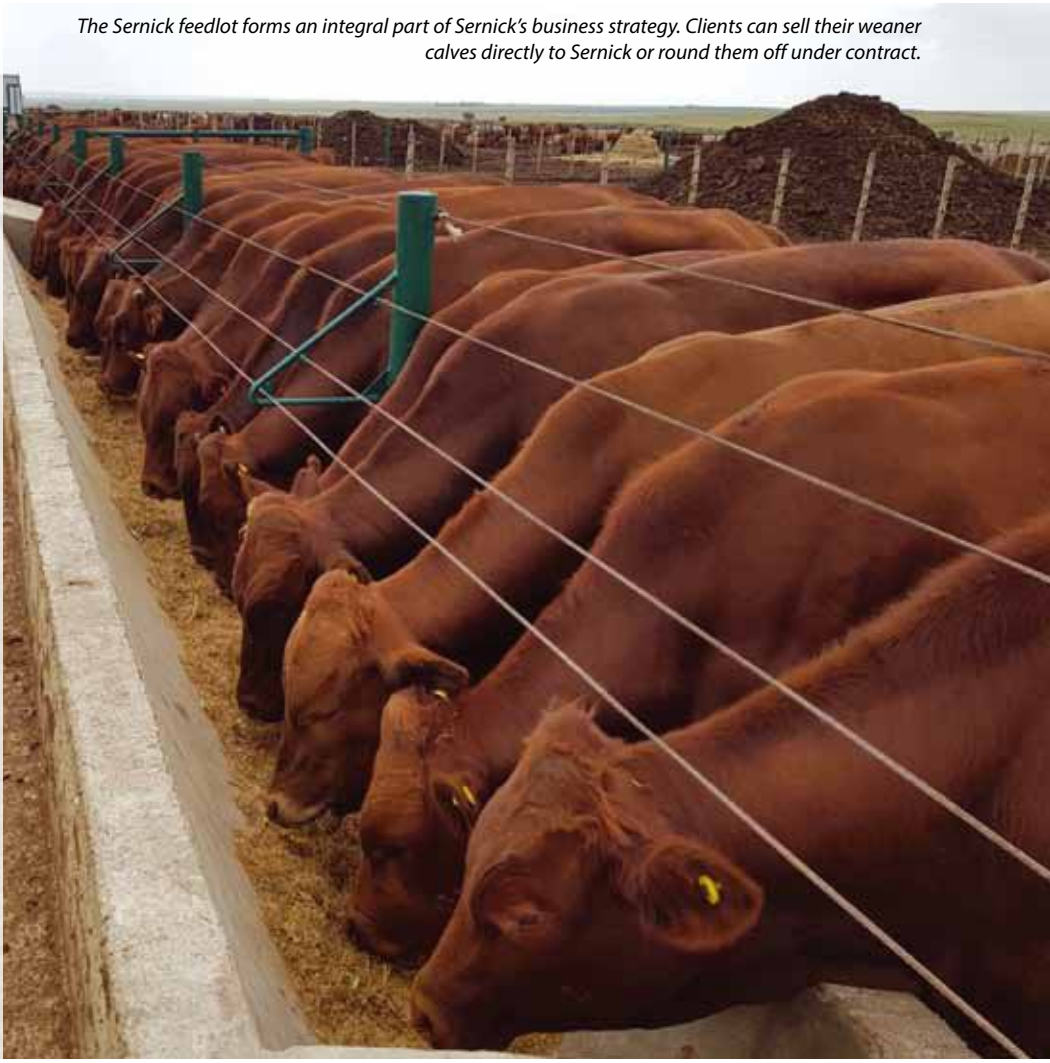
Sernick research and innovation: The future is now

When you think of excellence in a farming enterprise, initial progress is clearly visible. But the higher the level of excellence, the more difficult it becomes to improve even further.

It is in this context that the Sernick Group established a research and innovation department with Phillip Oosthuizen at the head.

According to Phillip, the focus of their research is not only on the feedlot, but on the entire value chain. It ranges from genetics all the way to the steak served on the consumer's plate, and includes production, processing and marketing. These aspects are just as crucial for their export meat as it is for the steak prepared in one of their three restaurants.

"My job is therefore not to take anything we are doing for granted, but to actively search for ways to improve. Each link of the value chain is simultaneously affected by several components, which means we should constantly be aware of its effects elsewhere in the chain. This is precisely the purpose of one of our current projects – to see how different growth stimulants affect the consumer's dining experience."



The Sernick feedlot forms an integral part of Sernick's business strategy. Clients can sell their weaner calves directly to Sernick or round them off under contract.

Cooperation between sections

Sernick's research and innovation department operates parallel with three other departments, namely the feed factory and feedlot, the abattoir and deboning plant in Kroonstad, and the retail section that includes two butcheries in Kroonstad, as well as three butcheries and three restaurants in Johannesburg. The butcheries are called Country Meat and the restaurants are called The Braai Room.

"Our challenge in the research and innovation department is to dedicate our research to each of these departments. The feedlot team includes Dr Piet Swiegers, technical advisor and control, and Dawid Smit, manager of the research unit. The feedlot research unit consists of 14 separate kraals with 50 animals each, which means that we can feed a total of 700 cattle.

"We do not have a full-time team in the abattoir; we use the support of the existing staff. In the retail section we work closely with the management team to determine and implement strategies," says Phillip.

Meat quality is crucial

Phillip explains that with the establishment of the research and innovation department, the merit of a multitude projects became clear, but that meat quality in particular stood out as extremely important.

"After thorough research on everything

that could potentially affect meat quality, we concentrated on stress factors in animals prior to slaughter. Based on the principles of Prof Temple Grandin, well-known professor in animal science at the State University of Colorado in the United States, we completely altered the collection kraals and shooting box at the abattoir, so they do not contribute to the animals' stress."

Next in line was electrical stimulation directly after the animal has been killed, as this has a major impact on meat tenderness. The existing system was replaced by an electronic system, which guarantees accurate application.

The pH of meat

Another important project that was launched is the processing of data related to the pH of meat, collected over the years in the abattoir. Dr Phillip Strydom of the Agricultural Research Council has been assisting Sernick in this regard. Accordingly, procedures have been adapted to ensure optimal meat tenderness.

"We are developing a unique Sernick meat grading system that will allow us to define and predict meat quality. The current national meat classification system was originally developed when all abattoirs were under state control and uniform standards applied.

"Since then, the free market has taken over and technology such as beta agonists in livestock feed has become common. Meat quality can therefore no longer be linked to only the age of an animal. In addition, packaging and maturation have also taken giant leaps forward, which further complicates the issue. Furthermore, meat is currently simply seen as a commodity."

A high-value product

"We want to get out of the commodity market and position meat as a high-value product. The only way to achieve this is to provide proof of the quality of your product. For this, our unique grading system will be linked to the existing classification system.

"The criteria we are using is the pH of the warm and cold carcass, meat colour and maturation. If you have a certain pH, meat colour as well as maturation, the predictability of the quality of meat is relatively high. By linking this information to the existing classification system, any assumption made will be replaced with a statement about the quality of the carcass," Phillip says.

The Sernick research team at the new research facility. At the back, from the left, are Carel Serfontein, Christo Faasen, Dr Piet Swiegers, Phillip Oosthuizen, Nick Serfontein, David Niemann and Dawid Smit. In front are Stevie Coetzee and Ruan du Bruyn.

Phillip points out that there is a series of actions and processes that can be done in the feedlot which will affect meat quality. The current research project in the feedlot relates to the influence of the use of growth stimulants on the quality of meat.

> Each link of the value chain is simultaneously affected by several components, which means we should constantly be aware of the effects elsewhere in the chain.

"It is common knowledge that growth stimulants have a negative effect on meat tenderness, but it is also true that they have a considerable impact on the feedlot's profitability. If we accept that the feedlot industry cannot function profitably without this technology, then we need to investigate ways in which the technology can be used, but with the smallest possible effect on meat quality."

Phillip says the research project is a good example of the kind of research his department wants to be involved in – the outcome of research by one department should find application and offer benefits throughout the value chain. The aim is to continuously put a product of high quality on the dinner table.

Sernick Livestock Feeds

"Because the different departments in the Sernick Group are so closely interwoven, innovation in one section can open a marketing gap in another. For example, Sernick Livestock Feeds produce several products for cattle, sheep, dairy, chickens, pigs and game. It includes licks, concentrates and total mixed rations. Feed and concentrate formulation can be done for clients based on their available resources and conditions.

"However, a strong focus is placed on the cattle and sheep feedlots, as it is Sernick's speciality area. The marketing strategy is to not only supply livestock feed to clients, but to also share knowledge and research for successful production.

"Since the Sernick Group is involved in all links of the red meat value chain, clients are offered a one-stop service.

"Producers have the opportunity to feed their own calves under contract or to sell them to the Sernick feedlot. Market-ready calves can also be supplied directly to the Sernick/Country Meat abattoir. The marketing innovation is to provide a producer with all options to obtain maximum profit," he says. SF

For more information, contact Phillip Oosthuizen on 076 901 8763 or email phil.oosthuizen@gmail.com.

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Dryveld 46 (V20820) (Act 36 of 1947)

By Jackie Tucker

Reduce bottlenecks to reach your goals

One of the most limiting resources on a farm is the time and attention of the manager/owner. Therefore, when it comes to problem-solving and decision-making, it is necessary to identify and focus on those important limiting factors that prevent a farming enterprise from achieving its goals. In this process we use the team's skills to make positive changes that will improve the efficiency and profitability of the business.

If the farm is not achieving its set goals, there may be a problem that is limiting the process of goal achievement. However, these problems can form a long list: products, processes, physical items, staff, consumer perception or financial constraints.

Prof John Fetrow, a professor of dairy production medicine at the University of Minnesota, visits South Africa regularly to share his views and recommends that we focus on the problems causing bottlenecks.

All eyes on the bottleneck

By using the water pipe analogy (*Figure 1*), we can see that there are four problems, but only one is really limiting the rate of flow through the pipe. This becomes the bottleneck. If any of the smaller dents in the pipe are 'fixed', the flow of water through the pipe won't necessarily increase, which means that, for now, these can be ignored. All attention should be on the bottleneck.

If we reduce the bottleneck dent by half and only fix it up to a certain point, we will still increase the rate of flow and have a positive impact on reaching the goal.

Therefore, the goal is not always to solve the problem completely, but simply to improve it to the point where it is no longer the bottleneck impeding the goal.

Bottlenecks in animal production

Some examples of bottlenecks in animal production could be access to water, dry matter intake, heat abatement, stockmanship, stocking density, and compliance with standard labour procedures. As mentioned earlier, the time and attention of the farmer is the most limiting resource. Therefore, if we focus on opening bottlenecks, we will see actual practical results in overall performance and progress will be made in reaching the farm's goal.

Identify the goals

To manage the farm using the process of opening bottlenecks, it is very important to identify what the specific and measurable goals are. Some examples may be:

- Increased revenue.
- Improved animal health/survival.
- Cost control (feed use and price, labour and energy utilisation/ alternative sources).
- Regulatory compliance (animal welfare and consumer pressure).

