

African Farming

and Food Processing

Livestock

Curbing bovine mastitis

Fertiliser plants

Ending Africa's hunger

Coffee

Boosting yield with soluble calcium



Agrofood Nigeria preview. p4



Annual Buyers' Guide

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Revolutionising the African agrarian industry




Image credit: Adobe Stock



Omex CalMax containing a high concentration of soluble calcium along with other essential plant nutrients helped boost coffee yield and bean quality.



With the ever-increasing need to boost productivity, feed milling technologies are mostly focusing on automation.



African Farming
and Food Processing

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Printed by: Buxton Press

US Mailing Agent: African Farming & Food Processing USPS. No. 015-224 is published six times a year for US\$90 per year by Alain Charles Publishing Ltd, University House, 11-13 Lower Grosvenor Place, London, SW1W 0EX, UK
Periodicals Postage Paid at Rahway, NJ. Postmaster: send address corrections to: Alain Charles Publishing Ltd, c/o Mercury Airfreight International Ltd, 365 Blair Road, Avenel, NJ 07001.
ISSN: 0266 8017

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Farming Calendar 2023

JANUARY

24-27 IPM ESSEN ESSEN
www.ipm-essen.de

FEBRUARY

08-09 Africa Agri Expo NAIROBI
www.africa-agriexpo.com

MARCH

08-10 HortiFlora Expo ADDIS ABABA
<https://hppexhibitions.com/hfe/>

15-17 Agritech West Africa ACCRA
www.agritechwestafrica.com

28-30 Agrofood & Plastprintpack Nigeria 2023 LAGOS
<https://www.agrofood-nigeria.com/>

APRIL

20-22 AgriTech Expo Zambia CHISAMBA
<https://www.agritech-expo.com/>

MAY

16-18 Pan-African Poultry Conference (PPC) LOME
<https://www.cersa-togo.org/>

16-19 Nampo Harvest Day BOTHVILLE
<https://www.grainsa.co.za/pages/nampo>

JUNE

06-08 IFTEX Nairobi NAIROBI
www.iftex.org

Readers should verify dates and location with sponsoring organisations, as this information is sometimes subject to change.

What makes agrofood Nigeria 2023 indispensable?

THE EIGHTH EDITION of 'agrofood & plastprintpack Nigeria' is coming back to Lagos in March this year.

The event, which is scheduled to take place from 28-30 March 2023 at the Landmark Centre in Lagos, will shine a spotlight on beverages

- production and ingredients. On the trade visitor side, buyers and decision-makers from all major beverage producers are expected to visit, while exhibitors will mostly comprise of important beverage technology and ingredient suppliers. A top level three-day conference will also take place, covering key topics such as finance and supply chain evaluation, among others.



Nigeria's trade show and conference on agriculture, food and beverage technology, food ingredients and food.

Guest of Honour 2023

agrofood Nigeria this year, is pleased to welcome the Republic of Türkiye, who will be attending the show as Guest of Honour. Organised by Expotim Ladin, the Guest of Honour 2023 will present exciting solutions and products from renowned Turkish suppliers that are specifically tailored to the requirements of the Nigerian manufacturing sector.

With expenditure in the F&B sector growing steadily, F&B production is by far the largest segment of the Nigerian processing industry. Accordingly, the demand for food and beverage ingredients is rising continuously. In addition to this, Nigeria remains one of Africa's biggest food importers and is also the country's second largest investor in food and packaging technology. All these factors, and many more make agrofood Nigeria 2023 a must-attend event for trader visitors, exhibitors and buyers alike.

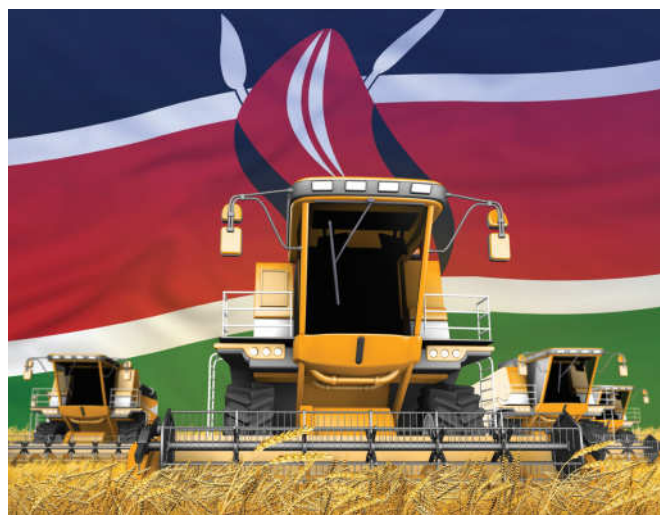
Sixth edition of Africa Agri Expo to be endorsed by Ministry of Agriculture and Livestock Development - Kenya

THE TAB GROUP organiser has officially confirmed that Africa's largest, most established and prominent agricultural show - sixth Africa Agri Expo will be endorsed by The Ministry of Agriculture and Livestock Development - Kenya from 8-9 February 2023 in Nairobi, Kenya.

The Ministry of Agriculture and Livestock Development - Kenya has assured complete food and nutrition security while also ensuring an improvement in the living conditions of rural residents. The Ministry aims to transform the sector into being more competitive, commercially oriented and responsive to economic demands. In the expo, the Ministry will not only mark their presence, but will also participate in keynotes and panel discussions on the available opportunities in the agriculture sector, along with full support to the companies present.

The show provides an excellent networking platform and business opportunities for various agriculture, machinery, technology, agro-chemical, poultry/ livestock and other agriculture solution companies. This year, the event is much anticipated and being talked about globally, with visitor counts that are expected to surpass all records.

AAE - Kenya is an ideal spot to showcase your strength in terms of the latest technologies and brands as it provides a space wherein you can exhibit your expertise in the industry to people who matter the most to you. Sponsoring this event not only gives you brand recognition, but also helps you outstand your competitors. As the demand for agricultural mechanisation, irrigation and agri-tech in the region



The Ministry aims to transform the sector into being more competitive, commercially oriented and responsive to economic demands.

grows exponentially - governments, agriculture companies & farmers are actively looking at world-class, cost-effective solutions that could help improve their efficiency. As a key Sponsor at AAE 2023, you will meet them, generate targeted leads and close new businesses.

Uganda's Ministry tasked to focus on providing post-harvest handling support to tackle food insecurity

THE COMMITTEE ON Agriculture, Animal Industry and Fisheries has tasked the sector ministry to focus its budget priorities on food security.

The committee chairperson, Janet Okori-Moe said there is need for a clear strategy to handle food insecurity. She added that availing money for seeds for such interventions under the Agriculture Ministry will enable the government to facilitate interventions aimed at curbing food insecurity. "Before such an issue goes to the Minister for Disaster Preparedness, how prepared are we as the Agriculture Ministry? What food production and food security arrangements do we have?" Okori-Moe said.

While chairing a meeting with officials from the Ministry of Agriculture, Animal Industry and Fisheries led by the State Minister for Animal Industry, Bright Rwamirama, Okori-Moe cited food intervention to Karamoja to handle starvation due to food insecurity, saying that an alternative provision of seeds for planting would save the government on costs of buying food.

UPDF Representative, Sam Kavuma called for provision of proper post-harvest handling support by the ministry, to beneficiaries of agriculture inputs in cases of managing food insecurity. "What is going to happen after they have harvested this food? Is there any general plan as to who will handle the next phase of harvesting and storing these foods?" Kavuma asked.

Stella Apolot Isodo (FDC, Ngora District) reiterated the need for best postharvest handling techniques as well as value addition. She noted that farmers in her constituency were suffering with post-harvest losses. "Food insecurity is coming back to bite us because we are ignoring the local farmer who needs to be helped to preserve his sorghum so that he can sell it at a fair price," Apolot said.

Minister Rwamirama said the concern on food security required



Image Credit: Adobe Stock

Sam Kavuma called for provision of proper post-harvest handling support by the ministry, to beneficiaries of agriculture inputs in cases of managing food insecurity.

sufficient food production to cater for domestic consumption with a surplus for commercial purposes including export. He added that interventions to manage food security included genetic improvement of disease-resistant crops and high yielding, plant and animal nutrition through irrigation. "The sustainable solution for food security now is to convert idle pieces of land belonging to government and make them productive," Rwamirama said.

Idris and Sabrina Elba urge world leaders to increase investment for small-scale farmers at WEF award ceremony in Davos

ON 16 JANUARY, at Davos, actor Idris Elba and his wife Sabrina Dhowre Elba, both Goodwill Ambassadors for the United Nations' International Fund for Agricultural Development (IFAD), received the 2023 Crystal Award for their leadership in championing and advocating on behalf of millions of poor small-scale farmers across the globe who work each day to produce one-third of the world's food and more than 70% of the food produced in Africa and Asia.

Since they became UN Goodwill Ambassadors for IFAD in 2020, Idris Elba and Sabrina Dhowre Elba have been vocal proponents for greater investment in agriculture and rural development, particularly in Africa where severe weather events and conflicts have further impacted farmers' ability to produce food for their families, communities and countries. Despite the important role these farmers play in ensuring global food security, 75% of world's hungry and poorest people live in rural areas of developing countries.

"The poor of the world are not just looking for aid and handouts, they are looking for investment - investment in people, in nature, in innovation," said Idris Elba, making a strong plea in a room filled with many of the most powerful global leaders in government and industry. "With greater access to finance, markets,



Image Credit: IFAD

Idris and Sabrina Elba have been vocal proponents for greater investment in agriculture and rural development, particularly in Africa.

resources, technology and knowledge, we can unlock a different future."

The actor's plea was echoed by IFAD's President, Alvaro Lario, who came to Davos, calling on governments, development partners and the private sector to step up now with long-term investments in small-scale agriculture. "Failure to invest massively will lead to increased hunger and poverty, which in turn could fuel social unrest, conflict and migration," he said.

Today the world is experiencing an unprecedented food crisis triggered by high food, energy and fertilizers prices linked to the war in Ukraine and several climate shocks in 2022. Prior to the crisis, hunger and poverty was

already on the rise due to conflicts, climate change and the economic slowdown brought by the COVID-19 pandemic.

The Intergovernmental Panel on Climate Change (IPCC) is forecasting that extreme weather events will likely increase in frequency and magnitude in the years to come. Global and local food systems are at increased risk of disruption, with potential supply shortages and price hikes.

Despite global commitments to end hunger by 2030, donor support for agriculture has been stagnant at just 4% of total Overseas Development Assistance (ODA) for at least two decades.

About three billion people live in the rural areas of developing countries and they rely to a significant extent on small-scale farming for their food and livelihoods.

In her statement Sabrina Dhowre Elba emphasised the important role of the private sector. "Rural communities are filled with talented, youthful populations and enormous potential for new and vibrant markets. The private sector can play a massive role in supporting and sourcing from small farmers and in ensuring world leaders continue to invest in holistic ways to combat environmental degradation and rising hunger," she said.

Strategies to implement Nile tilapia farming in Zimbabwe

ACCORDING TO AN FAO report, funding for the initiative would come from the EU and Germany's Federal Ministry for Economic Co-operation and Development.

The increase in production would be driven by better access to inputs, services and markets for small-scale fish farmers, and would raise their annual benefits over the next decade, the FAO said in the statement.

According to the Global Seafood Alliance, Nile tilapia were produced mainly in Lake Kariba on the border between Zambia and Zimbabwe.

Production is expected to increase from the current 5 600t/year to 14 000t/year in 2032.

President Barrow receives over 40,000 bags of rice from China Aid

PRESIDENT ADAMA BARROW has received Gambians 1,996 tonnes of parboiled rice amounting to 40,021 bags from China as part of The Gambia-China Bilateral Cooperation at a presentation held at the Statehouse in Banjul.

The rice at the GGC Warehouse in Saro is ready for onward nationwide delivery, targeting vulnerable households, recently affected disaster victims as per the Social Registry Institutions and Humanitarian Agencies. President Barrow expressed delight at the donation during the ceremony, stating that China has supported his government since coming into office. He highlighted the landmark infrastructure projects that have impacted the lives of Gambians as a manifestation of the friendly ties between the two countries.

Ukama Ustawi plans to set policy priorities for climate-resilient agriculture in Zambia

ZAMBIA'S LEADERS ARE clear about where they see their country a decade from now.

"This country aspires to be a prosperous, middle-income country by 2030," said Joy Sinyangwe, a chief specialist with Zambia's Ministry of Agriculture. "But what does that mean to the agriculture sector?"

Nothing short of radical transformation, including a significant effort toward building the policies needed for climate resilience.

The majority of this landlocked Eastern African nation of about 18 million people relies heavily on a single crop – maize, which makes them particularly vulnerable to climate impact. Maize cultivation employs 90% of smallholder farmers and more than half of the Zambian population classified as extremely poor.

Maize cultivation in Zambia has been severely affected by weather events associated with climate change, such as delayed rains and extreme droughts. Only in one year, from 2021 to 2022, maize production fell 25%, intensifying food and income insecurities.

There is a need to rethink policy priorities to foster climate adaptation in maize farming and achieve climate-resilient agriculture at the heart of a successful broader economic transformation.

Acknowledging the urgency, Ukama Ustawi: Diversification for Resilient Agrifood Systems in East and Southern Africa prioritised Zambia to launch stakeholder dialogues. Ukama Ustawi (UU, which means "well-being" in Swahili) is one of 32 initiatives in CGIAR's new research portfolio. UU aims to drive climate-resilient agricultural transformations by providing governments with policy support and finance in 13 countries in sub-Saharan Africa. In Zambia, it sought to identify gaps, synergies, and tradeoffs in this context through a multistakeholder exchange to provide informed support.

The dialogue in Zambia's capital brought together 95 stakeholders



Image Credit: Adobe Stock

Government ministries, researchers, NGOs, businesses, and others come together to debate policy priorities for Zambia to strengthen agriculture in the face of climate change.

to discuss fine-tuning the Zambian policy environment, enable agribusiness and climate-proof the agricultural sector. The Minister of agriculture, honorable Reuben Mtolo, inaugurated the dialogue and welcomed UU to Zambia.

Speakers emphasised diverse gaps in addressing climate urgency in agriculture. The lack of climate information and agro-advisories is one. Technologies such as rainfall forecasts are needed to de-risk farming. Also, there is a dearth of agricultural extension. Climate change brings many uncertainties that require the government to constantly train its overstretched agricultural extension agents, specialists that assist farmers with production on their farms. The goal is to have one agent for every 400 farmers, but right now there is only one per every 2,000, Sinyangwe estimates. Hiring more is a priority.

Stronger market linkage improves fisheries value chains

THROUGH NOVEMBER 2022, FAO has engaged with two consultants to conduct a livelihoods and value chains study in Mkinga district to come up with options to improve fisheries value chains and livelihoods of people in fishing communities.

