

ProAgri

technology for the farmer

A F R I C A

No 116

Free



**Smarter farming starts here:
Mahindra Tractors launches AgriWys**

page 7



**Get ready for the
Mazabuka AgriExpo!
10 & 11 October
2025**

**SARO Powering
African farmers forward**



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Dear readers,

As we prepare for the last few months of 2025, with summer approaching us very quickly, there's a renewed energy in the air, the promise of a new season, new opportunities, and fresh challenges.

Our cover story this month puts the spotlight on SARO Agro and their support of the SAFF (Smallholder Agricultural Finance Facility) initiative. Mechanisation remains one of the biggest game changers in farming, and through this partnership, more farmers are gaining access to tractors and implements that help them produce efficiently, save on labour costs, and improve yields. This is the type of progress that excites us, when technology becomes a tool that truly empowers the farmer.

We also bring you exciting news from Mahindra Tractors, who have just launched their brand-new telematics platform, AgriWys. This is more than just a piece of technology, it's a management tool that gives farmers real-time insights into their tractors'

performance, helping them make informed decisions and get the most out of every litre of fuel and every hour in the field. Read more on page 7.

And for our readers in Zambia... get ready! The Mazabuka AgriExpo is just around the corner. On 10 and 11 October, Mazabuka Turf Club will once again be the meeting point for farmers, agribusinesses, and suppliers. It's the perfect opportunity to see the latest in equipment, seed, fertiliser, and solutions for your farming enterprise – and of course, a chance to network and share ideas with fellow producers.

This time of the year is a time to plan, prepare, and take action. Whether you are planting, calving, lambing, or harvesting, we salute our farmers who constantly work to keep our plates full.

ProAgri regards,
Bianca Henning
bianca@proagri.co.za

Cover

SARO Agro, in partnership with SAFF, is helping farmers access the mechanisation they need to boost productivity and cut costs. Read more on page 3.



ProAgri
AFRICA

technology for the farmer

No. 10 Tito Road
Rhodespark, Lusaka
+26 (0)97-769-9786
www.proagri.co.za

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ProAgri

Editor

Bianca Henning > 082-326-2572
bianca@proagri.co.za

Reporters

Natasha Pretorius > 083-468-2653
natasha@proagri.co.za
Benine Ackermann > 073-105-6938
benine@proagri.co.za
Jaco Cilliers > 071-893-6477
jaco@proagri.co.za

Senior Production Manager

Zainab Pandor > +26 (0)97-769-9786
zainab@proagri.co.za

Marketing

Xander Pieterse > 062-391-6507
xander@proagri.co.za
Tiny Smith > 082-698-3353
tiny@proagri.co.za
Sheré Holtzhausen > 084-560-0123
shere@proagri.co.za
Kevin Greeff > 078-374-8597
kevin@proagri.co.za

Sales Manager

Quintus Grobler > 083-302-0383
quintus@proagri.co.za

Head of Design

Anja Oosthuizen > 079-959-6724
anja@proagri.co.za

Design

Jamie-Lee Tromp & Cara Watson

Enquiries

Engela Botha > 084-088-0123
engela@proagri.co.za

Accounts

Ronel Schluter > accounts@proagri.co.za

Distribution and subscription

Nita Volmer van Zyl > 079-515-8708
nita@proagri.co.za

Business Manager

George Grobler

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TAFE TRACTOR

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3 POINT HITCH	Category II

Kubota



KUBOTA TRACTOR

POWER	85HP (64Kw) 90HP (68Kw)
PTO	Live, 540rpm, 6 Split
HYDRAULIC	Lift Capacity 2500Kgf
3 POINT HITCH	Category II

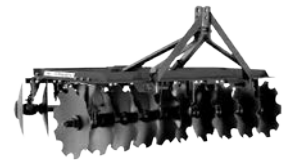
Landini



LANDINI TRACTOR

POWER	82HP (62Kw)
PTO	Live, 540rpm, 6 Split
HYDRAULIC	Lift Capacity 2600Kgf
3 POINT HITCH	Category II

BALDAN



DISC HARROW

NO. DISC	WORKING WIDTH	TRACTOR SIZE
HI 16	1800mm	35 - 50HP
HI 28	2615mm	60 - 80HP
WORKING DEPTH		
DISC SPACING		185mm
DISC DIA.		20"

JACTO



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DRUMS	4
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HOPPER SIZE	190cm x 120cm
CAPACITY APPROX.	700
MAX. PAYLOAD	1800
Machine with for M = 108cm on version K,D,Q and R = 120cm	
EXTENSIONS	
M430 for MDS 17.1/19.1	

BALDAN



PLANTER PLB

NO. ROWS	WORKING WIDTH	TRACTOR SIZE
2	1400mm	35 - 50HP
3	1900mm	50 - 66HP
4	2900mm	60 - 80HP
6	4000mm	85 - 90HP
WORKING DEPTH		0 - 120mm
FERTILIZER HOPPER		60L
SEED HOPPER		45L
MIN. ROW SPACING		420mm

BALDAN



DISC PLOUGH

NO. DISC	WORKING WIDTH	TRACTOR SIZE
2	600mm	35 - 50HP
3	900mm	60 - 75HP
4	1200mm	80 - 90HP
WORKING DEPTH		150 - 300mm
DISC SPACING		550mm
DISC DIA.		26"

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Three point linkage mounting brackets category 2	

BALDAN



OFFSET DISC HARROW

MODEL	NO. DISC	WORKING WIDTH	TRACTOR SIZE
CRSG	14	1550mm	75HP
CRSG	16	1750mm	85-95HP
CRSG	18	2000mm	95-105HP
CRSG	20	2250mm	125-140HP
CRSG	24	2420mm	132-145HP
CRSG	28	3200mm	148-163HP
CRSG	32	3650mm	169-185HP

AMAR



AMAR MULTI-CROP THRESHER

MODEL	AMD-ED
PRODUCTION	SOYA 500Kg/Hr
	MAIZE 1500Kg/Hr



Lusaka Head Office
Plot No. 5284 Buyantanshi Rd,
P.O. Box 35168



+260 211 241477
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+260 773 914996



saro@saroagri.co.zm
www.sarozambia.com

Farmers access mechanisation through SAFF with support from SARO

by Misheck Mukupa, Digital Marketing Officer, SARO Agro Industrial Limited

Access to agricultural mechanisation in Zambia is being transformed through the Sustainable Agriculture Financing Facility (SAFF) a government-backed programme implemented in partnership with commercial banks and key suppliers such as SARO Agro Industrial Limited.

This initiative has made it possible for farmers to acquire modern machinery and equipment such as tractors and solar irrigation systems, with flexible financing options that were previously out of reach.

At SARO, the commitment goes beyond simply supplying equipment. Farmers who benefit from the programme are provided with the necessary training to ensure they can operate, maintain, and fully utilize the machinery. In addition, SARO ensures the availability of spare parts and technical backup, giving farmers peace of mind that their investment is supported for the long term.