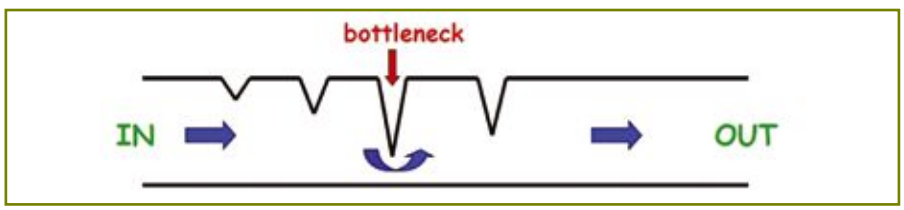
Since limiting factors differ on every farm, a thorough investigation and understanding are needed to identify them. There is no shortage of bottlenecks on farms, but the base from where we manage them is constantly improving.

Prof Fetrow has some valuable and practical pointers that may help to identify bottlenecks:

- Quality and quantity of training for staff.
- Stockmanship.
- Simplicity and consistency.
- Cow comfort.
- Consistent rumen-safe diets – focus on forage quality, effective fibre and minimal sorting of rations.
- Water access and quality.

If we can work together as a team on the farm and understand what the goal of the business is, the right marginal decisions can be made to ensure success.

Figure 1: Bottleneck – the rate-limiting dent in the pipe that controls the flow.



Jackie Tucker (*Pr.Sci.Nat. 400144/14*) is ruminant team lead at Chemunique and has twelve years' experience working in the field of trace mineral nutrition, as well as eight years in cattle lameness. Her focus is on technical support to customers and producers on optimised trace mineral supplementation, together with the provision of solution-based strategies that add value to the agricultural industry.

For more information, contact Jackie Tucker on 011 789 2414 or 082 571 2165, or email jackie@chemunique.co.za.

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Trough management is crucial when rounding off animals in a feedlot.

By Izak Hofmeyr

Rounding off in the feedlot

In light of the current low maize price, more and more livestock farmers are considering the prospect of rounding off animals for the market themselves. There is merit in the point of view that you should keep control over your product for as long as possible. The more 'middlemen' you can eliminate, the more profit you can put in your own pocket.

Lenél Oosthuizen, former manager of a large feedlot group in Harrismith, says the argument may have merit, but rounding off livestock is a specialised field that should not be tackled without thorough preparation and research. The profit margins are simply too small to allow for mistakes.

Lenél highlights several aspects that can determine the success of a feedlot.

Most important aspects

"Feed, water and shelter are probably the most important aspects to take into account," he says. "With regard to feed troughs, the ideal measurements for a cattle feedlot allow 150mm feeding space per animal. It is important that the troughs drain thoroughly to prevent urea poisoning from the remaining water.

"The troughs need to be at least 150mm above the level that the cattle are standing on, with a floor on which the cattle can stand. It should be designed in such a way that the cattle cannot defecate in the trough or be pushed into it. The floor should be cleaned regularly, and the feed troughs should be eaten clean at least once a day."

Regular cleaning necessary

The kraal must be of sturdy construction and no barbed wire may be used. In the case of cattle, between 7 and 10m^2 of space per animal is optimal. An important aspect to bear in mind is a slope of 15 degrees to enable water to run off. No water may remain in the kraal.

"Kraals must be cleaned regularly to prevent the accumulation of manure. A thick layer of manure increases energy consumption, which in turn affects growth. A 10cm thick layer of mud can cause a loss of 15% in growth."

Water troughs must be washed at least twice a week. There must be a floor in front of each water trough on which the animals can stand when they drink. High-pressure water supply is important, and pipes should not leak and cause wet spots as these spots become a breeding ground for flies, liver fluke and other pests and diseases.

"A handy tip is to throw a handful of salt into the empty trough after it has been washed, and to leave it there for approximately five minutes before it is filled with water. The salt kills parasite eggs and does not affect the taste of the water."

Cattle drink 40 to 60 litres of water per day, which means that 6 000 litres of water are needed for 100 animals. Always ensure that there is enough water available for at least three days.

Trough management and rations

Lenél says a feedlot is a place where animals are fed, which clearly implies that feed is an essential element – both the feed composition and its presentation. "The correct ration and trough management can have a major effect on the profitability of a feedlot.

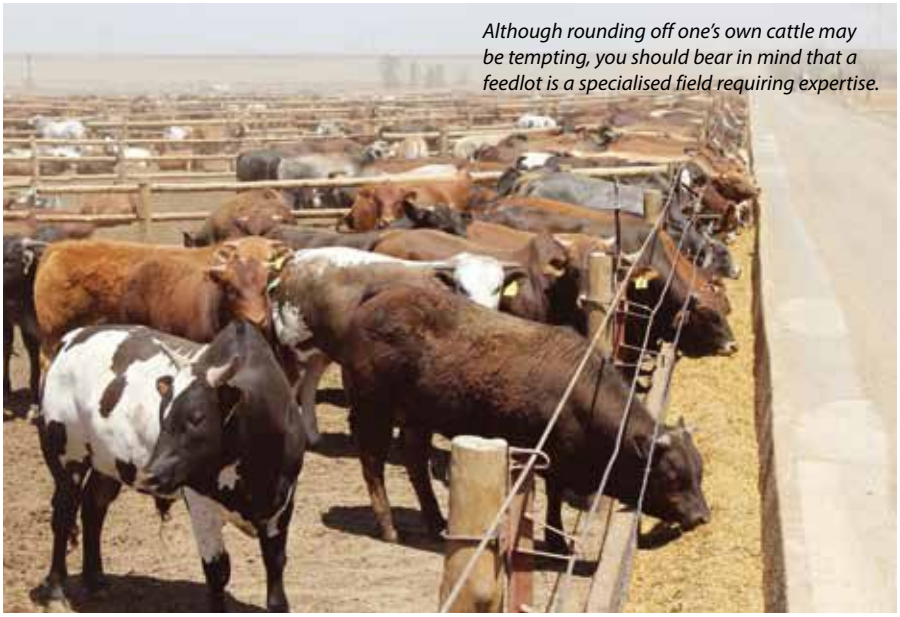
Silage can significantly reduce the cost of feed in a feedlot.

"Rations must be of high quality and must meet the nutritional needs of the animals. The balance between fibre and energy should be right, and the feed must be properly mixed and tasty. Rations must be fed in three phases, namely an adaptation phase (nil to 14 days), a growth phase (15 to 90 days) and a rounding off phase (last 30 days)."

Adaptation ration: In the adaptation phase, the energy levels should be lower and the fibre levels higher to prevent damage to the rumen wall. Damage to the rumen wall in this phase has a major influence on the growth of the calf later in the kraal, as the absorption surface of the rumen becomes smaller. Keep in mind that the rumen content is broken down by micro-organisms. Additional roughage in the form of a bale must be provided during the adaptation phase and feed supplements can have a major effect.

Growth ration: In the growth phase, the energy levels are adjusted upward and fibre levels downward. The microbes in the stomach have gotten used to high starch and energy, and additional roughage is not necessary anymore.

Rounding off ration: In the rounding off phase, the energy value increases and the fibre levels decrease. During this phase a beta-agonist (Zilmax) is recommended at the right inclusion level. It must be fed to selected animals for only 30 days. The cattle return to the growth ration for the last five days before being slaughtered. The ration must have enough moisture (so that it is not blown away), be as cheap as possible, be consistent every day and must be regularly tested.



Although rounding off one's own cattle may be tempting, you should bear in mind that a feedlot is a specialised field requiring expertise.

Take feed samples

A feed sample is taken when the feed is put into the trough, by taking three scoops of feed at every meter – one from the top, one in the middle and one at the bottom. The scoops of feed are mixed in a bucket and sealed in a self-sealing bag. Keep it in the fridge until it is sent to the laboratory for analyses.

"Use silage, which is an easy way of increasing moisture and making rations cheaper," says Lenél. "It requires good management, though, and knowledge of cultivation and the ensiling of grain. High-quality silage must be cut at the right time and properly compacted. It can form up to 30% of the ration.

"Complete fodder flow planning is necessary to balance the need and supply. Cattle ingest approximately 4% of their body weight and the average daily feed intake can be 14kg."

Take trough readings

Trough management is of utmost importance and requires daily attention. Weigh the feed per kraal, either per bag or per kilogram.

Take a trough reading early in the morning and again at 12:00. The reading ranges from 0 to 5.

0: Licked clean and empty.
1: A floury amount of feed is left.
2: A quarter of the feed is left.
3: Half of the feed is left.
4: No feed has been eaten.
5: The trough is filled to the brim.

Amount of feed

"Based on this reading, the amount of feed needed for the day is determined. Troughs must be eaten clean once a day. It prevents food from becoming rotten and forces cattle to ruminate. Saliva contains buffers that prevent nutritional disturbances.

"Calculate your day from 12:00 to 12:00 the next day. If you weigh feed, 30% of the feed should be fed between 07:00 and 10:00 and 70% between 13:00 and 17:00. The whole allocation can also be given once-off.

"Note the behavioural patterns of the cattle to determine whether your trough management is optimal. If you feed correctly, the trough should be empty by 12:00 and the cattle should be lying down and ruminating," says Lenél. SF

For more information, phone Lenél Oosthuizen on 082 851 1089.

By Craig Shepstone

CAMP DESIGN – how it affects animal nutrition and production

The annual white-bearded wildebeest migration is a good example of how nature ensures a healthy, productive animal and a healthy ecosystem.

The great migration takes place in the conservation areas surrounding the Masai Mara National Reserve in Kenya and Tanzania. Approximately 1,4 to 1,7 million white-bearded wildebeest and thousands of Thomson gazelles, zebras and eland migrate together in search of better grazing.

Different requirements

The wildebeest migration illustrates how plant nutrient quality and availability affect food selection. When the availability of edible grass and open water is low, animals will migrate to areas with suitable grazing and water.

In other words, the large herd of animals moving along the well-known migratory route isn't simply a huge grass eating machine, consuming all available vegetation available to them, but a herd of animals with different nutrient requirements moving together looking for suitable food sources to keep healthy, to grow, and to produce calves. It is important to note that all young, growing animals, including lactating cows, require more protein, energy and other nutrients than a dry cow or bull, for instance.

As the animals move along the migratory route, they do not only consume the available grass; they indirectly supply the plants with nutrient-rich humus originating from the decomposition of trampled grass, faeces and urine they have left behind.

Generally speaking, the herd will always migrate to a particular area after good rain, where they consume the fresh regrowth high in nutrients. When there is no rain, the quality of the grazing drops, forcing animals to move to areas with better quality grass forage. These animals will only return to that area the following year, which allows the grass swards enough time to rest, to distribute seed and to grow.

Effects of enclosures

Enclosing animals in smaller areas can have a negative effect on the ecosystem and the animals, if not managed correctly. While the previous section pointed out how nutritious green forage benefits animal production and reproduction and how a proper waiting period allows regrowth in grass, we now look at possible problems – and methods to alleviate, reduce or prevent them – if animals are forced to stay in one area all year round.

Factors that should be kept in mind when enclosing animals in smaller areas:

- Animals can no longer follow

natural migration routes or find forage of superior quantity and quality as the seasons change.
- Over-utilisation of the better-quality grass/forage occurs within the enclosed area, leading to negative grass sward succession, resulting in the establishment of poorer quality forage in the area.
- Over-utilised areas can lead to the creation of bare patches that have no actively growing plants or roots to keep the topsoil from eroding into gullies and dongas.