The project is funded by the Swedish International Development Cooperation Agency (Sida) and implemented in Tanzania by the Food and Agriculture Organisation of the United Nations (FAO) and the Ministry of Livestock and Fisheries (MLF).

The consultants, together with FAO and the MLF conducted Focus-Group Discussions (FGDs) with community members, local government authorities, and village and Beach Management Units (BMUs) leaders in nine different villages to gather information on socio-

economic constraints and existing income-generating opportunities. The FGDs involved fishing and non-fishing stakeholders from men, women, and youth groups. The study also examined market access, pricing, product quality, and packaging aspects, which affects the value chain and the livelihoods of the fishing communities.

"This is the first time that a value chain analysis has been conducted in these villages and BMUs," said Oliva Mkumbo, FAO's National Fisheries Sector coordinator. "The main goal of the study is to analyse alternative livelihoods and gender needs linked with the fisheries and ecosystem management plans and propose new/improved products or services that can improve the fishing communities and livelihoods."

Uganda comes close to producing its own anti-tick vaccines for foot and mouth disease in cattle

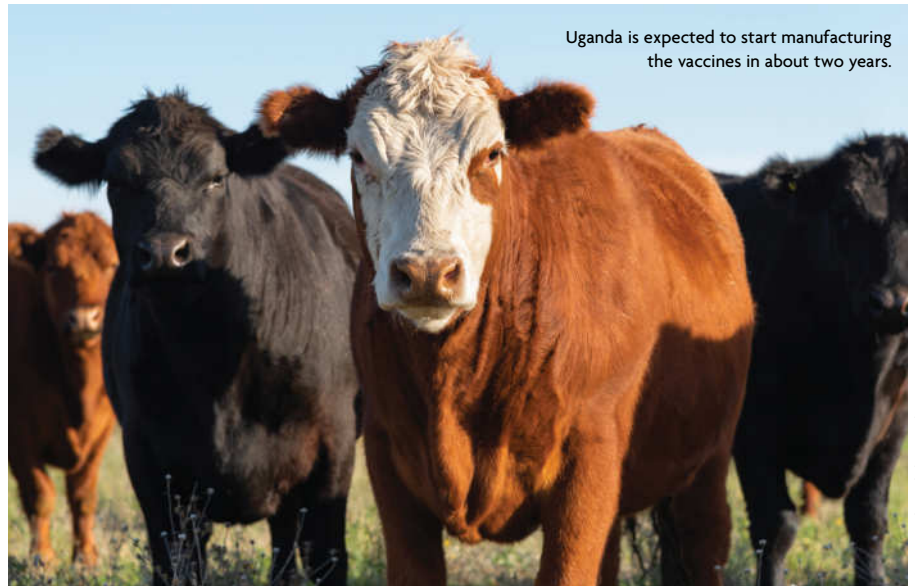
THE FOOT AND mouth disease that has for long been a menace to farmers could soon be history as Uganda gets closer to producing its own vaccine.

The Ministry of Agriculture, Animal Industry and Fisheries through the National Agricultural Research Organisation (NARO) is in advanced stages of establishing a local vaccine manufacturing infrastructure at Nakyesasa in Wakiso District to produce vaccines for ticks, foot and mouth disease. According to the ministry, Uganda is expected to start manufacturing the vaccines in about two years.

This came to light on 18 January 2023, as the technical team from the ministry led by Ronald Ssegawa Gyagenda, the Undersecretary and Commissioner in charge of Finance and Administration appeared before the Public Accounts Committee (Central) to respond to the Auditor General's queries for Financial Year 2020/2021.

"We are having plans to have both anti-tick and foot and mouth disease vaccines manufactured in Uganda through NARO and the facility at Nakyesasa has been set up. We are going to produce a strain vaccine which can be multiplied, but we have fast-tracked the one for ticks which has become so serious and it is now on field trial before we roll out the complete manufacturing," Fred Mayanja, Commissioner for Agricultural Planning and Development said.

This response was triggered by concerns from the legislators on the committee who sought government intervention to curb the highly



Uganda is expected to start manufacturing the vaccines in about two years.

Image Credit: Adobe Stock

contagious and severe foot and mouth disease.

Tororo district woman representative, Sarah Opendi however, criticised the government for spending a large sum on facilitating research and vaccine development for the Ministry of Science, Technology and Innovation, without making any efforts to facilitate the Ministry of Agriculture to respond to cattle-related diseases.

According to Gyagenda, if Kenya and Botswana were the only regions in Africa that produced the foot and mouth disease vaccine, then this would impact the timely supply of the vaccines from the suppliers. He added that the supply of

vaccines was inadequate in the country during the COVID-19 period because part of the elements used to manufacture the foot and mouth disease vaccine was the same used to manufacture COVID-19 vaccines. Moreover, he also attributed the crisis to financial constraints in the ministry.

"The ministry every year budgets for the purchase of foot and mouth disease vaccine but the budget is too small to vaccinate more than 14 million heads of cattle," he said. The ministry has however assured that the government is heavily investing in research to have these vaccines manufactured in the country.

Heads of State plan to harness Africa's agricultural potential at Dakar 2 Summit

AT THE ACTION-DRIVEN Dakar 2 Summit scheduled to take place from 25-27 January 2023 at the Senegal Abdou Diouf International Conference Center (CICAD) in Diamniadio, heads of State plan to harness Africa's food and agriculture potential by mobilising government resources, development partners and private sector financing, turning advocacy efforts into concrete action.

At the summit, private sector actors will commit to the development of critical value chains. In order to develop financial arrangements for implementing food and agriculture delivery compacts, Central Bank governors and Ministers of Finance will work closely with ministers of agriculture, as well as private sector players, including commercial banks and financial institutions.

"We call for a global coalition of efforts around Africa to unlock its immense agricultural potential to become a global destination for meeting rising food supply shortages in the world," said president of the African Development Bank (AfDB), Akinwumi Adesina, in a report published by the Bank.

With a whopping 65% of arable land, Africa alone holds the potential to feed around nine billion people in the world by 2050. However, only 10% of its vast savanna areas have so far been cultivated. A number of factors including the strong political will of African heads of State, access to technology and climate-smart agriculture platforms, as well as the incredible success that some countries have had in achieving self sufficiency, all point to the fact that Africa can indeed become a global solution provider for the rising food shortages in the world.

A key part of the Dakar 2 Summit agenda will include presidential roundtable discussions, high-level plenary and 'Food and Agricultural Delivery Compact' sessions.

For more information, visit: <https://www.afdb.org/en/dakar-2-summit/feed-africa-food-sovereignty-and-resilience/about-dakar-2-summit>

To register, visit: <https://surveys.afdb.org/opinio/s?s=FeedingAfricaAndFoodSovereignty>

South Sudan farmers receive agricultural equipment from Turkey

THE TURKISH COOPERATION and Coordination Agency (TIKA), along with the Turkish Embassy have been continuously carrying out a range of humanitarian initiatives to provide support to South Sudanese communities and refugees, as the region struggles with food insecurity.

On 21 December 2022, at a ceremony held in Juba, the embassy, along with support from the Turkish Disaster and Emergency Management Authority (AFAD), handed over a range of equipment to support farmers in need.

CERF allocates funds for Cameroon

THE CENTRAL EMERGENCY Response Fund (CERF) approved the allocation of US\$6mn to provide lifesaving and protection assistance to people affected by the humanitarian crises in Cameroon.

The projects funded by CERF will be implemented by the FAO, IOM, UNHCR, UNFPA, UNICEF and WFP. "This allocation will support the people most in need in the Far north, north-west, and south-west regions through protection and shelter services as well as food and nutrition assistance," stated the humanitarian coordinator in Cameroon, Matthias Z Naab. To improve timely access to vulnerable populations and ensure sustainability of humanitarian assistance, the concerned agencies will work in close collaboration with national NGOs having better access to inaccessible areas.

CERSA and WPSA to organise second Pan-African Poultry Conference

THE REGIONAL CENTRE of Excellence for Poultry Science (CERSA), University of Lome, and World Poultry Science Association (WPSA-Togo branch) are co-organising the second edition of the Pan-African Poultry Conference (PPC) from 16-18 May 2023 with the theme - 'Competitiveness and inclusiveness of the value chains of the poultry sector in Africa.' It aims to bring together specialists, industrialists, trainers, and researchers in the industry. The main themes to be discussed during the PPC 2023 are environment and poultry production systems, diet, nutrition and metabolism, reproduction and incubation, product quality, processing and food safety as well as economics of poultry production.

Nigerian agritech raises funds to improve productivity in manufacturing

RELEAF, A NIGERIAN supply chain company that supplies foodstuffs to African factories, has raised US\$3.3mn from Samuraj Incubate Africa through an oversubscribed Pre-Series A round.

Other participating investors include Consonance Investment Managers, Stephen Pagliuca (chairman of Bain Capital) and Jeff Ubben (board member at World Wildlife Fund and founder of Inclusive Capital Partners).

Releaf will use the funds to support the launch of its new technologies - Kraken II, a portable version of its palm nut desheller and SITE, a geospatial mapping application to find the most profitable positioning of food processing assets.

Uzoma Ayogu, CTO and co-founder of Releaf, commented, "SITE and Kraken II are the next steps in our plan to transform the efficiency of agricultural supply chains in Africa fundamentally, and we are excited to have partnered with an exceptional cohort of investors and collaborators to roll out these technologies. To make food supply chains profitable, we must maximise extraction yields with leading processing technology and minimise logistics costs by bringing processing capacity closer to farmers. Before Releaf, stakeholders had to choose between one or the other - large factories had great technology but were far away, leaving most farmers with



To improve profitability and prevent post-harvest losses, Kraken and SITE enable decentralised purchases and processing of raw crops.

rudimentary technology to process their crops. We are re now able to maximise both."

Building climate-adaptive supply chains

Releaf, founded in 2021 by Ikenna Nzewi and Uzoma Ayogu, provides high-quality ingredients to FMCG manufacturers in Africa. To improve profitability and prevent post-harvest loss, Kraken and SITE enable decentralised purchases and processing of raw crops.

With its proprietary Kraken deshelling machine, Releaf eliminates the need for smallholder farmers to use hand-held rocks to crack nuts, currently done by hand.

With Kraken, Releaf produces premium oil palm products with 95% purity, higher than the 88% industry standard.

Kraken II is a second-generation palm nut deshelling machine.

By using geospatial mapping tools and proprietary data on soil type, rainfall, and farmer productivity, SITE determines how much oil palm is planted in a given area. The company will use the data set to train Reinforcement Learning Models in SITE that identify the most optimal positioning of supply chain infrastructure for consumer goods manufacturers.

The African Development Bank Group's AgriPitch competition shortlists 25 finalists

TWENTY FIVE AGRICULTURAL companies from 14 African countries have reached the final round of the African Development Bank Group's (AfDB) 2022 AgriPitch Competition.

The Bank, in collaboration with the implementing lead Private Equity Support and partner organisations, Eldohub and the Private Finance Advisory Network, announced the finalists for the competition that will be awarded US\$140,000 in grants and business skills training. The finalists include 17 women-owned or led small and medium enterprises. The AgriPitch Competition targets African youth aged 18- 35 years working in the agricultural value chain. The finalists will receive training to build business skill capacity with the requisite tools and knowledge to bolster their investor readiness, financial management, and help them pitch

bankable business proposals.

They will also be eligible for one-on-one mentorship as well as access to post-competition digital expertise. "The Bank's support, through the AgriPitch Competition, will boost the bankability of these projects and provide a tangible step towards enhancing agribusiness and food security on the continent," said Edson Mpyisi, the Bank's chief financial economist and ENABLE youth coordinator. The AgriPitch Competition is a central and recurring activity of the AfDB's ENABLE Youth Programme, sponsored by the Youth Entrepreneurship and Innovation Trust Fund of the Bank. Three start-up categories will be awarded: Early start-ups (0-3 years of operation), Mature start-ups (3 or more years in operation) and women-empowered businesses.

Tarak Lechkab, Area Sales Manager Africa at Desmet, a leading global provider of custom-engineered plants and equipment for the food, feed and biofuels industries, speaks to African Farming on the reliable and innovation technologies the company is delivering to the agricultural sector.

Desmet delivers innovations to support Africa's farmers

African Farming (AF): How productive has 2022 been for you?

Tarak Lechkab: It was a great year, one of the best of the last five, mainly driven by our refining and fat modification technologies.

For vegetable oil refineries, our Continuous Deodorisation Qualistock+™ continue to provide a competitive advantage to our customers. This all-in-one deodoriser with reduced footprint, robust design with low leakage risk, high heat recovery, low residual FFA at approximately 0.2% with post-stripper, is a cutting-edge technology. Moreover, our bleaching process – continuous dry pre-treatment with bleaching – allows an accurate dosage of bleaching earth, no mechanical agitation in bleachers and full automation.

In fat modification, to change the properties of refined palm oil, our IconFrac™ continuous fractionation technology is designed in accordance with the product specifications desired by our clients. Our continuous fractionation process, easy to operate and fully automated, can achieve 30 to 40% energy savings compare to the batch technology.

AF: What are your goals for 2023?

Tarak: What we do best: staying reliable, remaining close to our customers/partners, creating new trustworthy relationships and gaining more market share.

We are always innovating, as you have to if you want to be delivering premium quality in your field.

AF: Can you highlight the current market trends for the food, feed and biofuel industries?

Tarak: We are expecting a market growth in Africa, driven by (on one hand) a switch to healthier alternatives influenced by

“We are always innovating, as you have to if you want to be delivering premium quality in your field.”

WHO's guidelines on eliminating trans fat from processed food. On the other hand, the rising consumptions of bakery, confectionary and processed food is driving the market.

This high consumption of processed food is mainly due to the growing population, but also to convenience, long shelf life and time-saving. Thus, it boosts the demand for fats and vegetable oils in Africa.

Moreover, most countries have this willingness to increase their food sovereignty. Considering that 60% of the world's uncultivated arable land is in Africa (according to the World Economic Forum), the potential is there. Even if in the recent years, the progress has been quite impressive. According to the World Economic Forum, while agricultural production is up 160% over the past 30 years, Africa will have a population of 2bn by 2050. Continued agricultural development will be central to feed all these people.

AF: Do you have any plans of expanding your market reach to smallholder farmers in Africa?

Tarak: Some of our partners are smallholder farmers and we help them by providing accurate plans according to their needs. We support them from the beginning to the end and even after with our customer services. Moreover, most of our partners work exclusively with the local farmer. It is crucial to take in consideration the smallholder farmer knowing that according to UN's Food and Agricultural Organisation, they contribute up to 80% of sub-Saharan food supply and Africa has an estimated 33mn smallholder farms.

In Africa, there are some initiatives by pan-African groups like the African Development Bank in order to enable them. These centre around education, infrastructure, water management and financing through public private initiatives. In Nigeria, for instance, The Anchor Borrower's Programme provides loans to small holder farmers to boost agricultural production and reduce food importing bills.




