ProAgri ZAMBIA

technology for the farmer

No 93

Free



Vertical farming for the future

Heat stress in poultry: Tips from Novatek

FAW TRUCKS

Fuel-efficient FAW trucks produce additional fleet savings for Rubtrans Logistics

Introducing the BULK CHICK FEEDER LID

NEW

The lid prevents birds from entering the feeder, contamination, perching and keeps feed clean & dry.

Keep an eye out for more exciting **NEW PRODUCTS** being launched soon.

Lid optional extra



PAZ/27670/FP

LIVESTOCK SERVICES CO-OPERATIVE SOCIETY LIVESTOCK

OFFICIAL DISTRIBUTOR
OF POLTEK® PRODUCTS

Tel: 0211-254024 / 254497 | **Fax:** 260-211-253925
Email: admin@livestock.co.zm
Address: Lusaka Showgrounds, Lusaka, Zambia

POLTEK®
LEADERS IN PLASTIC POULTRY TECHNOLOGY



Dear Readers,

I am delighted to welcome you to the latest edition of ProAgri Zambia - your trusted source for the latest developments and innovations in the field of agriculture in our great nation. As we enter a new season, it is essential to reflect on the vital role that agriculture plays in our lives, from providing sustenance to fostering economic growth.

In this issue, we explore the challenges and opportunities facing Zambian farmers in the wake of evolving weather patterns. Climate change continues to impact our agricultural landscape, and our dedicated farmers are embracing sustainable practices to adapt to these shifts. You will find insightful articles on climate-smart agriculture and how it transforms the way we farm.

We also delve into the advancements in technology and mechanisation that are revolutionising the agricultural sector in Zambia. From precision farming to innovative crop protection methods, these developments help our farmers to increase productivity and reduce the environmental impact.

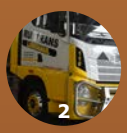
In our cover story, we feature the benefits of FAW trucks in the business and operations of Rubtrans Logistics. As always, we provide you with expert advice on crop management, livestock care, and market trends. Our goal is to empower every farmer, whether he has acres of land or a small backyard garden, with the knowledge and tools to succeed.

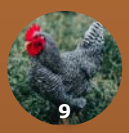
This magazine is a testament to the dedication of Zambian farmers, and we thank them for their hard work in feeding our nation and contributing to its prosperity.

We hope this issue inspires you, provides practical insights, and keeps you informed about the agricultural landscape in Zambia. We are committed to being your most trusted source of information, and we look forward to continuing this journey of growth and learning with you.

Wishing you a successful and bountiful season ahead.

ProAgri greetings
Bianca Henning
bianca@proagri.co.za













Content

2. Fuel-efficient FAW trucks produce additional fleet savings
5. Poultry news from Novatek
7. Senter has the perfect pivot propulsion for you
9. Chicken breeds part 2: Layer hens
15. Technews: The latest in agricultural technology from around the world
21. Livestock identification part 2: Ear tattooing and notching
26. Managing the effect of heat on poultry performance Part 1: Heat stress
29. Beware of unnecessary losses in broiler production: Part 2
30. Is Africa ready for Artificial Intelligence?
33. Food for Africa: Millet
41. Hobby or small-holder farmers: Vertical farming may be the way to go
45. Fruit production part 9: Cherries take the cake

Cover



The needs of transport operators are the first consideration of FAW Trucks. Rubtrans Logistics recently expanded their fleet with FAW's JH6 28.500FT models. Read on page 2 how FAW contributes to additional fleet savings for Rubtrans Logistics.

ProAgri
technology for the farmer ZAMBIA
No. 10 Tito Road
Rhodespark, Lusaka
+26 (0)97-769-9786
www.proagri.co.za

Copyright © 2023. All rights reserved. No material, text or photographs may be reproduced, copied or in any other way transmitted without the written consent of the publisher. Opinions expressed are not necessarily those of the publisher or of the editor. We recognise all trademarks and logos as the sole property of their respective owners. ProAgri shall not be liable for any errors or for any actions in reliance thereon.

ProAgri Zambia

Editor
Bianca Henning > +27 82-326-2572
bianca@proagri.co.za
Reporters
Benine Ackermann > +27 73-105-6938
benine@proagri.co.za
Maryna Steyn > +27 82-261-9177
maryna@proagri.co.za
Natasha Pansegrouw > +27 81-736-4236
natasha@proagri.co.za
Specialist Writer
Annemarie Bremner > +27 82-320-3642
annemarie@proagri.co.za
Senior Production Manager
Zainab Pandor > +26 (0)97-769-9786
zainab@proagri.co.za
Client Relations Manager
Carin Swartz > +27 84-233-0123
carin@proagri.co.za
Marketing Manager
Diane Grobler > +27 82-555-6866
diane@proagri.co.za
Marketing
Xander Pieterse > +27 79-524-0934
xander@proagri.co.za
Johan Swartz > +27 71-599-9417
johan@proagri.co.za
Tiny Smith > +27 82-698-3353
tiny@proagri.co.za
Lynette van Tonder > +27 74-694-4422
lynette@proagri.co.za
Evette Liebenberg > +27 71-891-4441
evette@proagri.co.za
Denechia Lowings > +27 74-411-6440
denechia@proagri.co.za
Head of Design
Michelle Kruger > +27 84-416-1780
michelle@proagri.co.za
Design
Anja Oosthuizen Jamie-Lee Tromp
Enquiries
Engela Botha > +27 84-088-0123
engela@proagri.co.za
Distribution and subscription
Nita Volmer-van Zyl > +27 79-515-8708
nita@proagri.co.za
Accounts
Ronel Schluter > +27 83-748-3413
accounts@proagri.co.za
Business Manager
George Grobler



Rushil Ahir, Director of Rubtrans Logistics.

Fuel-efficient FAW trucks produce additional fleet savings for Rubtrans Logistics

by Bianca Henning

The needs of transport operators are the first consideration of FAW Trucks. Therefore, they provide fleet owners with a range of vehicles that minimise the total cost of operation in their respective categories. Fleet and transport operators are under massive pressure to contain operating costs as much as possible to offset the steadily increasing price of diesel fuel.

Rubtrans Logistics running strongly for 45 years

Rubtrans Logistics is owned and managed by a father and his sons. Rushil Ahir, Director of Rubtrans Logistics, tells more: "Rubtrans Logistics is a family-owned business with the second-generation adding value and new innovations. We are formerly from Ladysmith. In 1978, my parents started the transport business, where we transported fresh produce. From these humble beginnings, the company has grown to become the ultimate road cargo, transport and logistics solution in Southern Africa with 120 vehicles."

He adds: "We tailor our logistics solutions around our clients' needs ensuring their brand reputation is never at risk, and that is only possible with the best, reliable vehicles on the road."

Rubtrans Logistics' relationship with FAW

"After I saw one of the FAW JH 6 models on the road, I made contact with FAW to find out more," Rushil adds.

"We took in the FAW trucks, and to date we have not looked back one day!"

FAW's JH6 28.500FT fleet

"Before choosing the FAW JH 6, we had a look at various other models, but the test drive with the fleet of FAW's convinced us: The JH 6 proved that horsepower and fuel economy comes hand in hand with these models. Our fleet of FAW's have certainly showed and proven to us the best fuel efficiency," Rushil says.

"From our drivers' perspective's, I have received only good reviews and feedback. No one wants to get out of the vehicle, because of the comfort, less fatigue and the cabin space," he continues.







Reliability and performance of FAW's vehicles

"To date we haven't had any issues with our FAW trucks, with +- 60 000 km's on them. Whenever we have an enquiry, the response of the FAW team is fantastic!" he admits.

Rushil explains that the cost per kilometre to run an FAW is way less than any other vehicle on the road at the moment. "In terms of the performance of the vehicles, compared to the rest of the fleet, I would say that I have about a 45% saving on tyres, fuel and time. We also do not have any downtime with our FAW fleet.

"As a transporter or logistics owner, the price per kilometre running an FAW, compared to running any other brand on the road, was better by far. We are proud to say that Rubtrans Logistics has an 99,8% delivery rate, and our fleet of FAW's JH 6's has certainly contributed to these statistics, due to the fuel efficiency, safety and reliability of the vehicles," he adds.

"FAW has never let us down on the road! Therefore, we will place another order before end of November 2023 for 10 new JH 6 FAW's, through the ELT Group," Rushil says.

He concludes: "You are never alone on your journey with FAW - the support team from FAW is always there to support you and to keep your business running smoothly. It is an honour for us to be part of the FAW and ELT family, and they will most definitely see more business from Rubtrans Logistics in the future."



FAW Trucks is committed to ensuring operating efficiency throughout its vehicle range and constantly compares the figures it achieves against other comparative brands to ensure they remain the best. For more information, visit FAW's website at www.faw.co.za or visit your nearest dealer.

SARO AGRO INDUSTRIAL LTD

QUALITY & SERVICE

SARO SUPPLIES & PROVIDES BACK UP FOR QUALITY WORLD RENOWNED, PROVEN EQUIPMENT BRANDS RELIABLE MACHINERY



KIRLOSKAR HORIZONTAL SPLIT CASE PUMPS
CAPACITY : 2400m^3/hr, H=240m



KIRLOSKAR END SUCTION PUMPS
CAPACITY : 7000m^3/hr, H=42m



SPP FMUL APPROVED FIRE DEISEL PUMPS



SPP SELF PRIMING DEWATERING PUMPS
CAPACITY : 2550m^3/hr, H=130m



KIRLOSKAR GENERATORS
10 KVA – 1000KVA



SUBMERSIBLE DEWATERING PUMPS
CAPACITY – UP TO 900M^3/hr,
HEAD- UP TO 140m



TAFE TRACTORS
35HP – 110HP
2WD & 4WD



HIGH EFFICIENCY CROMPTON ELECTRIC MOTORS
FOR MINING APPLICATION
LV | MV | HT



SKID TANK
2000Ltr - 100,000Ltr

www.sarozambia.com

LUSAKA
Plot No. 5284 Buyantanshi Road
P.O Box 35168, Lusaka, Zambia.
Tel: 241477, 845675, 0965000051,
Fax: (260) (211) 846224, 846225

E Mail: saro@saroagri.co.zm

KITWE
Plot No. 4013 Mutentemuko Road
Heavy Industrial Area, Kitwe - Zambia
Tel : (260) (212) 210793/94
Fax: (260) (212) 210795

E mail: info-kitwe@saroagri.co.zm

MKUSHI
P. O Box 840238 Mkushi Turn off
Mkushi -Zambia
Tel: (260) (215) 352569
Fax : (260) (215) 352568
Cell: (260) (979) 343330, (973) 654518
E mail: saromkushi@zamtel.co.zm

LIVINGSTONE
P.o Box 60010
Plot No. 1015Chifubu Road
Tel: 0213 322992
Cell: 0973-394547/0977797962
0955797962

Poultry news from Novatek

Article supplied

Heat stress management in monogastric species

Heat stress is a critical concern in the management of monogastric species, including poultry, swine, and rabbits. Monogastric animals are highly sensitive to environmental temperature fluctuations, making it essential to implement effective heat stress management strategies. Let us take a moment to explore the causes and consequences of heat stress in monogastric species and discuss various management techniques to mitigate its impact.

Causes of heat stress

Monogastric species are homeothermic, which means they regulate their body temperature within a narrow range. When ambient temperatures rise, they can experience heat stress due to the following factors:

High temperatures: Hot weather, especially during summer months, can elevate the environmental temperature beyond the comfort zone of monogastric animals.

Humidity: High humidity levels can impair the animals' ability to dissipate heat through evaporative cooling, causing heat stress.

Poor ventilation: Inadequate ventilation systems in housing facilities can trap heat and humidity, further exacerbating the problem.

Consequences of heat stress

Heat stress can have severe consequences for monogastric species:

Reduced performance: Heat-stressed animals often exhibit decreased feed intake, growth rate, and egg or meat production, leading to economic losses for producers.

Mortality: Extreme heat stress can be fatal, especially in poultry, where high temperatures can cause heat strokes and sudden death.

Health issues: Heat stress weakens the immune system, making animals more susceptible to diseases and increasing medication and treatment costs.

Heat stress management strategies

Environment control: Proper housing design and management are essential. Adequate ventilation, shade, and cooling systems can help maintain a comfortable environment for monogastric species.

Hydration: Providing clean, cool water is crucial during periods of heat stress to prevent dehydration. Hydrated animals are better equipped to regulate their body temperature.

Nutritional adjustments: Modify the animals' diet to include electrolytes and feed additives that support thermoregulation. Reducing the energy density of the diet during hot weather can also help.

Reduce stocking density: Lowering the number of animals per unit of space can reduce heat stress as it minimises the heat produced by animal metabolism and provides more space for airflow.

Timing of activities: Adjust feeding and management practices to cooler times of the day, such as early morning or late evening, to minimise heat stress.

Shade and cooling systems: Provide shaded areas and install cooling systems like misting or evaporative cooling to lower ambient temperature within housing facilities.