Conservation areas

Game reserves or conservation areas are generally classified as areas larger than the average game farm, where little or no extra roughage or feed is supplied. These areas are not large enough to support large-scale migrations to areas with greener grazing, resulting in animals losing condition during the dry months.

This can be mediated by controlled burning and/or mowing programmes two to three months after the last rains. Closing and opening of water points can also help to force animals into areas where they normally do not forage, even in different seasons.

The burned or mowed grass uses the moisture trapped in the soil for regrowth, which, in turn, supplies the animals with grass higher in protein and other essential minerals for superior animal production. Furthermore, it forces animals to leave the other areas, giving the grass in those areas a chance to rest.

It is vital to know which supplements to feed animals if the forage is of poor quality, even though there may be an abundance of it. In times of drought or when the naturally occurring forage is low in protein and other essential nutrients, the following can be used:
- As a protein source – protein blocks and/or lucerne and salt mineral licks for minerals.
- As a roughage source in times of drought – lucerne, different grass hays and crop residues.

Feeding of animals

If there are more animals than the reserve can feed – such as under normal winter or dry season conditions with a shortage of natural forage – lucerne, different grass hays and crop residues can be fed to fill bellies, lucerne hay and protein blocks can serve as a protein source, and salt mineral licks can supply minerals.

It is important to move the feeding areas periodically, as it will prevent over-utilisation and trampling of a specific area. If this is not possible, create a dedicated feeding site that is cleaned regularly.

> The wildebeest migration illustrates how plant nutrient quality and availability affect food selection.

Under these circumstances pelleted rations are not recommended. If pellets are the only way to supply animals with the necessary nutrients, feed them in bowls or on any stony area, preventing contact with the soil or dust on the ground. Only supply pellets every two to three days, as this will prevent animals from overeating and contracting conditions such as rumenitis and acidosis.

A protein lick containing salt as an intake inhibitor is more suitable for animals housed in these areas.

Making a farm profitable

To most game farm owners whose focus is the breeding of animals to either supply their own or other hunting farms, it is important to mimic nature as far as possible.

These types of farms expect a calf or lamb from each female animal every year. Similarly, livestock farming's main aim is to produce a calf/lamb every year. To a large extent, livestock farmers have been mimicking the natural migration patterns on their farms for most of the last century. Rotational grazing is used to move cattle and/or sheep and other livestock from one camp to another, allowing grass a chance to rest, to spread seed and to regrow.

The long-term survival of a game or livestock farmer is of utmost importance. Roughage is normally the most expensive part of feeding, not because it is expensive, but because it is the largest part of the animal's diet – most supplements supply less than a third of the animal's total daily intake. The remaining two thirds, or more, is the forage available on the farm. If this is not available, it must be purchased.

Livestock farming has been and is a success worldwide, largely due to farmers understanding how much grazing they have (carrying capacity) and that they generally should never overstock this number (stocking rate). In other words, farmers do not overstock their farms with more animals than what the available grass/forage can supply in feed over a fixed period.

More edible grass

Incorporating three to four camps or more per herd, or group of animals, will support the growth, regrowth, distribution of seed and the maturation of grass. One of the most important benefits of this system is that rested grass leads to the growth of more edible grass, which improves the grazing capacity and the farm's ability to keep more animals in a specific area. This has been done on many game farms in South Africa, and I hope it becomes a norm within the next few years.

Remember, even if the volume of grass has improved, it is not necessarily of suitable quality to produce a calf every year. As the dry season approaches, the concentration of protein and other nutrients drops in natural forage. Game pellets or self-mix feed can be supplied to supplement the shortfall of nutrients from the available forage.

During the green months, if there is enough available grazing, the animals will only need extra minerals, which can be supplied by using salt mineral licks. For grazing and parasite management, the feeding sites must be moved regularly during the rainy season.

Small camps, bomas and zoos

Small camps normally have limited or no grazing available. The feed required should be supplied to the animals daily.

Pellets, self-made feed or semi-complete feeds can be made and supplied. Ensure that suitable hay is always present as a source of roughage. Hay supplied in the camps must not be placed on the ground, but should rather be placed in hay racks or in dedicated hay bowls.

Move feed bowls regularly or use dedicated feeding sites that can be cleaned regularly. Faeces and old feed must be removed. SF

For more information, contact Craig Shepstone on 083 305 1380 or email craig.shepstone@mail.com.

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By Andries Gouws

Optimal utilisation of the dairy cow's dry period

The dry period in dairy cows presents dairy farmers with an opportunity to lay the foundation for a successful next lactation. Cows that have been dried off and fed correctly, and which proceed to the next lactation with a healthy udder, will increase the profitability of milk production.

Dr Carel Muller, a retired dairy cattle expert who worked at the Western Cape Department of Agriculture at Elsenburg, says it is a crucial period in the life cycle of cows, as they are heavily pregnant with a rapidly growing foetus, the rumen is recovering from prolonged exposure to concentrates and the milk secretion tissue in the udder is recovering before the next lactation.

"The dry period should not be shorter than 50 days. Studies in the US on almost 300 000 cows showed that cows that were dry for between 42 and 60 days, produced more milk during the next lactation than those with a shorter or longer dry period."

When cows are dried up, the concentrate ration is discontinued and replaced with low-grade roughage for a few days.

Build the body condition

Dr Muller says the body condition of cows should preferably be built up during the last part of the lactation period and maintained in the dry period. "Approximately 60% of the development of the foetus takes place in the last three months of pregnancy.

"To determine when the drying-off period should commence, the expected calving date of the cow must be known. To dry up a cow, her milk production should be reduced to around 10 to 15 litres. This is accomplished by discontinuing concentrate nutrition and feeding only low-grade roughage for a few days. Then you stop milking her. Milk pressure in a full udder leads to gradual re-absorption of the milk, suppressing further milk secretion.

"If a cow's udder is very swollen, she can be milked out two or more times. Cows must be monitored closely in the first week after they have dried up, because animals with mastitis can become ill if the infected milk is not removed from the udder."

Long-acting antibiotics

After the first milking, long-acting antibiotics (dry cow treatment) can be administered in each quarter of the udder to heal the mastitis infection and prevent new infections from occurring.

In the last part of the previous lactation, through the dry period and early in the new lactation, cows can develop several metabolic disorders. This is due to the development of stress conditions while the cow prepares to calve (when readying herself for the next lactation), and when the cow develops an energy imbalance early in the new lactation (when milk production increases faster than the energy she acquires from the feed).

In the days before calving, a cow often loses her appetite and ingests less energy. This has a significant impact on the fatty acid levels in her blood, leading to diseases post calving, such as ketosis, fatty deposits in the liver, a twisted abomasum and retained placentas.

Physiology and reproduction

Research has shown that cows ingesting very little dry matter prior to calving, also feed poorly after calving. They will produce less and can develop more physiological and reproduction problems. Cows must have a good condition score (3 to 3,5 out of 5) after having dried up.

Dr Muller explains that it is important for cows to receive good roughage with a coarse texture during the first four to six weeks of the dry period. "Maize silage, grass hay, small grain hay or silage, grazing grass and clover can be used as roughage sources for dry cows during this period. Since maize silage has a high energy content, its intake must be reduced to prevent cows from becoming overly fat.

Winter lick

Mix your own licks and save

The importance of winter licks in the maintenance of body weight and condition of animals must not be under estimated. Make use of your own farm produced products together with Yara Animal Nutrition SA's products and proven recipes and save on lick costs this winter.

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Example of a winter lick for cattle and sheep

	Cattle lick	Sheep lick
Maize meal/Hominy Chop	250	250
Oilcake	-	150
Feed Grade Urea	150	100
Kimtrafos 12 Grandé/PhosSure 12	150	100
Kalori 3000	50	50
Feed Grade Sulphur	7	5
Salt	350	350
Total	**957**	**1005**

Composition:	**g/kg**	**g/kg**
Crude protein	475	367
% From NPN	95.6	77.5
ME	3.8 MJ/kg	5.25 MJ/kg
Calcium	41	27
Phosphorous	21	14
Sulphur	8	5
Intake Cattle (g/cattle/day)	350 - 500	450 - 650
Intake Sheep (g/sheep/day)	Not suitable for sheep	80 - 120

* Feed Grade Urea can lead to Urea poisoning if used indiscriminately. Read the instructions on the bag carefully.

In the first four to six weeks of the dry period, it is vital that cows receive good roughage.

"Cows should always receive a suitable lick together with the roughage, to ensure that their mineral and trace element status is not depleted, but rather built up. A diet with high roughage levels will ensure that rumen papillae recover completely, which will prepare the rumen for the next lactation period.

"During the last three weeks of the dry period, cows can again be made accustomed to concentrates. This is known as the steaming up period. The concentrates should contain the same raw material cows will receive early in their lactation period, which provides the rumen microbe population the opportunity to adjust for the next lactation diet. Concentrate nutrition can start with 1kg per cow per day, increasing weekly by 1kg to approximately 3kg per day in the week just before calving."

Addition of anion salts

If milk fever occurs in a herd, anion salts can be added to cows' meal. During this period, cows should only receive roughage with a low potassium content. Good examples are maize silage, small grain hay or silage.

Roughage with low potassium levels, such as kikuyu, ryegrass and clover grazing, suppress potassium mobilisation, causing cows to develop problems such as milk fever, dystocia and retained placentas during calving. Since the trace element status of cows is important to reduce retained placentas and mastitis infection after calving, dairy cows can be injected with vitamin A and E approximately 14 days prior to calving.

Milk fever is a disease that often occurs at the beginning of the lactation period (just after calving) in older and high producing dairy cows. It occurs when the potassium level in the blood serum suddenly drops from a normal 10mg/100ml to 3-7mg/100ml.

Maize silage, grass hay, small grain hay or silage, grazing grass and clover can be used as sources of roughage for dry cows.

Effects of milk fever

Secondary effects of milk fever include retained placenta, uterine infection, mastitis and lower milk production.

Roughage with a low potassium content and stimulation of calcium metabolism with anion salts or low calcium diets can largely prevent this problem. The addition of anion salts can change the electrolyte balance of the cow's diet, increasing its calcium status. However, this salt should not be administered on the day of calving or during lactation.

Low calcium levels in the blood develop due to a lack of calcium in the colostrum and the cow's inability to withdraw enough calcium from her skeleton. Anions in anion salts are negatively charged and cause a negative electrolyte balance when enough is included in the diet. This negative balance causes calcium to be transported from both the skeleton and digestive system to the blood.

Ketosis in overly fat cows

Dr Muller says ketosis often occurs in overly fat cows, especially if they are not adapted to the concentrates or a complete lactation diet at calving. "When the cow calves, her nutritional needs increase by 300 to 700%.

"If she does not increase her energy intake fast enough in the early post-calving period, her body reserves are used for milk production. Once the cow's body reserves are used up too quickly, it increases the number of ketone bodies in the blood and urine, causing ketosis." SF

For more information, contact Dr Carel Muller on 082 907 1139 or careljcmuller@gmail.com. Source: *Dairy Farming Handbook* of the Western Cape Department of Agriculture.