Image Credit: Desmet

Tarak Lechkab believes that the high consumption of processed food is boosting demand for fats and vegetable oils in Africa.

AF: What are your plans for a climate-smart and sustainable future?

Tarak: At Desmet, we recognise that our business activities have impacts on the environment and on climate change. We are therefore dedicated in reducing the carbon footprint of our technologies and contributing towards the Paris Agreement. In the last decade, our research and development centre has come up with a few innovations that reduce the consumption of chemicals and energy, such as nano technology or our ice condensing vacuum system for Refining.

Moreover, our technologies are designed to guarantee good plant maintenance and supply according to the most recent standards which are key to maintain low energy consumption, heat losses and leaks during the entire lifespan of our customer industrial plants. 

If you are interested in connecting with the Desmet team, please get in touch with Gaston de Liedekerke, Bruno de Jaeger and Tarak Lechkab via email: ofsalesafrica@desmetballestra.com

The consequences of improper care during the transportation process of chickens has proven detrimental to the poultry industry, especially the effects thermal stress can have on the livestock.

Mitigating thermal stress in poultry transportation

Chickens subjected to thermal stress while being transported is a prominent issue in the poultry industry and one that can lead to premature deaths of the livestock.



Image Credit: Adobe Stock

SUFFICIENT AND RELIABLE livestock enterprises are paramount to the rural communities across Kenya, where 70% of the population reside, but none more so than the production process for indigenous chickens. Rearing the livestock is often carried out at a small scale in different geographical locations and relies heavily on transportation across long distances for processing.

The mode of transportation differs depending on what is available, whether it be trucks, motorbikes or bicycles, with the birds themselves being placed in either transport containers, freely hung on open vehicle rooftops or bike handles, or in some instances carried by hand. The results of these procedures has proven detrimental to the livestock, bringing on varying degrees of stress to the birds and compromising their welfare. These stresses can be caused by numerous factors working in combination, including thermal demands of the transport microenvironment, acceleration of the vehicle, and noise levels, among others.

South Eastern Kenya University has

conducted a study examining the effects of transportation on stress hormones in indigenous chickens. The study included two tests involving two batches of hens being transported a distance of 119.5 km for 1 hour 59 minutes. The first batch of hens were tied together and loaded onto the top of an open roof vehicle. The second batch were transported in traditional travel cages.

The study established that birds transported on open roof tops are subjected to higher stress level than those in cages. It was found that birds transported on open roofs experienced increased serum cortisol levels; a hormone released to prepare the body for the release of energy into the muscles and bloodstream. This acts as an indicator of stress levels in the birds and can be critical in evaluating and improving the

“Stress during transportation impacts on psychological responses in the bird’s psyche and has a direct impact on the quality of the meat.”

management of transportation conditions. The study recommends passing a fully endorsed policy enforcing the correct regulations on chicken transportation and the subsequent equipment needed to safeguard the animal’s welfare.

In 2012, the Kenyan government passed the Prevention of Cruelty to Animals Act; a revised version of the initial law passed in 1983. The law is a broader measure to stop the ill-treatment of all animals from wildlife to breed stock, and encompasses the countries’ commitment to stop mistreatment. The Act demands that any animal which is being transported be provided with adequate food, water and shelter in suitable carriers.

The National Police Service in June, 2022, released a photo on social media showing chickens being transported on top of a passenger vehicle and announced law enforcers will take stern action against those caught transporting livestock in this manner, as it is a blatant act of cruelty on the animals.

Not only is transporting poultry in inhumane conditions a callous practice, it is directly breaking the law to transport

chickens over the top of vehicle roofs for any duration of time, let alone the great distances covered when transporting the livestock for processing.

Temperature stresses

What presents the biggest threat to the birds is the thermal risk associated with improper transportation methods which can lead to severe thermal stress, increased mortality due to heat or cold stress, muscle damage and changes in product quality. Stress is a psychological response which is increased during the transportation process, more so if the conditions during travel are poor. Stress during transportation impacts on corticosterone, glucose and creatine kinase responses in the bird's psyche, having a direct effect on the meat quality after slaughter, especially colour and water holding capacity (WHC).

The trailer microclimate is imperative to the poultry's welfare during the transportation process. Heat stress can easily be caused by the high temperature and humidity inside the vehicle, and similar cold stress can come about via cold air and wet feathers.

Research has shown that heat stress can result in declines in the blood pH and WHC levels in the birds, contributing to a lightness in poultry meat, and in some circumstances, severe economic losses for the farmers. High temperatures and humidity during transportation can account for 2-3% of bird loss

Best Practice

The Animal Transport Guides have an accessible report titled 'Transport Guide Extreme Temperatures' which outlines the best practice methods during poultry transportation. The guide highlights the risks associated with heat stress, including being aware of hot weather conditions, poor ventilation and overstocking, all of which can lead to dehydration, disease, stress and even death. The guide references the importance of mitigating against thermal stress in the birds, as the animal welfare, future productivity and meat quality is at stake if the poultry is not handled correctly.

Truck design is a key factor in mitigating

"In instances of extreme hot weather, minimising the time the birds spend in the trailer and avoiding travel during the hottest parts of the day are good practices for poultry care."

against thermal stress. Before transportation begins, the crate height needs to be adapted for sufficient ventilation and should contain a monitoring system for temperature and humidity checks. Actively ventilated trucks should be using forced ventilation to minimise the risk of thermal stress on journeys over four hours, while passively ventilated trucks should be equipped with roofs that can be lifted and have fans or grids to prevent heat from building up.

All transport methods should be equipped with an emergency generator to keep the fans running in the event of a breakdown.

The planning of a journey cannot be undermined, as the risk of thermal stress is at its highest when travel is more than eight hours long, the driver stops for a break or when the truck breaks down. Planning accordingly by analysing the weather forecast and rescheduling the journey if the conditions could prove useful to the bird's welfare.

In instances of extreme hot weather, minimising the time birds spend in the trailer and avoiding travel during the hottest parts of the day are good practices for poultry care, as well as limiting the number of birds per cage to create more ventilation.

Transporters should also be checking the welfare of the birds at every stop they make, and making the necessary adjustments if needed. If the chickens are seen to be panting, that is an indication they are experiencing heat stress, and if that is the case, either the microclimate inside the truck or the covers on the side of the truck need to be adjusted.

After transportation during the offloading process, it is illegal for birds to remain in a stationary vehicle for more than two hours. The vehicle has to either be moving or parked next to a ventilation fan to enable better air circulation. Protected and covered areas are required to protect the birds from extreme temperatures with necessary heating and cooling systems provided when they are being housed.

AI involvement

At the University of Georgia, researchers are putting together computer simulations to create a learning model to evaluate the comfort of the birds during loading, transporting and holding processes. The aim is to create an app which will allow farmers to evaluate transportation conditions – air velocity, heat production, ambient temperature and humidity – and adapt their carriers to meet the ideal conditions and limit heat stress among the chickens.

"Heat stress can be a major issue for the poultry industry and can cause bird death.



Sufficient crate height and appropriate ventilation are key to improving the welfare of chickens during transportation

The DOA (dead-on-arrival) rate has gone down significantly because this has become an industry focus over time," said Harshavardhan Thippareddi, poultry researcher, University of Georgia.

The machine learning model uses artificial neural networks and Bayesian optimisation to analyse variables within the transportation carriers to ensure the correct conditions are met for the welfare of the birds.

With funding from the US Department of Agriculture's National Institute of Food and Agriculture sector, the next step will involve building model crates with sensors to measure wind speed, temperature and relative humidity. The sensors will provide real-time measurements of simulated conditions during transportation and the data accumulated from the simulation will be used to design and determine optimal fan placement to improve the livestock's welfare.

"Before we do validations on the farm, we will conduct more lab experiments on the small coop model to calculate temperature, body heat, humidity and airflow and measure how the birds react and what changes occur in body temperature under controlled environment," Thippareddi said.

Ramana Pidaparti, professor in UGA's College of Engineering, is a partner in the research and said the computer modelling and simulation is the perfect method for this type of research.

"With these simulations, we will try to identify the static zones within the poultry transportation coops where airflow through the loaded trailers is limited, with the goal of designing fan systems and targeting those static zones so it results in well-ventilated systems to improve comfort level.

Thippareddi remarked that the study was truly an interdisciplinary collaboration, harnessing UGA's strengths in engineering and poultry science together to solve an important problem for the poultry industry. **E**

As the rise in popularity for free range chickens grows, farmers could face challenges in rearing their own.

Taking steps to sustain free range products



Free range chickens typically have two metres of space outdoors to freely roam around and source their own feed.

Image Credit: Adobe Stock

THE RISE IN demand for free range chickens should not come as a surprise for anyone who knows anything about rearing their own chickens. Even consumers are steering towards free range products over the conventional pick. With this in mind, one may be wondering what exactly the benefits are of making the switch to free range chickens, and why so many shops and farms take pride in advertising themselves as offering it.

Free range chickens – also referred to as roadrunners, organic or indigenous chickens – are given the freedom to roam around freely within an area without being restricted to just one container or cage. They are not forced into overcrowded conditions, rather having enough space to walk outside and forage for their own feed.

Naturally, this comes with a wide variety of benefits. Allowing the birds to roam outside increases their exposure to vitamin D from the

“If taken seriously, this is a business which brings more money in the family and does not require a lot of work.”

sun which not only improves their happiness, but also their health. Compared to conventionally raised chickens, free range chickens are higher in minerals and vitamins D, B, A, Potassium and Sodium. A healthier chicken means better eggs. DrAxe.com reported, “Free range chickens are known for producing eggs that are much more nutritionally dense than the eggs laid by caged hens. According to one study conducted in 2007, free-range eggs are a much healthier choice in a lot of specific ways.” A combination of less cholesterol and saturated fats with more vitamins and omega 3 certainly explains why free range chickens are in high demand.

As previously discussed, the freedom to roam around the fields allow the chickens to scavenge their own feed, which often comprises of berries, plants, green vegetables, bugs or red worms. An additional benefit to this is free pest control. Seeing as sourcing feed for chickens often amounts to a huge percentage of costs in poultry production (typically around 70%), allowing chickens to roam freely, enables farmers to greatly reduce costs and maximise their profits.

Of course, with these benefits and subsequent high demand for free range produce, it should be anticipated that free range



Image Credit: Adobe Stock

Free range eggs are higher in A, B and D vitamins and lower in cholesterol and saturated fats.

chicken, both meat and eggs, fetch a higher selling price over their conventional counterpart despite the lower production cost. All of it essentially comes down to supply and demand; the scarcity of the product and the high demand means that buyers should expect to pay higher prices should they want to reap the benefits of free range produce.

Making free range more accessible

In Zimbabwe, under the Presidential Rural Poultry Scheme, an additional batch of 300,000 chicks are to be distributed to provinces in line with the Second Republic’s endeavour to tackle poverty and lift rural income. As part of the scheme, three million households in rural areas are to be given 10 free range chicks each in batches spaced over a five-year period.

Zimbabwe Free Range Poultry Association (ZFRPA) secretary general, Beauty Jiji, in The Herald commented, "After the launch of the scheme in Masvingo, we sent almost 18,000 chicks. We want to send another 5,000 for further distribution in that area to make it 23,000. On the ground we have brooders across the country and to date we have more than 300,000 going to be centralised chicks because on average we are getting 70,000 chicks per week. We get some from the hatchery and some farmers bring them here." "Farmers around the provinces are going to supply and we are going to have a team at the brooders where chicks are taken from and then distribution is done from there."

The scheme serves to be mutually beneficial to both farmers and rural households, as the farmers are to be generously paid for supplying fertilised eggs. In some cases, farmers reported to be earning more money supplying eggs to ZFRPA than prior to joining. One such farmer, Bernard Mudyariwa, commented, "If taken seriously, this is a business which brings more money to the family and does not require a lot of work. No sweat in poultry. We are getting more money from this. I supply 50 to 60 crates per week," speaking to The Herald.

Another producer mentioned how the scheme has aided him in sending his daughter to university. "Most farmers started supplying

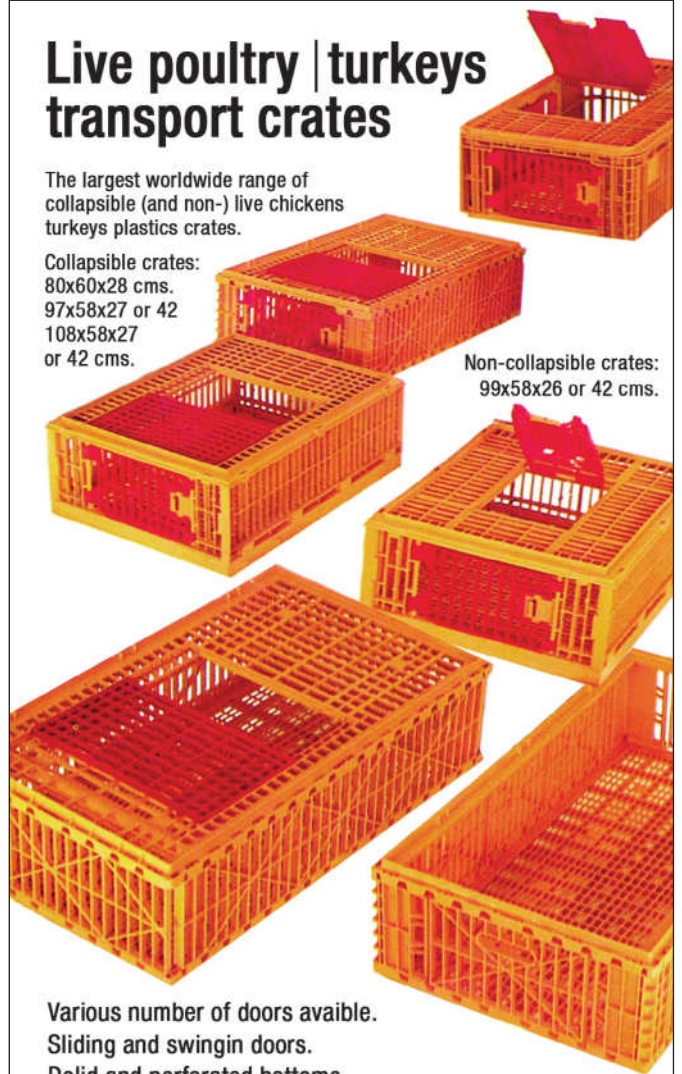
“Organic and free range flocks are also particularly susceptible to avian influenza, a recurrent viral infection that is caused by avian influenza type A viruses.”

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the eggs and I supply an average of 2,400 fertilised eggs weekly for hatching. Supplying fertilised eggs has helped me and now my daughter is studying law at University of Zimbabwe," said Arnold Mutamba.