Monitoring: Regularly monitor the animals' behaviour, respiratory rate, and rectal temperature to identify signs of heat stress promptly. Early intervention is critical.

In conclusion, heat stress management in monogastric species is of paramount importance to ensure their well-being and productivity. Implementing a combination of environmental control, proper nutrition, and vigilant monitoring can help mitigate the adverse effects of heat stress. Proactive measures not only promote animal welfare but also contribute to the economic sustainability of monogastric farming operations, making it a critical aspect of modern animal agriculture.

Novatek is well known for being Zambia's leading stock feed producer and distributor. They pride themselves in supplying the best quality feed across the country. For information on Novatek's wide range of products and quality feed, contact Robert Kanyembo, Novatek National Sales Manager on (+260) 97-125-2522.



Polyflex Zambia Limited



Pipes for Reticulation of Potable Water, Sanitation, Irrigation, Civil Construction, Mining & Telecom Sectors from

FLOWTECH
Unmatched quality - discover the difference!

SATAS SANS 966-1

SABS ISO 9001:2015

Mobile
+260 771 696 816
+260 770 375 999
+265 888 829 028

Email
info@polyflexzm.com
sales@flowtechmw.com



Senter360 has the perfect pivot propulsion for you:

Electric, solar, petrol, and water driven units



Senter360 pivots are well known for their strong structure and durability due to of their construction of high quality steel pipes. The pipe structure is lighter and more wind resistant than angle iron.

Senter360 offers farmers across Africa centre pivots that can perform and last in the tough African conditions. Their pivots are manufactured in South Africa.

"Our pivots are available with a four wheel drive system for clay areas and are fitted with tyres that are specially made for Senter360," says Theuns Dreyer, Managing Director of Senter360. "The main idea is that it will not cause deep wheel ruts like some other types.

"All the trusses on the system are made of steel pipe, unlike the typical angle iron structure. The advantages are a super strong structure and less wind resistance to prevent the pivot from toppling over in strong winds.

Various drive systems

Senter360 has a propulsion system suitable for every purpose. It can be water, electrical or petrol driven.

The water driven unit uses only water pressure to propel the pivot. No electricity is needed at the pivot circle.

The petrol driven system is more adjustable with its engine that uses 1 litre of petrol per hour.

With the electric propulsion system, the farmer can adjust the quantity of water that he wants to apply. The system will choose the speed needed to complete one rotation, from three hours to three days.



The electric system can also work with Senter360 solar panels.

Senter360 also has larger, higher pivots for taller crops. Theuns says: "The standard pivot has 3 metres crop clearance for crops such as maize; one with a higher profile (4 metres) for sugar cane; and a 5-metre high one for bananas or crops that grow extra tall."

All Senter360 pivots can be towed to other circles to gain the most benefit from your existing equipment.

Sprayer packages

Investing in proper sprinklers is really worth your money. "Senter360 pivots use a very high-quality movable sprinkler. A unit inside the sprinkler rotates to cut the droplets into specific engineered sizes and get 97% water applied into the soil," he added.

Stainless steel control box

"The control system is a stainless steel cabinet with quality epoxy coating to ensure a long life. The standard system can be fully automated with full control from your smart phone," says Theuns.

Control Senter360 on your smart phone

The farmer downloads the app for free. It is a web based system that the farmer can manage from his cell phone or computer. Any change of the pivot is reported to the farmer immediately through the app.



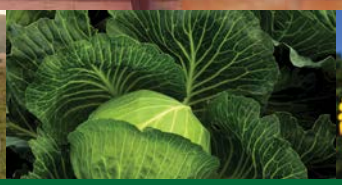


Contact Theuns Dreyer for more information at +27 (0)82-564-5955 or visit their website at **www.senter360.co.za**

FARMERS BARN LTD

DEKALB PANNAR MRI SEED SEED·CO PIONEER ZAMSEED STARKE AYRES

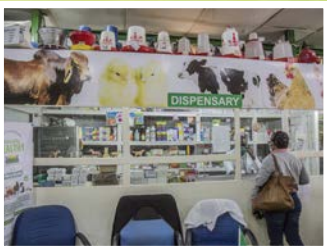






All types of hybrid maize seed | Agricultural chemicals | Horticulture chemicals | Veterinary products
Agricultural tools | Hand tools | Protective equipment | Fumigation | All types of seed





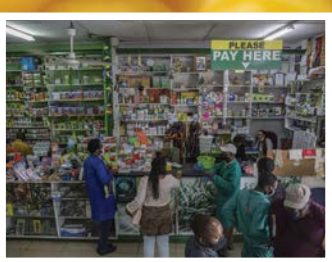


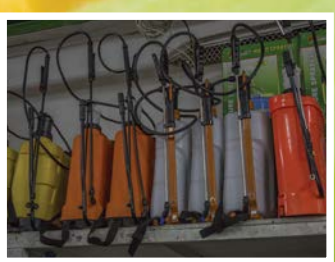
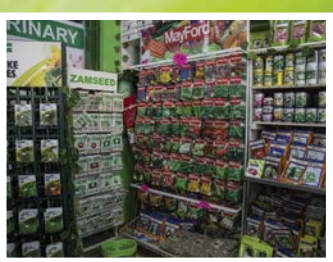








Distributors of Dekalb maize seed

DKC 80-33	**Tamanga**	**Early maturing**
DKC 90-89	**Ngao - Ngao**	**Medium maturing**
DKC 80-53	**-**	**-**
DK777	**Shoma**	**Medium maturing**

DEKALB

DEKALB

FARMERS BARN LIMITED

Farmers Barn Ltd.
Tel: +260 211 225 352
Cell: +260 977 518 635
Farmersbarn_ltd@hotmail.com

Address
Plot 51,
Chiparamba Road,
Lusaka, Zambia

Mumba Road branch
+260 953 077 011
Mumba Road, next to
Uniturtle, Lusaka



Chicken breeds part 2:

Layer hens

by Natasha Pansegrouw

Why are hybrid chicken layer breeds so popular among farmers? This article will seek to provide the answers.

The creation of hybrid chickens requires the mating of two or more pure chicken breeds, with additional matings possible in the future. In some cases of hybridisation, meat or egg-laying birds are produced. In recent years, breeders have been able to produce hybrids with eggs in more desirable colours, more eggs per year, or increased size, or yolk per egg.

These chicken breeds are developed through careful, scientific selection and genetic engineering to maximise traits useful for commercial egg production.

Genetically pure offspring cannot be produced from a hybrid parent. Chickens bred from a male and female of certain breeds will produce offspring that are a unique mix of characteristics from both parents.

The use of hybrids, as opposed to pure breeds, offers numerous benefits. Because their blood lines are so different from their parents, the offspring tend to be extremely healthy and physically fit. The term "hybrid vigour" is used to describe the phenomenon that occurs when two different bird breeds are mated. The resulting offspring is superior to both of its parents.

Amberlink

Mixed offspring of a male Light Sussex and a female Rhode Island Red resulted in the Amberlink chicken breed.

The cream-coloured feathers of an Amberlink chicken have reddish overtones, and they form beautiful patterns not only on the neck but also on the wings.

This type of hen is highly sought after because of her calm nature and



Amberlink chickens have beautiful neck and wing patterns of cream-coloured feathers with reddish overtones. (Source: sasmallholder.co.za)

WEED FREE MAIZE FROM THE START



Lumax®

A suspo-emulsion systemic pre- and early post-emergence herbicide for the control of annual broadleaf weeds, grasses and the suppression of certain weeds in sugarcane.

NON-SELECTIVE HERBICIDE

Touchdown Forte® Hi Tech

A soluble concentrate non-selective foliar, systemic herbicide with a wetting agent for use in glyphosate tolerant crops and for the control of a wide range of annual and perennial grasses, broadleaf weeds, certain woody perennials and industrial weed control.



The Gallery Office Park, May building, Stand Number (4015a), Lagos road, Rhodespark, P.O. Box 33088, Lusaka, Zambia

Tel: 096 762 4634
Website: www.syngenta.co.zm

syngenta®



The eggs laid by Lohmann Brown hens are considered among the highest quality in the industry. (Source: desobry.co)

her ability to lay about 280 eggs per year. If you are looking for an attractive and productive backyard chicken, the Amberlink is a sensible choice.

These birds should be considered a part of your backyard poultry flock if you want to get the most out of them with the least amount of work. Amberlink chickens are quite active and prefer a free-range feeding system, despite the fact that an adult male can weigh up to 2,7 kilogrammes and a female up to 2,3 kilogrammes.

The free-range system meets their nutritional requirements without confining the birds to a cage. Instinctively foraging, Amberlink chickens thrive when allowed to roam freely in the grass and find their own food.

The Amberlink chicken is a resilient breed that can thrive in many environments. They are able to regulate their body temperature and lay eggs continuously throughout the year, making them well suited to colder climates.



The feathers of a Boschveld chicken feature a spotted pattern in shades of black, brown, and white. (Source: Facebook by Tshepo Tshambani)



Hy-line chickens come in a wide range of colours, from white to brown. (Source: zootecnicainternational.com)



An Amberlink hen typically lays around 280 brown eggs per year. The eggs can be any size between medium and large, but tend to be on the larger side. Many factors, including the chickens' diet and environment, can influence their ability to lay eggs. A purebred hen or breeder hen will stop laying quality eggs between the ages of six and eight years of age.

Hy-line

Another variety of hybrid laying hens is the Hy-line. They can be found in a wide array of colours, from white to brown. The two most common colours in Africa are Hy-line Brown and Hy-line Silver Brown.

Hy-line chickens are favoured for their submissive demeanour and low-maintenance requirements in the backyard coop. Despite hens weighing only 2,2 kilogrammes, they are extremely strong.

Some breeders claim that the Silver Brown is the most common layer in the world. She can start laying at 18 weeks of age and produce 320 eggs annually. Her eggs consistently weigh 63 grammes and have a uniform brown colour.

The Brown Hy-line hens lay eggs reliably until the age of 80 weeks, and has a high feed conversion rate. The eggs are heavier and have a slightly better internal quality.

Due to their resilience, adaptability, and high degree of feather retention, the Brown Hy-line is a popular breed for free-range environments. Both the Silver Brown and the Brown have a lengthy lifespan.

Lohmann Brown

The Lohmann Brown is a cross between the Rhode Island Red and the White Rock chickens.

Lohmann Brown hens are known for producing some of the best eggs in the industry at a rapid pace. This hybrid breed can thrive in a wide range of environments.

Lohmann Brown chickens have a reputation for being of superior quality. They can start laying eggs at 19 weeks, and produce 360 eggs over the course of a year. Each of their brown eggs can weigh 65 grammes.

The improved laying capacity of chickens can be traced back to Lohmann breeders. The Lohmann Brown matures quickly and can lay eggs for up to 72 weeks of age.

Lohmann Browns are known for their slim build and light bone structure. Adult roosters can grow to 3 to 4 kilogrammes in body weight, making them significantly heavier than hens. In their prime, hens can weigh up to 2,2 kilogrammes.

The docile and social nature of Lohmann chickens makes them ideal for backyard flocks. These chickens are bred for their commercial viability







The Potchefstroom Cuckoo's tolerance of the dry climate of Southern Africa is due to its distinct genetic makeup.



and raised on large-scale egg farms. In addition to their commercial use, Lohmann chickens do well on smaller, more environmentally conscious farms.

Boschveld

The Boschveld chicken is a unique cross between three native southern African chicken breeds, namely Venda, Matabele and Ovambo. The bird's feathers are a mottled, spotted pattern of black, brown, and white.

The Boschveld chicken, while not the largest breed, is known for its strength and muscularity. Its long, slender neck is held high, adding to its already distinctive posture.

This breed is popular with hobbyists and small-scale farmers because they are hardy and adaptable. They are claimed to be fantastic at finding food and assisting with pest management in fields and gardens.

It is possible to reduce the use of chemical pesticides by employing their use in gardens. These chickens are resilient and rarely fall ill, even in the harshest environments. Boschveld chickens are economical because they require little in the way of care from humans.

Despite their homely appearance, Boschveld hens are excellent layers, laying 200 eggs per year on average. Hens start laying eggs at about 24 weeks of age. When the hen is young, she lays small eggs, but as she matures, her eggs are larger. The yellow yolks are delicious and visually appealing. The Boschveld is a rare and practical breed that offers its owners many benefits.

Potchefstroom Cuckoo

The Potchefstroom Cuckoo is a cross between the Black Australorp, the White Leghorn and the Barred Plymouth Rock. The Potchefstroom Cuckoo's unique genetic composition makes it resistant to the dry climate of Southern Africa. The ability of the Potchefstroom chickens to adapt to both hot and cold climates makes them a popular choice for local farmers.

The Potchefstroom Cuckoo is well-known for its hardiness.

The breed's resistance to disease and stress allows it to survive and even thrive where other chickens perish. This is why the Potchefstroom Cuckoo is so important in the South African agricultural economy.