One success story is that of Mr. John Pensulu, a farmer from Chongwe, who recently acquired a brand new TAFE Tractor 45Di (47 horsepower) under the SAFF programme. Overjoyed at the life-changing milestone, Mr. Pensulu



Mr. John Pensulu proudly sits on his new TAFE 45Di Tractor, acquired through the SAFF programme with support from SARO, marking his shift from ox-drawn farming to mechanisation.



Mr. John Pensulu (left) stands proudly beside his new TAFE 45Di Tractor, acquired through the SAFF programme.

declared “ngombe zi pumule” meaning “my cattle can now rest” as he received the keys to his tractor, marking his transition from ox-drawn implements to full mechanisation.

Building on this achievement, Mr. Pensulu later returned to SARO and acquired a Three Tyne Ripper, a vital implement for conservation farming. Impressively, he managed this by adding a small top-up from his personal funds to the balance remaining on his SAFF voucher after redeeming the tractor.

Mr. Pensulu has encouraged his fellow farmers to seize the opportunity that SAFF provides, emphasising the positive impact mechanisation can bring to productivity and livelihoods. He is not alone many other farmers across Zambia have already benefited from the programme, successfully acquiring tractors, farm trailers, and a variety of implements supplied by SARO.

Through SAFF, farming in Zambia is steadily evolving from traditional methods to modern, efficient, and climate-smart solutions. And with SARO as a trusted partner, farmers can be confident not only in accessing cutting-edge equipment but also in receiving training, support, and reliable after-sales service.



Official handover of SAFF loan equipment at Indo Bank Branch in Nyimba District, as SARO continues to support farmers with access to modern agricultural mechanisation.

For more details on the Sustainable Agriculture Financing Facility (SAFF), visit: www.sarozambia.com/saff

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SCAN ME



SCAN ME

Zambian farmers... get ready for the Mazabuka AgriExpo!

by ProAgri editorial

In the heart of Zambia's sugar belt, Mazabuka once again opened its gates to the agricultural community with the much-anticipated **Mazabuka AgriExpo**. This event has become a cornerstone for commercial farmers across the country, a place where knowledge meets opportunity, and where the latest innovations in crop production, mechanisation, irrigation, and agribusiness are showcased. For Zambia's commercial farmers, whose daily challenges range from climate pressures to rising input costs, the AgriExpo is more than just an exhibition – it is a practical platform to engage with solution-driven technology, explore new partnerships, and gain insights that directly impact farm productivity and profitability.

Agriculture is one of the fastest-growing industries in terms of technology, and for a country like Zambia, this growth is more than just innovation, it is a lifeline. Every step forward in mechanisation, irrigation efficiency, precision farming, and crop management has the potential to secure food security while strengthening the bottom line of Zambian farmers.

Over the past few years, Zambia's agricultural sector has steadily benefitted from this exposure to international technology and knowledge. However, the reality is that many farmers, especially those in more rural regions, continue to face challenges that prevent them from accessing these opportunities. Water shortages, electricity constraints, and weak infrastructure not only affect production on the ground, but also limit mobility to attend larger events where solutions are showcased.

This gap means that some farmers are left behind, unable to access the very innovations that could make farming more efficient and profitable. But this year, the tables are turning. With the backing of **Lusaka Happening**, farmers can now look forward to a platform closer to home. On **10 and 11 October**, the



Mazabuka AgriExpo will bring the technology, expertise, and networks directly to the farming community. By hosting the event in Lusaka's farming hub, organisers ensure that both commercial producers and emerging farmers alike are introduced to new practices and technologies that will shape the future of farming in Zambia.

This event is powered by Professional Insurance and official partner, Sasol, and is proudly supported by Livestock Services Mazabuka.

It is time to connect and explore with other farmers

Agricultural expos play a vital role in shaping the future of farming. They not only showcase new technology and farming methods, but also provide farmers with the opportunity to connect – with suppliers, distributors,

agribusiness experts, and most importantly, with one another. These networks are where knowledge is shared, partnerships are formed, and ideas are sparked that lead to real growth back on the farm.

At the Mazabuka AgriExpo, farmers can look forward to an impressive line-up of technologies and innovations designed to make farming more efficient and profitable. From the latest agricultural machines and implements to advanced seed varieties and cutting-edge tools, the event promises practical solutions that can directly increase farm productivity.

The Mazabuka Turf Club will be transformed into a hub of agricultural activity, offering visitors the chance to experience:

- Tractor and implement demonstrations
- Pump and irrigation technology
- Livestock nutrition and management solutions
- Agricultural equipment displays
- Green energy innovations
- The mobility sector
- Seed and fertiliser for higher yields
- Leasing and financing options to make investments possible

From Choma, Monze, Kalomo, Livingstone, Siavonga, Namwala, and beyond – wherever you are farming in Zambia's southern region – this expo offers direct access to industry leaders and solution providers, just in time for the new planting season.

The Mazabuka AgriExpo is more than an exhibition; it is a platform to empower local farmers, strengthen regional agriculture, and ensure that Zambia continues to grow together. Make sure to mark your calendar for this unmissable event.

For more information on expos in Lusaka please visit Lusaka Happening on Facebook or contact them at **(+260)96-777-9998** or send an e-mail to **lusakahappening@gmail.com**.

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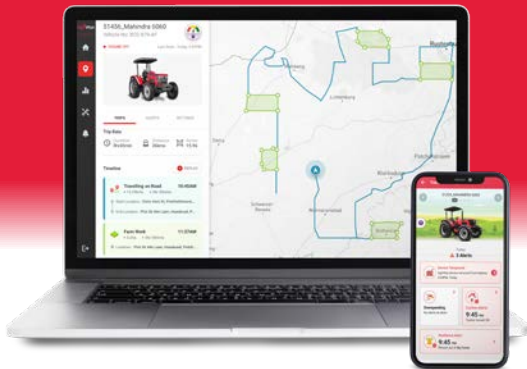
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Mahindra brings smart farming to your fields with

mahindra
AgriWys
Smart Farming



by Jaco Cilliers

AgriWys is designed to make farmers' work easier and more profitable through real-time data, fleet management and smart monitoring of tractors and implements. With this new system, farmers can track their tractors from anywhere, analyse performance, optimise operations, and make informed decisions with greater confidence.

At this year's NAMPO Cape, Mahindra Tractors once again proved that they are serious about delivering innovative solutions to the farm. With the launch of their new telematics platform, AgriWys, digital farming has now become even more accessible to Southern African producers.

AgriWys is designed to make farmers' work easier and more profitable by providing real-time data, fleet management, and smart monitoring of tractors and implements. With this system, farmers can track their tractors from anywhere, analyse performance, and even manage fuel and maintenance costs more effectively.



Mahindra emphasises that this system uses the power of 4G GPS technology, which keeps farmers connected to their fleet in real-time – no matter where they are. With the launch of AgriWys, Mahindra is entering a new era of digital farming in Southern Africa.