Don't put all your eggs into one basket just yet

While there may seemingly be endless benefits to adopting free range chicken into one's strategies, whether it be for rearing or consumption, there are however, potential drawbacks which could end up causing more damage than good.

Naturally, one of the main selling points of free range chickens is that they have generally better nurturing due to the outdoor systems allowing them to make choices in accordance to their own needs, ultimately improving their overall health and quality. This, however, can leave them exposed to hazards such as parasites, bacterial infections and wild or feral animals, giving rise to biosecurity issues from disease transmissions between animals.

Regarding bacterial and viral diseases, *Frontiers in Veterinary Science* reported, "The main pathogenic bacteria are *Mycoplasma*, *Pasteurella*, *Escherichia coli* and *Salmonella*. The occurrence of *Salmonella* spp. is highly monitored and regulated since, like *Campylobacter*, it can lead to food borne disease in humans and both bacteria can be encountered in the environment. *Salmonella* spp. is among the most common zoonotic pathogens responsible for bacterial infection that compromises food safety but not animal welfare.

"Organic and free range flocks are also particularly susceptible to avian influenza, a recurrent viral infection that is caused by avian influenza type A viruses, because the risk of contamination is higher in outdoor systems. *Salmonella*, mostly *Salmonella*



Image Credit: Adobe Stock

Vaccination is one of the most effective measures for protecting against avian influenza.

"Depending on the size of the farm, biosecurity procedures can be practiced to limit contact with wild animals."

Enteritidis and *Salmonella* Typhimurium, *Campylobacter* and avian influenza can contaminate reared flocks after direct or indirect contact with infected wild animals." Vaccination appeared to be the most effective method in thwarting the circulation of such diseases before they become widespread within a flock.

According to *Frontiers*, parasitism offers yet another danger to free range birds, consisting of endo-parasitism, especially helminths, i.e., nematodes (*Ascaridia galli* and *Heterakis* spp.) and cestodes (*Raillietina*, *Choanotaenia*, *Davainea* especially) and in protozoa (*Eimeria*, causing coccidiosis). In eight European countries, a study found that parasitic infection was actually present in almost 70% of free range chickens, although the study did not demonstrate a correlation

between time spent outdoors and infection within the hens, so it is difficult to conclude that there is a direct link between the two.

Essentially, endo-parasitism can be attributed to red poultry mites. These little parasites latch onto hens during the night to feast on blood. This can have adverse effects on the hens affected as it can cause anaemia, result in lower egg production and increased stress, feather pecking, and even death. Seeing as red mites are present in wild birds, it can make the process of destroying larvae difficult within free range systems due to wood shelters being used as opposed to steel cages.

Countering the downsides

With the potential dangers of bacterial and viral diseases in mind, there are measures which can be taken to either prevent or minimise risks to a flock. For instance, depending on the size of the farm, biosecurity procedures can be practiced to limit contact (direct or indirect) with wild animals. Farmers can set up nets to deter high-risk birds of avian influenza from landing within certain areas where free range hens congregate. Fences can also be used to effectively regulate between animals on the ground, thus reducing the chances of a large-scale outbreak of disease. Furthermore, avoiding setting up in an area with pools of water or where puddles can form as this also attracts wild birds into the zone and can cause more issues.

It may be tempting to invest in a guard animal for protection against wild animals, and while it can certainly be an effective measure to some extent, they themselves can be carriers and transmitters of bacteria and viruses. In any case, several European countries have actually banned the use of guard animals on the grounds of sanitary reasons within the flock, solidifying the risks



Image Credit: Adobe Stock

To minimise risks to a flock, biosecurity measures are practiced to limit contact with wild animals.



Image Credit: Adobe Stock

Temporarily housing free range hens indoors may protect against interactions with wild animals, but may negatively affect the eggs produced.

as a serious issue. Ultimately, the best defence against avian influenza and viruses remains as vaccinations, and secure fences for dealing with predatory ground threats.

Frontiers reported, "Reduced contamination by red mites can be achieved by the use of entomopathogenic fungi and predatory mites that are very congruent with the requirements of organic production." They also suggest the use of mobile

housing systems so that pasture rotation practices can be adopted which can reduce endo-parasite infestation. Seeing as pasture rotation can make it challenging for hens to access henhouses, a mobile system could address the problem.

Housing free range hens indoors to combat the spread of the avian influenza does somewhat contradict the implications of 'free range'. Restricting the typical two

metres of roaming space and amount of time spent outdoors certainly raises questions as to whether or not the eggs produced by the hens would still constitute as being free range.

In some instances, such as in the United Kingdom, eggs which followed this principle are forced to change the way they are labelled in stores. Each egg is stamped with a 'No.2' which indicated that the egg produced is a barn egg, as opposed to 'No.1' for free range. The packaging itself would also usually highlight that the eggs were produced in barns.

Whatever the case may be, such challenges should be anticipated in rearing free range chickens. The exposure to the outdoors yields several benefits as well as hazards, but the solutions are out there for those who know where to look. Consumers should expect to pay a premium over conventionally raised hens, and as demand for free range meat and eggs rises, the prices are expected to follow suit. The distinction between true free range and barn eggs should also be noted, as although the two may be somewhat similar, there still is a difference in their production. **E**

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Cleanliness is key to curbing mastitis



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Milking cows are highly prone to mastitis or chronic ailment with inflammation in the udder region.

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Milking cows, however, are highly prone to mastitis or chronic ailment with inflammation in the udder region. It is mostly caused by microbes. The disease can have a drastic effect on the milk production capacity of lactating cows.

Some of the factors that contribute to the poor production of milk include:

- Mismatched genetics
- Nutritional deficiency
- Unhealthy reproductive condition
- Frequently infected teat along with the udder, internally and externally.

Mastitis is a condition in which innumerable bacterial pathogens invade the udder tissue of a cow, and is quite different from other cattle diseases. Once the pathogens invade the udder tissue, it will not leave until it has contaminated the region and badly affected the most susceptible teats.

Diagnosis

The diagnosis of mastitis involve monitoring chemical, physical and nutritional changes in the milk and pathological changes in the

Mastitis also can transmit chronic diseases like tuberculosis, brucellosis or leptospirosis through contaminated milk to consumers.

milk glands. The disease can be prevented through proper and timely sanitation of the cowshed and frequent disinfection of the teat, mechanised milking process, etc.

Applying bactericidal drugs generates different kinds of resilient microbes beyond the allopathic boundary. In this regard, an attempt is taken to focus the plant-based pharmacopoeia. The most conventional cure for a lot of such diseases involve medicinal plants as they can be easily administered orally, and through fodder.

Cows suffering from mastitis will experience unusual increment in the number of somatic cells as the quality of milk starts deteriorating. High somatic cell count (SCC) in mastic cows is detected by the fluoro-optoelectronic method. SCC approximately 200,000 cells/ml defines the threshold for mastitis.

Mastitis also can transmit chronic diseases like tuberculosis, brucellosis or leptospirosis through contaminated milk to consumers.

Mastitis can vary on the basis of the pattern of infection, and also depend on the microbial type. Besides, it can be either subclinical or clinical.

Mastitis that is contagious is caught from infected ones while milking by the use of hands. Inadequate sanitisation of milking machines or clothes used while milking encourages the spread of mastitis.

When it comes to environmental mastitis, factors such as unclean cowsheds, unhealthy water for preparation of udder prior to milking, flies or mud holes provide for the growth of loose pathogens.

Intramammary infections that are diagnosed as SCM are difficult to identify as it cannot be detected physically at first. The animal will look completely fine, with no inflammation or redness in the udder or teat. But once the milk it produces is put to test, it will show an increase in the count of somatic cells.

Since mastitis involves a wide range, it is necessary to first figure out which pathogen has affected the animal, as the treatment strategy will vary for different pathogens. Only proper diagnosis can reveal the kind of antibiotic that will work. Once the agent is detected, a dairy farmer, with the guidance of a veterinarian, can work out a treatment plan. If the right antibiotics are used judiciously, there are fewer chances of resistant pathogens developing. That, in turn, can cut down on the number of days required for treatment, thus reducing operation costs.

The most prominent bacteria that causes mastitis can be classified as contagious and environmental.

With contagious bacteria, the dairy cow becomes the host, as they are passed on from a cow with an infected udder to a healthy cow. They are also spread while milking, most likely through the machine used, the milker's hands or unclean towel used in the process. Transmission is also possible if there is a leakage of milk from the udder into the stall.

The most contagious pathogens are:

- Staphylococcus aureus
- Coagulase-negative staphylococci (CNS)
- Streptococcus agalactiae
- Streptococcus dysgalactiae
- Mycoplasma bovis
- Mycoplasma spp.
- Corynebacterium bovis

Contagious bacteria are mainly gram-positive mastitis infections. Cows infected with mastitis usually show abnormal milk and a substantial increase in somatic cell count. Gram-positive infections generally respond well to antibiotic treatment.

In Nigeria, mastitis has reached the endemic stage, but still there are no proper management plans or control strategies in place.

Environmental bacteria, as the name suggests, are present in the bedding, soil, walkways, in the pasture or any surface with which the cow or her manure comes in contact. The infection route is from environment to the udder. The environmental bacteria load is highly correlated with the hygiene of the barn, the stalls, the cow and the udder. Organic materials used for bedding such as wood shavings, straw or recycled dry manure solids are common sources of environmental bacteria.

Environmental pathogens are also categorised as Gram-negative mastitis infections. Infected cows tend to get systemically sick and



Image Credit: Adobe Stock

Seasons are a huge factor in the transmission of mastitis, as organisms amplify most under specific conditions of temperature and humidity.

would be considered a "hotter," more acute case of mastitis.

The most notable environmental pathogens include:

- Streptococcus uberis
- Streptococcus dysgalactiae
- Some Coagulase-negative staphylococci species
- Escherichia coli
- Klebsiella spp.
- Enterococcus spp.
- Serratia marcescens
- Trueperella pyogenes/P. indolicus
- Yeasts
- Prototheca spp.
- Bacillus spp.

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Mastitis in Nigeria

According to research, the prevalence of mastitis in the African countries is as much as 30%, with Ethiopia witnessing most of it.

In Nigeria, mastitis has reached the endemic stage, but still there are no proper management plans or control strategies in place. The majority of Nigeria's livestock is at risk of the disease because of unsanitary conditions. In respect to the extent of its severity, mastitis can trigger huge economic losses for the dairy industry too.

Besides reduced milk production and quality, there is the risk of culling infected animals, leading to increased veterinary costs and deaths.

The industry in Nigeria, like most developing countries, suffers from a lack of knowledge regarding the various manifestations of the mastitis, its economic impact, and also for the lack of a specific national programme to control the disease. It is thus important to closely monitor the status of the disease, and on the basis of that, come up with a holistic data that can serve as a standard control or management programme.

Mycoplasma, a form of mastitis, was detected in the Nigerian goats. This species of mycoplasma includes *M. agalactiae*, *M. capriolium*, *M. mycoides* and *M. bovis*. Such mastitis is especially challenging to cure because they are resistant to most antibiotics, including penicillin and cephalosporins. What allows mycoplasma to elude antibiotic therapy is its capacity to invade host cells and form biofilms because of the lack of a cell wall. Also, mycoplasmas can infect any part of the body, making thorough treatment all the more hard. In fact, for *M. bovis*, the most common mycoplasma mastitis species in cattle, there is no treatment.



Image Credit: Adobe Stock

The teats should be clean and have no trace of water on them before milking.

The industry is yet to witness a major breakthrough in curbing mastitis.

Seasons are a huge factor in the transmission of mastitis, as organisms amplify most under specific conditions of temperature and humidity. Poor ventilation, with high temperature and relative humidity, causes a variety of bacteria to proliferate. The exposure of livestock to high temperature can bring along stress and subsequently affect immunity. It is especially important for

farmers to remain alert of the weather conditions (hot and humid) that may initiate an outbreak of environmental mastitis. Studies have found that in Nigeria, clinical mastitis (CM) in goats become most severe during the hot dry to the early wet season. Similarly, a high prevalence of it was found among cattle and goats in the late dry season while in sheep during the early rainy season. There are hardly any surveys on the seasonal prevalence of mastitis in regions like Imo state or Zaria.

Recommending the best practices to control environmental mastitis, Cornell University College of Veterinary Medicine stresses on making cows comfortable.

Prevention is better than cure

The good news, however, is that mastitis can be prevented by following some simple measures:

- Providing neat, dry and adequate bedding for cows to lie
- Cows should be clean while entering the milking area
- Using a fresh cloth or paper towel each time while cleaning the teats
- Teats should be clean and have no trace of water on them before milking
- It is important to use germicidal teat dips after milking
- It is best to feed the cows post milking to prevent them from lying down immediately. That way, microorganisms can be kept away from entering into teat canals that are still open from milking.

Recommending the best practices to control environmental mastitis, Cornell University College of Veterinary Medicine stresses on making cows comfortable. They should be provided with well-designed stalls that are utilised in a correct manner by cattle. Care must be taken to daily change the wet and soiled bedding. The surroundings should be kept clean and well drained. It also helps if the immediate surroundings are kept well drained and manure free. **E**

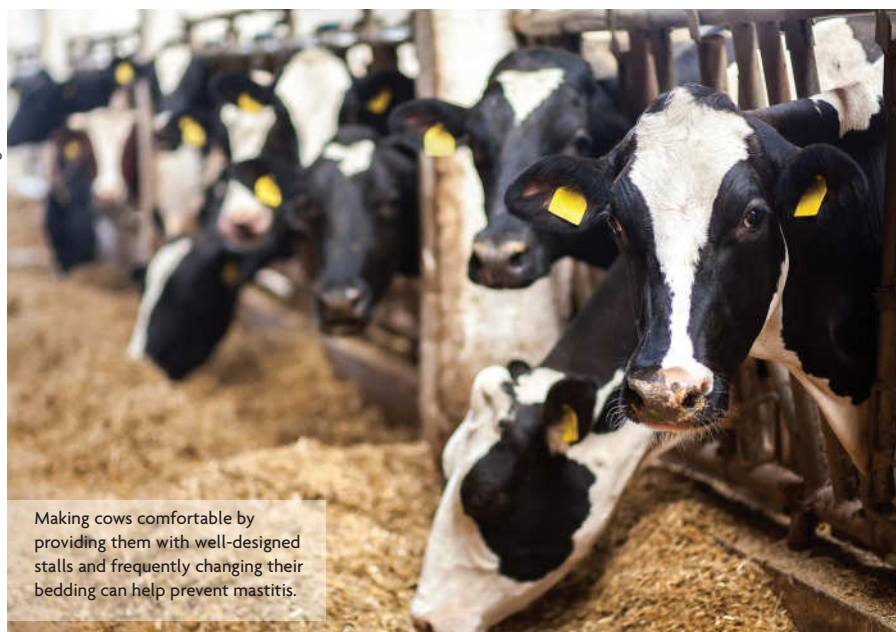


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Making cows comfortable by providing them with well-designed stalls and frequently changing their bedding can help prevent mastitis.