The Potchefstroom Cuckoo is selectively bred for its large, light brown eggs, which average 56 grammes in weight. One Cuckoo hen lays between 200 and 250 eggs per year.

References

Azeem, S. (2022) *Chicken breeds*. **ZPoultry. Available at: https://zpoultry.com/category/chicken-breeds/**

Staff Reporter. (2021). *Choose your chicken. SA Smallholder*. **Available at: https://sasmallholder.co.za/2021/05/01/choose-your-chicken/**

Mobile irrigation systems to irrigate Africa

EXPERIENCE IN IRRIGATION SYSTEMS 40 YEARS





CANE MASTER 300



RHINO 300 4X4
HEAVY DUTY AGRICULTURAL IRRIGATOR



CLUBMAN/ FARMER 100
LIGHT DUTY AGRICULTURAL IRRIGATOR



RAINMAKER 200 4X4
HEAVY DUTY AGRICULTURAL IRRIGATOR



GREENKEEPER/ FARMER 200
LIGHT DUTY AGRICULTURAL IRRIGATOR

SPORTSMAN/ CROPMAKER 120
LIGHT DUTY AGRICULTURAL IRRIGATOR

Choose from our **wide variety!**

Suitable for irrigating most overhead crops | Pastures/maize/wheat/tobacco/vegetables/sugar cane etc.

SARO

ZAMBIA www.rotrixafrica.co.za
Steven Siisii | Assistant Manager | Pumps And Irrigation Department
+260 977 824 913 | SARO AGRO INDUSTRIAL LTD
Buyantanshi Road P.O.Box 35168 Lusaka, Zambia | siisii@saroagri.co.zm

ROTRIXAFRICA industries cc
MECHANISED IRRIGATION SYSTEMS
BUILT TO IRRIGATE AFRICA

Lime Your Fields, Get Better Yields

FOR EACH TON OF FERTILISER, THE SOIL NEEDS ONE TON OF LIME

Also available:
Stock Feed lime & Stock Feed Grit



UNITURTLE INDUSTRIES

Turtle Agro

Cell: 0974 990928 / 0973 142990
Email: infolime@uniturtle.com

Chivuna, Mazabuka
Tel: 03 233069

Plot 12913, Mumbwa Road
Tel: 286057 / 286064 / 286258

TECHNEWS

by Annemarie Bremner

The latest in agricultural technology from around the world

Cows (and farmers) will love Exos, the Lely grass robot



The autonomous grass harvester and cow feeder can even be told to apply fertiliser for the next cutting.

The Exos, a fully autonomous vehicle for harvesting and feeding fresh grass, will be commercially available to Dutch dairy farms from the middle of next year.

It took around ten years to develop and was extensively tested on 13 Dutch farms.

The company is targeting farms with at least 150 cows and a minimum of 40 ha, but the autonomous vehicle has also been evaluated on farms with up to 350 cows.

The reciprocating cutter bar is not only lightweight but also helps to keep the power requirement to a minimum.

The grass harvester operates at speeds of 3 to 4 km/h, and the working width is 2 m. The 12 m³ bunker holds about a tonne of fresh grass. The vehicle can be programmed to deliver grass to the right, left, or both sides. A front safety bumper is part of the standard specs, as are front and rear safety cameras. Outdoor navigation is via GPS. Ultrasonic sensors take over when driving inside.

The Exos can also be used to apply liquid fertiliser. The ten nozzles are located directly behind the mowing unit, and the capacity of the fertiliser tank is 100 litres.

Electricity to power the vehicle is supplied by a 400 volt on-board battery. All four wheels have electric motors. (Source: Veehouderij Techniek)



Lely-Exos1: Imagine a machine cutting the grass and feeding the cows all on its own. The company, Lely, did just that … and then built it.

New LEMKEN harrow controls weeds effectively

With the Thulit, LEMKEN presents its first weeder harrow to round off its range of mechanical weed control implements. In developing this machine, the agricultural machinery specialist launched a new concept with four beams and eight rows of harrow tines.

Complex spring combinations are replaced by an innovative hydraulic tine pressure adjustment, which ensures that the tines deliver more even pressure across the full working surface. The pressure can be continuously adjusted to up to five kilogrammes while driving. As a result, the Thulit does an outstanding job during the sensitive crop growth stages.

The tines are arranged with a line spacing of 31,25 millimetres to ensure blockage-free work. Stable, true-to-track and wear-free tine bearings ensure optimum weed removal. A straightforward quick-change system makes it easy to replace the harrow tines.



The Thulit can even handle raised vegetable beds.



The Thulit harrow will initially be available in limited quantities in working widths of 6 and 9 metres from next year.

The Thulit features precise and continuous ground contour following with consistent tine pressure, making it a highly versatile implement, even on very uneven ground and in ridge crops. Due to its generous clearance height and clever design that removes the need for the usual springs, it is almost impossible for plants to get stuck under the frame. The flexible hydraulic system further supports width section control within the frame sections to avoid multiple passes across parts of the field.

Minimising the frame weight was a core aim in designing this machine. To achieve this, the number of moving parts was significantly reduced in comparison to similar models, ensuring that the Thulit can also be used with tractors with low lifting capacity. The driver has a clear view of the harrow tines during work, and therefore a constant view of work results. For transport, the tines fold in automatically for an increased level of safety. (Source: LEMKEN)

Cultivate and fertilise or sow in one go with Pöttinger. When TERRADISC marries AMICO F ...

Pöttinger has announced a number of new technological solutions for the new



The TERRADISC T with the distribution system for the AMICO F front hopper is a high output solution for sustainable and strong plant growth.

season, and the one solution shining as resource-saver was the AMICO F front hopper with its combinations.

For high output sowing during stubble cultivation or seedbed preparation, Pöttinger has now equipped not only its TERRIA stubble cultivators but also its trailed TERRADISC 8001 T / 10001 T disc harrows with a distribution system coupled to the AMICO F front hopper. Now, soil cultivation and sowing or fertilisation can be done at the same time.

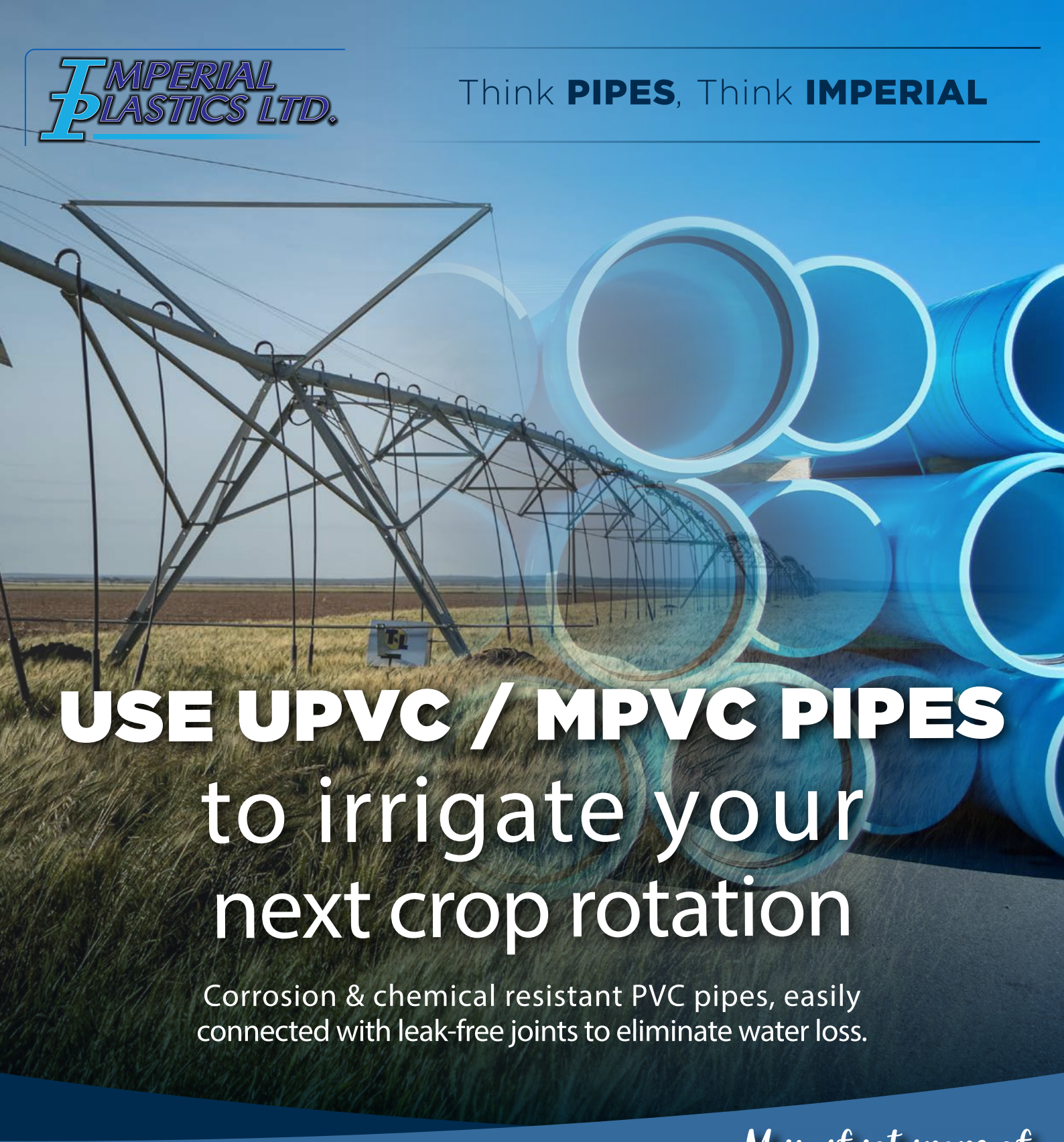
In only one pass, fertiliser or cover crops are sown directly into the soil. By feeding fertiliser into the raised flow of soil, it is mixed in and covered straight away. The fertiliser does not lose any of its effectiveness and is immediately available for the plants. This process is suitable for seedbed preparation in spring or for replenishing nutrients with granular trace elements in autumn.

Cover crops are directly stimulated to germinate because they are immediately covered and consolidated by the packer. This can be done during shallow stubble cultivation. Driving speeds above 10 km/h in combination with the wide working widths of 8 and 10 metres ensure an enormous output.

Large, 580 mm diameter discs slice into the ground and get the soil moving. The aggressive setting ensures reliable soil entry, even in the driest conditions. The TWIN ARM suspension system prevents the discs from deviating sideways on hard ground. This ensures that the whole surface is moved, which ultimately ensures uniform application of

IMPERIAL PLASTICS LTD.

Think **PIPES**, Think **IMPERIAL**



USE UPVC / MPVC PIPES to irrigate your next crop rotation

Corrosion & chemical resistant PVC pipes, easily connected with leak-free joints to eliminate water loss.

Zambia Bureau of Standards Certified Product ZABS ZS/ISO 15877:2009

ZAMBIAN FO SHO

30 YEARS 1993 - 2022

All our **PVC Pipes** are

lead free!

Manufacturers of

Irrigation HDPE Polypipes, Sewer/Waste Pipes, Garden Hose Pipes, UPVC Pressure Pipes, PVC Borehole Casings

Tel: +260 211 845544 | 260 955 180189 | ***Email:*** imperialplasticsip@yahoo.com | ***Website:*** www.imperialplast.com
Facebook: facebook.com/imperialplastics1 | ***Physical Address:*** No. 456A | Kafue Road, Shimabala, Lusaka - Zambia

the seed material and fertiliser.

By setting the distribution rail perpendicular to the ground, the material is immediately mixed into the soil below so that it is deposited across the full cultivation depth. The fertiliser and seed material is therefore distributed throughout the entire cross section or soil movement. During stubble cultivation, for example, compensatory fertilisation of potassium or nitrogen can be used to accelerate the decomposition of straw.

The capacity of 1 700 or 2 400 litres and a division of 60:40 ensures a wide range of applications for the front hopper. To ensure convenient operation, the AMICO front hopper is equipped with ISOBUS as standard. (Source: Pöttinger)

Collaboration can enable automation

Claas, AgXeed and Amazone have stepped up their collaboration in the field of highly automated and autonomous agricultural machinery and work processes by establishing the first multi-manufacturer autonomy group.



Claas, AgXeed and Amazone formed a new joint venture to make automation practical.

3A, ADVANCED AUTOMATION & AUTONOMY, aims to accelerate the development, standardisation and market introduction of semi- and fully autonomous tractor-implement combinations through their combined expertise.

The three partners have been working together in the field of autonomy for some time already – Claas and Amazone are minority shareholders in the Dutch company AgXeed.

The market-ready technology developed by the 3A group comprises design and implementation software, which was previously available only for autonomous field robots, but can now be used in conjunction with the AgXeed box to control tractors and implements as well.