A smart solution for modern challenges

Farming is becoming more competitive every day, and margins are thinner than ever. Every litre of fuel and every working hour must be used optimally. This is where AgriWys plays a key role. The platform provides real-time insight into exactly what is happening on your farm, from where your tractors are operating to how efficiently they are being used.

The system offers:

- Real-time GPS tracking of tractors and implements.
- Speed and engine status, with live monitoring for proactive maintenance and smooth operation.
- Daily trip logs and logbooks for planning and recordkeeping.
- Expense tracking.
- Performance metrics such as engine hours and hectares worked.
- Alerts for speeding, fuel theft, or misuse of equipment.

All of this data is consolidated into a powerful online dashboard that is easy to understand and customise.

Monitoring in the palm of your hand

The days of guessing or phoning around to find out where a tractor is are over. With the AgriWys app, farmers can manage their entire fleet from a smartphone or computer.

The Live Location Tracking function shows exactly where your tractors are and what they are doing. If a tractor moves outside of a geo-fencing area, you immediately receive a notification. This reduces risks such as theft or misuse.

In addition, the app provides Fleet Overview Dashboards, giving you a complete view of all your tractors and implements, their work status, fuel consumption, and task progress. This means faster, smarter decisions, less downtime, and greater control over your operation.

More than just tractor management

AgriWys is not just a GPS tracker, it is a complete fleet management solution. Beyond location and performance monitoring, you can also:

- Create and manage driver profiles.
- Use multiple languages, making the system adaptable for farm workers.
- Access diagnostic functions, which will be further expanded in the future.
- Improve security with alerts for fuel levels, overspeeding, and even device tamper alerts.

These functions help farmers plan maintenance more effectively, reduce risks, and ensure a longer lifespan for their machinery.

Smarter farming, better results

According to Mahindra, AgriWys has been developed with a focus on smaller, more efficient farming. This means that even medium-sized and emerging farmers now have access to technology that was once only available to large commercial operations.

By monitoring tractor performance in real time, you can:

- Reduce fuel consumption.
- Avoid unnecessary downtime.
- Optimise working hours.
- Lower maintenance and repair costs.
- Plan production with greater accuracy.

Ultimately, this leads to higher profitability and a stronger competitive position for local producers.

An investment in the future

Mahindra does not see AgriWys as just another tool, but as a long-term investment in smart farming. The system will continuously be expanded with new functions such as advanced diagnostics, more customisable reports, and enhanced security.

This also includes the potential for integration with other digital platforms, further increasing farmers' access to precision-farming data.

Made for Africa

What makes AgriWys unique is that it was developed with Southern African farmers in mind. The application takes local challenges into account, such as fuel theft, downtime at implements, and the need for practical, easy-to-use data rather than overwhelming statistics.

Mahindra emphasises that this system harnesses the power of 4G GPS technology, keeping farmers connected to their fleet in real time—no matter where they are.

With the launch of AgriWys, Mahindra enters a new era of digital farming in Southern African. It is more than just a tracker; it is a partner in your farming operation that helps you take control, make faster decisions, and boost profitability.

As agriculture becomes increasingly driven by technology, Mahindra demonstrates that they are not only building tractors but also delivering solutions that support the long-term sustainability of producers.

Sustainable food systems need nature, not just agriculture

by Dr Peter Babyenda, of Uganda's Makerere University
(Article supplied by the University of Pretoria)

Sustainable food systems in Africa cannot be achieved through agriculture alone. This was the powerful message from Dr Peter Babyenda of Uganda's Makerere University, who called for the integration of natural capital and ecological-economic modelling into food systems transformation. Speaking during a high-level discussion hosted by the Africa-Europe Cluster of Research Excellence in Sustainable Food Systems (CoRE-SFS), in collaboration with the University of Pretoria (UP), Dr Babyenda stressed that transforming food systems requires a coordinated approach that connects environmental, health, trade, and industry policies.

He argued that recognising nature as an economic asset is essential if the continent is to feed a growing population without compromising the ecosystems that underpin agriculture. "We must shift our thinking from seeing nature as an externality to embedding it at the core of food systems policy and planning," Dr Babyenda said.

The event brought together leading academics and policy experts to explore how Africa can harness nature to secure a sustainable food future. Among them was Professor Arndt Feuerbacher of the University of Hohenheim in Germany, who joined Dr Babyenda in advocating for a systems-based approach to food security that aligns with both the United Nations' 2030 Agenda for Sustainable Development and the African Union's Agenda 2063.

"If we treat agriculture in isolation, we risk reinforcing food insecurity, accelerating ecological decline and undermining public health," he said. "Systems thinking is not optional – it's essential."

Central to his argument is natural capital modelling, a method that quantifies nature's contributions to

society. By assigning value to essential ecosystem services such as pollination, water purification and carbon sequestration, governments can better assess policy trade-offs. This is particularly vital in African economies, where agriculture is closely linked to natural ecosystems.

Uganda offers a practical example.



Dr Peter Babyenda.

Its Ministry of Finance, Planning and Economic Development has begun integrating natural capital into macroeconomic models, drawing on data from the Uganda Bureau of Statistics. However, progress is hindered by data gaps, limited technical expertise and little awareness of natural capital accounting methods.

To accelerate impact, Dr Babyenda proposed three key strategies: valuing nature within national policy frameworks, addressing data gaps through technologies such as remote

sensing and community monitoring, and strengthening institutional capacity through targeted training and inter-ministerial collaboration.

"We need to democratise environmental data from remote sensing to citizen science," he said. "The tools exist; we just need to align them with policymaking." Complementing this perspective, Prof Feuerbacher demonstrated how ecological-economic modelling can further refine policy decisions. His work, particularly through the Behavioural Change Towards Climate-Smart Agriculture (BEATLE) project, bridges agricultural markets and ecosystem dynamics using tools like computable general equilibrium models and InVEST software.

One compelling case study explored the impact of pollinator decline on cocoa production in West Africa. In Ghana, falling pollinator populations led to reduced yields and significant welfare losses for poor households. This also triggered price increases that benefitted producers in unaffected regions, revealing the complex and uneven consequences of ecosystem disruption.

Prof Feuerbacher noted that biodiversity reforms often stall because decision-makers lack reliable data on both ecological services and market reactions.

"The missing link is evidence," he said. "Without understanding how environmental change ripples through markets and livelihoods, we are designing policies in the dark."

The speakers concluded that by embedding natural capital and ecosystem services into policy and planning, African countries can design food systems that are not only productive and resilient, but also equitable and ecologically sound.



Spot the difference, check your eggs

More than just feed

by Rowena Blanco, Animal Nutritionist, Tiger Animal Feeds

Have you ever bought a tray of eggs or cracked a few eggs and noticed something strange either outside or inside the egg? Commercial egg production, whether on a large scale or small scale, will often result in some odd-looking eggs. This article will highlight ten of the most common abnormalities and the possible causes of them.