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Omex CalMax containing a high concentration of soluble calcium along with other essential plant nutrients helped boost coffee yield and bean quality. Dr Terry Mabbett reports.

Soluble calcium boosts coffee yield, the bean and the brew



Omex CalMax strengthens coffee tissue to increase resilience to disease and reduce berry drop.

Image Credit: Omex

COFFEE IS A widely travelled crop. Arabica coffee (*Coffea arabica*) and Robusta coffee (*Coffea robusta*) originate on African soil, the former in the Ethiopian Highlands and the latter in Sub-Saharan West and Central Africa. Many of the world's best commercial coffees are grown and processed in African origin countries including Kenya, Uganda, Tanzania and Ethiopia, but by volume world's top ten coffee producers are mostly in Asia and the Americas. In decreasing order the world's top ten coffee producers by volume are: Brazil, Vietnam, Colombia, Indonesia, Ethiopia, Honduras, India, Uganda, Mexico and Guatemala. However, this ranking does not do justice to African coffee because when quality is inserted into

the coffee equation, coffee origins from countries like Kenya, Tanzania, Uganda and Ethiopia are firmly at the top of the table.

Despite coffee being a truly tropical world crop commodity its production is surprisingly parochial with minimal transfer of research findings, knowledge and expertise from one part of the world to

Research and development carried out in Vietnam shows how applications of soluble calcium can significantly boost coffee yield, bean quality and ultimately the coffee brew.

another. And thus not uncommon for key research carried out on Arabica coffee in Kenya and Tanzania failing to filter through into key Arabica-producing countries elsewhere in the world such as India in Asia and Guatemala in Central America.

Likewise, research conducted on coffee in top robusta-producing countries like Vietnam often fails to reach and benefit growers and processors in established African, robusta-growing countries like Cote d'Ivoire and Uganda. Failure to connect across the coffee growing areas of the world extends to all aspects of production and processing including coffee nutrition and the role of specific nutrients in securing the best in coffee yield and bean quality. A prime example is research and

development carried out in Vietnam showing how applications of soluble calcium can significantly boost coffee yield, bean quality and ultimately the coffee brew.

Coffee and calcium

Few if any farmers are faced with a more complex set of crop priorities than those who grow coffee. Crop yield potential is paramount but so is bean quality, including bean size and strength, and not to mention post-harvest, on-farm processing (wet or dry) of coffee berries and beans. Required to achieve the green coffee commodity, they represent some of the most mechanically rigorous crop processing methods, and from which coffee beans must emerge physically intact. Last but not least is the



Image Credit: Omex

Omex Calmax allows coffee berries to stay packed on the branches rather than falling to the ground during berry drop.

Foliar sprays of calcium delivered under strict timing and concentration schedules allow crop nutritionists and plant physiologists to more accurately predict calcium's strengthening roles.

flavour and aroma of the coffee cup infusion, largely governed by chemical profile of the roasted coffee bean but potentially prejudiced by off flavours caused by a wide spectrum of bean defects.

Coffee crop nutrition and the full gambit of essential plant nutrients clearly plays a pivotal part in achieving high yields of top quality coffee cherries and green coffee

beans, but one nutrient in particular is credited with an over-arching role in achieving these goals. This nutrient is calcium which minimises coffee berry drop and maximises resilience of the coffee berry to pests and diseases, and also the bean to a range of well-known commercial defects.

Calcium is rarely deficient per se as a soil nutrient, but the maintenance of sufficient

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levels of soluble calcium in the soil and in a plant-available form is an entirely different matter. Laboured movement of calcium, within the soil and into plant roots, and up the plant as divalent calcium ions (Ca^{2+}) for use in the growth of shoots, leaves, fruits and seeds, is well established and appreciated. And the reason why savvy growers use foliar sprays of soluble calcium to boost low levels of plant-available soil calcium, and to maintain the tissue strengthening attributes which calcium can provide. Calcium is essential in the formation of cell membranes and plant cell walls. It has a specific and prominent role in cementing plant cell walls together, to form strong plant tissue, via the inherently gelatinous (adhesive) middle lamella composed of calcium pectate.

Foliar sprays of calcium delivered under strict timing and concentration schedules allow crop nutritionists and plant physiologists to more accurately predict and pinpoint calcium's strengthening roles. And the minutiae of how these are expressed in specific aspects of plant growth and development, such as minimising coffee berry drop, resilience to pests and diseases and as a bulwark against bean damage and resulting bean defects.

Omex CalMax trialed on coffee in Vietnam

This is exactly what Omex Agrifluids, the UK based manufacturer of high quality soluble nutrient products, set out to achieve in comprehensive field trials in Vietnam using Omex CalMax, a fully, water-soluble, fluid-emulsion product containing a range of essential plant nutrients - nitrogen, magnesium and full profile of chelated micronutrients together with a high concentration of soluble calcium at 22.5% w/v.

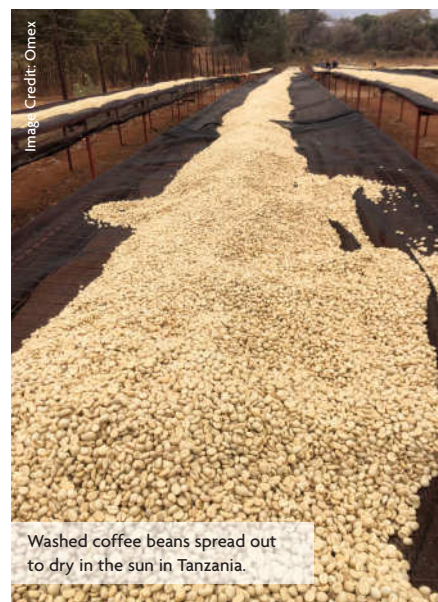
Research was carried out in Vietnam the

world's number two producer of coffee with over 1.5 million tonnes per annum. Ten trials were established in five coffee growing areas (Bao Lam, Di Linh, Lam Ha and Duc Trong) to determine the most effective rate of Omex CalMax in terms of extension growth, berry drop, coffee yield and bean quality. Omex CalMax was applied by foliar spraying to 5-year old Robusta coffee trees. Harvested ripe cherry was processed by the dry method using the sequential steps of sorting and cleaning, sun drying and hulling.

Omex CalMax was applied at three different treatment levels (3.75, 2.50 and 1.25 ml/tree) in multiple applications, starting at the end of March/early April which is post-main flowering stage and beginning of the 'pin-head' stage. Harvesting began in September and was completed by end January/early February.

Omex CalMax ticked almost all the boxes for increased yield and superior bean quality with the highest rate of CalMax performing best in virtually all respects.

The three Omex treatments were compared with 'Farm Check' trees not receiving foliar sprays of Omex CalMax. Trees within the four different treatment categories were thus compared for a range of growth parameters, yield and bean quality. This included extension growth (new branch length), berry drop (per cent), coffee cherry yield, processed green coffee yield, size-grade of coffee beans and per cent bean defects (black bean, broken bean and mouldy bean).



Washed coffee beans spread out to dry in the sun in Tanzania.

Omex CalMax ticked almost all the boxes for increased yield and superior bean quality with the highest rate of CalMax (3.75 ml/tree) performing best in virtually all respects.

- Trees treated with CalMax suffered only a 1-2% berry drop and measurably less than the 5% of berries 'dropped' from untreated 'Farm Check' trees. CalMax treated trees accordingly supported a greater number of cherries in each cherry cluster compared with the untreated Farm Check trees. Average figures for cherries/cluster were: 24, 24, 21 and 13 for, respectively, the 3.75 ml, 2.50 ml, 1.25 ml/tree treatments and the untreated Farm Check trees. Five per cent berry drop is considered as an upper threshold level before a serious impact on yield sets in.
- Average yield of coffee cherry in kg/tree was significantly higher for the CalMax treated trees. Average yield performance of treated trees was CalMax 1.25 (19.23 kg/tree), CalMax 2.50 (20.66 kg/tree) and CalMax 3.75 (21.39 kg/tree). Corresponding weight of coffee cherry harvested from the non-treated (Farm Check) plots was 17.28 kg/tree.
- Green coffee bean yield was enhanced by foliar applications of Omex CalMax. Using standard conversion figures for converting fresh cherry into green coffee, the yield of beans/tree in kg averaged out at 7.71 kg, 8.71 kg and 9.06 kg/tree for, respectively, the 1.25 ml, 2.50 ml and 3.75 ml CalMax treatments. Average yield of green coffee beans per untreated (Farm Check) trees was 6.15 kg/tree.
- New extension growth rates were also heightened by treatment with Omex CalMax. New branch length in cm measured 25.67 cm, 30.67 cm and 33.67 cm for, respectively, the 1.25 ml,



Pulping red cherry during wet processing of coffee in Tanzania.

2.50 ml and 3.75 ml CalMax treatments. Average new branch length for trees in the untreated (Farm Check) plots was 21.33 cm.

- Bean quality as measured by size also benefitted from foliar sprays of CalMax. Per cent of beans from trees treated with CalMax at 2.50 ml and 3.75 ml and caught by Screen No 13 was 85% and 83%, respectively. Screen No 13 is commonly used for assessments of Farm Average Quality (FAQ). Current on-shore trading benchmark in Vietnam lies between 75 to 80%. Percentages for the CalMax 1.25 and Farm Check (no CalMax) treatments were 79% and 78%, respectively.
- There were measurable and significant reductions in the incidence of some common defects of coffee beans from trees treated with CalMax, and with the 3.75 ml CalMax treatment coming out on top in this respect. Per cent incidence of 'Black Bean', 'Broken Bean' and 'Mouldy Bean' for the CalMax 3.75 ml treatment was 5.56%, 1.44% and 1.84%, respectively. Equivalent figures for untreated (Farm Check) trees were 5.99%, 2.08% and 2.04%.

Omex CalMax (3.75 ml/tree) demonstration trial

Following these preliminary results which showed Omex CalMax at 3.75 ml/tree as the best treatment, a 'Demonstration Trial' to confirm CalMax at this rate in providing significant commercial benefit for farmers was set up. The trial covered 12 sites spread across Dak Nong, Dak Lak and Gia Lai with age of coffee robusta trees varying from 9 to 23 years depending on the site.

Ten sprays of Omex CalMax (3.75 ml tree) were applied at 30 day intervals, starting on 15th April 2018 and ending



Image Credit: Omex

after harvest which took place on 10 January 2019. A full comparative assessment of extension growth (average length of new branches), yield (fresh picked cherry and green coffee in kg), coffee bean quality

board' reduction in yield for the 2018/19 season, compared with 2017/2018, due to climate and weather related factors.


The significant positive effect of Omex CalMax applied at a rate of 3.75 ml/tree on extension growth, yield and bean quality, compared with Farm Check coffee trees, was confirmed.

(bean size and incidence of common bean defects) was made and results summarised.

The significant positive effect of Omex CalMax applied at a rate of 3.75 ml/tree on extension growth, yield and bean quality, compared with Farm Check coffee trees, was confirmed. And despite an 'across the

Results can be summarised as follows:

- Average yield of coffee cherry picked from Omex CalMax treated trees at 16.16 kg/tree was 30.8% higher than the average 12.36 kg/tree harvested from Farm Check plots
- Use of standard conversion figures to convert fresh coffee cherries to green coffee beans showed the Omex CalMax treatment gave a 34.4% increase in green coffee yield on a per hectare basis – 4,060 kg green coffee/ha compared to 3,026 kg/ha for Farm Check trees
- Bean quality, expressed as bean size, was similarly superior with 86.8% of beans from CalMax treated trees retained by Screen No 13 compared with 82.2% for beans from Farm Check trees.
- Incidence of black beans (3.1%), mouldy beans (1.9%) and broken beans (1.0%) was less for harvests from Omex CalMax treated trees compared with Farm Check trees. Respective figures for beans harvested from Farm Check trees were 5.0%, 3.2% and 2.9%.

In consultation with Vietnam's coffee inspectorate, the researchers concluded the following: 'Based on coffee bean quality the price value of beans harvested from Omex CalMax treated trees could be reasonably expected to be 10 to 12% higher than beans harvested from the 'Farm Check' (untreated trees) and around 13 to 15% higher than the prevailing market price. They concluded by saying: "Using Omex CalMax on coffee brings benefits to the trees, elevates yield, improves coffee bean quality and increases profits for farmers." Omex CalMax is widely used by coffee growers throughout the Asia/Pacific region. 

New, branch growth was enhanced by foliar sprays of Omex CalMax.



Image Credit: Omex

With the ever-increasing need to boost productivity, the latest innovations in feed milling technologies are mostly focusing on automation.

A walkthrough of Africa's animal feed industry

ANIMAL FEED PRODUCTION is fast becoming an important economic activity globally. Population growth and urbanisation are two main factors that have contributed to an increase in meat consumption, especially in developing countries, thereby boosting feed consumption of cereals such as maize and oilseeds.

Having a detailed look at the animal feed industry across different regions of Africa will help paint a better picture in terms of the factors affecting animal feed production.

Animal feed industry in South Africa

The Animal Feed Manufacturers Association (AFMA) of South Africa commissioned the Bureau for Food and Agricultural Policy (BFAP) to conduct an industry assessment or deep-dive analysis to provide insight into the region's animal feed industry structure. Findings from the analysis highlight that animal feed indeed plays a critical role in agricultural chains by being the most important input to South Africa's farming sector. Moreover, the feed industry also employs around 17,000 workers, thus making a significant socio-economic impact.

In addition to this, the widespread roll-out of conditional grants to poorer populations of South Africa has contributed to the increasing demand for pig and poultry meat, which in turn has led to the strong growth in animal feed manufacturing. While the use of crops such as maize and soyabean are expected to go up, the impact of the COVID-19 pandemic along with the slow-paced growth of the African economy have suppressed growth in key livestock sectors, which are expected to be much

Given the steady growth of middle class population in Sub-Saharan Africa, animal feed production in the region, just like South Africa is expected to see a steady rise.



Image Credit: Adobe Stock

Livestock-derived food demand is expected to increase by a total of 38% between 2020 and 2050, with demand growth being fastest in south Asia and sub-Saharan Africa.

lower when compared to the 2000-2010 growth period.

The overall outlook of the South African feed industry, however, looks promising. An article published by *Feed Planet* mentioned that despite these adverse conditions, the feed industry had witnessed a decent growth in the past few years due to increased spending on food, especially by the middle class. Traditionally, the Western Cape, Mpumalanga and Gauteng have been the largest manufacturers of prepared animal feed, while strong growth has also been realised in Mpumalanga and the Free State.

Animal feed industry in sub-Saharan Africa

Given the steady growth of middle class population in sub-Saharan Africa, animal feed production in the region, just like South Africa, is expected to see a steady rise.