"Agricultural robots currently act mainly in closed systems with limited applications and without the option of being able to use them in parallel or in combination with other vehicles and implements," the development team explains. "And this is where 3A's innovative approach comes in: within the group, we have developed the AgXeed box technology, which for the first time connects tractors and implements to the planning and autonomous implementation process using the standardised ISOBUS interface. Via this interface, implements can interact with field robots, AgBots and tractors to enable automated or autonomous process optimisation."

The first products developed by 3A are the Amazone AutoTill for mulch cultivators and Claas Autonomy connect, which incorporates the entire tillage planning and implementation process. These solutions, which have been tested under field conditions, are the starting point for further multi-manufacturer applications involving every conceivable machine combination for outdoor work processes. Tasks are planned in the familiar Claas farm management information system (FMIS) or the AgXeed portal, where it has long been possible to schedule tracks and application maps for tasks.

Claas Autonomy connect, Amazone AutoTill and AgXeed AgBot offer significant advantages:

- Both the tractor and the implement perform all operations precisely as the farmer or contractor has planned.
- The planning function not only calculates the best possible route; it also ensures that the tractor-implement combination is optimally configured. This prevents poor quality work and inefficiency resulting from incorrect settings.
- The first plan forms the basis for reducing the workload in subsequent years, as only seasonal adjustments are then required – for example, depending on the main crop, follow-on crop and rotation.
- Errors by the machine combination are detected by sensors and automatically corrected to maintain consistently high process quality. For example, the system automatically detects when the cultivator is at risk of clogging, and adjusts the working depth and speed accordingly.
- Responsibility for producing optimum results no longer lies solely with the operator, which reduces the pressure on him, especially during long working days.
- Preplanned and process-optimised machine-implement combinations are more energy efficient and thus more cost-effective to operate.
- Farmers and highly qualified operators can perform other more important operational tasks while the planned task is being performed, since constant supervision is no longer needed.
- On non-autonomous tractors, the technology also enables less skilled or experienced operators to produce optimal results.

Talks are currently underway with other machine manufacturers who are interested in joining the multi-manufacturer group and thus play an active role in expanding the range of applications.

Drip tube *16 mm / 0.6 mm*

Designed to endure the elements and meet the requirements of your farm.





Drip tape

16 mm / 0.2 mm & 0.3 mm

Easy to install and maintain!



Rain Hose

25mm, 32 mm & 40 mm



PIPES ROTO TANK ZAMBIA TANKS

Garden Hose Pipe

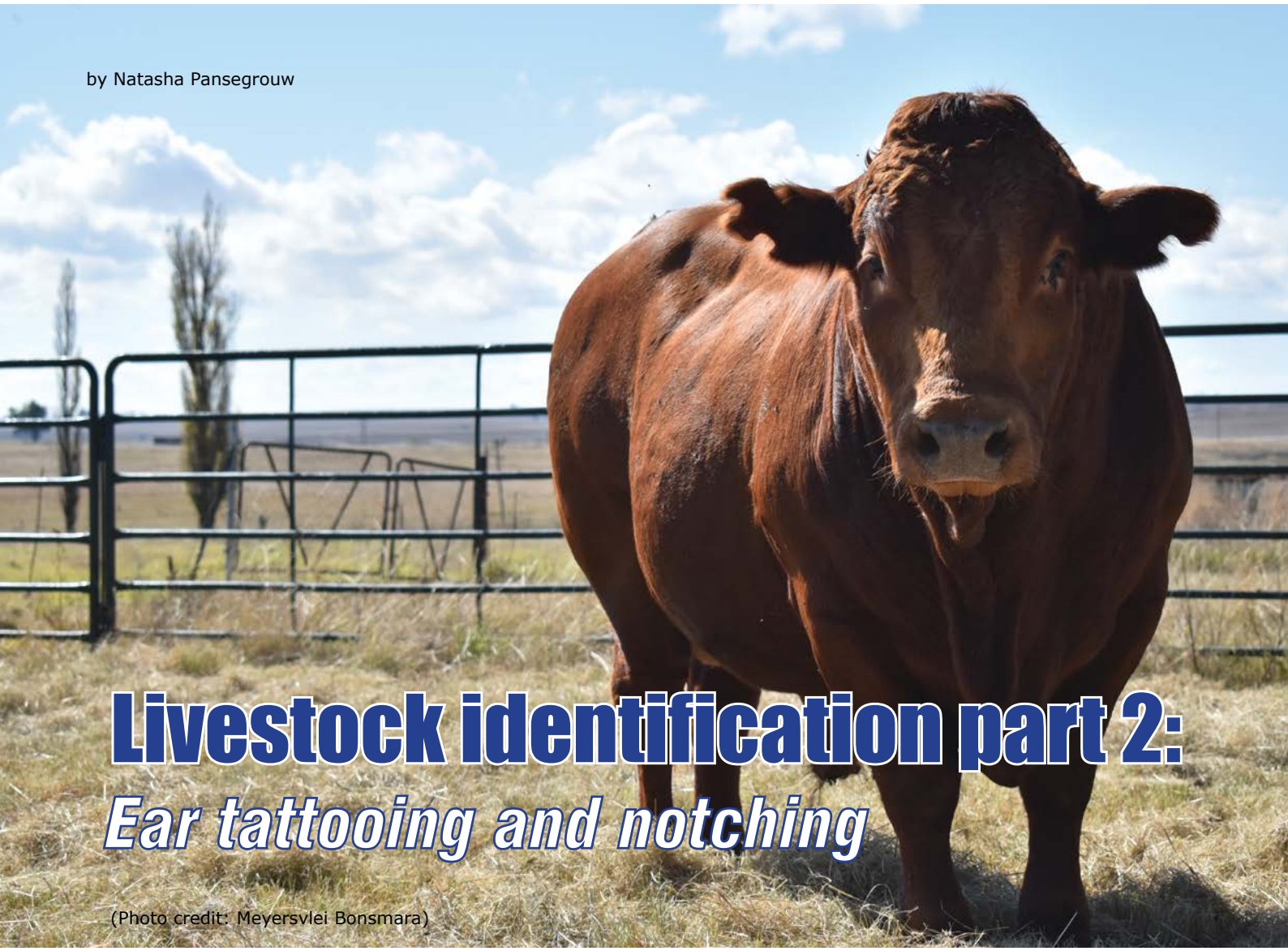
16 mm

Available in
30 m / Roll ; 50 m / Roll; 100 m / Roll

sales@rototankzambia.com
0960 567 058 / 0971 926 953

www.facebook.com/RototankZambia

by Natasha Pansegrouw



Livestock identification part 2:

Ear tattooing and notching

(Photo credit: Meyersvlei Bonsmara)



Having secured the sheep's neck with a clamp, the tattoo artist has begun sterilising the ear in preparation for the tattoo. (Source: Caring for Sheep and Goats Ear Tattooing, https://www.youtube.com/@UNFAO)

Improved alternatives to replace conventional methods of livestock identification, such as branding or ear tags, have been available for quite some time now. Farmers and breeders today are taking advantage of the trend of having more detailed information etched into the ears of their prized animals as a means of identification and keeping track of treatments or breeding factors.

Marking and branding livestock can be done in a number of ways, each with its own set of advantages and disadvantages. Several factors, such as the type of animal, the intended use, and local regulations, influence the decision as to which method to use. Livestock must be marked and branded correctly for identification, traceability, and disease control purposes, regardless of the method used.

Tattoos are a fast and permanent way to identify livestock. Typically, ink or a specialised tattoo gun are used to apply them to the ear canal. Tattoos are best suited for smaller herds



PARATOP

Combines an organophosphate and pyrethroid formulating a stable and potent dip, with long lasting control of sheep scab and goat mange mites, itch mites, ticks (including karoo paralysis ticks), lice, keds, blowfly strike, midges, nuisance flies and screw worm infestations.

- ~It can be used as a plunge dip, in a sprayrace and handsprayer .
- ~For best results, add a measured volume, to double the volume of water while stirring to produce a white emulsion before pouring the premix into the bulk of water. Do not use with other dips.
- ~See bottle for dilution and dipping intervals

+260 966 500 096
+260 966 500 032
+260 972 176 040

P.O Box 34902 Lusaka Zambia
Plot No 396a/67/d/Makeni Road
Plot No 97/block 101 Mumbwa Road
farmersafrica04@gmail.com

farmersafricaltd

because they are difficult to read from a distance.

Some tattoos need to be touched up because they blur or fade over time. Some livestock owners, however, find them to be the best option for permanent identification. Similar to ear tattooing, ear notching is commonly believed to be more legible and resistant to wear and tear compared to tags.

How to ear-tattoo livestock

Tattooing involves using a specialised tool to imprint a unique number or symbol onto the animal's ear. Before starting, it is important to ensure that the animal is properly restrained, and that all equipment is clean and sterilised. It may also be helpful to have an assistant hold the animal steady during the procedure. Once the tattoo is complete, be sure to record the animal's tattoo number in a permanent record for future reference.

Tattooing advantages

The ability to keep accurate breeding records, track animals over time, and track of their health and growth are all advantages of ear tattoo identification for livestock. As an added bonus, ear tattoos are a permanent form of identification that does not need to be replaced or maintained often. However, it is worth keeping in mind that some animals may feel pain or stress during the tattooing process, so it is important to take extra precautions.

Tattooing disadvantages

Human error in recording tattoo numbers is one drawback of tattooing livestock ears, and tattoos may fade or become difficult to read over time. Some animals and circumstances may benefit more from the use of alternative forms of identification, such as microchipping or ear tags. Weighing the benefits and drawbacks of each identification technique is essential before making a final choice.

The process of ear tattooing

Typical supplies for tattooing livestock include cardboard, a wiping towel, tattoo pliers, ink, and tattoo numbers or letters. A stencil or template can be used to ensure that the tattoo is consistently placed, and disinfectant can be used to ensure that the area is clean before and after the tattoo is applied, but these items are optional. The risk of infection or injury to the animal can be reduced by using high-quality equipment and adhering to proper sanitation procedures.

Steps to tattoo livestock

1. Gather the necessary equipment, including tattoo pliers and ink.
2. Use proper precautions to restrain the animal.
3. Clean the ear thoroughly with alcohol or another disinfectant.
4. Make a few tattoos on cardboard first to get the hang of tattooing and double-check the display of the characters.
5. Place a stencil over the ear or draw the design freehand.
6. Load the tattoo pliers with ink and position them over the stencil or drawing.
7. Apply steady pressure to the pliers to make small holes in the skin and deposit ink there.
8. Release pressure on the pliers and remove them from the ear.
9. Repeat the process for any additional tattoos needed.
10. Apply an antiseptic ointment to the tattooed area to promote healing.
11. Release the animal and monitor the tattooed area for any signs of infection or complications.



Tattoo pliers are pressed down firmly on the ear between the ear's major veins to minimise bleeding. (Source: Caring for Sheep and Goats Ear Tattooing, https://www.youtube.com/@UNFAO)

Livestock ear notching

Ear notching is a permanent method of identifying livestock in which a series of notches are cut with specialised pliers into the animal's ear. Notches can be used to provide information about the animal's breed, age, and other vital aspects.



For a clean tattoo, ink is smeared into the holes created by the pliers. (Source: Caring for Sheep and Goats Ear Tattooing, https://www.youtube.com/@UNFAO)

SEL

AGROLIME

SIMMER ENTERPRISES LIMITED

Manufacturers of Agriculture Lime,
(Calcitic Lime & Dolomitic Lime)
Calcium Carbonate, Stockfeed Lime & Grit

Suppliers of Agro Inputs, Gypsum
(Calcium Sulfate) & all types of fertilizers



+260 974 573 758
agrolime.zambia@gmail.com
+260 978 592 390
agrolime.simmer@gmail.com
+260 211 286 424
www.simmerlime.com
P.O. BOX 33201, STAND No.12609, KATANGA ROAD,
CHINIKA INDUSTRIAL AREA, LUSAKA - 10101 ZAMBIA



Ear tattoo pliers and black ink can be used for tattooing livestock. (Source: valleyvet.com)

What tools are required for ear notching on livestock?

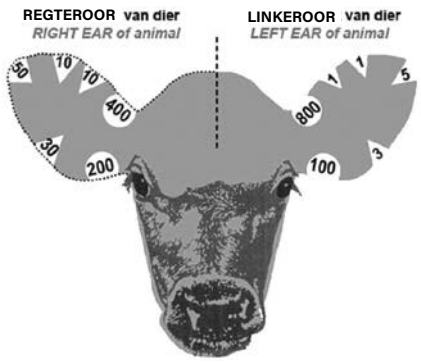
Notching pliers, antiseptic, and a record-keeping system with permanent entries are all necessities for success ful notching. The procedure should be carried out in a sterile environment free of dirt and germs. Wearing gloves can help prevent injuries and keep hands clean. In addition, the procedure should be carried out with the utmost care and caution to avoid injury to both the animal and the person during the procedure.