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By Richardt Venter

Alternative crops for making silage

Making maize silage nationwide and oats silage in the Western Cape are common practice among farmers with pastures under irrigation during winter. The popularity of sweet feed sorghum has also grown over the past few years, and it is widely ensiled with great success.

Making silage from grasses, especially fodder crops such as ryegrass and kikuyu, is common practice. Other small-grain crops, canola, lucerne and traditional hay crops such as Smutsfinger grass and weeping lovegrass (*oulandsgras*) are also often used for silage.

One of the definitions of silage entails that any crop that is stored with enough moisture in an oxygen-free environment and which ferments successfully, can be ensiled.

A lack of knowledge

So then why are some of these alternative options not being used more often in silage-making? In my view, the main reason is that, until recently, knowledge regarding successful ensiling of some crops was fairly unobtainable. Of course many farmers have tried out one or other alternative crop in the past, but sometimes with disastrous results. And when a lot of money has been spent on such a silage project, and the entire bunker is lost due to decay or it being unpalatable, most farmers become wary of trying it again.

Obviously not all crops ferment as easily as others. For example, it is much more difficult to lower the pH (acidity) to preservation level using so-called high-buffer capacity crops, i.e. crops with a high protein content. This is compared to crops with high sugar levels, such as maize and sweet feed sorghum.

Lucerne (left) can be ensiled successfully, while sugar cane silage (right) is quite common in countries such as Brazil.

Effect of weather patterns

Furthermore, the market for lucerne hay has developed so strongly over the years due to our weather patterns, that lucerne is not being cultivated in certain areas anymore – the rainfall in normal years is such, that the risk is simply too high for drying the hay. This is exactly where silage can present the solution, as it isn't as affected by rain as hay is.

The same applies to hay crops such as Smutsfinger. Everyone has struggled to dry hay that has been cut for baling after the rains, only to experience risks and losses.

Crops such as grass and lucerne can be ensiled with great success. The secret lies in the optimal cutting time, cutting lengths, compaction and lowered pH. One of the greatest revolutions in the silage industry over the past two decades, is the availability of bacterial silage inoculants.

Ensuring fermentation

Bearing in mind that inoculants cannot replace basic ensiling techniques, the bacteria that are supplied in this way have become the most important way of ensuring fermentation – especially where difficult crops are involved. It presents only a degree of assurance and should in any case be applied correctly.

Correct application starts with the right type and concentration of bacteria. A one-size-fits-all will not work. You have to do your homework and obtain as much information as possible from your inoculant supplier regarding what is appropriate and optimal for the specific crop you want to ensile. The information and products are there – just be aware that this can be an expensive exercise.

This brings me to another great advantage, namely reducing your dependency on e.g. lucerne hay and its market prices, which is beyond your control. This can be done by planting your own lucerne or soya beans for silage. Another alternative is sugar cane silage, which is quite rare in South Africa, but is commonly found in countries such as Brazil. SF

WINTER MAINTENANCE
YOUR TRUMP CARD IN THE DRY SEASON

Author: Ronnie Wamback
Technical Advisor: Extensive Ruminants

In any extensive ruminant system, the main feed component, crude fibre, should be in the form of natural grazing. The optimal utilization of this source of roughage can be utilized with good management and the purposeful implementation of a good quality winter lick programme. If used properly, it ensures that natural grazing is used as optimally as possible.

The timing of the implementation of winter licks is vital in order to improve and maintain the health and condition of your breeding animals. This is especially important after the challenging season of 2017/2018 and the current state of most of the country's natural pasture.

During the summer and early winter months, pasture is the largest source of available protein and energy for ruminants. When grazing begins to mature, the fibre content increases, while the protein content begins to decrease. Together we see a decrease in digestibility of the pasture and the consequent contribution of nutrients to the animal. If it is not managed properly it will lead to a decrease in the condition and weight of animals that correlates directly with fertility and conception during the mating season.

We can improve the situation by managing the rumen microbes, which leads to an increase in the digestibility of low-quality roughage and the consequent increase in available nutrients. The situation further improves as the rumen microbes themselves serve as a source of protein and energy for ruminants in the form of microbial protein. This effect is even observed on good quality grazing. The effective functioning of rumen bacteria is indispensable in ruminants.

This is where the inclusion of a good quality lick supplement plays an important role. The general misconception regarding winter licks, especially, is that the primary focus is to replenish shortages in nature. Although it is partially correct, the emphasis should rather be shifted to optimal management of the rumen microbes, which in turn naturally overcomes the deficiencies. In this way, we ensure a healthy functional rumen that optimizes the grazing at your disposal, and create a nutritional source for the animals - rather than trying to supplement shortages with unnecessary expensive feed. Between 60% and 90% of an animal's protein needs can be provided by microbial protein - if managed correctly.

When the compilation of a supplement can bring about the correct ratio of nutrient sources to microbes, as well as its gradual release (utilization) over time, it results in a faster increase in rumen microbes, which leads to better utilization of roughage, more microbial protein, better animal health, increased reproduction, etc. under the same conditions.

The De Heus *RumiLick® Bovine 50* (V28649) is an ideal winter lick for severe *Suurveld* winter grazing that is based precisely on this principle. *RumiLick® Bovine 50* is a low intake protein trace mineral supplement for cattle with 50% protein, 89% from NPN (Urea and other sources). Supplementing with *RumiLick® Bovine 50* should commence as a rule of thumb as early as early March (when the protein content of grazing drops below 6%) with expected intake of 200 g – 300 g per animal per day.

A good indication of when to start with winter licks is when the pasture begins to seed. After a dry year, followed by good rains, it may also be necessary to start earlier. Supplementation is then gradually adjusted as the quality of the pasture begins to decrease towards the peak of the winter season to 400 g – 500 g intake per animal per day. It is of the utmost importance that roughage is available with the use of winter licks. Just before calving time and at the height of the winter season, change to *RumiLick® Production* (V24935) - a production lick, containing more natural protein and energy. It supports udder development, foetus growth and milk production. By now, the animal's nutritional needs are at their highest while the quality of natural grazing is the poorest.

Lick intake is also a good indication of dry matter quality and availability. The poorer the roughage or availability of it, the higher the lick intake in ruminants. Use this as management information to decide when moving animals to fresh pasture camps. Do not add salt to the lick. Although the intake will be relatively low at the beginning of the dry season, you will enable the animals to adjust to their environment and microbes early enough to function optimally as soon as the grazing quality begins to decrease. Especially in a year like this year where rainfall and grazing are insufficient, the timing of the utilization of a winter lick is extremely important.

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Ryegrass provides quality fodder throughout the year

Reliable fodder of high quality is indispensable on a livestock farm. Ryegrass is a fodder crop that produces high quality fodder. It has outstanding regrowth qualities and due to its rapid establishment and longer vegetative growth, its productivity is much better than that of other cool season grasses. Ryegrass is also known as an exceptional rotation crop with follow-up yields that are usually higher than before.

Tips for planting and management

The optimum planting time for ryegrass is during the autumn months. However, South African conditions sometimes require the establishment of ryegrass in spring. For this purpose only Italian ryegrass cultivars are recommended.

Genuine Italian ryegrass cultivars sown under irrigation in spring, will usually not bloom during the summer months, but will continue to exhibit vegetative growth under favourable production conditions, thus providing quality fodder until the next spring.

There are however, various aspects that can affect its efficiency and survival, and which should be taken into account:

Preferential locality: The higher the summer temperatures, the more important it is to look at cooler options for spring plantings. The grass prefers southern and south-eastern slopes. Do not use low-lying fields, unless they are well-drained.

Irrigation: The best establishment is achieved by planting early in August. It is important to apply regular light irrigations of 10-20mm. Centre pivot irrigation systems are ideal for relatively rapid cycles. Irrigation in summer is vital.

Cultivar choice: Diploid ryegrass (two sets of chromosomes per cell) are more ideal for spring plantings. The combination of good yield and robustness will ensure fodder, even if environmental conditions are not ideal. Tetraploid ryegrass (four sets of chromosomes per cell) is more palatable and establishes quickly and easily. The latter produces high quality fodder and can be planted in combination with clovers. The recommended sowing density with a planter is 25kg/ha for diploid ryegrass types and 35kg/ha for tetradiploid types.

Utilisation: With correct irrigation and fertilization, the pasture will be ready for grazing approximately six weeks after planting (with a height of around 25cm). The first grazing should be light, after which the pastures can be grazed to a height of between 25 and 8cm. Post-grazing control of tetraploid ryegrass is important, as it can easily be overgrazed due to its palatability.

Management: Do not over-utilise these pastures in the hot summer months. A post-grazing height of at least 8cm should be retained to ensure rapid recovery of the pasture, as well as to prevent summer weeds from gaining the upper hand. Late autumn and winter production of these pastures compare unfavourably to early autumn plantings of the same crop. Spring plantings can be supplemented in autumn with 10 to 15kg/ha, if necessary.

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By Albert Loubser

A future perspective on **breeders' societies**

Every day we make decisions that determine our future, based on information from the past. There is no roadmap for the journey ahead. The practices we follow today were written down for us in the past by a previous generation.

We therefore have a big responsibility towards the next generation to leave behind a better legacy than the one we were handed. This can only be accomplished by making responsible decisions that will offer our descendants the best future possible.

Unfortunately, good decisions are not enough. Environmental influences that we have no control over, as well as financial and political factors, will always play a role. Our decisions are also influenced by these aspects.

Managing livestock

But how does the future look for breeders' societies? It is the responsibility of these societies to manage the livestock breeds under their wing. The important drivers influencing the way that breeders' societies will look in future, include the development of new technology, the potential development of more patented genetics, land and water issues, and financial considerations.

The development of technology is one of the most important aspects. Keeping a register of animals that meet the breed standards of a particular breed, is an administrative function that traditionally entailed birth entries and records of pedigrees.

Computer technology and available software have simplified this process to such an extent, that a single clerk with a good computer and software can perform basic livestock stud administration. With the Internet allowing global access, a society can theoretically be managed from another country and information can be obtained from anywhere in the world.

In addition, genomics has also changed everything. The genetic merit of an animal is determined earlier, which signifies that everything happens quicker and on your computer.

Feed conversion of animals

It must be borne in mind that livestock farming only centres around one aspect, namely the conversion of food that people cannot eat (grass and roughage) into food that people can eat (meat). The feed conversion of the particular production animal is therefore of primary concern. The more efficient the feed conversion, the more significant the animal will become. Of course there are other supporting aspects, such as generation interval and number of offspring per birth.

> The development of technology is one of the most important aspects.

If you look at what has happened over the past 50 years, you will see that red meat's market share, particularly meat consumed by consumers, has decreased. The market share of chicken, as well as fish and pork, has grown at the expense of red meat, which is simply not able to provide the same feed conversion. Mutton is also gaining ground as sheep have a better conversion rate than cattle; sheep are markedly more efficient as a result of generation interval and multiple births.

It is worth noting that almost no chicken or pig breeds have meaningful breeders' societies. Instead we see the emergence of private genetics companies that own patented genetics, which they sell to clients at a profit. These animals are bred from 'original genetics' or breeds, but the genetic composition of the animals sold is usually patented and therefore unknown to the user. It significantly weakens the relevance of the original breed.