Local commercial feed production is however, quite underdeveloped.

Speaking to Feedinfo, Aduagna Tolera, an animal scientist and professor of Animal Nutrition at the School of Animal and Range Sciences, Hawassa University in Ethiopia, stated that since only a small portion of grazing land is utilised for animal

feed, there is a scarcity of traditional sources in this region.

Correlation between consumer spending and animal protein demand and consumption

A study conducted in 2021 derived three conclusions while examining the influence of demand factors on livestock-derived food demand from a futuristic perspective, using a global economic model.

Firstly, livestock-derived food demand (for protein) was expected to increase globally by 14% per person and by 38% in total between 2020 and 2050, with demand growth being fastest in South Asia and sub-Saharan Africa.

Secondly, as a result of the effect that increasing incomes and falling prices could have on demand, substantial reductions in the income elasticity of demand for red meat would be needed in order to see per person demand in high-income countries fall in 2050 relative to 2020. Therefore, the study's scenario-based modelling projected that a decline in red meat demand in high-income countries is strongly related to rising consumer prices.

Thirdly, the study suggested that global reductions in the income elasticity of demand for red meat can have seemingly

counterintuitive results. This means that lower income growth can lead to a slowing of demand growth in some regions of the world, but this can then reduce global prices and lead to demand increases for consumers who are more price sensitive and less income sensitive.

Competitive landscape of the African compound feed market

The compound African feed market is concentrated, with leading companies being focused on acquiring feed mills and small manufacturing companies looking forward to expanding their businesses in both local and foreign markets. With the aim of boosting production capacity and product line, a large number of leading companies are now setting up new feed milling plants, thereby expanding their presence across different regions. These companies are also increasing production capacities of their existing plants.

Some of the key players in Africa's compound feed market include Alltech Inc., Cargill Inc., New Hope Group SA, Nutreco NV and Novus International among many others.

Nutreco receives grant to establish feed mills in Africa

In June 2022, Nutreco, part of the SHV group of companies, and a global animal nutrition leader based in the Netherlands, received a US\$4.8mn grant from the Bill & Melinda Gates Foundation to accelerate the implementation of localised, sustainable, complete feed production in sub-Saharan Africa, driving forward Nutreco's purpose of 'Feeding the Future'.

The grant will directly fund 21 Hendrix4U complete feed production projects initially in Ghana, Ivory Coast, Nigeria and Uganda. Hendrix4U provides a 'factory-in-a-box' for rural areas ensuring access to quality compound feed production for small-scale

Nutreco received a US\$4.8mn grant from the Bill & Melinda Gates Foundation to accelerate the implementation of complete feed production in sub-Saharan Africa.

producers, in a financially sustainable way.

This is one of the first investments from the foundation in the animal feed space – a powerful endorsement of the extensive work done to date by Nutreco. Since 2018, the business has tried and tested the implementation of 16 Hendrix4U projects, demonstrating its critical impact for producers. The 37 Hendrix4U projects in total, all of which include a full-service package for small-scale feed production, will not only improve local feed value chains, but also critically improve the profitability of more than 15,000 poultry and dairy producers.

Furthermore, feed production distributors will also gain access to training and education in the following fields:

- Local raw material quality control programme
- Concentrates portfolio
- Nutritional advice
- Production and operations
- Market development support
- Business management support

"More than half of the projected global population growth in the coming decades will take place in Africa, and many will face food insecurity and hunger if no innovative solutions are developed to increase the sustainable production of food in the region," said Nutreco CEO Fulco van Lede. "Today's grant funding serves as validation of the work we are doing in Africa to equip producers with the right tools to future-proof their livelihoods – and as a result, ensure high quality food and produce is accessible for



Image Credit: Adobe Stock

With the aim of boosting production, a large number of companies have started setting up new feed milling plants, while also increasing production capacities of existing plants. communities throughout the continent," Lede added.

Importance of training programmes for feed millers

Given that dairy production acts as a tool to alleviate poverty and promote food security, providing farmers and feed millers with adequate skills and knowledge regarding the latest feed milling technology, livestock diet, feed formulation, diet formulation optimisation and feed quality improvement will help tackle the various challenges associated with dairying.

Some of the common challenges include feed shortage, poor feed quality, high feed costs, and high costs of poor quality

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concentrates. As a result, dairy farmers end up making losses or remain stagnant in their production, which is contrary to their goal of making profit. Understanding how to formulate feeds can thus go a long way in improving feeding of dairy animals and reducing feeds costs. In addition, a good livestock diet can boost profitability on the farms, as well-fed animals are healthier, and more productive.

Africa's first feed milling research facility

In January 2020, the University of Pretoria (UP) entered into a joint venture with the Animal Feed Manufacturers Association (AFMA), and rolled out the first ever feed mill research and training facility project in Africa. The project has received support from animal feed industries and aims to provide UP with a state-of-the-art feed mill facility to prepare research rations/ diets for animal and welfare sciences projects, while also providing training for feed milliers.

The project was launched at the AFMA Forum which took place in February 2020. In a report published by the University of Pretoria, Esté van Marle-Köster, head of the Department of Animal and Wildlife Sciences, mentioned that the primary focus of the project was to enhance the current curriculum by providing exposure to undergraduates about modules pertaining to animal nutrition, while also adding a MSc level post graduation qualification in feed milling at UP. Moreover, an online feed mill and animal nutrition curriculum is also part of the facility's objectives.

Solving modern-day challenges with feed mill innovations

With the ever-increasing need to boost productivity, the latest innovations in feed milling technologies are mostly focusing on automation. However, before taking a dive into the importance of automation and how it works, it is useful to understand the different parts of the feed mill equipment and their operations:

- **Raw material receiving:** Feed mills are designed to receive both rail and truck delivery of dry and liquid ingredients as well as bulk grains and other ingredients.
- **Grinding:** Whole grains first need to be ground using a feed hammer mill, prior to being mixed with other ingredients.
- **Batching:** After being weighed, different ingredient quantities need to be fed into the scale hopper.
- **Mixing:** Each ingredient batch has to be added into the mixing machine where it is uniformly mixed.
- **Pelleting:** The blended ingredients are then added to the feed pellet machine where they go through a pelleting process involving multiple steps.
- **Cooling and sifting:** Hard and durable pellets are obtained by feeding the heated feed pellets into a cooling machine by gravity, after which they flow directly into the screening machine for scalping.

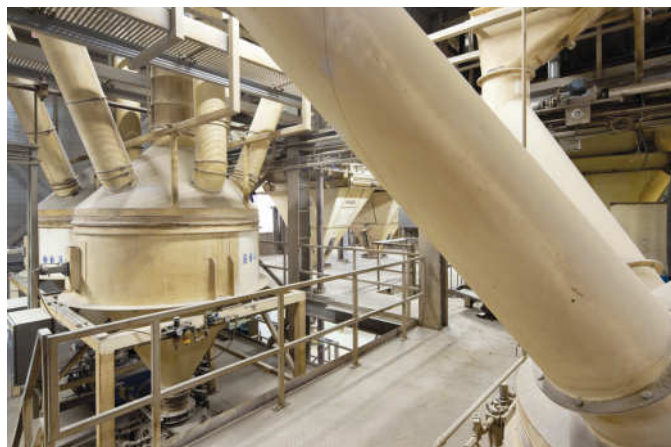


Image Credit: Adobe Stock

Providing feed millers with adequate skills and knowledge regarding the latest feed milling technology will help tackle various challenges associated with dairying.

Automation is a major driver of ROI since it makes the feed milling process simpler, faster and cost-efficient, while also helping in the production of an improved end product.

- **Packaging and warehousing:** Finished pellets are weighed, packed and sealed using a pellets packing machine, following which they are then moved to a warehouse.

Automated process of feed milling

Feed mill automation is similar to the basic process, apart from the fact that it is a lot simpler, faster and cost efficient. Now we can have a detailed look into the feed mill automation process:

- **Receiving/ transfer:** Automation allows the design of this application to be customised to suit individual needs and includes both manual control and automated steps.
- **Grinding:** The automated grinding process improves the overall efficiency and conditioning of the feed production operation.
- **Batching:** The entire process of batching can be automated irrespective of the type of weighing system used.
- **Pelleting:** Despite being historically a manual process, the entire process of pelleting can be customised and fully automated using individual formulas and production requirements.
- **Loadout:** Automation of this process involves quick, efficient and accurate transport of the correct product to the desired location.

What makes feed mill automation a major driver of ROI?

Feed mill automation can improve the end product by solving and reducing issues throughout the process, thereby driving the Return on Investment (ROI) in the following ways:

- **Labour cost reduction:** Automation reduces the need for manual operation and ensures consistent completion of tasks. This helps free up manpower for other important jobs, in turn protecting labourers from working in unsafe environments.
- **Production enhancement:** Automation enables streamline processes and drives ROI by making it easier to run multiple processes at once, thus reducing the need to take breaks or pauses.
- **Simplification of regulatory compliance:** Automation enables simplification of regulatory compliance for rules like the Food Safety Modernization Act (FSMA). Lot tracing and lot number tracking can be easily automated to improve accuracy, reduce liability and meet compliance requirements at minimum costs.
- **Testing consistency:** Automated sampling and testing enables the gathering of uniform and accurate information about ingredients and products.
- **Reduction in batching errors:** Automation of batching and mixing processes significantly helps reduce error and variation.
- **Automatic routing:** While automation of batching constitutes the first section of feed mill automation, the addition of downstream routing of material can enhance the payback of the system.
- **Easy regulation and monitoring of hazard analysis and critical control points (HACCP):** Automation makes HACCP easier to regulate and monitor, thereby enabling you to gather more data and information regarding the production line. Moreover, automation of repetitive tasks largely helps in eliminating human error.

UGAFMA call for separation of human food and animal feed milling facilities

As we know, producing quality feeds is important for the growth of the animal feed industry. In order to determine the quality and standards of the feeds produced, it is necessary to set apart the

mills that process animal feeds from those that produce human food.

In November 2022, business players under the Uganda Animal Feeds Manufacturers Association (UGAFMA) held a meeting in Kampala, calling upon the government to emphasise the importance of differentiating between processors who deal with animal feeds from those who don't.

In a report published by *Chimp Reports*, UGAFMA general secretary, Waliggo David said, "We want to have known people dealing in processing of animal feeds whereby we can be in position to set standards for them. We shall be inspecting their factories and once they fail to meet the standards, we shall be in position to fine or reprimand them."

According to him, these measures would be effective in eliminating poor quality feeds from the market, thereby addressing the current demand and aiding the growth of the animal feed industry. Aimable Mbarishimana, the organisation's chairperson, also suggested opening a private Agricultural Polytechnic to encourage more Ugandans to engage in quality feed production.

In response, Dennis Mulongo Maholo, the principal range ecologist on Animal and Nutrition from the Ministry of Agriculture, Animal industry and Fisheries spoke in favour of the association,

Taking necessary measures to separate human food and animal feed processing facilities will help eliminate low quality feeds from the market, thereby addressing current demand.



Image Credit: Adobe Stock

A clear differentiation between facilities dealing with human food and animal feed will help in determining the quality and standards of the feeds produced.

emphasising on his belief that they had the potential to bring about tremendous change in the sector. He pointed out that Uganda currently had feed standards for every ingredient and feed stuff, but lacked the standard for the concentrates. Therefore, working closely with other partners who were already a part of the industry, he suggested, would definitely help them meet their goals. **E**

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AN ANNUAL GUIDE to suppliers of equipment and services for agriculture and for the primary processing of produce. The first section of the Directory lists suppliers under classification of their products and services. The second section lists alphabetically company addresses.

The third section lists agents and distributors in Africa geographically. The Directory has been compiled from information submitted by the companies concerned.

While every care has been taken to avoid errors and omissions, they may occur; the Editor would like to be notified of these so that the digital edition of the Directory can be kept up to date.

Supplier Listings
start on page 29

Agent Listings
start on page 32

Classified Listings

Abattoirs

LIMA S.A.S.

Agricultural Projects

A a Z Performance
CANTONI MOTOR S.A
Mavitec B.V.
Symaga SA

Agricultural Equipment – General

A a Z Performance
CANTONI MOTOR S.A

Animal Health Products

Henke-Sass,
Wolf GmbH
INTRACARE.

Automatic Chain Feeders

Big Dutchman International GmbH

Bagging plant

Statec Binder GmbH

Bale Handling Equipment

JOSKIN S.A

Breeding

Aviagen Ltd
Hendrix Genetics
Lubing System SRL

Broiler Breeding Stock

Aviagen Ltd

Broilers

Aviagen Ltd
Cagemax
Henke-Sass
Wolf GmbH

Bulk Storage Equipment

Symaga SA

Cages & Batteries

Big Dutchman International GmbH

Centre Pivot Equipment

T-L Irrigation Co.

Chicks

Cagemax
Henke-Sass
Wolf GmbH

Chicks - Day Old

Aviagen Ltd
Cagemax
Henke-Sass
Wolf GmbH

Concentrates

Cagemax

Consulting Services

A a Z Performance

Conveyors and Elevators

Big Dutchman International GmbH
CANTONI MOTOR S.A
Lubing System SRL

Coolers - Environmental

Big Dutchman International GmbH

Cotton Handling & Storage

JOSKIN S.A.

Coolers - Evaporative

Lubing System SRL

Diagnostics

A a Z Performance

Disinfectants

INTRACARE
Intraco Ltd.

Drinking Systems

Big Dutchman International GmbH
Lubing System SRL

Dry Rendering

Cagemax
Mavitec B.V.

Egg Collection

Big Dutchman International GmbH

Egg Layers

Hendrix Genetics
Henke-Sass
Wolf GmbH

Egg Layer Breeding Stocks

Hendrix Genetics

Egg Layer Parent Breeders - White

Hendrix Genetics

Feed Additives

Cagemax Intraco Ltd.
Unipoint AG

Feed Additive Applicators

Henke-Sass, Wolf GmbH

Feed Compound

Cagemax

Feed Concentrates

Cagemax
Intraco Ltd.

Feed Premixes

Cagemax
Intraco Ltd.
Unipoint AG

Feed Pharmaceuticals

Cagemax

Feed Supplements

Cagemax
Unipoint AG

Feed Ingredients

Cagemax
Intraco Ltd.
Unipoint AG

Feeding Systems

Big Dutchman International GmbH

Fertilisers

Omex Agrifluids Ltd.

Fertiliser Spreaders

JOSKIN S.A.

Fish Farming

Cagemax
Henke-Sass, Wolf GmbH

Fish Feeds - General

Cagemax

Fish Feeds - Frozen

Cagemax

Foliar Fertilisers

Omex Agrifluids Ltd.

Fogging Machines

Big Dutchman International GmbH

Food Processing Equipment

CANTONI MOTOR S.A
LIMA S.A.S.
Marel South Africa

Forestry Equipment

CANTONI MOTOR S.A

Genetic Research

Hendrix Genetics

Grasscutting Machines - Forage

JOSKIN S.A.