The egg laying process, from the release of the yolk from the ovary to the actual laying of the egg, takes approximately 24 to 26 hours to be complete. At the end of the process, a perfectly oval-shaped egg is expected but this is not always what the hen lays.

What are some of the peculiarities we have seen:

Pale egg yolks

Pale egg yolks are nothing to be concerned about, they are just not aesthetically appealing and gives one the impression that there is something wrong with the egg. The colour of the yolk is directly related to the pigment the hen consumes. Diets richer in carotenoids (such as yellow maize) will have darker egg yolks, whereas diets with white maize will have a paler egg yolk.

Vivid orange egg yolks

Occasionally, you will find yolks with a dark orange colour. This means that the diet which the hen consumed had too much artificial pigmentation (such as carophyll).

Double yolk eggs

This is common with large and jumbo-sized eggs and is not a problem for table egg production. It is caused when two yolks are released from the oviduct at the same time and encased in one shell.

Bloodstained eggs

Bloodstained eggs are usually common in younger flocks in early lay and is a result of straining on the part of



Bloodstained egg. (poultryworld.net)

the hen where large eggs are involved. This can be avoided by ensuring that the birds are fully grown and sexually mature before providing the required artificial light (16 hrs/day) for commencement of lay.

Eggs with blood spots inside

This is a result of blood escaping the ovarian follicle and getting imbedded in the albumen. The cause is possibly due to the birds being shocked or stressed and will usually correct itself. It is good to note that there are some breeds which are flightier than others and therefore blood spots may be more prominent in these eggs.

Dirty eggs

This is a cause of lack of removal of faeces from the nest boxes, or when a flock has wet litter and pasty droppings. This can be prevented by regular cleaning of the nest boxes and providing flocks with adequately balanced diets to prevent wet droppings.

Soft shelled eggs

These are eggs with a thin layer of calcium deposit on the egg membrane and are soft to the touch. It can usually occur in the first pullet egg and in older birds. Other possible causes are diets which are too high in phosphorus, mouldy feed, salty feed and feed contaminated with mycotoxins. Provide flocks with a balanced diet from a reputable animal feed company, such as Tiger Animal Feeds.

Eggs with watery albumen

This is more frequent in older hens and in hotter weather. Most of the time eggs develop watery albumen because they are stale and have been kept in a warm area for more than two weeks. Eggs should be stored in cool controlled temperatures to preserve the freshness.

Wrinkled eggs

These eggs appear to have wrinkled or rigid surfaces which is caused by overcrowding and stressed hens. This may also be seen in flocks which have infectious bronchitis.

Calcium deposits on eggs

This can be caused by defective shell glands or disturbances during the calcification process of egg formation. Excessive calcium or Vitamin D in the diet may also be a possible cause of these deposits. Make sure a balanced feed is given to the birds.



Soft shell eggs. (backyardchickens.com)



Egg with calcium deposits. (fresheggdaily.bog)

There are many other abnormalities which may have been noticed but these are very few and not common in flocks. If chickens are kept in clean non-stressful conditions and given a balanced diet with fresh clean water, then these problems will be avoided.

For more information contact Rowena Blanco, Animal Nutritionist of Tiger Animal Feeds on (+260)977-991-847 or visit their website on www.tigerfeeds.com



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#AfriqDrip

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Widespread harvesting of trees for timber, fuelwood and charcoal are destroying about 2% of Malawi's forests.



Earth as we know it is rapidly changing. A few years ago, it would have been regarded as wildly imaginative if you mentioned that droughts and floods are simultaneously devastating Africa.

Yet climate change is a reality and the way food is produced influences it. As one researcher stated: Agricultural practices affect climate change, and they are simultaneously affected by climate change.

In order to produce enough food without destroying the environment, countries facing food insecurity must have suitable policy and technology that are affordable, meet food security objectives and provide smallholder farmers with a means to adapt to climate change.

Farming alone is responsible for almost 30% of global greenhouse gas emissions, research has shown. Cultivating vast tracks of land using heavy mechanisation and synthetic fertilisers to boost production. Industrial agriculture comes at a price, as it creates ecological dead zones, release carbon from the soil, and disrupt natural ecosystems.

Climate change causing droughts and floods in Africa is blamed for leaving millions of smallholder farmers on the continent hungrier and poorer than ever. Mostly, the climate change caused by greenhouse gas emissions is not even caused by these poor farmers trying to scrape a living from their meagre plots of land; it is caused by industrial agriculture giants in faraway countries these small farmers might not even have heard about.

In Africa, regenerative farming is a solution that holds promise of beating climate change. And in Africa, small farmers are already doing it, as our examples show.

Agroforestry as natural climate solution refers to the intentional establishment, increase or maintenance of trees in agricultural landscapes, we said in the previous article.

As forests are increasingly being broken down by agriculture, regenerative agriculture is becoming more urgent. For example: Malawi's Zomba-Malosa Forest Reserve is a degenerating forest:

widespread harvesting of trees for timber, fuelwood and charcoal are destroying about 2% of the

country's forests.

The lack of electricity and the high price of natural gas, force households to use fuelwood for cooking. Also, harvesting and selling wood for charcoal production to bolster the farmers' meagre income from subsistence farming, further helps deplete forests.

Agroforestry part 13.

Regenerative agroforestry helps mitigate climate change

by Tisha Steyn



A Malawian woman with a child on her back. The lack of electricity and the high price of natural gas force households to use fuelwood for cooking.

Healing the land

Regenerative agroforestry, on the other hand, is about regeneration (renewal, revival). Instead of working against nature to gain as much production as possible out of the system, the regenerative farmer works with nature, mimicking natural ecosystems.

Agroforestry has long been recognised as a sustainable land management practice, integrating trees, crops, and livestock to enhance biodiversity and productivity.

Regenerative agroforestry blends permaculture principles with agroforestry restore ecosystems, build soil health and create agricultural systems that sustains itself. It is not just about growing food; it is it's about giving back to the earth rather than depleting and degrading it.

Key features of regenerative agroforestry

Regenerative agriculture support foods production while benefiting the environment by rebuilding soil, increase biodiversity and fight climate change by minimising earth warming. It is characterised by the following:

Mimicking nature

Regenerative agroforestry create agriculture that closely mimics natural ecosystems by combining diverse plant species, trees, crops, and sometimes livestock to create a system that is self-sustaining while enhancing ecosystem services and biodiversity.

Soil health

Deteriorating soil is caused by the breakdown of the traditional natural

fallow system. Farmers used to work part of the land while allowing the rest to lie fallow for a period of time to naturally replenish fertility of the soil. Another cause is the lack of funds and access to mineral fertiliser, which declined when government withdrew funding.

Traditional agroforestry improves soil health through organic matter and erosion control; regenerative agroforestry actively rebuilds degraded soils by using cover cropping, while integrating trees helps storing carbon (carbon sequestration). retain water and enhance nutrient recycling, thereby making soils more resilient and fertile.