Land and water issue

In essence, the land and water issues we are experiencing in South Africa are of a political nature. However, they have a major effect on the way agriculture will look in future. It is important to understand that this is a global problem; it is most definitely not limited to South Africa.

The effect of these issues on farming practices is a shift towards intensification, i.e. to do more on less land and to utilise water more efficiently. The better the feed conversion, the more economical the animals in an intensive production system.

The economy, i.e. the cost of food production (for people), will be the driving force of future agricultural practices. Although membership of societies is already cheap, there will be increasing pressure to save even more. A society model that cannot be managed cost-effectively will have to fight to justify its existence. A successful breeders' society will, in future, look vastly different from the way it does now. SF

This calf is from a purebred Angus bull and a crossbred cow.

A return to purebred bulls

By Izak Hofmeyr

Judging by the prices paid for his bulls the past two years, Chris Nel, well-known Sussex breeder of the Eversar Sussex stud near Petrus Steyn, believes there is a new trend towards bulls from the traditional pure British and European breeds.

Chris bases his theory on the increasing demand for his bulls which, over the past few years, has doubled. "My buyers tell me the heterosis they get from the calves of my bulls is extremely rewarding. One buyer even says that he gains 60kg on a weaner calf if he uses my Sussex bulls. He runs a cow herd consisting of one of the composite breeds and often complained that his weaning weights had reached a ceiling, even showing a decline at times. As a result he switched back to purebred bulls."

He says the main reason why cattle farmers tend to return to pure breeds is the advantages presented by heterosis. "It is important, though, to use performance tested bulls of exceptional quality to get maximum advantage.

"While a composite breed initially has enough variation within the breed to achieve a lot of heterosis through the right choice of bull, you often reach a point where the variation within a herd starts decreasing. If you put a purebred bull with the cows, you bring strong heterosis to the fore. The F1 progeny of a purebred bull with an unrelated maternal line, provides maximum heterosis. These female F1 animals are sought-after cows with unparalleled performance. They perform much better than their parents."

Predictability and prepotency

Chris explains that predictability and prepotency are two more reasons why there is such a strong trend back to pure breeds.

"Performance measuring and selection in pure breeds have already come such a long way that the genes are well-captured, which makes it possible to predict the performance of a specific bull's progeny.

This trait is becoming increasingly important to farmers. The very first advantage presents itself at the birth of the calf – purebred bulls will provide a predictable birth weight. Afterwards, the progeny exhibit predictable production (pre- and post-weaning growth) as well as predictable reproduction.

"Pure breeds have been selected for structural correctness for a long time and they transfer these traits to

Chris Nel.

their progeny. You can predict fairly accurately whether a bull will transfer a trait such as growth, or perhaps improve his calves' milk production.

"On the same basis, a farmer can use bulls to improve meat tenderness and marbling in his weaner calves. The next step is genomics, which will improve predictability even more.

"I believe the most important reason for the return to pure breeds is because composite breeds are generally unable to sustain heterosis within the breed, as they become too uniform. Cross-breeding is therefore necessary to achieve heterosis."

Increase in prices

Chris has already hosted 27 production sales of his Eversar Sussex cattle, with prices having increased considerably the past two years.

"I notice that buyers who have never bought my cattle before are interested in my bulls, although I have done nothing more or extra to draw their attention to my stud.

"I make an effort to follow up with buyers as to whether they are satisfied with my bulls. Thus far I have only received positive feedback, which tells me that the Sussex, a pure British breed, provides the X-factor in a large variety of commercial herds."

Economically important traits

Chris says it should be remembered that the modern Sussex is completely different from the Sussex of 30 years ago. "Growth, milk, reproduction, adaptability and hair coat, in fact, are all economically important traits that have improved by leaps and bounds. We are currently breeding cattle that are adapted to South African conditions.

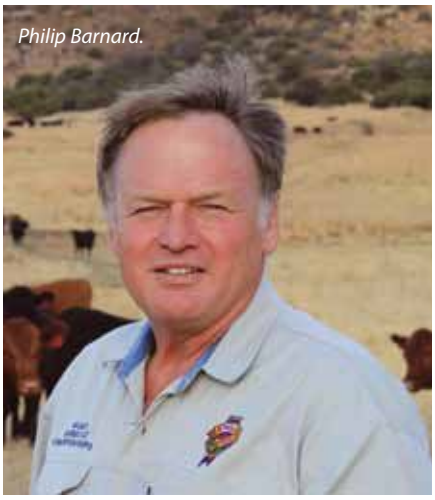
"It is a well-known fact that farmers in general are excited by something new. There is excitement when a new breed enters the country, and the demand is usually so high that prices skyrocket. In direct contrast, there is now a tendency to go back to something old, namely the pure breeds, to meet specific needs such as better performance and weaner calves."

Predictability of bulls

Philip Barnard, well-known Angus breeder of the Mequatling Angus stud near Clocolan, says he also gets the impression that commercial cattle farmers increasingly require better predictability from their bulls, and tend to return to pure breeds. "The longer a breed is purely bred based on strict selection, the greater the predictability of its breeding.

"My impression is that breeders demand better heterosis, and that they no longer get it from their herds because they have become too uniform. With a composite breed, you initially achieve unbelievable results because of heterosis. You have fantastic calves, but from the third or fourth generation onwards you don't find heterosis within the breed anymore, and the breeders become disappointed.

"With that, we find that farmers consider pure breeds to improve fertility, which is understandable. When you are building your herd, you retain as many of your female progeny as possible. It is logical that your fertility will receive a blow. Breeders want to correct this by returning to the old pure breeds."



Philip Barnard.

Philip says the Angus is in great demand as recipient cows for an embryo programme. "Remember, the Angus is the biggest beef breed in the world. The gene pool is therefore very large, and strict selection is possible. This contributes to the great demand for the Angus."

Afrikaner and Sussex crosses

Nico Kriek is a commercial cattle farmer from the farm Clarenz in the Reitz district. His father started buying purebred bulls in 1960, with Nico quickly following his lead. They initially had an Afrikaner herd, where they used Sussex bulls. These days, they alternate between Afrikaner and Sussex bulls.

"The Afrikaner/Sussex is a very good cross, especially in our conditions in the Eastern Free State. If I use a Sussex bull, I get extremely satisfactory weaning weights – 260kg or more at the age of seven months."

Why a purebred bull? It is all about predictability and reliability, which he found lacking in many composite breeds. "You get excellent calves from composite bulls, but every now and then there is an extremely bad calf. This isn't a factor with the pure breeds.

"Of course, you must carefully select the bull you want to buy. You cannot rely on only its history or figures. Your eye provides the final test," he says. SF

This bull represents the type of purebred bulls Chris Nel believes are increasingly in demand.

For more information, phone Chris Nel on 078 245 4442 and Philip Barnard on 051 943 0058 or 082 557 2075.

By Ursula Human

The Hugenoot school herd is flourishing

One herd in the *Veeplaas* Schools' Herd Project is doing exceptionally well. The Hugenoot herd, established in Balfour in March 2017, is a prime example of how this project is impacting the schools responsible, and how the various herds are flourishing.

The Hugenoot herd is hosted at the Balfour Combined School in Mpumalanga, where Agricultural Science was introduced as a new subject in 2017.

Although the herd resides on the Cilliers farm and not at the school itself, the pupils visit the farm regularly when major events, such as dehorning or routine animal health activities, take place. The owner of the farm, Stefan Cilliers, decided to help the school by providing land for the cattle due to his love for agriculture.

His three sons also attend Balfour Combined School and he wanted to support the school in their new venture to introduce Agricultural Science as a subject, which he believes will benefit the agricultural community in the long run.

Braam Olivier of the Landmerck Hugenoot stud, Stefan Cilliers of the Cilliers farm, Philip Breedt, headmaster of the Balfour Combined School, and Willie le Roux, one of the coordinators of the project, with some of the pupils.

Katleho Molete and Patricia Oosthuizen, two pupils of the Balfour Combined School with Braam Olivier, president of the Hugenoot SA Cattle Breeders' Association.

The cattle in a Tal-Tec kraal on the Cilliers farm.

According to Cilliers, the Hugenoot herd has been thriving and there are several new additions. The herd originally consisted of five pregnant and five open heifers that were donated by Braam Olivier of the Landmerck Hugenoot Stud, who is also the president of the Hugenoot SA Cattle Breeders' Association. Eight of the ten heifers have calved again, allowing the project to generate an income by selling some of the animals. SF

The Sussex heifers at Oakdale Agricultural School.

By WA Lombard

Oakdale becomes home to a Sussex herd

Oakdale Agricultural School in Riversdale recently strengthened its ties with the Sussex breed when it received Sussex heifers via the *Veeplaas* Schools' Herd Project. The fact that the school already owned Sussex cattle before the *Veeplaas* Oakdale Sussex stud was established, made the event even more special. The first cattle were donated to the school by a parent.

The grade 10 pupils of Oakdale Agricultural School are taught the ins and outs of beef cattle in the subject Agricultural Management Practices, while also working with the cattle to gain practical experience. The Sussex cattle are used to participate in youth shows.

The heifers were donated by Sussex breeders, who transported them to Bloemfontein in August 2017 during the national Sussex auction. But it was a long and challenging journey before the heifers were finally offloaded, as the school was severely affected by the drought in the area and could not immediately accommodate them.

Donors of heifers

Heifers were donated by the following Sussex stud breeders: Dawie Albertyn of Nacht Wacht, Nico Bouwer of Witkwas, Callie Cillié of Advocate, Johan du Randt of Mountain Shadows, David Evans of Huntersvlei, Gert Fourie of Kyknou, Chris Nel of Eversar, George Potgieter of Pothou, James Stephen of Vigorex, and Theo van Zyl of Faurzyl.

André Latsky, headmaster of Oakdale Agricultural School, expressed his heartfelt thanks to the breeders for their generous donation. "The school is also grateful to Dawie Albertyn, who has accommodated and looked after the heifers since the auction."

Mentor of the herd

Pieter Stofberg will act as mentor of the school's herd to ensure that they follow the Sussex breed standards and to assist when any help is needed. According to Pieter, the heifers are in good condition. They have developed well and have adapted quickly to the dry Western Cape.

"We placed a bull, supplied by Dawie Albertyn, with the heifers on 1 October. The bull was removed at the end of November. The management of Oakdale is excited about the project and I regularly communicate with them," he says.

Youth show achievements

At the Riversdale show, held from 14 to 17 February, a total of 57 pupils from Oakdale Agricultural School took part in the youth show competition in the classes for wool and mutton sheep, dairy and beef cattle and Angora goats. The Oakdale pupils were awarded five first, nine second, nine third, seven fourth and four fifth places.

The participants' handling skills with the animals as well as the synchronisation in a team context were assessed. According to the judges, these skills are only obtained through regular practice.

For the third consecutive year, Christiaan Theunissen, a grade 10 pupil at Oakdale Agricultural School, on Okalash's Handsome Private, was named grand champion Saddler in the three-gaited pleasure horse class. SF

Dawie Albertyn, left, handing the heifers to André Latsky, right, headmaster of Oakdale Agricultural School, with a group of pupils looking on.

For more information, contact WA Lombard on wa.veeplaas@gmail.com.