How to notch the ears of livestock

1. First, gather the necessary tools, including ear-notching pliers and disinfectant solution.
2. Restrain the animal in a safe and secure manner to prevent injury to both the animal and the person performing the procedure.
3. Clean and disinfect the area of the ear where the notches will be made.
4. Make a sequence of notches in the ear's cartilage in a pattern that corresponds to the desired identification code using the ear notching pliers.
5. Apply an antiseptic solution to the notched area to prevent infection.
6. Record the identification code in a permanent record-keeping system for future reference.



The ear tattooing pliers' inverted letter symbols. (Source: myvetsupplies.com)



Each notch on the ear represents a different number. (Source: www.bonsmara.com.na)

It is worth noting that different countries and regions have different rules about tattooing and notching the ears of livestock. However, South Africa, Kenya, and Zimbabwe are a few of the African countries that permit livestock tattooing. Before tattooing and notching ears, it is wise to familiarise oneself with and abide by the rules and regulations in effect in one's area.



This bull's number is 93. A total of 93 is obtained by adding the 50 at the right ear's tip, the 10 just above the tip, the 30 below the tip, and the 3 just below the tip on the left ear. (Photo credit: Meyersvlei Bonsmara)



Pliers for notching ears come in various shapes. (Source: www.vet-impex.com)

Please use the links below for guidelines on tattooing and notching livestock:

Botswana
https://www.gov.bw/animal-husbandry/user-application-botswana-animal-identification-and-traceability-system-baits

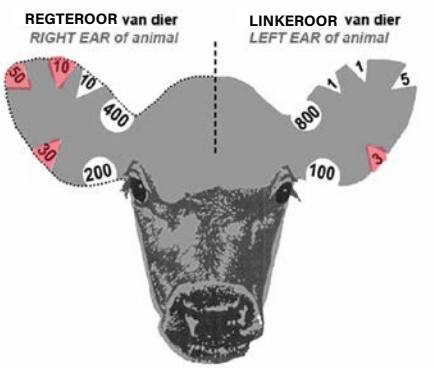
Namibia
https://www.lac.org.na/laws/2017/6476.pdf

Zimbabwe
https://www.swm-programme.info/legal-hub/zimbabwe/animal-production

References

Livestock Production Management. (n.d.). *Identification of livestock.* Available at: https://sites.google.com/site/viveklpm/introductory-animal-husbandry/identification-of-livestock

Neary, M. and Yager, A. (n.d.). *Methods of livestock identification*, *as-556-W - Purdue university,* Farm Animal Management @Purdue. Available at: https://extension.purdue.edu/extmedia/AS/AS-556-W.pdf



Managing the effect of heat on poultry performance Part 1: **Heat stress**

by Dr Oscar Blanco (DVM, PhD), Phibro Animal Health Corporation, Central and Eastern Africa

The current rise of average temperatures and the unpredictability of the weather patterns are imposing new challenges to poultry production. The exposure of birds to sudden and/or prolonged hot weather conditions result in heat stress, which has negative effect on the health, productivity, and welfare of birds.

In this series of articles, we will discuss how heat stress affects the productivity of poultry flocks, as well as the strategies that can be used to mitigate its negative impact, especially focusing on gut integrity.

How do chickens respond to heat?

It is essential that the body temperature of birds is maintained between 40.6 and 41.7 °C. To achieve that, there should be a balance between the amount of heat a bird produces and the amount of heat it dissipates.

A chicken loses heat by following a difference of temperature between its body surface and the surrounding environment, or through evaporation, following a difference of humidity (Fig. 1). Higher environmental temperatures and/or higher ambient humidity tend to reduce heat dissipation from the bird.

In hot environments, birds have different strategies to reduce the impact on their body temperature. From the behavioural point of view, they tend to reduce feed intake and decrease activity levels to reduce heat production. Also, the water intake increases. Sometimes, birds extend their wings and lay with their breast in direct contact with the ground to help with heat dissipation.

Since chickens have most of their bodies covered by feathers, they can only dissipate sensible heat from their legs, combs, and wattles. They redirect their blood circulation to these areas to maximise heat loss. Such mechanism has limited effectiveness in very hot environments.

Unlike us, birds cannot sweat, so they evaporate heat from the respiratory tract by panting. In fact, panting is the most relevant method a chicken uses to regulate its body temperature in hot weather (Fig. 1).

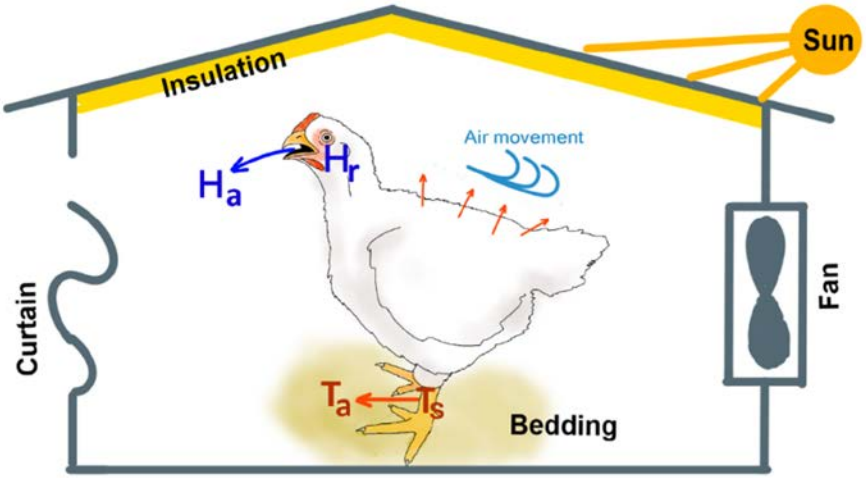


Figure 1. Simplified diagram of heat loss from a chicken. Arrows in red show the heat loss driven by the temperature difference between the skin (Ts) and ambient temperature (Ta). Blue arrows show heat loss by evaporation (panting) driven by a difference in humidity between the surface of the respiratory tract (Hr) and the surrounding environment (Ha).

The cost of regulating body temperature

Birds pay a cost, sometimes very high, to maintain their body temperature constant under hot environmental conditions.

Firstly, birds lose excessive amounts carbon dioxide (CO_2) when they pant for a long time. This makes their body more acidic, resulting in a series of metabolic alterations. In hens, the drop in levels of CO_2 reduces the deposition of calcium in the eggshells, resulting in eggs that break easily; in the case of breeder hens, thinner eggshells also result in a reduction of hatchability due to an alteration in the gas and water exchange during incubation, as well as higher chances of embryo contamination.

Secondly, heat stress translates in an abnormal secretion of hormones, which greatly affects carcass composition. Stressed birds have higher amounts of hormones of the cortisol family circulating in the blood, which results in a reduction of protein deposition and an increase in deposition of fat. Also, to reduce the generation of heat, there is an increase in the secretion of hormones that reduce the appetite, which decreases the availability of nutrients for production.

Finally, heat stress has a major negative effect on the integrity of the gut, jeopardising not only the productivity of the flock, but also its health and wellbeing. The following sections explain the concept of gut integrity and how heat stress can compromise it.

What is gut integrity?

The lining (or mucosa) of a healthy intestine has a series of components forming a barrier that avoids the free passage of microorganisms and toxins into the blood, as well as the loss of proteins and water into the intestine. Such a barrier consists of a layer of cells tightly joined together, a protective layer of mucus, the normal microbiota (microorganism population) of the intestine, as well as immune cells in the gut wall (Fig. 2). The disruption of this barrier results in reduction of poultry performance, with higher chances of occurrence of systemic inflammation and infections.

How does heat stress affect gut integrity?

As mentioned above, in hot conditions, chickens redistribute their blood circulation to the areas of the body with no feathers in order to dissipate heat. In

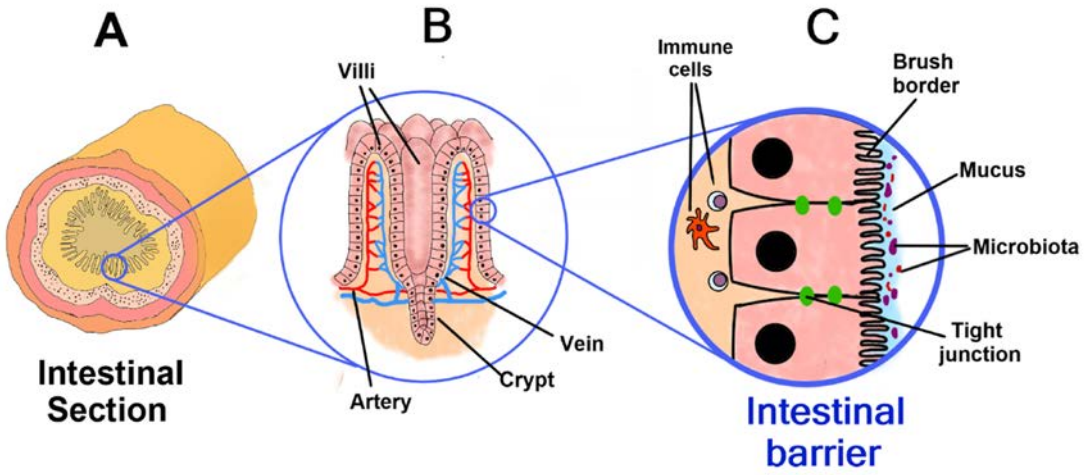


Figure 2. A. Transversal section of the intestine showing the mucosa layer in the centre. B. Details of the structure of the mucosa, showing villi, (projections that increase the surface area of digestion and absorption), the crypts (where the cells of the villi are produced). Note the blood vessels in the centre of the villi; in heat stress, these vessels have a reduced blood flow. C. Detail of the intestinal barrier, constituted by the cells of the villi surface ("lining"), the mucus on the villi surface, the microbiota (microorganisms), the tight junctions keeping cells together (green), and normal distribution of immune cells.

doing so, less blood and, consequently, less oxygen and less nutrients, reach the intestinal lining. Therefore, there is damage to the cells of the intestinal lining, as well as in the tight junction that keep such cells together, resulting in loss of gut integrity. Also, the villi of the lining become shorter and wider. Such alterations result in the impairment of the digestion and absorption, reducing the productive performance of the birds. This is normally accompanied by diarrhoea and feed passage.

The loss of intestinal integrity also allows pathogens to colonise the intestinal wall and pass via blood stream to other organs, producing generalised infections. This is called "leaky gut syndrome". There are reports indicating the increase of infections with *Salmonella, Campylobacter*, and E. coli in heat-stressed flocks. In some of those cases, translocation of bacteria such as salmonella into the reproductive tract of pullets and layers has also been described; this may result in the vertical transmission of the bacteria to the chicks. Large proteins and bacterial toxins can also cross the damaged intestinal wall, producing local and systemic inflammations.

A damaged intestinal barrier also leads to alterations of the conditions inside the gut, resulting in imbalance of the intestinal microbiota (that is the population of microorganism living inside the gut). Studies reported that heat-stressed chickens experienced a reduction in the population of beneficial bacteria (such as *Lactobacillus* or *Bifidobacterium*) and an increase in the amount of potentially harmful bacteria (such as *Salmonella*, *E. coli*, *Campylobacter*, and *Clostridia*). This results in an impaired digestion of the feed and a higher susceptibility to disease.

Managing heat stress

To manage heat stress, it is necessary to facilitate heat dissipation, reduce heat production by the birds, and alleviate the impact of heat stress on productivity, health, and welfare.

Heat dissipation is facilitated by improving the environmental conditions in the poultry shed. Such an improvement depends on the building characteristics (roof insulation, type of ventilation, and presence of cooling systems) and on how the building is managed (for example, curtains management and stocking density) (Fig. 1).

Strategies to reduce heat production include, for example, avoiding bird activity during hot hours by supplying a dark and quiet environment, as well as feeding during the cool part of the day and night.

Birds also should be assisted to reduce the impact of heat stress. It is recommended to supply cool water, administer supplements to compensate for electrolyte losses, and perform dietary adjustments to reduce heat production and compensate for lower feed intake. The effects on the gastrointestinal tract and the metabolism can be ameliorated by administering vitamins A, C, and E, as well as Zinc. Amino acids such as Arginine and Glutamine are important for immunomodulation, microflora balance, and improvement of intestinal integrity.

Particular attention should be given to the utilisation of plant-based products, rich in saponins and terpenoids (Phibro's Magni-Phi) as well as probiotics (Phibro's MicroLife Prime). Such products have proven to significantly reduce the occurrence of leaky gut syndrome and improve the composition of the microbiota in the presence of heat stress. Furthermore, the combination of both products resulted in a reduction of the number of *E.coli*, *Salmonella*, and *Clostridia* counts in heat-stressed birds.

In the second article of this series, we will discuss in more detail the implementation of strategies to ameliorate the effect of heat stress on gut integrity.

As usual, please consult your veterinary advisor and/or your nutritionist before implementing any new heat stress management strategies. *(References on request).*



Magni-Phi®
MicroLife™ PRIME™

ZAMPIPE

ZAMBEZI POLYPLAST LTD

PIPES YOU CAN TRUST!