- Agroforestry adds organic matter from dead tree litter and root biomass to the soil, improving the soil structure and the nutrient content.
- Tree root systems help maintain the soil allowing better absorption of water, thereby keeping erosion at bay and lowering compaction.
- As a result of better soil and more moisture, plants grow better, boosting not only plant diversity, but also animal diversity by providing a suitable habitat for a host of wildlife.
- Better soil health needs fewer chemical fertilisers, thereby cutting down greenhouse gas emissions. Healthy soil also acts as a carbon sink that holds Co^2 .

Agroforestry systems thus generate microclimates that protect crops from adverse weather conditions while improving water management, minimising drought impacts, and preventing waterlogging.

Climate resilience

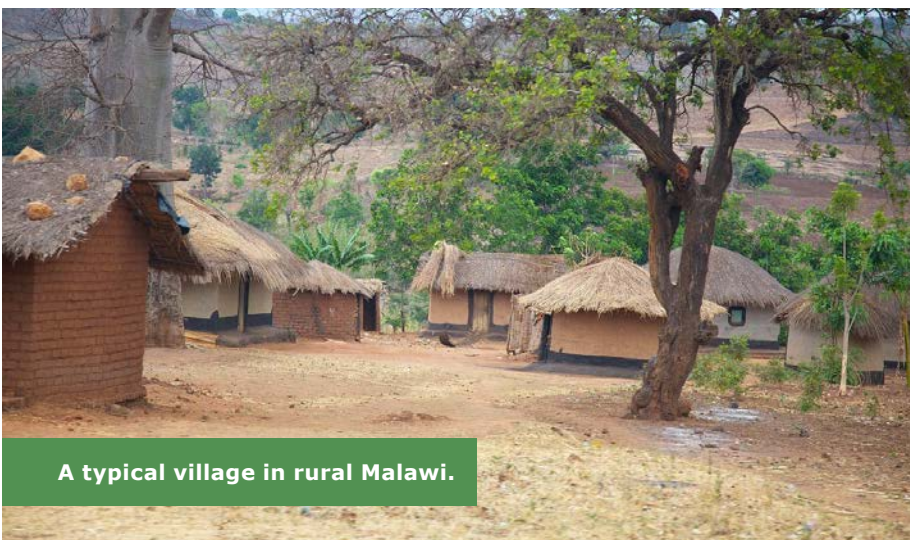
By restoring the soil and preventing erosion, thereby keeping moisture in the soil, regenerative systems help withstand extreme weather events such as droughts and floods. This leads to sustainable land use.

Economic diversification

Regenerative agroforestry creates more than one income stream by integrating cash crops, fruit trees, timber, and livestock, thereby reducing financial risks for farmers. Small-scale farmers with a single income stream are extremely vulnerable to climate vagrancies that can instantly destroy their little crop and livelihood, leaving them hungry and even poorer.

Restoration of degraded lands

Regenerative agroforestry focuses on actively restoring degraded ecosystems. By integrating fast-growing trees, especially bean-bearing



A typical village in rural Malawi.



Field site visit to see restoration practices. The barrier of rock and grass help slow the water flow and allow plants to grow. (Source: Flickr)



Aside from planting macadamia seedlings, NESMAC also encourages farmers to plant trees for agroforestry and firewood uses also.

trees that increase nitrogen in the soil, with crops, barren lands can be rehabilitated while providing food from and cash income from wood products for communities.

In short, core principles are:

Regenerative agroforestry thus rests on the following core principles:

- Soil must be kept covered to prevent erosion;
- Crop diversification enhances farmer's resilience;
- Food security is ensured while ecosystem is being regenerated;
- Knowledge exchange among farmers and other stakeholders is promoted;
- Economic viability is achieved for long-term sustainability.

Improving soil and livelihoods

Farmers in Malawi and Zambia have integrated leguminous 'fertiliser' trees

and shrubs to fix nitrogen in the soil in their maize fields, resulting in a major increase in yield.

These trees capture atmospheric nitrogen, and release it into the soil when the large amount of biomass they provide decomposes in the soil, releasing it for crop growth.

An assessment of the impact of fertiliser trees/shrubs in eastern Zambia shows that it improves (household) food security and can reduce the seasonal household hunger period, when there are no crops, by two to four months per year depending on the type of tree or shrub species planted.

Regenerative agroforestry also offers financial resilience by creating multiple income streams through crop diversification. In Tanzania, farmers use high-value cash crops like cardamom in addition to staple crops like maize, bananas and beans to ensure a stable income and food security. Trees grown on steep slopes

or poor soils help farmers to utilise all of their land while improving soil structure and fertility.

Regenerative agroforestry goes beyond traditional agroforestry by integrating permaculture principles for long-term sustainability and proves that farming can be sustainable, profitable and resilient while restoring the environment.

Instead of viewing land as a resource to exploit, regenerative agroforestry treats land as a living system that thrives when taken care of.

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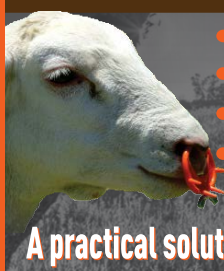
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African cuisine part 11: North Africa

by Tisha Steyn

Algeria

Algeria is a country in the Maghreb region of North Africa. It borders on the Mediterranean Sea to the north, Tunisia to the northeast, Libya to the east, Niger to the southeast, Mali, Mauritania and Western Sahara to the southwest, and Morocco to the west. The capital Algiers is located in the far north on the Mediterranean coast.

Although Algeria is the largest country in Africa, most Algerians live in a narrow band near the sea. Along this fertile strip between the coast and the Atlas Mountains agriculture takes place. South of the Atlas Mountains is a steppe landscape ending with the Saharan Atlas and further south the Sahara Desert.

Rainfall along the coast ranges from 400 to 670 mm annually, and up to 1 000 mm in some years in the northern part of eastern Algeria. Between the mountains are sand dunes with winds and high temperatures of up to 43,3 °C in summer.

Algerian cuisine is similar to the cuisines of its neighbours Morocco and Tunisia and is strongly influenced by Turkish and French cuisine. They love their greens, olives and olive oil, as well as aromatic herbs and spices.

Since Algeria is a Muslim state, they do not eat pork or drink alcohol. Locals prefer green tea, milk, various juices and coffee.

The dishes depend on the region and season, and include couscous, fresh vegetables and herbs, bread, lamb, beef or poultry and olive oil. Vegetables are used for salads, soups, tajines, and sauce-based dishes.

Couscous is made from durum wheat semolina that is steamed for about ten minutes and served with meat stew with vegetables like potatoes, carrots and zucchini. Sometimes black-eyed peas are added, or it is enjoyed with buttermilk. A variety of dishes are made from couscous – from side dishes to lamb and beef and sweet desserts. It all depends on what is added which can be vegetables, meat, fish, seafood, raisins, fruits and nuts.