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LOGIX focus

Management information: The key to successful milk production

Dairy farmers are constantly under pressure to produce economically. It is, however, an unfortunate fact that dairy farmers remain price takers, even if there are large quality differences in primary production. The pressure thus remains to make informed management decisions that can focus on the core aspects of dairy farming.

Management reports by Logix Milk focus on these aspects and provide farmers with a continuous frame of reference with which the quality of products can be evaluated against the quality reported by milk processors. The evaluations are done independently throughout the year by accredited laboratories and can serve as starting point when disputes arise.

Dry period

Successful early lactations start with the dry period, when the animal's rumen needs to be adjusted to utilise the production ration at the start of lactation. It must be accomplished without spurring on the growth of the foetus in the late stages of pregnancy, which can cause calving problems.

During the dry period, it is important to sufficiently increase rumen organisms in order to make optimal use of the ration fed during early lactation.

Several advantages arise from this. Firstly, the animals will reach peak production earlier, but will then deliver more sustainable production. The second advantage is that the animals will move from a negative energy balance to a positive energy balance earlier.

Primary nutrition

To produce economically, it is necessary to ensure that the available primary nutrition on the farm is optimally utilised. This can play a major role in herds for which fertilised pastures are used as the primary source of nutrition. This provides a great opportunity, since the crude protein and fibre that are available in abundance is fully utilised.

Increasing energy in the rumen will lead to better utilisation of the available crude protein. This way, more rumen organisms will be produced with the available feed that can be converted to milk more economically.

It is vital that sufficient feed space and drinking water are available to avoid dominance and the queuing of animals to drink or feed. Sufficient space will ensure optimal intake and production.

General and udder health

With nutrition and pregnancy at optimum levels, it is extremely important that a very high level of general health and especially udder health are maintained. Management activities that cause problems can be observed, interpreted and identified in management reports. It is therefore important to constantly monitor the situation and to eliminate management activities that may lead to problems.

By regularly determining each animal's somatic cell count (SCC), in which the lactose percentage in the milk is also available, one can get a good indication of instances where animals are under pressure. This makes timely action possible.

Other management or outside activities that can lead to poor udder health can be identified by regular SCC observations. In cases where only certain milking points in the milking parlour are not functioning optimally, great variation in the SCC is possible, since cows are not always milked at the same milking point.

Make informed decisions

To help dairy farmers make informed decisions and to control the quality of their product, regular lists are supplied to Logix Milk participants in which the cows that proportionally contribute the most somatic cells to the bulk tank, are identified.

If level of quality is such that the producer can be penalised due to a high SCC, these animals can be identified, their milk withheld from the bulk tank and a higher income realised for the rest of the milk.

The habitual criminals, i.e. the animals that regularly produce high SCC milk to such an extent that the quality of the entire milking is negatively affected, will be identified in this way. These lists are regularly provided to Logix Milk participants in order to identify possible cull cows.

To help milk producers, SA Stud Book is prepared to communicate with any participant and to upgrade reports or make them more applicable. Farm visits are available to evaluate the entire dairy enterprise to find an appropriate solution for each situation. SF

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Tick control in **red meat production**

Over the last century many advances have been made in the management of livestock production systems. Looking holistically at red meat production, we manage systems (*Figure 1*) and within these systems we manage risk. Over the last century many advances have been made in the management of livestock production systems.

Input refers to all the activities needed for the production of safe meat such as land, cattle, grazing, management and many more. **Process** refers to all the activities we do with these inputs or animals in a process to gain **output** (immunisation, dip, deworming, feeding, etc.). All of the above does not take place in an isolated space, but is exposed to the environment. This is where the risk factor comes in.

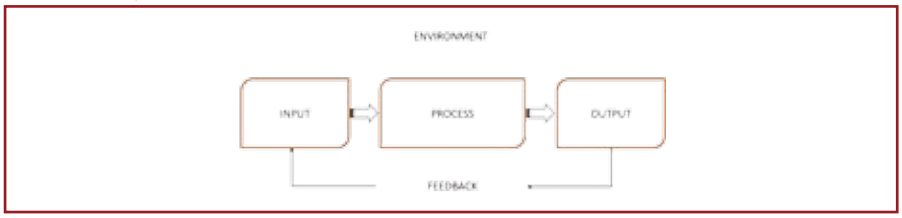
Ticks, as vectors of disease and damaging agents, impact directly and indirectly on the economic output of the livestock industry in Southern Africa. The risk associated with their presence cannot be ignored. We estimate the cost of acaricides alone in the control of ticks amounted close to R104 million in 2016.

Ability to transmit diseases

The veterinary and economic importance of ticks has long been recognised due to their ability to transmit diseases, not only to animals but also to humans. Approximately 80% of the world's cattle population of 1 281 million are at risk from ticks and tick-borne diseases. Over a decade ago McCosker (1979) estimated global costs of control and productivity losses to be some US$7 000 million annually.

In Africa, with around 186 million head of cattle, ticks and tick-borne diseases are the most serious constraints to increased production. Weekly or twice-weekly applications of chemical acaricides are still a common form of control. However, immunisation against tick-borne diseases and the strategic application and use of drugs have recently been receiving increasing attention.

Figure 1: A systems approach to managing risk.



Ticks cause great economic losses and adversely affect livestock hosts in several ways. Loss of blood is a direct effect of ticks but they also act as potential vectors for blood parasites. Blood sucking by large numbers of ticks causes reduction in live weight and anaemia among domestic animals, while their bites also reduce the quality of hides. However, major losses caused by ticks are due to their ability to evoke disease.

New acaricides

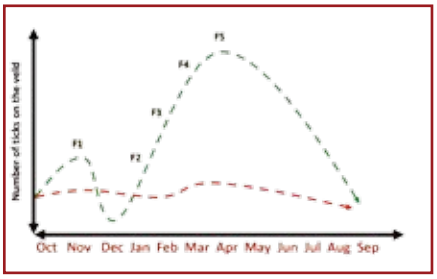
The development of new acaricides is a long and very expensive process. Worryingly, there is increasing resistance to available acaricides leading to the real possibility that our dwindling supply of effective acaricides will be exhausted unless alternative approaches are taken to manage ticks.

Recent years have seen great progress in approaches to drug development and tick control strategies. Such advances will undoubtedly help to decrease the risk associated with ticks and diseases. One simple strategic approach is the use of chemical products and drugs at the right time of the year, such as planning ahead in winter for the summer explosion of ticks and diseases.

Tick numbers (especially blue ticks) follow a predictive population growth curve. In *Figure 2* the green line indicates the normal growth curve of blue ticks. Soon after the first seasonal rain in September or October, we see an exponential increase in tick numbers reaching a high around February to early April. During these peak population times the risks are at its highest for major economic losses.

A simple though effective risk management plan is to treat all animals around three weeks after the first good rains in spring, with an injectable macrocyclic lactone product. This will decrease the potential second and following generation of ticks (F2 - F5, etc.) and thus lower the pasture contamination and potential risk.

Figure 2: Tick population growth curve.



Dip all animals

In the absence of pyrethroid resistance in ticks, a good option is to follow up the treatment of all animals with a flumethrin type dip. The idea is to obtain a parasite population as indicated by the red line in *Figure 2*. Enough ticks should still be present to ensure endemic stability to tick transmitted diseases, but low enough numbers to prevent economic losses. Critically important is dip tank testing and resistance surveillance to establish baseline values for future control strategies.

In the area of tick control, much has been achieved, but much more remains to be done. Problems with acaricide resistance make the managing of risk around tick control ever more important. SF

For more information, contact your local veterinarian.

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By Izak Hofmeyr

Johne's disease: Like a ticking bomb

The problem with Johne's disease is that the bacteria causing it, *Mycobacterium avium* subsp. *paratuberculosis*, can withstand heat, cold and drought, and can survive in the soil and water for as long as a year.

Hence, it is very difficult to get rid of the disease if it occurs on your farm. The disease can cause a lot of damage – up to 15% mortalities per year and suppressed production, which is more difficult to calculate.

It is a controlled disease in terms of the *Animal Diseases Act, 1984* (Act 35 of 1984), which means it is the responsibility of the owner to prevent the disease from spreading. According to the Act, the control measures of Johne's disease entail that susceptible animals may be tested by the state, animals that came into contact with sick animals must be isolated and tested, and animals with the disease must be slaughtered, either at an abattoir or under the supervision of a state office bearer.

Prevention and control

There is no existing treatment against the disease. Control is based on good management practices, which include regular tests on new animals entering the farm.

Although there is a vaccine against the disease, the Department of Agriculture, Forestry and Fisheries (DAFF) does not support its general use, since it does not protect animals effectively against contracting the disease and does not prevent it from spreading. Furthermore, it is impossible to distinguish with serological tests between infected and immunised animals.

A big dilemma

According to Prof Gareth Bath, chairman of the Smallstock Health Advisory Body (SSHAB), the current approach to Johne's disease is problematic because indefinite quarantine on farms where it has been identified, is causing some farmers to hide the disease rather than report it.

"It is time for us to thoroughly investigate what other countries, such as Australia, are doing to control it. At the moment, the disease has massive implications for any farmer on whose farm it is identified. Such a farmer cannot market live animals from his farm, except to the abattoir, unless the farm has been classified as clean.

"Since it is such a complicated disease, you cannot simply test animals and cull those that tested positive. You can never say with total certainty that you got rid of it. In addition, the vaccine is not 100% efficient. It is therefore possible for the disease to spread, even if animals ready to be sold have been immunised."

A trading statement

Leon de Beer, general manager of the National Wool Growers' Association (NWGA), says there are two reasonable approaches to the disease. Firstly, farmers who don't have the disease on their farms should be protected as far as possible by using a trading statement that buyers of livestock may demand. The other is a concession by DAFF to make life easier for farmers who do have the disease on their farms – the concession will allow them to sell animals to other farmers who also have the disease on their farms.

"The aim of the trading statement is to enable farmers to determine the extent of their risk when they buy livestock from a specific farmer. In the statement the seller indicates whether he/she has tested for the disease, if he/she immunised against it and why."

Leon says the good news is that there is a diagnostic method waiting to be declared valid, according to which there can be no false positive and false negative results. SF

For more information, phone Leon de Beer on 041 365 5030.

By Marike Brits

MSD Animal Health

#VIDEOVET

How to decrease worm woes

High worm burdens can lead to severe production losses due to poor weight gain, high treatment costs or even direct animal losses. Managing your herd by monitoring the worm burden, is an easy and cost-effective means of prevention through building a parasite resistant herd or flock.

Dr Gillian Declercq, community state veterinarian with the Gauteng Department of Agriculture and Rural Development (GDARD), says there are two types of worms. The first are intestinal worms that affect the gut and feeds directly off the food eaten by the animal. They can cause diarrhoea and severe weight loss. As the animal loses weight, it loses protein which causes a soft jelly-like bag under the jaw, known as bottle jaw.

"The other type of worm is blood suckers, that attach to the inside of the intestine or stomach lining and suck blood from the animal," she explains. As the animal loses blood, it becomes anaemic and weak, does not grow and, if not attended to, can die.

How to check for worms?

The five-point check is used to check for worm burdens in livestock. Checking all five points is important to determine whether worms are present, and can also give an indication of whether it is intestinal worms:

1. Check the **nose** for nasal discharge.
2. Check the mucous membrane in the **eye** for anaemia.
3. Check the **jaw** for bottle jaw.
4. Take a condition score on the **back/loin area**.
5. Check the **rear** for signs of diarrhoea.