We pride ourselves on the quality and strength of our products. We aim to give our customers nothing but the very best. That is why our pipes require minimum maintenance, have high tensile strength and have unmatched durability.

ISO AND ZABS CERTIFIED COMPANY



uPVC Pressure pipes | HDPE pipes



White sewer pipes | Sewer pipes

CONTACT US:

Phone: + 260 978 002 222

Tel: +260 211 233 105

Email: sales@zampipe.com

ADDRESS:

#687, Los Angeles Road,
Makeni, Lusaka, Zambia



Casing Pipes

OUR PRODUCTS INCLUDE:

- SEWER PIPES
- HDPE PIPES
- THREADED PIPES FOR BOREHOLE CASING
- PRESSURE PIPES FOR IRRIGATION, WATER SUPPLY & CONSTRUCTION

IRRIGATION UNLIMITED

OCMIS

WHOLESALE SUPPLIER AND DISTRIBUTOR OF A WIDE RANGE OF IRRIGATION PRODUCTS









- BUTTERFLY & WAFER VALVES
- CAMLOCK FITTINGS
- CLAMPS
- COMPRESSION & SADDLES
- FITTINGS FOR PVC PIPES
- FLANGES & JIS
- MALLEABLE FITTINGS
- MULTI RANGE FITTINGS
- POLY PROP FITTINGS
- QUICK COUPLING FITTINGS
- QUICK COUPLING ACCESORRIES
- RAIN BIRD
- VALVES & BRASS FITTINGS
- TANK CONNECTORS
- SIME GUNS
- VYRSA



TRAVELLING IRRIGATORS.

www.iunlimited.co.za

TOMMY | GOLD MEDAL | MING | VENICE | OYA | wahl IRRIGATION

IRRIGATION UNLIMITED

FOR YOUR NEAREST DEALER, CONTACT:
PTA +27 12 736 2121 | CPT +27 21 946 1194

Tobie Van Den Heever
+27 82 658 6054

Henko Cilliers
+27 71 303 8829

Beware of unnecessary losses in broiler production: Part 2

by Given Hamanungu



In nature, hens create the conditions for their babies. On a commercial farm, the farmer has to do it.

Simple overlooked issues are costly

Brooding is the period immediately after hatch when special care and attention must be given to chicks to ensure their health and survival.

In nature, a broody hen takes over all brooding requirements and makes sure all the necessary conditions needed for her chicks to grow are met.

On a commercial farm, the farmer must ensure that the brooding conditions important for getting chicks off to a good start, are in place. It is necessary to have an accurate assessment of the environmental conditions into which the chicks are being placed. The desired conditions can be achieved and managed by using the correct equipment in the correct way.

Equipment that can be used to monitor brooding conditions are:

Scale

- **Purpose:** To take individual weights to determine general weight gain. To determine the progressive weights and the FCR (food conversion rate), and calculate the CV (coefficient of variation).
- **Methodology:** Individual weights of a sample of up to 10% of the total flock are taken weekly.
- **Specification:** An electronic small scale, minimum 100 g and maximum 5 kg capacity.



Thermometer

- **Purpose:** To measure brooding temperatures, to manage and maintain ideal room temperatures and to regulate temperatures according to the condition requirements.
- **Methodology:** Random temperature measurement using infrared thermometer checks at different points in the brooder is important. This should be done every 2 hours for the first 72 hours and thereafter every 8 hours up to 21 days of birds' age.
- **Specification:** The infrared thermometer or any other digital type is the ideal thermometer and gives an accurate result.



Crop check

- **Purpose:** To monitor the rate at which birds consume feed within few hours of their life.
- **Methodology:** Handling each chick with care, gently feel the crop of each chick in the pen using your thumb and forefinger.
- **Specification:** Record the content of the crop of each chick using the following categories: Full, soft, and rounded.
  - Rounded and soft means chicks took feed and water.
  - Full but hard with original feed texture indicates that chicks took feed but little or no water.
  - Crop empty is an indication that chicks have not located feed and water yet.

Chick behaviour

- **Purpose:** To determine the healthiness of the chicks in the first few hours of their life in the pen.
- **Methodology:** Physical assessment.
- **Specification:** Take time to move around and observe the following on the chicks. Eyes alertness, leg smoothness, movements, and sound produced. This should be done every 8 hours for the first 72 hours.



The best way to ensure happy chicks is to physically examine them and take corrective actions if needed.



Communication and teamwork

Strong communication and coordination between all those involved in helping your farm to run smoothly should ensure a stronger and more successful management programme for your birds. Above all, listen to technical advice for better results.

Be proactive, not reactive. Stay tuned for part 3 which will follow in the next edition of ProAgri Zambia.

Contact Given at +260 97-540-3834 or +260 96-793-3658 or givenhams@gmail.com for more information.

Is Africa ready for Artificial Intelligence?

by Tapuwa Mashangwa

In a world of rapidly changing technology and creation of more efficient systems, manual labour is slowly becoming a thing of the past and with this conception of new technology the application of Artificial Intelligence (AI) is on the rise.

AI is a branch of computer science that is concerned with building smart machines capable of performing tasks that typically require human intelligence. The main purpose of artificial intelligence is to enable computers to perform such intellectual tasks as decision-making, problem-solving, perception, and understanding human communication.

What does it mean for agriculture? It means decision making and reaction time when it comes to important agricultural decisions can be faster and more precise than ever before whilst simultaneously giving rise to the extensive use of remotely controlled tractors, greenhouses, or irrigation systems.

AI applications in agriculture help farmers improve accuracy and controlled farming by providing proper guidance to farmers about water management, crop rotation, timely harvesting, types of crops to be grown, optimum planting, pest attacks, and nutrition management.

Benefits of AI include reduction in human error. AI help reduce the number and severity of errors by adding large-scale data analysis to human judgement in agricultural decisions.

Unlike humans, AI only needs a power source and the corresponding software and hardware. From there they are available all day to manage whatever farm activity they have been assigned to manage or participate in. Not only does this cut down production costs that would have been incurred using humans for labour, but it also improves the turnover time, making the production activity easier to complete. With repetitive jobs, AI works with a stored memory of activities which then also makes a performing the same task repeatedly a walk in the park.

Other benefits of AI are the digital assistance it provides where information is readily available online, and uploading and updating of farming related programs can be done quicker.

There are four types of AI:

- Reactive AI,
- Limited memory AI,
- Theory of mind AI, and
- Self-awareness AI.

Reactive AI revolves around the rudimentary AI principles. This form of intelligence can only interpret, and process information (visual or auditory) presented to it. A reactive machine does not keep a memory, thus cannot depend on past occurrences for instant decisions. Such technology can be used for drones to identify and spray chemicals upon detecting the presence



Artificial Intelligence in agriculture can be used in drones that survey or spray crops. (Source: Pixabay)

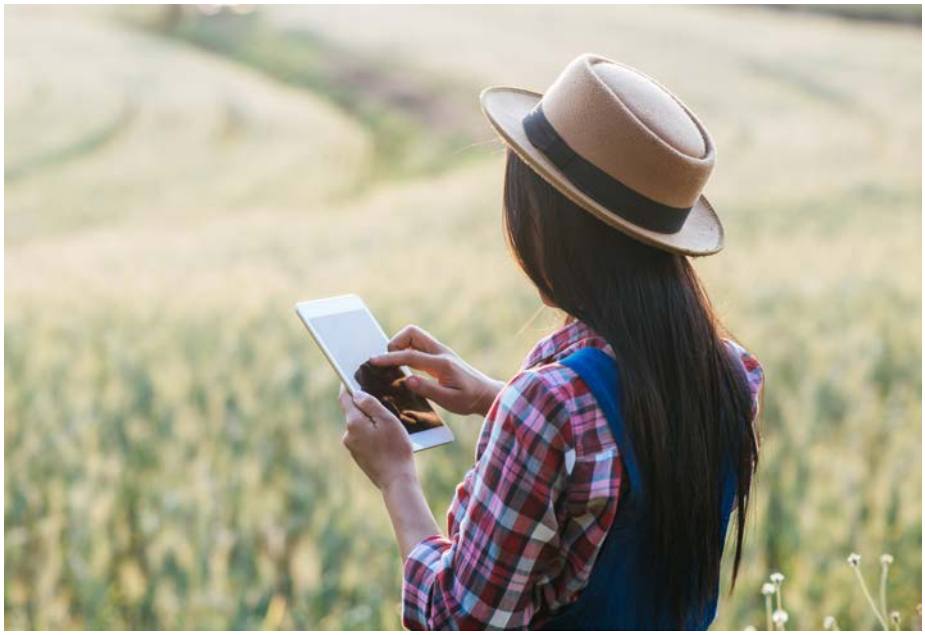


of unwanted weeds, insects, or pests.

Unlike reactive AI, limited memory can keep information and make forecasts during data collection, evaluating plausible actions or conclusions. Limited memory AI is quite multifaceted and has a wider scope of application in comparison to reactive machines. This can be used to predict weather patterns based on historical rainfall patterns.

Theory of Mind is based on the psychological foundation of understanding that other living things have thoughts and emotions that affect the behaviour of one's self. With regards to AI machines, the technology would then be able to understand how living creatures and non-living machines feel and are able to make choices by self-reflection and willpower, and posteriorly use this data to decide independently how to proceed. A future farm can be run by AI as it is able, for example, to analyse labour force moods based on an analysis of their facial expressions and body language to determine their state of health or exhaustion.

In first world countries all this seems realisable, but in most of the developing countries of Africa, such achievements are beyond the imagination and lack of investment. Whether Africa is ready for artificial intelligence remains a question as there will need to be a balance in finding a solution for these challenges without threatening the livelihoods, income, and employment of the inhabitants.



Artificial Intelligence has the benefit of aiding in decision-making about crop rotation timely harvesting, types of crops to be grown, optimum planting, pest attacks, and nutrition management. (Source: Vecteezy)



SEED·CO



NEW

Download Seedney
The new SeedCo Agronomy app

Available on the App Store

GET IT ON Google Play

THE HOME OF BUMPER HARVESTS

It starts with the right seed | www.seedcogroup.com/zm

Food for Africa: Millet

by Tisha Steyn

The United Nations has declared 2023 as the International Year of the Millet.

Millet provides a nutritious and affordable addition to the diet of people living in Africa, and can provide food security, especially in the light of climate change.

Millet farming can play an important role by empowering smallholder farmers to achieve sustainable development, eliminate hunger, adapt to climate change, and promote biodiversity in Africa.

What is millet?

The millet plant produces small, round whole grains that belong to the grass or *Poaceae* family.

Pearl millet was domesticated in the Sahel region of West Africa, where its wild ancestors are found. Evidence for the cultivation of pearl millet in Mali dates back to 2500 BCE (before the Common Era) and was found on the Indian subcontinent by 2300 BCE.

Finger millet is native to the highlands of East Africa and was domesticated before the third millennium BCE. Its cultivation had spread to South India by 1800 BCE.

Forgotten foods

Millet, which is regarded as an ancient grain, has been a staple food in many



Millets are high in nutrients, grow in poor soil in semi-arid and arid conditions with low rainfall, and can withstand heat. (Source: Pixabay)



The wild ancestors of pearl millet, the most important millet in Africa, were found in the Sahel region of West Africa. (Source: Pixabay)



IMPROVE YOUR YIELD WITH FSG'S

HIGH-QUALITY CROP NUTRITION

We offer a comprehensive range of locally manufactured, innovative plant fertilizers that complement your farm's specific requirements. We provide the precise nutrients your crops need at every growth stage, from seed to harvest.

fsg

+260 977 610 498 | +260 963 482 728 | +260 960 997 589
marketing@fsgzambia.co.zm | sale@fsgzambia.co.zm
www.fsgzambia.co.zm

Suppliers of the farmers input support programme

SUPER FERT FERTILIZER
The Formula for Success



The Best Deal in Quality Steel
Visit our website to view our extensive range of products www.bsisteel.co.za

LUSAKA | *+260 211 222 112* | *saleslusaka@bsisteel.com*
KITWE | *+260 212 210 670* | *saleskitwe@bsisteel.com*



Millet can be harvested as soon as the seeds turn golden brown. (Source: Pixabay)



In some countries, millet is also grown as ornamental plants, while their seeds feed birds and other wildlife species such as squirrels that may visit the garden. (Source: Pixabay)



Millet is a staple food in many countries with a low income. (Source: Pixabay)

African and Asian countries for centuries, where it has contributed to a third of the food basket. It is referred to as 'Forgotten Food' because consumption has declined in recent times due to scarcity, convenience, taste, and the social perception that it is poor people's food.

However, this food has not been forgotten by the people of sub-Saharan Africa and Asia, who rely on it for their survival. In these countries, it remains remain a staple among crops like cassava, yam, sweet potatoes, Bambara beans and groundnuts.

Millet is high in nutrients, and grows in poor soil in semi-arid and arid conditions with low rainfall, and requires less water compared to other cereals. It has a shorter growing season, which makes it suitable for areas where rain is unpredictable, and water scarce.