Greenhouses - Glass

Big Dutchman International GmbH

Harvesting Equipment

JOSKIN S.A.

Hatcheries

Cagemax
Henke-Sass, Wolf GmbH

ICT Equipment & Services

Big Dutchman International GmbH

Integrated Pest Management

Omex Agrifluids Ltd.

Irrigation & Drainage Systems

RKD Irrigacion S.L.
T-L Irrigation Co.

Irrigation Equipment

CANTONI MOTOR S.A
RKD Irrigacion S.L.
T-L Irrigation Co.

Livestock Handling

JOSKIN S.A.

Material Handling - Bulk

Statec Binder GmbH

Medicators

Big Dutchman International GmbH

Meat Processing and Packaging

LIMA S.A.S.
Marel South Africa

Micronutrients

Omex Agrifluids Ltd.

Milk Replacers

Cagemax

Mills

CANTONI MOTOR S.A

Oilseed Production & Processing

Farmet a.s

Oil Extraction Equipment

Farmet a.s

Packaging Machinery

Statec Binder GmbH

Palletizers

Big Dutchman International GmbH
Statec Binder GmbH

Pig Equipment

Big Dutchman International GmbH
Henke-Sass, Wolf GmbH

Pig Feed

Cagemax

Pig Feeding/Drinking Equipment

Big Dutchman International GmbH

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Electric tricycles have come as an enormous boon to farmers struggling with long distance commute and post-harvest losses.

e-tricycles ignite a spark of hope for farmers in Zimbabwe

SMALL-SCALE FARMERS IN Africa have long since struggled with transportation issues, often finding it extremely hard to deliver their produce to markets on time. This problem is especially common with perishable products, which require a farmer to be time-conscious. Commuting long distances on rough terrains with no suitable means of transport often result in post-harvest losses. A lack of transportation also means that farmers have minimum access to markets in larger towns, which in turn prevent them from selling their produce at higher costs.

Sustainable mobility becomes top priority

The Zimbabwean government as part of its renewable energy policy, has put a special focus on sustainable mobility. The European Union (EU), as a means of supporting this policy recently purchased 88 electric tricycles for the women farmers of the Zimbabwean province of Domboshava.

Women-led startup company, Mobility for Africa, registered in Zimbabwe has been working with social impact investors such as InfraCo Africa and the Toyota Mobility Foundation to build a

In December 2022, InfraCo Africa signed a US\$2mn agreement to scale Mobility for Africa's fleet management solution.

market, using a social enterprise model that provides a package of services from skills to low income financing. Solar-powered cargo-carrying three-wheeled vehicles, locally known as 'Hambas' were assembled in various regions of Zimbabwe, along with a number of charging stations. These, to a great extent have contributed to the development of the circular economy in Zimbabwe.

In December 2022, InfraCo Africa, part of the Private Infrastructure Development Group (PIDG), signed a US\$2mn agreement to scale the Mobility for Africa's fleet management solution.

"We are grateful to InfraCo Africa for this investment and their vote of confidence. It will allow us to demonstrate how our fleet management system can be replicated to many rural communities," Shantha Bloemen, Mobility for Africa's director and CEO said in a report published by InfraCo Africa. "As the first African off-road e-tricycle, 'Hambas' will transform access to affordable, clean transport enabling people to reach employment, education and healthcare as well as to transport goods to market and to support domestic labour," InfraCo Africa's business development manager, Beatrice Muthoni added.

Some of the notable benefits of using Hambas include:

- Building resilience towards climate change
- Reducing inequality, since the e-tricycles are mostly aimed at women farmers
- Having a catalytic impact on local economic activity
- Reducing journey times
- Increasing farmers' access to markets in larger towns
- Minimising post-harvest losses



Image Credit: Adobe Stock

Solar-powered three-wheeled vehicles, locally known as 'hambas' were assembled in various regions of Zimbabwe, along with a number of charging stations.

- Increasing income generation and supporting sustainable development goals (SDG 2)
- Enabling the transportation of firewood, water and passengers
- Reducing the energy and time burden for women who have the primary responsibility for domestic labour **B**

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The emergence of fertiliser plants in Africa appear to be the gateway for the continent to escape acute food insecurity amid the ongoing climate crisis.

Fertiliser management: A game changer in ending Africa's hunger

AGRICULTURE PROVIDES EMPLOYMENT opportunities to nearly two-thirds of Africa's working population and contributes 30-60% of GDP, making it one of the most important economic activities in the continent. Yet, acute food insecurity has continued to plague most of the African continent.

Need for fertilisers in Africa

In order to obtain high yields, crops need to be enriched with sufficient quantities of essential nutrients like nitrogen, phosphate, and potash. A dearth of fertilisers can, however, make this challenging. One of the common problems that most developing countries face is an inadequate access to fertilisers. This issue is especially evident in regions of sub-Saharan Africa, where the incredibly high cost of fertilisers makes them inaccessible to smallholder farmers.

A blog published by the World Bank mentions that fertiliser prices in Africa have skyrocketed since early 2020, with the continent's two major suppliers – Belarus and Russia – along with other exporting countries being hard hit by a number of factors including wars, export taxes, bans and licensing requirements. Advanced countries on the other hand, are continuing to use fertilisers excessively, thereby leaving lesser room for poorer farmers to practice efficient methods of farming and fertiliser utilisation.

The blog also highlighted that despite Africa producing an average of 30mn metric tons of fertiliser per year, 90% of its consumption came from imports. The Russia-Ukraine war has however left a significant impact on African fertiliser imports. During the pre-conflict years, several countries including Ghana, Mauritania and Ivory Coast purchased around 20-50% of their fertiliser supply from Russia. However, shortly after the war, prices

Aliko Dangote's US\$2.5bn fertiliser plant contains surplus reserves for export, making it the second largest fertiliser production facility in the world.

The Dangote plant produces urea and ammonia based fertilisers, both of which are essential for crop growth.

Image Credit: Adobe Stock

shot up as Russia began minimising its natural gas supply to Europe. This heavily impacted African facilities that were forced to cut down their outputs.

Apart from imports, it is also worth mentioning that some regions like Algeria, Mozambique and Nigeria have surplus reserves of natural gas – an essential component used to produce nitrogen-based fertilisers – while other regions like Morocco are rich sources of phosphate rock, a major component of phosphate-based fertilisers. Processing and manufacturing facilities that convert these raw materials to finished fertiliser products are however lacking. This further emphasises the need to boost fertiliser production in Africa since it holds the key to tackling food insecurity in the continent.

Nigeria becomes home to world's second largest fertiliser plant

March 2022 saw the rise of Nigerian business magnate, Aliko Dangote's US\$2.5bn fertiliser plant in Lagos, Nigeria. Having a capacity of 3m tons per year, the plant has surplus reserves for export, making Nigeria the home to the second largest fertiliser production facility in the world. The International Monetary Fund (IMF) in a report, mentioned that the Dangote plant was expected to strike a 3000,000 barrels per day produce by 2026.

Examples of other fertiliser producers in Nigeria include Indorama's Eleme Fertiliser and Chemicals Co and the Notore Chemicals Industries plant. However, the Dangote plant being the largest in Africa, seems to have so far surpassed the capacity of all other fertiliser plants in the country.

Moreover, the fact that the Dangote plant was launched at a time when commodity prices had reached all-time highs and input prices had begun to soar, came as an added advantage, by giving the fertiliser plant yet another opportunity to receive widespread recognition.

Although initial export targets were confined to regions within the African continent, the Dangote plant has however been receiving an increasing number of demands from outside the continent, especially from countries such as the US, Brazil and India, to mention a few.

BusinessDay in December 2022, reported that the Dangote

refinery was nearing completion as pre-commissioning tests reached concluding stages, making a launch date in the first quarter of 2023 feasible.

The two main fertilisers produced by the Dangote plant are urea and ammonia-based fertilisers, both of which are very essential for efficient crop growth.

Advantages of urea-based fertilisers

Besides being the primary raw material utilised in the process of NPK fertiliser production, urea is also one of the most commonly used chemical nitrogen fertilisers having high nutrient value. Its advantages include:

1. Containing high levels of available nitrogen.
2. Its ability to be stored and preserved with ease, given the low moisture absorption of urea.
3. Containing rich raw materials that can be exploited in large quantities
4. When treated with urease inhibitors or coating material, urea fertilisers enable long-term release of nutrients into the ground throughout the period of crop growth.

Advantages of ammonia-based fertilisers

Ammonia binds air borne nitrogen, making it an important base material used in nitrogen fertiliser production. Its advantages include:

1. Being helpful when the soil lacks sufficient amounts of natural ammonia as well as those that are displaced during the harvesting process.
2. Fertilisers such as ammonium nitrate and calcium ammonium nitrate (CAN) have the lowest carbon footprint when compared to any other fertiliser available in the market.

As with any other product, both urea and ammonia fertilisers come with their fair share of disadvantages. Urea, for instance, should not be spread on the ground or added in large quantities. Moreover, since urea takes a long time to come into effect, it should be used well in advance for maximum efficiency. Fertilisers like ammonium sulfate, in the absence of hydrogen ions, result in a toxic effect capable of killing seedlings. Moreover, these fertilisers are capable of permanently modifying the soil's pH levels and causing soil acidification. They are therefore, far from being eco-friendly methods of producing good yield.

Health and environmental impact of fertilisers

The Food and Agriculture Organisation of the United Nations (FAO) in collaboration with the World Health Organisation (WHO) recently released a report highlighting the impacts that fertilisers can have on our health and the environment:



A report was released highlighting the health and environmental impact of fertilisers.


Image Credit: Adobe Stock

1. They are major contributors to anthropogenic greenhouse gas emissions, ammonia emissions and particulate matter.
2. Excessive application of fertilisers can contaminate terrestrial and aquatic environments, thereby affecting soil quality, as well as microorganisms and other animals through the food chain.
3. Excessive or inefficient fertiliser use can result in contamination of food and water sources, in turn causing adverse health effects in humans.

Strengthening fertiliser management

The African Plant Nutrition Institute (APNI) highlighted a series of priority actions mentioned by the report, that were required to strengthen fertiliser management. These included the need to:

1. Incentivise healthy and sustainable consumer choices and consumption.
2. Fundamentally change crop management by adopting ecosystem-based approaches.
3. Use economic instruments to create a level playing field for greener products and approaches.
4. Promote the use of direct finance to encourage sustainable agriculture.
5. Adopt integrated and life cycle approaches for sound fertiliser management.
6. Strengthen standards and adopt corporate policies for sustainable supply chain management.

In addition to this, the report also emphasised the need to continue strengthening available agricultural research and development systems, especially in Africa, where the existing public systems require significant support to address the challenges of serving the millions of smallholder farmers who form a critical part of the food security goals for the continent. This is possible through close collaboration between farmers and fertiliser manufacturers, which will enable the development of new fertiliser development tools and delivery platforms. 







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Lukas Bauer and John Htoo from Evonik explain how guanidinoacetic acid (GAA) supplementation can advance efficient and sustainable animal protein production.

GAA boosts swine and poultry performance

INCREASING LEAN MUSCLE gain is a key objective for profitable swine and poultry production. The essential nutrient content of feed is obviously an important factor in achieving that objective, but there are less obvious nutrients that also have a significant role in increasing performance. One such nutrient is guanidinoacetic acid (GAA).

GAA is an amino acid derivative that is metabolised in the liver to produce to creatine, which in turn plays an essential part in energy metabolism in muscle cells. Among other metabolic roles, creatine acts as a high energy reserve for the ADP/ATP (adenosine diphosphate/adenosine triphosphate) system which makes muscles work and grow.

More than 90% of the body's store of creatine is found in the muscles, but other high energy tissues such as brain, bone and sperm also need a good supply in order to function efficiently.

Feed raw materials are often unable to supply sufficient creatine for the body's day-to-day needs: plant protein sources don't contain any creatine at all, and animal protein sources have widely varying creatine contents. Pigs and poultry can synthesise some GAA from the amino acids' glycine and arginine in renal tissues, but in fast-growing animals it is estimated that this accounts for only two thirds of the amount required for optimal growth.

Research has confirmed that GAA supplementation can increase the level of creatine in muscles by 10-20%, depending on dose. For example, supplementing the diet of grower-finisher pigs with GAA has been shown to improve feed conversion ratio (FCR), growth rate, and meat quality. The question for producers is how to use this knowledge to their best advantage.

Options available

The advent of proven GAA feed supplements for farm animals gives producers a choice of different feed strategies. One option is to add a GAA supplement on top of the existing diet. This has the potential to get a significant return on investment by enhancing FCR, increasing body weight



Image Credit: Evonik

Research has confirmed that GAA supplementation can increase the level of creatine in muscles by 10-20%.

gain and meat yield, but those gains have to be offset against the cost of the supplement. The second option is to formulate the diet by considering the energy-sparing value of GAA and allowing the reduction of existing high-cost ingredients, such as oils, and thus cut feed costs without losing performance.

In a study carried out at the ZOOTEESTS Research Center in France, 540 newly weaned piglets were given three different diets. The control group was fed with a standard diet, a second group was given an energy-reduced diet (standard diet minus 80 kcal NE/kg), and the third received the reduced energy diet plus GAA supplementation (1000 g/t of feed). The results showed that the GAA supplemented group performed at the same level as the control group in terms of FCR, weight gain and final body weight, and significantly better than piglets in the non-supplemented, reduced energy group.

An economic assessment of the different groups in the same study showed that GAA supplementation successfully compensated for the reduced energy concentration in feed without compromising live performance. Earnings were highest in this group. Simply reducing the energy content of the feed, without GAA supplementation, resulted in losses of around EU€3 per piglet compared to the control group. This indicates that under-supply of dietary energy to lower feed cost without energy-sparing feed additives can actually reduce

pig performance and profitability.

Comparable results have consistently been found in broiler trials.

Environmental factors

There are environmental factors that need to be considered when deciding which supplementation strategy to follow. Reducing energy intake while maintaining performance with GAA supplementation has the benefit of producing a corresponding reduction in excretion and subsequent gains in welfare (such as fewer foot problems) and a reduction in nitrogen production.

An evaluation of the environmental impact of the broiler life cycle from egg to slaughter, has shown a possible improvement of about 6.9% when a standard diet supplemented with GAA is reformulated by taking into consideration its energy sparing value. It is obvious that these benefits can be obtained by pig and poultry producers from both approaches to GAA supplementation.

Finally, GAA feed supplements are available in different forms. For example, Evonik supplies a granulated form (GuanAMINO: 96% GAA content) which is virtually dust free, free flowing, does not cake and is stable in all feed processing stages. Whatever formulation is used, there is no doubt that GAA supplementation can promote a more efficient, productive and sustainable animal protein production. **E**

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With farmers being pushed to produce more with less, emerging precision agriculture technologies are quickly making their way into influencing the future of global food production.