It is important to check animals weekly in summer, and every second week in winter, and to treat accordingly.

The FAMACHA© system

The FAMACHA© chart, developed by Drs Francois Malan, Gareth Bath and Jan van Wyk, is a scoring system used to determine how anaemic or pale an animal is, by looking at the colour of its mucous membrane in the eye. "We look at the inner-bottom of the eyelid and compare the colour to that of the FAMACHA© scorecard."

This check is important in order to assess the severity of the worm infestation or how well the animal is coping with the worms it is exposed to. It makes economic sense to only treat those animals that need assistance. Regularly blanket-treating an entire flock with a dewormer can result in the development of resistance against the product.

For accurate colour scoring using the FAMACHA© card, the cards must be kept out of sunlight and internet examples should preferably not be used. Order your card from the Ruminant Veterinary Association of South Africa at www.ruvasa.co.za, or the Livestock Health and Production group at 012 529 8038.

Understanding the FAMACHA© chart

A score of 1 or 2 (a nice red-pink mucous membrane) shows that the animal is healthy and does not need treatment. If the membrane has a white or almost white coloration, a score of 4 or 5 shows the presence of bloodsucking worms and that your animal should be treated.

Treating for worms

"When choosing a deworming product, pay attention to the encircled numbers on the label, which indicate the active ingredient group in the product. It is recommended that you use one active ingredient per year."

Keep tabs on how your animals respond to these treatments. Do this through weekly checks using the five-point check. "Should your animals continue showing high worm burdens after treatment, it is wise to perform a faecal egg count reduction test. Your veterinarian will collect samples and check whether the products you are using have resistance on your farm. Pharmaceutical companies will often assist you in getting a product that will work on your farm."

This article is the third in a series of informative animal health articles. The series walks hand in hand with the #VideoVet video series that can be viewed on www.agriorbit.com.

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For more information, contact your MSD Animal Health representative or phone 011 923 9300. (ZA/ORUM/0218/0003e)

By Koos du Pisanie

The influence of lameness on dairy cows' production

Lameness among dairy cows is a problem that can cost a farmer dearly. Some experts believe that lameness is a disease causing many side effects, while others are of the view that lameness is not a diagnosis, but rather a symptom of other underlying problems.

Jackie Tucker, a ruminant specialist at Chemunique, says regardless of how you look at it, lameness can be one of the major profit eaters on a dairy farm. Not only does it directly affect milk production, but it has an indirect influence on reproduction and the immune system.

Reasons for lameness

Jackie says most people wrongly believe that lameness is caused only by poor nutrition. "Acidosis (*suurpens*) can cause a chain reaction, such as inflammation that weakens the animal's immune system, weaker hoof growth and more. Most causes of lameness are, however, due to environmental management on the farm."

> "Not only does lameness directly affect milk production, but it has an indirect influence on reproduction and the immune system."

She divides lameness into two classes, namely bacterial and mechanical. "Bacterial lameness occurs when the environment is not managed properly. Here we are referring to aspects such as hygiene management, the use of an effective footbath and scraping of housing.

Hooves in poor condition can negatively affect cattle's walking ability and may cause lameness.

"Mechanical lameness, on the other hand, can be caused by even more factors, such as wear and tear of floors and paths where animals walk, cow comfort, the length of time animals lie down during the day, the size of the parlour and each animal's space, the distance to the milking parlour, heat stress and stones on the premises. All are management aspects that can be corrected."

Consequences of lameness

Lameness in dairy cows can have enormous consequences on the farm and each one can cost the farmer an increasing amount of money.

Firstly, it has a major effect on the animal's health. Jackie explains that lameness suppresses the immune system and can cause an inflammatory reaction in the animal. "When you have a suppressed immune system, other diseases such as mastitis will occur more frequently."

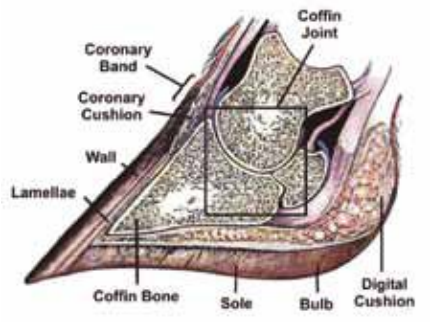
Another typical consequence of lameness is that cows' intake decreases, since they cannot reach the feed trough; in this instance, the effect of 'bully cows' becomes even more severe. Lameness also affects the labour efficiency on the farm, because animals move slowly, causing frustration and poor animal handling. It is a vicious cycle.

So, does a lame cow become skinny, or does a cow in poor condition become lame? Jackie says there is merit in both scenarios. "Because a lame cow struggles to walk, she will struggle at the feed trough and lose condition. This, in turn, leads to other problems, diseases and stress. Likewise, there is merit in the second scenario. A cow in poor condition can also become lame."

Shock absorbers

She explains: "One of a cow's major shock absorbers is located at the bottom of its hoof – the fat part or digital cushion. It absorbs most of the pressure and shock that occurs during walking. If this part is not healthy, it causes severe pressure on the hoof and especially the coffin bone. That means that a combination of nutrition and environmental management leads to lameness."

Figure 1: Composition of a cow's hoof.



Lameness on dairy farms is a complex problem and the solutions are just as complicated. To the dairy farmer, the essence of the matter is the losses that are suffered because of the problem. The difficult part is determining what the losses will amount to.

Jackie describes a points system that was developed (Sprecher *et al.*, 1997, and PH Robinson, PhD, Department of Animal Science, UC Davis) as an excellent tool for calculating the milk loss within a herd. This model allows for the animals in a herd to be evaluated based on their appearance and walking ability. The percentage of the herd in each category is indicated.

She explains the loss of milk in a specific herd based on an evaluation report: "From the report it is clear that 7% suffers from severe lameness. This is seven out of every 100 cows, which is quite common. The milk losses alone, according to Sprecher and Robinson's financial evaluation, reaches an average of 0,5 litres per cow per day, which adds up to R93 000 per year for the 100 cows. If we were to implement a prevention programme and its goals are reached, we can return R55 000 of the farmer's profit."

Lack of production

This however illustrates only the farmer's possible loss of milk. Other losses that will cost the farmer money are the lack of reproduction, farrier costs, a higher risk of other diseases and accompanying veterinary costs, medications, treatments, higher labour costs (because lameness is more labour intensive), and higher fertility costs.

Dr Roger Blowey, a veterinarian from Britain, explains these financial losses to farmers by stating that good management of lameness and regular hoof care, costs only 5 to 10% of what a severe case of lameness per cow will cost.

According to Jackie, the importance of evaluating a herd at least twice a year, cannot be overemphasised. In cases of severe lameness in a herd, it can even be performed monthly, and adjustments should be made to solve the problem. A locomotion score is a handy instrument when carrying out the evaluation.

Figure 2: Locomotion score goals, % cows.

1	Standing and walking, flat back	75
2	Standing flat back; walking, arched back	15
3	Standing and walking, arched back	9
4	Standing and walking, arched back; one or more limbs favoured	0,5
5	Standing and walking, arched back; no weight bore on a limb	0,5
	Steven Berry, DVM, UC Davis, personal communication, 2001	

Lameness specialists

There are also excellent lameness specialists and farriers who are trained to do evaluations. They go to great lengths to determine the cause of the problem and to help the farmer in finding solutions. Something that works on one farm does not necessarily work on the next farm. Every case is unique.

> "In cases of severe lameness in a herd, evaluations can be performed monthly, and adjustments should be made to solve the problem. A locomotion score is a handy instrument when carrying out the evaluation."

The secret is to have a team of people, consisting of a lameness specialist, farrier, nutritionist and farm manager, on the farm who can handle the lameness and evaluation management programme.

Jackie is of the opinion that there will always be problems with lameness on dairy farms, but the negative effects can be reduced through good management. "Regular and efficient visits by experts and farriers are necessary to ensure that cows have the right hoof balance for their environment and that overgrowing hooves do not cause lameness.

"Attention to the right nutrition is important, but cow comfort should receive the most attention. The modern consumer is increasingly placing pressure on farmers to make animal welfare a high priority." SF

For more information, phone Jackie Tucker on 011 789 2414 or 082 571 2165, or send an email to jackie@chemunique.co.za.

Why diversification should be central to your financial planning

OLDMUTUAL

Many farmers consider their farm to be their sole investment, retirement plan and income, ignoring the risks and potential dangers of placing all their eggs in one basket.

Old Mutual's research indicates that only 19% of farmers invest outside the farming operation, and only 35% of farmers own property other than their farm. In addition, 95% of farmers have no investment in assets outside the South African economy. Many believe their farm is their single most reliable investment and plough back most of their capital into the farming operation.

Investment portfolio

Diversifying your risk by investing outside the farming operation is a sound business principle that farmers should consider. Diversifying your financial portfolio will also help when it comes to succession planning.

There is no one-size-fits-all investment portfolio. Each farmer's risk profile and appetite should be considered and the risk and taxation aspects of each investment option should be assessed.

- The lower the risk, the lower the potential return, and *vice versa*. Better returns can be expected from a diversified portfolio over the longer term because of exposure to more risky investments such as shares.
- The way in which investment portfolios are structured, determines how tax efficient it will be and could make a significant difference in the eventual return for the investor. Offshore investments could be especially tricky with onerous tax compliance issues.

Old Mutual recently launched the Global Food & Agri Portfolio via Old Mutual Wealth's Private Client Securities (PCS). PCS manages share portfolios for individuals and businesses using model share portfolios or structuring, and creates bespoke solutions for its customers.

The new Agri Portfolio is designed for investors who believe in the long-term prospects of the agricultural value chain and have an appetite for investing globally.

The Old Mutual PCS Global Food & Agri Portfolio invests in carefully selected international companies that focus on farmland, applied research and technology, transport, and agricultural inputs such as equipment and fertilisers. The portfolio includes companies such as John Deere, DuPont, BASF, Mondi, Heineken, Unilever, Nestlé, Alphabet, Dannon, VanEck and ABInBev. Old Mutual also offers several other diversification mechanisms.

For more information, contact Koos Nel on 082 459 1407, +27 (0)12 369 7231 or email knel1@oldmutual.com. Alternatively, visit *www.oldmutual.co.za/personal/financial-planning/agri*.

By Frikkie Maré

Food-borne diseases and consumer confidence

Listeriosis has been with us for some time now. The seriousness of the matter is evident in the number of reported cases, as well as the number of deaths resulting from the disease. Its presence has been like a menacing predator hiding in the grass; we were all aware of the danger, but were uncertain from which direction the onslaught would come.

Although there was a lot of speculation concerning the origin of listeria and many (mostly false) rumours did the rounds, Enterprise (Tiger Brands) and Rainbow (RCL Foods) were finally identified as the culprits one Sunday in March.

Processed meat is damned

I do not have the necessary proof to make a judgement on these companies, but the public accepted the 'conviction' straightaway. The companies in question acted swiftly; the factories in question were closed and certain products removed from the shelves, with everyone hoping that the public would be satisfied. Unfortunately, this was not the case, as consumers had lost confidence in processed meat produced by basically all brands.