Tagine zitoun is a typical Algerian stew prepared using lamb or chicken and olives as the chief ingredients. (Source: <https://travelfoodatlas.com/algerian-food>)

01 Breads



Mahdjouba is an Algerian flatbread typically filled with a combination of onion, garlic, tomato, peppers and spices. (Source: <https://travelfoodatlas.com/algerian-food>)

The common name for all flour dishes is khobz (hobs) which translates as bread. Bread is used instead of cutlery to mop up gravy and sauce. Algerians often use bread instead of cutlery: it is convenient for them to collect gravy and sauce. Khobz el Dar is an easy no-knead semolina bread sprinkled with sesame seeds. It is soft and slightly sweet.

Kesra is flatbread prepared with

baker's yeast and olive oil and finely ground semolina and water. It is fried in a hot cast-iron pan and served with soups, vegetable salads and cold drinks.

Mahdjouba or Mhajib is a flatbread is similar to a French crêpe that is made with semolina. It is typically filled with a combination of onion, garlic, tomato, peppers and spices. It is a popular street food.



Kesra is a type of Algerian bread made from semolina and water and fried in a hot cast-iron pan. (Source: <https://travelfoodatlas.com/algerian-food>)



Merguez is a sausage made of lamb or beef and seasoned with spices. (Source: <https://travelfoodatlas.com/algerian-food>)

02 Meat and vegetable dishes

Dersa is a spicy garlic and chili paste made by blending garlic, chili, cumin and paprika in a mortar and pestle, and mixed with olive oil, it is used as seasoning for fish, meat, or potatoes. Sometimes lemon juice and or parsley are added.

Poulet Roti a l'Algerienne consists of a whole chicken is rubbed with Dijon mustard, olive oil, onion, garlic, balsamic vinegar and spices and roasted in the oven. It is served with roasted potatoes.

Tajin Zitoune is made in a variety of ways, depending on the location. It consists of minced chicken, beef, lamb or fish and it is prepared in a tagine, or terracotta pot. Olives, potatoes and mushrooms, and or onions, carrots, and other vegetables are added, and it is seasoned with lemon juice, saffron or turmeric, cinnamon, thyme and bay leaves. Sometimes a white or red sauce is included.

Tajine de Poulet aux Carottes et Patates Douces consists of chicken thighs cooked on a bed of spiced onions, then roasted with carrots and sweet potatoes. Raisins and prunes are sometimes added for a sweet touch.

Chorba Hamra bel Frik or Freekeh is hearty stew with meat, vegetables, and spices. Most families prepare it every day of Ramadan. It is made with tomatoes, coriander, onions. Celery, meat and chickpeas and eaten with Freekeh or Bourek.



Bourek refers to a range of pastry dishes made by layering thin phyllo dough, with fillings such as cheese, minced meat, spinach and seasonings. (Source: <https://travelfoodatlas.com/algerian-food>)

Borek or Bourek is a crisp pastry dish made with thin layers of phyllo dough stuffed with melty feta cheese or seasoned minced meat, spinach and seasonings, along with a creamy egg yogurt mix and baked into a crisp and flaky pie-like dish. It is often served with chorba during Ramadan. Lamb Borek is filled with seasoned ground lamb.

Merguez is a sausage made of lamb or beef and seasoned with spices. Pork is never used because of the Muslim tradition. The sausage has become popular as street food in France where it is served inside a bun or with French fries.



Chorba Frik is a soup made with tomatoes, Frik, a type of green-coloured wheat, coriander, onions, celery, meat and chickpeas. (Source: <https://travelfoodatlas.com/algerian-food>)



Algerian carrots are prepared with cinnamon, cumin, garlic, and bay leaf, then finished with lemon juice. (Source: <https://www.allrecipes.com/gallery/best-algerian-recipes/>)

Dolma consists of vegetables, like zucchini or potato, peppers and tomatoes stuffed with meat and cooked in a cinnamon-flavoured white sauce.

Kefta is a meatball dish prepared with tomato sauce, garlic and pepper and served with a French baguette.

Rechta is prepared using pasta made with durum wheat semolina, flour and eggs. It is cut into thin strips, a common characteristic of the eastern Maghreb that includes Algeria and Tunisia. The noodles are cooked in a cinnamon flavoured white sauce and is usually accompanied by chicken and vegetables like turnips and zucchini.

Algerian carrots are prepared with cinnamon, cumin, garlic, and bay leaf, then finished with lemon juice.

Chtitha Batata is a potato stew made with dersa and vegetables, fish or meat. The dish includes a base of potatoes prepared in a red sauce of onions, tomato puree, paprika and chickpeas. Sometimes meat is added to the sauce and flavoured with salt, pepper and cumin. The broth is allowed to cook until it is thick, and it is then added on top of the potatoes.



Kefta is a meatball dish prepared with tomato sauce, garlic and pepper and served with a baguette. (Source: <https://www.allrecipes.com/gallery/best-algerian-recipes/>)

03 Sweets

Dziriat is an almond-filled cookie made with flour and butter or vegetable oil and eggs, the latter which may be omitted.

Cornes de Gazelle are crescent-shaped cookies with a sweet almond-orange blossom filling and topped with crushed pistachios.



Chtitha Batata is a potato stew made with dersa, a spicy mix, and vegetables, fish or meat. (Source: <https://www.allrecipes.com/gallery/best-algerian-recipes/>)



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Bushmeat: Delicacies of death

by Tisha Steyn

Nigeria's bushmeat industry is thriving. It remains a firm favourite in Nigeria, and the demand is rising, despite the sale of bushmeat being official banned in the country.

Bushmeat, including bats, pythons, porcupines and antelope is openly displayed alongside conventional livestock in the markets in the cities.

According to the World Bank, the illegal trade in bushmeat is worth between \$7,8 billion and \$10 billion a year.

That despite the fact that animals slaughtered and consumed may pose a serious health risk because of zoonotic diseases carried by many species.

Why is it still consumed? Bushmeat is traditional fare in Africa, especially in rural areas. In Nigeria, bushmeat is increasingly on the menu, whether in wet markets where live and slaughtered animals are sold, as well as cooked bushmeat sold by street vendors in cities.

Some vendors sell bushmeat because the demand is there and they firmly believe it is healthier than farmed livestock. However, the World Health Organisation (WHO) warns that eating bushmeat can be life-threatening, as diseases carried by wild animals can be transferred to humans.

A survey by the country's Wildlife Conservation Society showed that more than two out of five urban Nigerians have eaten bushmeat during the past year, almost double the number in 2018. It seems to be the fourth-most profitable criminal enterprise after drugs, human trafficking and arms.

The consumption of bushmeat is a ticking time-bomb that could be deadly considering the emergence of infectious diseases that originated in animals in the past decade. According to WHO, this include the Ebola outbreak in West Africa in 2014, and which is believed to be carried by bats.

According to the Nigerian Medical Association, practices like open-air butchering, the lack of protective equipment, and above all, the lack of veterinary screening creates a public health risk. The problem is not only in the eating, but especially in the handling, which opens up pathways for emerging infections, which cannot reliably be detected in bushmeat.