Revolutionising the African agrarian industry



Precision agriculture uses information technology to ensure that crops receive the right type of soil, weather and terrain to maximise productivity, profitability, and sustainability.

Image Credit: Adobe Stock

WHILE TRADITIONAL FARMING techniques have almost always relied on weather conditions for yield, global warming and climate change have changed the story entirely. Although climate change has always been a pressing concern, the devastating impacts that it has left on today's farmers have given birth to techniques such as precision agriculture that are known to be effective against climate change.

That being said, however, the fact that agriculture is one of the major contributors of climate change makes the relationship between the two, somewhat of a double-edged sword.

What is precision agriculture?

Precision agriculture (PA) – also known as satellite agriculture, as-needed farming and site-specific crop management (SSCM) – is a farming management concept that uses information technology (IT) to ensure that crops receive the right type of soil, weather and terrain to maximise productivity, profitability, and sustainability.

The goal of PA is to use predictive analytics softwares to enable

Precision agriculture uses predictive analytics software to enable farmers to identify fields that require treatment, thus reducing overall cost and environmental impact.

farmers to specifically identify fields that require treatment, provide adequate guidance regarding crop rotation, harvesting times and soil management, thereby avoiding wastage of resources and preventing run-off, while also reducing overall cost and environmental impact.

While only being limited to large operations capable of supporting the IT infrastructure in the past, mobile apps, drones, smart sensors and cloud computing techniques have today, enabled PA to become a reality that can be learnt and used by even small-holder farmer families.

Advantages of PA:

- Maintains sustainability
- Maintains soil health
- Minimises farmers' dependence on rain-fed agriculture
- Improves overall productivity by realising genetic potential of crops produced
- The technique is cost-effective

Addressing the challenges associated with PA:

Technology and agriculture do not always go hand in hand, which means that combining the two may not be as fast-paced as expected. Therefore, to ensure that PA lives up to its demands, the following challenges need to be addressed:

- Standardising technologies – Often, the same problem is approached in different ways, which means that operating

standards may vary across different technologies. This significantly slows down the adoption of new technology, which is why standardising technologies across various platforms is seen as an effective solution. However, this also appears to be one of the biggest challenges for the future.

- Access and connectivity – As technology is fast becoming integrated into farmers' lives, new technologies are being used in techniques such as PA. Most of these new technologies, however, require 4G or higher Internet connectivity. This is where rural areas, especially across developing countries lack the most. Therefore, for digital farming to make smooth progress, speedy connectivity needs to be ensured at all times. This in turn increases the uptake of new technology and contributes to the rise of PA.
- Scalability and optimisation – The ability of any implemented technology to be scaled up or down to appropriately fit the size of a farmer's operation is key for PA to take hold. Moreover, optimisation of PA tools can be made possible by ensuring that they are self-configured in such a way that they do not require any manual adjustments.
- Application across different agriculture models – Although PA is generally associated with traditional outdoor agriculture models, easy implementation of its tools needs to be ensured even for vertical farming and indoor operations. This will allow PA to be a part of the growth of industries having great future potential.

With the help of government bodies, farmers, cooperative societies, agri-tech startups and mobile apps, precision agriculture can be made easily accessible to smallholder farmers.

A need for precision agriculture in Africa

With food insecurity looming over the continent, poverty-stricken farmers struggle to make ends meet. High labour cost, low yield, climate change, crop pests and post-harvest losses are just few among the many challenges that smallholder farmers in Africa face on a regular basis.

While PA has the ability to effectively tackle most, if not all of these challenges, adoption of technologies like drones and sensors that are essential for PA operations do require a certain amount of investment and dedication. Often, the high cost of these tools and technologies act as a barrier which prevents them from being adopted by smallholder farmers.

PA can however be made easily accessible to smallholder farmers in the following ways:

- Government bodies like South Africa's Western Cape Department of Agriculture (WCDoA) can help farmers purchase PA tools and technologies. For example, WCDoA developed the Fruit Look application to help improve water usage efficiency and boost yield.
- Farmers cooperative societies can help purchase the required technologies for its members by offering them at a low price.
- Agri-tech startups such as the Kenya-based Ujuzikilimo provides smallholder farmers with PA technologies and services at an affordable price unlike most private companies that prove to be too expensive.
- Mobile apps such as Phytodetect and Cropio can help monitor fertiliser and water usage, identify crop diseases, track seed prices and provide crop and soil status.

The African Union High Level Panel on Innovation and Emerging Technologies (APET) strongly believes that the adoption of emerging technologies can to a great extent enhance job creation and solve Africa's problem of poverty, hunger and food insecurity.



Image Credit: Adobe Stock

The APET believes that adoption of emerging technologies can to a great extent enhance job creation and solve Africa's problem of poverty, hunger and food insecurity.

Second precision agriculture conference takes place in Kenya

The second edition of the African Conference on Precision Agriculture (AfCPA), which took place from 7-9 December 2022 at the Trademark Hotel in Nairobi, Kenya was announced by the African Plant Nutrition Institute (APNI) in partnership with the International Society of Precision Agriculture (ISPA), the African Association for Precision Agriculture (AAPA), and Mohammed VI Polytechnic University (UM6P).

Through its mission to 'connect the science and practice needed to put precision agriculture in action for Africa, AfCPA seeks to provide a pan-African platform focused on highlighting new advances in the fields of experimental and applied precision agriculture. AfCPA is a biennial event aimed at strengthening and

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The adoption of precision agriculture technologies allows farmers to plant smarter, grow better and harvest more.

supporting the precision agriculture community within the African continent and wishes to engage key stakeholders towards the common goal of building the capacity and resilience of African cropping systems. Multiple in-person satellite sites were distributed across East, West, North and southern parts of Africa, with sessions also having access to a global audience through livestream.

Two early career scientists were recognised for their contributions and received a cash award of US\$2,500 each:

- Mbulisi Sibanda, a senior lecturer at the Department of Geography, Environmental Studies and Tourism, University of

Trimble Agriculture, through its radical agri-tech innovations such as the Field-IQ ISOBUS liquid control system and next-generation displays, has put precision agriculture in the spotlight.



Image Credit: Adobe Stock

Using an ISOBUS system helps improve cultivated product quality, yield optimisation and efficiency of the production process, while also reducing operator fatigue.

the Western Cape was recognised for his focus on GIS and remote sensing. His current research revolves around drone technologies and their applications in agroecological ecosystems.

- Femi Adekoya, managing director of Integrated Aerial Precision Ltd, Nigeria, who is currently leading as the precision agriculture specialist at AI Precision, was recognised for his strong interest and experience with agricultural innovations and technologies.

The ISOBUS system – a radical agri-tech innovation

ROJ Mechatronics defines ISOBUS as being a standardised international communication protocol that allows different agricultural equipment to communicate with each other through a single common language. Using an ISOBUS system comes with a plethora of advantages such as improved cultivated product quality, yield optimisation, increase in efficiency and effectiveness of the production process and reduction of operator fatigue.

One example is Trimble Agriculture’s Field-IQ ISOBUS liquid control system which provides both rate and section control functions. The system also has a unique advantage of being able to connect to the implement with any ISOBUS terminal following ECU configuration.

Trimble Agriculture introduces next-generation displays for PA

In October 2022, Trimble introduced two new displays – the Trimble GFX-1060 and GFX-1260, that were especially considered ideal for farmers with a mixed fleet and offered compatibility with more than 10,000 vehicle models across more than 40 equipment brands. Some of the advantages offered by them include control settings standardisation, simplification of machine control and data exchange as well as significant reduction in installation and interface challenges and downtime.

Trimble’s representative in sub Saharan Africa mentioned in a report that combining SSA’s expertise with PA hardware, software and service would enable farmers to plant smarter, grow better and harvest more. **E**

African aquaculture leaders collaborate to build feed mill

MAXIM AGRI HOLDING, Victory Farms and Gatsby Africa have announced plans to break ground on the SamakGro aquafeed mill.

According to a news release, the feed mill facility will be managed by Netherlands-based Maxim Agri and will produce high quality and affordable aquafeeds to meet the demand from East Africa's growing aquaculture industry. The company has extensive experience in emerging markets through its operations in Pakistan and Sri Lanka, with its Kenya operations launched in November 2017. Maxim Agri will focus on producing customised feed to help small land commercial farmers maximise their performance.

Obaid ur Rehman, general manager of SamakGro Limited Kenya, said, "We are excited about the strategic advantages and opportunities for the aquaculture industry that this joint venture will create through localising feed production and making available a product of verifiable, consistent quality that aquaculture practitioners and entrepreneurs can rely on."

Construction of the SamakGro mill is ongoing in Naivasha, Kenya, with feed production expected to begin in 2023. The news release projects that multiple jobs will be created and that livelihoods will be positively affected when the mill comes online.



Construction of the SamakGro mill is ongoing, with feed production expected to begin in 2023.

Image Credit: Adobe Stock

Uganda to take part in world's largest agricultural expo and trade show

UGANDA IS READY to participate in this year's annual World Agricultural Expo, the largest agricultural expo and trade show at the International Agri-Center in Tulare County, California, US next month. The expo is scheduled to take place from 14-15 February 2023.

To guarantee Uganda's participation, the office of the Senior Presidential Advisor on Diaspora Affairs headed by Amb. Abbey Walusimbi is working with Damiano Kigoye, the coordinator for Uganda at the expo.

The goal of the expo is to offer attendees an opportunity to learn about the latest developments in modern agricultural practices, products, equipment, and services.

In a report published by AllAfrica, Kigoye said, "In addition to seminars, there will be different areas of interest such as tours of state-of-the-art farms, agri-processing, agricultural financing, modern methods of farming and irrigation, animal husbandry and robotic milking, modern bee farming, farm equipment and much more."

Reflecting on the Uganda Vision 2040, Walusimbi emphasised that the achievements would not only prove useful for the agricultural sector, but also other sectors of trade and investment.



The expo will run between 14 and 16 February.

Image Credit: Adobe Stock

Valmont to provide irrigation equipment and technology solutions in Africa

VALMONT INDUSTRIES, INC., a global leader that provides vital infrastructure and advances agricultural productivity while driving innovation through technology, has announced it has entered into a supply agreement to provide mechanised irrigation equipment and innovative technology for multiple agricultural development projects in Africa.

The agreement will harness the market-leading solutions of Valley Irrigation, a Valmont company, to help meet the escalating global demand for more efficient and reliable food production, and support national investments in agriculture to feed growing populations and address ongoing food security concerns.

"This new engagement is a testament to our technology leadership and ability to secure large-scale projects that address the critical need

by many countries to increase food production while decreasing dependence on grain imports," said Josh Dixon, Valley Irrigation president. "Our successful execution of several projects within the region has demonstrated the value of our technologically-advanced irrigation products and dealer network, giving customers confidence in our ability to consistently deliver results. This supply agreement validates the continuing strength of our international project pipeline." Utilising Valley's market-leading technology solutions, this project will become one of the largest installations of connected pivots, thus maximising crop yields and minimising inputs, while conserving nearly half the water used by traditional irrigation methods. Project shipments are expected to begin in the second quarter of 2023.

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LEMKEN acquires Equaliser and expands product portfolio

THE GERMAN AGRICULTURAL machinery specialist LEMKEN has reached an acquisition agreement with South African company Equaliser, and will be significantly expanding its product portfolio in seeding technology.

The Equaliser product range includes precision planters with up to 36 rows and seed drills with a working width of up to 24m. The acquisition is expected to be completed by spring 2023.

LEMKEN CEO, Anthony van der Ley, believes that the Equaliser portfolio perfectly complements the LEMKEN seed drill segment and constitutes an important building block for further growth.

Visitors gain access to interactive virtual showroom at CES 2023

NEW HOLLAND AGRICULTURE, a brand of global capital goods company CNH Industrial was present at the Consumer Electronics Show (CES) 2023 in Las Vegas, US, from 5-8 January 2023, along with Touchcast and Microsoft, to showcase a powerful simulation of a commercial customer experience in the metaverse featuring its T4 Electric Power tractor prototype, complete with autonomous features.

Visitors at the event were able to see the tractor thanks to Touchcast, a leader in creating immersive experiences in the metaverse, with technology powered by the Microsoft Cloud which lets vehicle manufacturers reimagine the customer journey by creating a photorealistic digital twin of their showroom and displaying their vehicles in real-time 3D. Potential customers can then browse, customise, and purchase their desired vehicle inside the interactive virtual showroom directly from their browser.

Consumers could interact with a real adviser, ask questions, explore new features, take a virtual test drive, buy their vehicle, and return anytime for post-sales support. New Holland, Touchcast and Microsoft programmed live demos at the show, featuring a large LED wall that will create a simulation of this metaverse experience and connecting consumers with the brands featured.

"We're thrilled to be part of such an innovative project at CES 2023 and we are proud to partner with Microsoft and Touchcast, companies that share our forward-thinking approach. Thanks to their technology we will be able to explore and enable metaverse commercial options, granting direct access to our products to customers all over the world," said Carlo Lambro, brand president of New Holland Agriculture.

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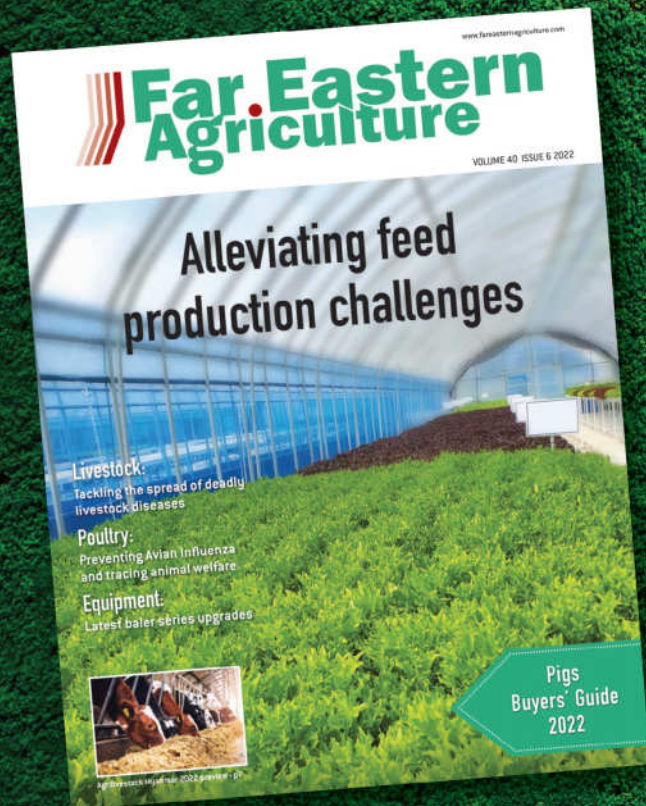
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