And it didn't stop there. Although many of the polony brands don't even contain red meat, the products are coloured red and consumers therefore immediately linked it to red meat. As such, their confidence in the general red meat market was also lost.

Imported mechanically deboned chicken, which was the apparent origin of the listeriosis outbreak, essentially caused consumers to reject processed meat and the red meat market. This led to a sudden loss of market for the animals of pork producers, while the demand for and price of beef and lamb also dropped.

Directly from the farmer

If you have been keeping an eye on social media, you would have noticed an attempt by several livestock producers to create an extra source of cash flow, driven by the fear of listeriosis. Apparently, the only place that 'safe' meat could be obtained amid the crisis was directly from the producer. Daily advertisements were placed for meat supplied directly by the farmer, stating that it was not contaminated in an abattoir or processing plant.

Although it sounds legitimate, this is a dangerous game to play. The advertised meat may come directly from the producer, but it has definitely not been tested and declared free from listeria. If anyone were to contract listeriosis from these products, it would cause the red meat industry even more harm, as consumers' trust in the origin of the product would be damaged.

A Spanish lesson

In 2016, I visited the farm La Finca near Madrid in Spain. The owner runs a closed cattle herd, his own feedlot, a processing plant, a laboratory that tests all meat, two butcheries (selling only meat from his own cattle) and a restaurant. He told us that mad cow disease had broken out in Europe just after he opened his butcheries and that sales plummeted by 85% within a week.

He realised the only way of regaining consumers' confidence in his products, was to present clear evidence of its safety. He started marketing his concept on radio, television and by handing out pamphlets. In this campaign, consumers were informed about his closed herd, their mad cow disease-free status, and that all meat sold in his butcheries and restaurant was declared mad cow disease-free by the laboratory.

> "I do not have the necessary proof to make a judgement on these companies, but the public accepted the 'conviction' straightaway."

These claims were substantiated with laboratory reports in the butcheries and restaurant alongside a complete traceability system showing the origin of each animal. By following this route, he retained consumer confidence, and within two weeks his sales increased to more than 80% of what it had been before the outbreak of mad cow disease.

In conclusion

In the past, food-borne diseases have led to huge losses for producers of agricultural products worldwide. The listeriosis situation in South Africa is serious, and ways of regaining consumer confidence should be actively investigated. These methods, though, should be based on facts. The industry will burn its fingers if empty (untested) promises and statements are made to consumers. SF

For more information, contact Frikkie Maré on MareFA@ufs.ac.za.

Drones are more than just toys. They are increasingly being used in agriculture to save on costs and labour.

Drones:
A technological revolution on farms

By Koos du Pisanie

The current generation is caught up in a technological revolution. Daring livestock farmers in particular are excited about new ways of performing routine tasks without the frustration of having to use extra labour. In fact, current technology means that fewer hands are needed on the farm.

Drones are technological 'wonders' that are becoming increasingly popular on livestock farms. Farmers have many routine tasks, some daily and some weekly, but the crux of the matter is that they need to be done. Fences, windmills and dams must be checked regularly, the licks and other sources of nutrition in the camps must be monitored, livestock must be counted, and an eye must be kept on predators.

These routine tasks are time consuming, and because most livestock farms in South Africa span vast areas, the farmer's monthly fuel costs are high. With drones, routine tasks can not only be done in a shorter time, but it is also more cost effective.

Beware of loopholes

To a livestock farmer, the idea of a drone taking over the brunt of the routine work, is very tempting. Several aspects should however be borne in mind, before simply investing in one.

According to aviation laws, drones and radio-controlled model airplanes fall in the same category, but the use of drones has increased so rapidly, that the South African Civil Aviation Authority (SACAA) is working on new regulations specifically for drones.

Jaco van der Merwe of Action Gear, a specialist dealer who has been importing and selling drones online since 2010, says that aviation law distinguishes between two uses of drones. The first is for commercial use and the second when it is used as a hobby.

Jaco describes commercial use as any use of a drone in return for any form of compensation or enrichment. "In such a case the pilot of the drone needs a license. It isn't an official pilot's license, but a remote pilot's license, which is less complex than the full pilot's license and less costly. The drone must also be formally registered at SACAA."

Valid operator's certificate

He says the commercial use of drones is described as either individuals or businesses providing a service to clients. "It is mostly utilised to collect data, and such a person or business must have a valid operator's certificate that proves that he/she is a registered supplier of aviation services. In the case of a land owner using his/her own drone on the farm, there is still a grey area in the legislation."

On livestock farms, drones are used for different tasks such as counting livestock, searching for livestock in inaccessible parts, and to check camps and windmills.

Regardless of whether a drone is used commercially or as a hobby, there are rules that apply to everyone. On the SACAA website, these rules are outlined in Section 101 of the *Civil Aviation Act, 2009* (Act 13 of 2009).

Civil Aviation is strict about safety, and one of the rules is that a drone cannot be flown closer than 50m from any person or group of people in a public area, such as a sports field or at social events. You can fly close to people when they are under your control and you have their permission, such as at a children's party.

National parks and airports

You are also not allowed to fly over someone else's property, national roads or buildings, unless you have permission from the owner. Other areas that are out of bounds for drones are prisons, police offices, nuclear power plants, important government buildings such as the Union Buildings and Parliament, fires or crime scenes.

It is forbidden to fly a drone in South African national parks. In parks where it is permitted, the drone may not fly lower than 457m above ground, as it can scare game.

Drones may also not be flown within 10km of an airport or airfield, nor close to manned aircraft. In cases where emergency helicopters or crop spraying aircraft are working on farms, it is the duty of the drone pilot to make way for the aircraft to do their work.

There is leeway for people who use drones as a hobby or for personal use, such as on farms. The act, however, states that people who do not obey these rules and regulations will face a jail sentence of ten years or a fine of R50 000.

Requirements of ownership

According to Jaco, there is only one requirement for someone who wants to use a drone for non-commercial purposes. "He/she must be older than 18, know the aviation rules and apply them at all times. Anyone can therefore become the owner of a drone."

He says it is easy to fly a drone. "It does not differ much from a radio-controlled plane and beginners quickly learn the skill. Almost all drones have an obstacle avoidance function that automatically prevents it from flying into something."

"It is forbidden to fly a drone in South African national parks. In parks where it is permitted, the drone may not fly lower than 457m above ground, as it can scare the game."

Power lines are one of the main problems when using a drone. "It is one of the things an obstacle avoidance system cannot detect, and the high magnetic field of power lines has a strong negative effect on a drone's compass and navigation system. It is advisable not to fly close to power lines.

"Other structures have no substantial effect on the signal, but it is handy to bear in mind that there should always be a direct line of sight between the operator and the drone. As such, people who want to fly over long distances should take note that there may be many obstructions in the line of sight over such a distance."

Think before you buy

The staff of Action Gear agree that it is an expensive hobby and that several aspects should be considered if you want a drone. Most important is the flying time of the drone, as well as the quality of the camera.

Jaco believes the flying distance should always be considered, especially on livestock farms. "In most cases, the distance is limited to 2km in clear weather, without any signal interference.

"Other factors are how easy it is to repair a drone, its portability and, obviously, the price." SF

For more information, visit *www.actiongear.co.za* or phone Jaco van der Merwe on 011 781 1323. For a map of all no-fly zones, visit *www.actiongear.co.za/noflyzones*.

Drones are not allowed to simply fly anywhere. The owner must still comply with Civil Aviation regulations.

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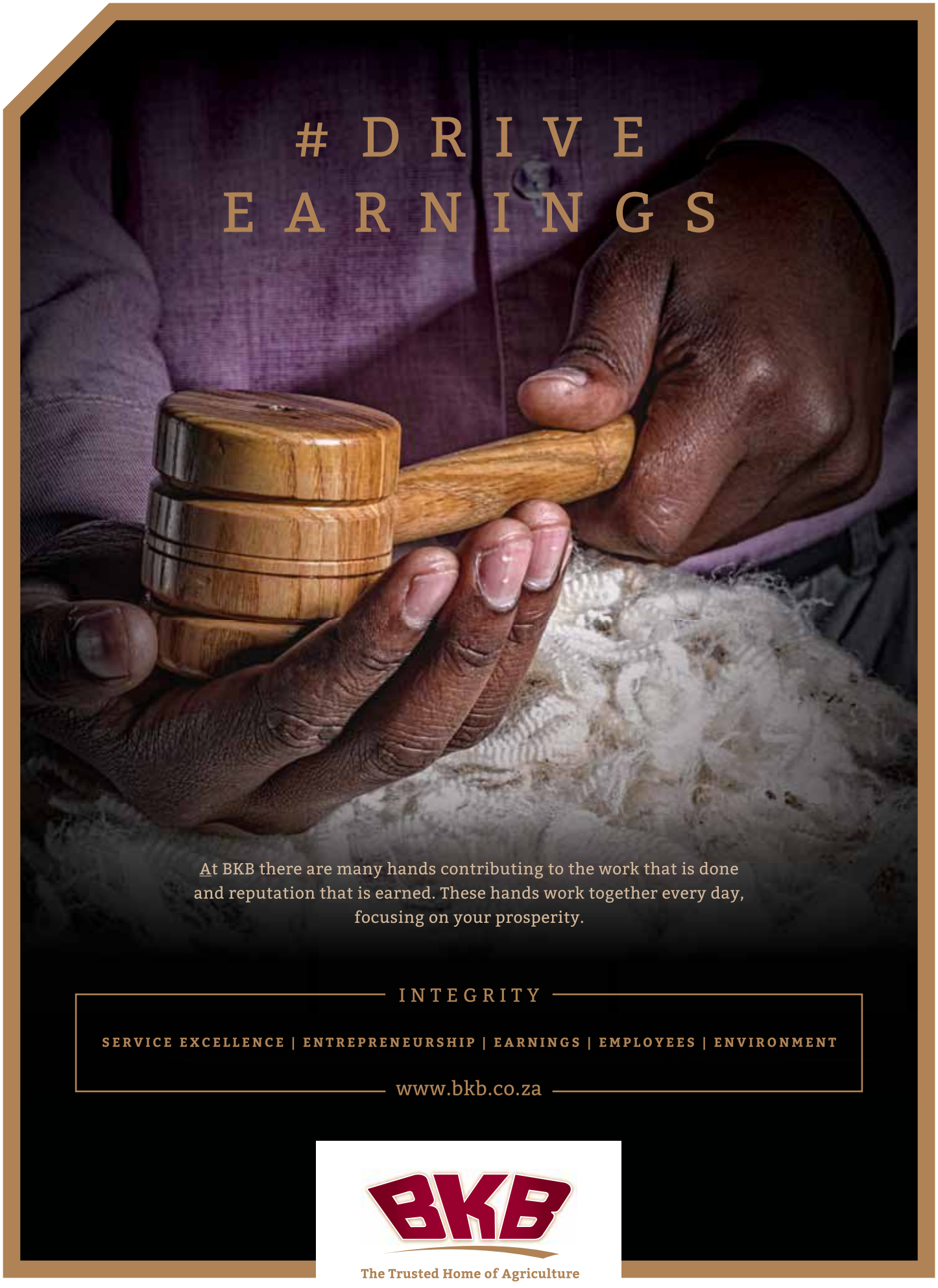
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