Wildlife conservationists are equally concerned because the increase in eating bushmeat is speeding up the collapse of wildlife populations. Since bushmeat is hunted indiscriminately to satisfy hungry consumers, some species, from rabbits to crocodiles



Bushmeat includes primates, pythons and pangolins, to mention a few animal species that are devoured in Africa. (Source: <https://africageographic.com/stories/saving-rodents-losing-primates-we-need-tailored-strategies-to-manage-bushmeat-trade/>)

to elephants, that are being hunted indiscriminately, may be endangered by the trend. Rare animals can fetch more than \$650, which encourages reckless hunting without regard for long-term survival of the species.

Driven by rising demand for bushmeat, Nigerian hunters, who see nothing wrong with killing and selling bushmeat, shoot any wild creature they encounter, whether pregnant females, juveniles or endangered species. Traders disguise the meat of endangered species, and police turn a blind eye. They often lack the training and tools to identify species and cannot tell the difference between what is legal and what is not, therefore law enforcement is lacking.

Despite increased fines of up to 5000 naira (\$3 269) and a jail sentence of up to five years since 2016 for hunting or trading endangered animals like pangolins, pythons, sea turtles, monkeys and civets, hunters and traders are not deterred, as long as they have customers, including the police and customs officers.

Zoonotic diseases

Zoonotic diseases are transmitted from animals to humans. These animals include primates, bats, rodents and antelopes and the diseases can be spread by hunting, butchering, as well as smoking and cooking the meat.

The main diseases that are carried over to humans include viral, bacterial and parasitic diseases.

Viral diseases

Ebola Virus Disease (EVD) is associated with hunting and or handling of fruit bats, primates, like chimpanzees, gorillas and monkeys, as well as duikers in West and Central Africa.

Marburg Virus Disease is also linked to bats and handling of primates.

Monkeypox (Mpox) is linked to handling and or consumption of rodents and monkeys, and cases have been traced to bushmeat preparation.

Simian foamy virus, simian immunodeficiency virus (SIV) is carried by primates; SIV is believed to be the ancestor of HIV.

Rabies can be transmitted if bitten by infected wild animals during hunting or butchering.

Other haemorrhagic fevers include Lassa fever that is linked to *Mastomys* rodents that are sometimes hunted and eaten.

Bacterial diseases

Salmonellosis is linked to contaminated meat or poor handling.

Anthrax can be present in antelope, wild bovids, and other ungulates.

Brucellosis is found in wild pigs and ungulates.

Leptospirosis is linked to contact with rodent urine during hunting or meat preparation.

Tuberculosis (bovine TB) is found in some wild ruminants.

Parasitic diseases

Trichinellosis is contracted from eating undercooked wild pigs, warthogs, or other carnivores.

Toxoplasmosis is found in wild mammals and can infect humans through undercooked meat.

Trypanosomiasis, or Sleeping Sickness is linked to some wild animal reservoirs like antelope that can harbour parasites spread by tsetse flies; it is not directly meat-related but linked to hunting zones.

Tapeworms and roundworms are linked to undercooked meat of wild animals.

Food Safety Risks

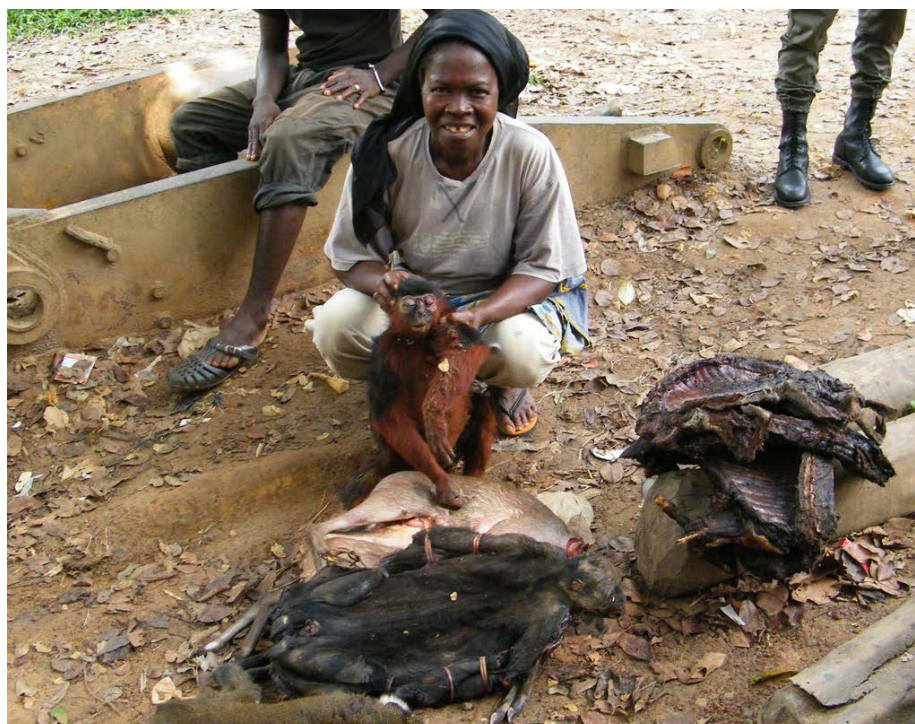
- Improper smoking and or drying can leave pathogens alive in bushmeat.
- Cross-contamination of knives, surfaces and water spreads pathogens from carcasses to humans.
- Zoonotic spillover hotspots include butchering sites, bushmeat markets, and kitchens with poor hygiene.

In Nigeria specifically, the highest risks are from Lassa fever linked to rodents, monkeypox carried by rodents and primates, anthrax carried by ungulates, and salmonella from poor meat hygiene.

Table 1: Risk by species

Here's a risk-by-species table showing which diseases are associated with different types of bushmeat in Nigeria/West Africa and the level of danger to humans:

Animal (bushmeat source)	Main diseases carried	Transmission route	Danger level to humans
Primates (monkeys, baboons, chimpanzees, gorillas)	Ebola, Marburg, Simian Immunodeficiency Virus (SIV→HIV), Monkeypox, TB, Salmonella	Hunting, butchering, contact with blood/fluids, eating undercooked meat	Very High (Ebola/HIV origins, epidemic risk)
Fruit bats and insectivorous bats	Ebola, Marburg, Rabies, Coronaviruses (possible), Nipah-like viruses	Hunting, butchering, contact with saliva/urine, drying meat in caves	Very High (Ebola/Marburg outbreaks)
Rodents (grasscutters, giant rats, cane rats, mice, squirrels)	Lassa fever, Monkeypox, Salmonella, Leptospirosis, parasites (tapeworms, worms)	Contact with blood/urine during hunting/butchering, undercooked meat	High (Lassa fever endemic in Nigeria)
Antelope, Duikers, Bushbuck	Anthrax, Brucellosis, TB, Trypanosomiasis (as reservoirs), Salmonella	Handling, consumption of raw/undercooked meat	Moderate-High (anthrax risk serious)
Wild Pigs and Warthogs	Trichinellosis, Brucellosis, Anthrax, Salmonella, parasites (worms)	Eating undercooked meat, butchering	High (trichinellosis and anthrax)
Carnivores (civets, genets, wild cats, mongooses)	Rabies, parasites (worms), Salmonella	Hunting/bites, butchering, undercooked meat	Moderate-High (rabies deadly if untreated)
Reptiles (monitor lizards, snakes)	Salmonella, parasites (tapeworms, nematodes)	Handling raw meat, undercooked consumption	Moderate
Birds (wild guinea fowl, pigeons, waterfowl)	Avian influenza, Salmonella, Campylobacter	Handling, undercooked meat	Moderate