Millet is also considered to be a low-input crop, which means it requires little fertiliser and pesticides, which reduces their impact on the environment and helps to preserve the fertility of the soil.

Hidden hunger

According to a 2022 report by the International Fund for Agricultural Development (IFAD), the World Health Organisation (WHO), and the World Food Programme (WFP), 29,3% or 2,3 billion of the global population were moderately



Millet does not only provide food for humans, but also for livestock and birds, including chickens, and is often found in a mix of birdseed. (Source: Pixabay)

or severely food insecure, and 11,7% or 923,7 million people faced severe food insecurity.

In addition, there is 'hidden hunger', which refers to malnutrition, meaning people have enough food, but the food they rely on does not provide enough nutrients. Women in many parts of the world are anaemic because they do not have enough red blood cells to keep them healthy, and children suffer from wasting, which means they do not grow as strongly as they should.

Dr Jacqueline Hughes, Director General at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) says: "The narrative of food and nutrition security must be expanded to include the role that millet can play to move towards more nutritious and sustainable diets and agriculture. This calls for fresh thinking around transforming our current food systems towards healthier, sustainable, resilient, and diverse food systems."

Nutritional value

All types of millet are renowned for their high nutritional value and health benefits.

Millet is gluten-free, protein-rich starchy grain that is rich in antioxidants, soluble fibre, and protein. One cup of cooked millet contains carbohydrates (41 g), fibre (2,2 g), protein (6 g), fat (1,7 g), phosphorus (25% of daily value (DV), and magnesium (19%, folate (8%), iron (6%).

Millet provides more essential amino acids – the building blocks of protein – than most other cereals. Finger millet has the highest calcium content of all cereal grains, providing 13% DV per one cup of cooked millet. Calcium is







necessary to ensure healthy bones, blood vessels and nerve function.

Health benefits of millet

Antioxidants

Antioxidants in millets, especially those with a darker colour, help heal wounds, protect the skin, and have anti-inflammatory properties.

Lower blood sugar levels

Millet is rich in indigestible carbohydrates that help control blood sugar levels and are considered ideal for people with diabetes.

Lower cholesterol

Millet contains soluble fibre and protein that may help reduce cholesterol levels and keep the heart healthy, which is good for people with obesity and type 2 diabetes.

Gluten-free

Millet is a gluten-free grain, which makes it suitable for people following a gluten-free diet. However, people with celiac disease or non-celiac gluten sensitivity must avoid it because it may trigger harmful digestive symptoms such as diarrhoea and nutrient malabsorption.

Caution

Despite the grain's multiple health benefits, it also contains antinutrients, which are compounds that block or reduce your body's absorption of other nutrients, which may lead to deficiencies.

The phytic acid in millet, for instance, interferes with the absorption of potassium, calcium, iron, zinc, and magnesium. However, a person with a balanced diet isn't likely to experience adverse effects.

Other antinutrients called goitrogenic polyphenols may impair thyroid function, causing goitre – an enlargement of your thyroid gland that results in neck swelling. However, this effect is associated only with excess polyphenol



Millet must be soaked before cooking as food, as it may contain antinutrients that may prevent the absorption by the body of some nutrients. (Source: Pixabay)

MADE WITH CARE • SOLD WITH PRIDE

NAMFEEDS

NATIONAL MILLING STOCK FEED

Zambia's Pride Nationwide

UPGRADE PERFORMANCE
TOP YIELDS. CUT COST



QUALITY BROILER
FEEDS DEVELOP QUALITY MEAT

Broiler Starter
Broiler Grower | Broiler Finisher

• Malambo • Kabwata • Showgrounds • Chelstone • Kalingalinga • Chilenje
• Makeni • Westgate • Matero • Zani Muone • Zingalume • Chilanga • Libala South
ALSO AVAILABLE IN: Eastern, Western, Central, Southern, Copperbelt, Northern, & North Western Provinces

GUARANTEE top quality TOP QUALITY GUARANTEE

NMC
Zambia's Pride Nationwide

LSK- MALAMBO ROAD
LSK H.O- Plot sub v / farm
403a Lilayi road, Lilayi
P.O Box 31980 Lusaka

+ 260 967 640 126
+260 961 580 785
feedsales@nmc.co.zm

intake when too much millet is eaten.

To lower the antinutrient content, the millet can be soaked at room temperature overnight, and drained and rinsed before cooking. Sprouting also reduces the antinutrient content.

How to prepare and eat millet

Millet can be used in a variety of dishes for a balanced diet.

When cooked whole, it can be used to replace rice in a meal, but remember to soak it overnight to lower the antinutrient content mentioned above.

Put one cup of raw-soaked millet in two cups of water. Bring to the boil and simmer for 20 minutes.

Whole millet can be used to replace rice on the menu, or as an addition to a salad, or it can be toasted in a pan as a snack. Ground into flour, it can be used for baking cakes and cookies, as pasta, or fermented to make non-dairy drinks. In this form, it has a probiotic value that increases gut health.

Growing millets

- Prepare the plot for planting with organic compost.
- Plant the seeds 6 cm apart in rows at least 30 cm apart. Cover with 3 cm of soil
- Add compost as the millet grows.
- Cover with mulch-like straw.
- Harvest either by hand or machine when the seeds have turned golden brown.
- Allow to dry before storing.
- Rain should provide sufficient water.
- In dry conditions, pests and diseases should be minimal.

Grazing millet

Millet is also used as a grazing forage crop. Instead of allowing the plant to grow to maturity to harvest the seeds, the young green leaves and shoots can be grazed by sheep, goats, and cattle.

Source references

How to Grow Millet | *Guide to Growing Millet.* (n.d.) Heirloom Organics http://www.heirloom-organics.com/guide/va/guidetogrowingmillet.html

Lang, A. (2023) *What is millet? Nutrition benefits, and more*. Healthline. https://www.healthline.com/nutrition/what-is-millet

Ongwae, E. (2023) 2023: *The International Year of the Millet.* The East African. https://www.theeastafrican.co.ke/tea/sponsored/2023-the-international-year-of-the-millet-4221708

Ongwae, E. (2023) *'Forgotten foods' have answers to food security, nutrition question in Africa.* The East African. https://static.nation.co.ke/pdfs/DN---Millet-Final.pdf

Ongwae, E. (2023) *With right crops it is possible to achieve SGDs and Zero Hunger campaign targets.* The East African. https://static.nation.co.ke/pdfs/DN---Millet-Final.pdf

Ongwae, E. (2023) *Millet: Drylands staple at the centre of food security.* The East African. https://static.nation.co.ke/pdfs/DN---Millet-Final.pdf



AVOID LOW QUALITY TANKS THAT LET YOU DOWN.

BUY ROTO TANKS FOR QUALITY AND LONGEVITY.



PIPES ROTO TANK ZAMBIA TANKS

Each tank is:

- Built to withstand the demands of daily use and the endure the elements.
- Strong, reliable, durable and safe.
- Manufactured from food-grade materials.
- UV-resistant & non-toxic plastic

Available in various colours.



Plastic manholes and covers

for sewerage and communication

- Easy to install
- Fits all pipe sizes
- Height adjustable
- No rust
- Easy access to pipe intersections and valves

Multi Purpose Industrial Bin 500L



- Available in, Clear , White & Black
- 1250 mm x 900 mm x 750 mm

NEW RANGE

ROTO AQUATANK



sales@rototankzambia.com
0960 567 058 / 0971 926 953
www.facebook.com/RototankZambia



Hobby or small-holder farmers: Vertical farming may be the way to go

by Maryna Steyn

The need to optimise farming and improve yields on small plots of land is increasingly important. Due to challenges of water scarcity, limited arable land and high input costs, profitable farming may be a problem, but innovative solutions such as vertical farming can help to overcome these struggles.

Vertical farming is an approach whereby farmers cultivate certain crops vertically in stacked layers in order to maximise space and increase yields. This is usually achieved by planting these crops in containers, structures, or stackable pots.

Most often, these structures incorporate aquaponics, hydroponics or aeroponic techniques. All of these are methods used in controlled environments, with various factors such as the water flow, lighting control, temperature, and substrate controlled by the farmer, unlike traditional farming practices.

Vertical farming has many benefits

The most obvious benefit of vertical farming is maximised land use. This method allows farmers to grow more crops in a smaller footprint, making it ideal for areas with limited land availability. But there are other benefits too:

Production throughout the year: Since the environment of vertical farms are more controlled, it is possible to cultivate a crop more than once a year, or to ensure that you have a consistent yield throughout the year - depending on the crop type of course. Any seasonal constraints are removed and production is more efficient.

Water conservation: Less water is used in these systems with only the precise amount of water needed to provide the plants with sustenance. Where farms are located in greenhouses or indoors, less evaporation also occurs.

Low environmental impact: When less space is needed to grow more food, there is a lower impact on the environment. Less natural vegetation needs to be cleared to accommodate soil based farming.

Improved control over growing conditions: When coupled with greenhouse systems, factors such as light intensity, temperature and humidity can be regulated. However, the plants are more dependent on the farmer to provide nutrients as there is little to no soil used as a substrate. Farmers can exercise strict control over when which fertilisers are used.

How to start a vertical farm

If you are looking to start a vertical farm, you need to first allocate space. You will need a space to put up the vertical structures where there is ample natural light, and where the structures can be safe from animals. People often want to put vertical gardens in warehouses and storerooms, but it is very costly to provide enough artificial lighting to try and make up for the lack of sunlight.

If you plan on adding ventilation to a greenhouse, temperature control systems or any other high tech additions, remember to consider access to electricity or solar power. If solar is your choice, take note that for every hectare of artificial lighting you may need up to five hectares of solar panels to provide enough electricity.

There also needs to be a space where you can add drainage so access water can drain from your vertical farm.

Next, you will need to look at the crops you would like to grow as this will determine your growing method.

Structures for vertical farming:

Vertical wall gardens

Vertical wall gardens are one of the simplest and most cost-effective ways to start vertical farming in cities where you have walls, and limited horisontal space. You can use recycled materials such as old pallets, wooden crates, or plastic bottles as planting containers. These containers can be attached to a vertical frame or wall, creating a vertical garden. This method is excellent for growing herbs, small vegetables, and even certain fruits like strawberries.

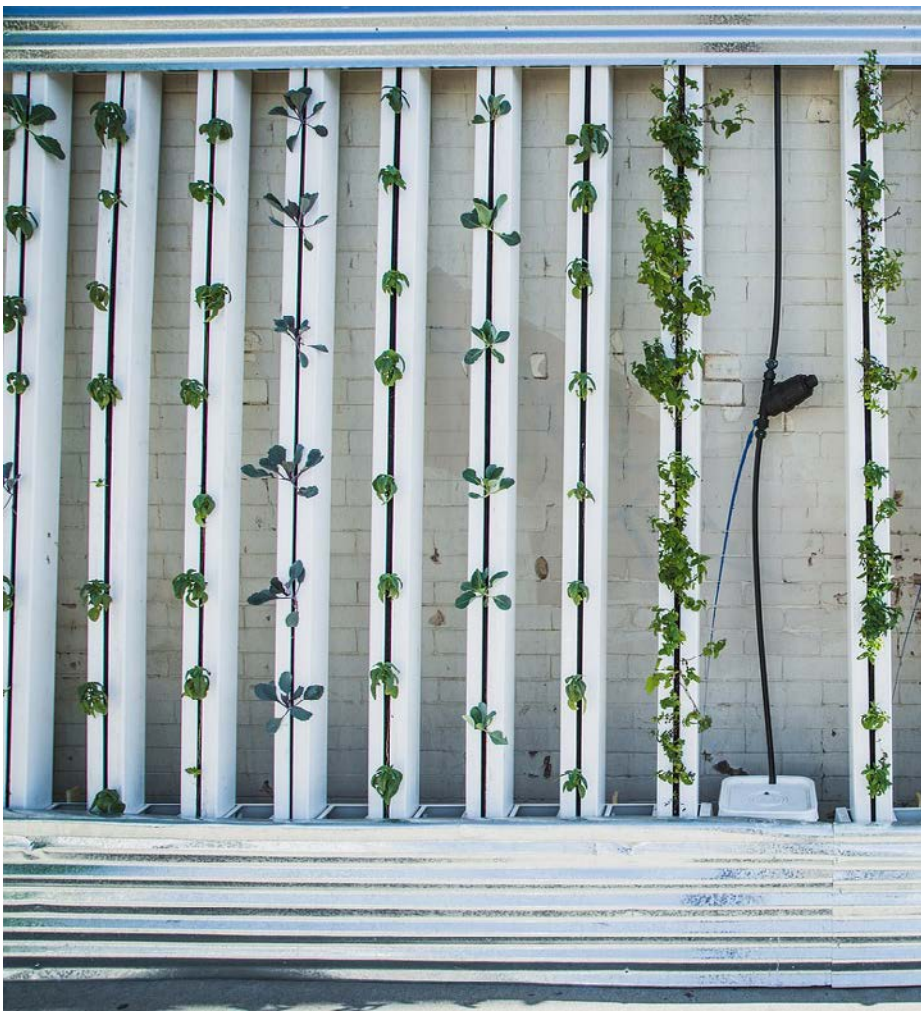
Tower gardens

Tower gardens are vertical systems that allow plants to grow in stacked layers. PVC pipes can be used to create vertical planting towers. Plants are placed in holes drilled into the pipes, and a water and nutrient solution is circulated through the system. PVC pipes are relatively inexpensive and can be found at local hardware stores. Tower gardens are suitable for growing a variety of leafy greens and herbs.

Hanging gardens

Hanging gardens are an excellent

Shelves can also be used to create vertical gardens. (Source: Vecteezy)



A wall garden constructed with PVC pipe. (Source: Pixabay)

option for small spaces. You can use hanging pots, recycled containers, or even fabric pouches attached to a frame or railing. These hanging containers can be filled with a lightweight growing medium and used for cultivating herbs, lettuce, and other compact crops. Hanging gardens utilise vertical space effectively and are relatively low-cost to set up.

Hydroponic systems

Hydroponic systems, where plants are grown in water without soil, can be affordable if you opt for a simple DIY setup. You can create a basic raft system using foam boards floating on a nutrient solution. Alternatively, a wick system, where a wick draws nutrient solution from a reservoir to the plants, is inexpensive and easy to set up. These DIY hydroponic systems are suitable for growing various vegetables and herbs.

Shelve system

As the name suggests, shelves are used to create rows of vertical gardens. Similar to wall- or hanging gardens, containers with substrate is used keep the plants in. Pots or trays are stacked on the shelves in a tray of water, or is connected to driplines that provide the plants with water.

Planting a (vertical) garden and watching it grow

Some crops are not compatible with vertical systems – do not try to plant maize or pumpkins in this system.

But there are still a multitude of other crops that can be used. Here are a few you can research:

1. Herbs:
Herbs such as basil, cilantro, mint, thyme, and parsley are vital flavours that are in constant demand. They require relatively little space and grow well in vertical systems. Additionally, herbs are high-value crops because they have a quick turnover, allowing for multiple harvests throughout the year.

2. Salad greens
Leafy greens like lettuce, spinach, arugula, and kale are popular choices for vertical farming. They are not only nutritious but also have a short growth cycle, making them ideal for continuous harvesting. Salad greens are versatile and are used in various culinary dishes, making them high in demand and a profitable choice for vertical farms.

3. Microgreens
Microgreens are young edible plants harvested at an early stage. They are incredibly popular in high-end restaurants and farmer's markets due to their intense flavour and high nutritional content. Microgreens can include varieties like radishes, mustard greens, and pea shoots. Despite their small size, microgreens are considered high-value crops because they can be sold at a premium price.

4. Strawberries
Strawberries are a popular fruit that can be grown vertically in towers or hanging systems. They have a relatively high market price and are favoured by consumers for their sweetness and freshness. Vertical farming allows for efficient use of space, making it possible to grow a significant quantity of strawberries in a small area.

8. Gourmet mushrooms
Gourmet mushrooms such as oyster mushrooms, shiitake, and maitake have gained popularity in culinary circles. They can be grown vertically in specially designed containers or shelves. Mushrooms have a relatively high market price, making them a profitable choice for vertical farms.

When choosing high-value crops for your vertical farming system, consider the local market demand, climate suitability, and your expertise in cultivating specific crops. Conduct market research and engage with local chefs, restaurants, and grocery stores to understand their requirements and preferences. By selecting the right combination of high-value crops, you can optimise your vertical farm's profitability and contribute to the sustainable growth of your agricultural venture.

For emerging farmers in Sub-Saharan countries, vertical farming represents a pathway to overcome traditional agricultural challenges and create a more sustainable, efficient, and profitable farming enterprise. By harnessing the benefits of vertical farming, these farmers can contribute significantly to the local economy, local supply chain and food security.

J.M. and Marsh, J. (2022) *How Africa can develop its own version of Vertical Farming, Agrilinks.* Available at: https://agrilinks.org/post/how-africa-can-develop-its-own-version-vertical-farming

Vertical farming in Africa with Tower Farms (2022) Agrotonomy. Available at: https://agrotonomy.com/vertical-farming-in-africa-with-tower-farms/

Vertical Farming South Africa: 4 companies making a big impact (2022) Indoor Grow Farmer. Available at: https://indoorgrowfarmer.com/vertical-farming-south-africa/#:~:text=Vertical%20farming%20in%20South%20Africa,conditions%20to%20accommodate%20vertical%20farming.

B.Bugbee (2015) *Why vertical farming won't save the planet.* www.youtube.com/watch?v=ISAKc9gpGjw&feature=youtu.be

Stackable planters can be purchased from local hardware or nursery suppliers to create your own vertical farm.







Ritlee
Chip-Shave-Cut-Recycle

We are a dedicated agricultural equipment manufacturer and supplier.

www.ritlee.co.za +27 11 452 3434

sales@ritlee.co.za

17 Mopedi Road Unit B, Sebenza
Edenvale
Gauteng, South Africa

Office Sales & Spares:	Dan: 011 452 3434 dan@ritlee.co.za
KZN & Export:	Marc: 084 453 4499 marc@ritlee.co.za
Rest of RSA:	John: 073 930 3799 john@ritlee.co.za




Feeding Cattle & Game
Selected bush and trees.

Using Ritlee 225 chipper with grinder

Ritlee TM3 Compost Turner






225 Ritlee Gravity feed wood chipper & chip grinder through
8, 10, 12, 15, 20mm screen



Fruit production part 9: *Cherries take the cake*

by Maryna Steyn

Cherries, like most other commercially produced fruits, are grown in orchards that can be quite expensive to establish. The cherry bush or tree (*Prunus avium*) has specific climatic requirements and it takes a while for the farmer to see a return on investment (it takes up to five years for grafted trees to bear fruit). Cherry crops can also be fickle, not fruiting for a season due to the slightest difference in soil health, climate, or nutrient levels.

Some growers have noted that a tree can be "too healthy" in that it prioritises growth when it receives ample nutrients, instead of procreating and thus fruiting. Much like nuts, apples, oranges, and olives, cherry trees are alternate bearing crops, meaning that they deliver high yields every alternative season.

You will also need to consider the possible capital expenditure for agricultural netting to protect cherries from sunburn as well as birds eating the crops.

After all that is said, cherries remain a well-priced, sought-after delicacy, mostly used in desserts, fruit salads, and speciality dishes. It can be very rewarding if done right. Here are a few pointers to keep in mind.



Climatic and soil requirements

Cherries thrive in temperate climates with distinct seasons. They require a



Fields of young cherry bushes. (Source: Vecteezy)

certain number of chilling hours (cold temperatures) in winter to produce fruit.

Cherries prefer well-drained soil with a slightly acidic to neutral pH (6 to 6,8). Soil should be rich in organic matter. Conduct soil tests to understand the composition and fertility of your soil.

Planting

Preparing the soil properly is crucial for the successful growth of cherry trees. Start by removing weeds and debris. Cherry trees do not like waterlogged soil. If your soil has drainage issues, consider planting cherries on raised beds or slopes. Adding organic matter such as compost can also improve drainage. Check and adjust pH where necessary.

You can choose cherry varieties that are suitable for your climate and soil type. An agronomist will we able to give advice on the best variety to plant. Plant cherry trees during the dormant season, usually in late fall or early spring.

When it comes to establishing a cherry orchard, using saplings is the preferred and more practical method.

When you use saplings, you can choose specific cherry varieties that are known for their taste, size, disease resistance, and suitability to your local climate. This ensures consistency in the quality and characteristics of the fruit you will harvest.

Cherries grown from seeds do not necessarily retain the exact traits of the parent tree. They can exhibit significant variability in terms of fruit quality, size, taste, and even disease resistance. This inconsistency makes it unpredictable and unsuitable for commercial orchards.

Grafted trees start producing fruit earlier than those grown from seeds. It may take only a few years for grafted saplings to bear fruit.

Nurseries often produce saplings from disease-resistant rootstocks,



Source: Lisa Fotios on Pexels



enhancing the tree's overall resistance to common cherry diseases.

Dig a hole twice as wide and just as deep as the root ball of the cherry tree. Break up the soil at the bottom and sides of the hole. This encourages the roots to spread easily. Gently spread out the roots of the cherry tree when planting. Avoid planting too deep; the tree should be at the same depth it was in the nursery.

Proper spacing between trees is crucial for good air circulation and sunlight exposure. Standard spacing for cherry trees is around 6 to 8 metres apart. Water after planting.

Irrigation

Cherries need regular watering, especially during dry periods. The trees need approximately 1 300 m^3 per hectare per season.

Drip irrigation is often the most efficient method, ensuring consistent moisture without waterlogging. Irrigation companies can provide you with advice on drip irrigation for your orchard.

Furthermore, mulching around the base of the trees can help to retain moisture and regulate soil temperature, making your orchard more water efficient.

Fertilisation

Based on soil test results, apply fertilisers containing nitrogen, phosphorus, and potassium as needed. Organic options like compost and manure can also enhance soil fertility. Additionally, boron, zinc, and manganese can also be applied.

Annual composting can also benefit your trees.

Pest and disease control

Common pests to cherry trees include aphids, fruit flies, and birds. Implement integrated pest management techniques such as natural predators, traps, and proper sanitation.

Cherry trees are susceptible to diseases like powdery mildew and brown rot. Proper sanitation, fungicides, and disease-resistant varieties can help manage these issues. Root phytophthora and bollworm are also common.



Cherries ripening on a cherry tree. (Source: Pixabay)



Mature cherry trees are blossoming. (Source: Vecteezy)



Cherries are harvested once they are ripe. (Source: Pixabay)



(2020). *Gardening Australia. 20 December.* https://www.youtube.com/watch?v=y4KEU1tSmoI

Louw, M. (2023) *How to grow cherries, Fruit Farming in South Africa.* Available at: https://southafrica.co.za/how-to-grow-cherries.html

Voigt, F. (2019) *Cherry production in South Africa: Status quo and new initiatives,* International Society for Horticultural Science. Available at: https://www.ishs.org/ishs-article/1235_33



ZIMMATIC™
BY LINDSAY

GROW WITH ZIMMATIC

IRRIGATE WITH PIVOTS BUILT FOR AFRICA!

Zimmatic's range of irrigation solutions are known for their robust and durable design, making it the perfect choice for farmers in Africa.

Are you ready to experience unparalleled change in your farming practices?

Zimmatic's irrigation solutions are made with one goal in mind: to help farmers like you increase production while minimising input costs at the same time.

Our pivots are made using the latest technology in irrigation to ensure that every drop of water you use on your fields is used effectively. By doing this, we help thousands of farmers get the best out of their fields year-on-year.

We're inviting you to **#GrowWithZimmatic!** Visit our website at www.lindsay.com to arrange a free consultation with one of our experts.

PRECISION IRRIGATION

Say goodbye to the guesswork! Zimmatic pivots deliver the exact amount of water required to minimise waste.

INCREASE YIELDS

Unlock the full potential of your fields. By enhancing the way in which you irrigate your crops, you can expect an increase in yields and ultimately, profits.

SUSTAINABLE WATER USE

Zimmatic pivots help to reduce your farm's water consumption rate by ensuring more accurate and goal-driven irrigation cycles. By choosing Zimmatic, you're working towards a greener future.

YOU'RE PARTNER

Zimmatic boasts more than 60 years of experience and expertise in irrigation. We work with our customers to ensure continued growth, innovation and success.

CONTACT US

Whether you need advise or more information about Zimmatic, our team is ready to help.

021 986 8900 | www.lindsay.com

USE THIS QR-CODE TO VISIT OUR WEBSITE

JOHN DEERE



Full article on our website.

ACHIEVE PRECISE AND CONSISTENT SEED PLACEMENT

Discover the new John Deere 1725C Planter and unlock a whole new world of benefits. Experience versatility and adaptability throughout the planting season with the 1725C planter's wide range of configuration options. Tailored to meet your specific needs, it empowers you to achieve efficiency and productivity in the demanding standards of modern-day farming, ultimately enhancing overall yield and improving profitability.

***Terms and conditions apply. (Available at https://www.deere.africa/en/)**

https://www.deere.africa/en/ | africa@johndeere.com | Customer care: 0800 983 821

JohnDeereAME JohnDeere JohnDeereAfrica


DURABLE.
CUSTOMIZED.
EASY TO MAINTAIN.
AGI TRAMCO
Heavy-duty chain conveyors designed for extreme conditions and a wide range of materials.
MEET US AT HALL 6, STAND E08
AGRITECHNICA
THE WORLD'S NO.
EXPERIENCE THE DIFFERENCE
Contact us at emea@aggrowth.com
aggrowth.com/emea
@AgGrowthIntl | @ AGI EMEA
AGI