Bushmeat is increasingly popular in Nigeria, not only in rural areas but also in cities. (Source: <https://africageographic.com/stories/saving-rodents-losing-primates-we-need-tailored-strategies-to-manage-bushmeat-trade/>)

The biggest global health concerns tied to bushmeat are Ebola, Marburg, Lassa fever, and Monkeypox because of their epidemic potential.

Summary

- Primates and bats are most dangerous as they have strong links to Ebola, Marburg, HIV, and other deadly viruses.
- Rodents are a major everyday risk in Nigeria because of Lassa fever outbreaks.
- Ungulates like antelope such as duiker can transmit anthrax, which has caused human deaths in West Africa.
- Wild pigs and carnivores carry

- both bacterial and parasitic risks. Reptiles and wild birds are less culturally important bushmeat but still carry foodborne risks, such as Avian Influenza.

Next article

Replacing bushmeat with alternatives, including chicken, goat, catfish, farmed grasscutter rodents and snails is much safer for both public health and biodiversity. More about these alternatives in the next article.



Bushmeat hunters have no qualms about hunting and selling bushmeat to willing customers. (Source: <https://www.bloomberg.com/news/articles/2025-08-25/as-bushmeat-consumption-grows-nigerian-doctors-fear-outbreaks?embedded-checkout=true>)



Vendors sell bushmeat alongside livestock meat in Nigerian cities. (Source: <https://www.bloomberg.com/news/articles/2025-08-25/as-bushmeat-consumption-grows-nigerian-doctors-fear-outbreaks?embedded-checkout=true>)

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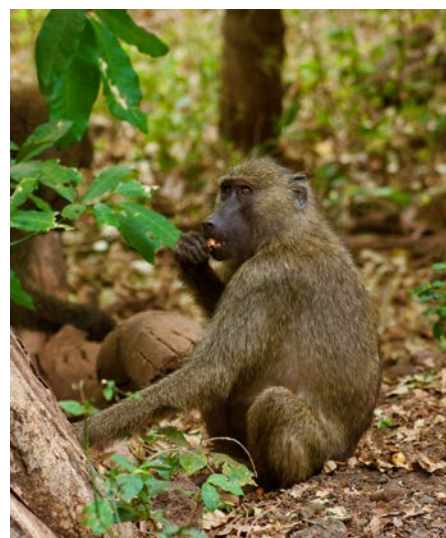
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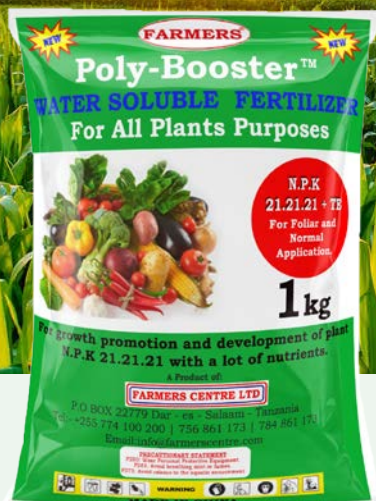
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Provide essential nutrients for proper growing of the plants.
Suitable for foliar and drenching application.
Promotes the development of roots, stems and branches in all the plants.

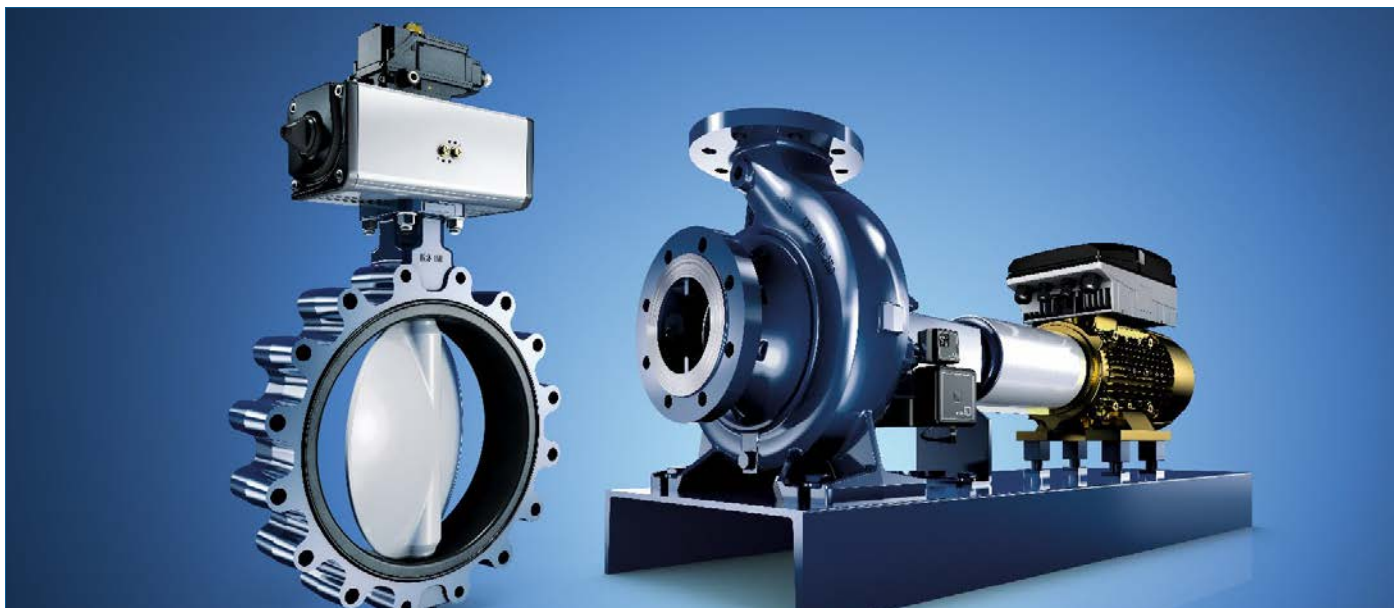
MAX-MORE

(N:P:K, 10:5:40 + TE)

Improves and promotes growth of plant, fruits and flowers.
Ideal to use during flowering and fruit formation.
Suitable for foliar and drenching application.
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