

African Farming

and Food Processing

Livestock

Disease management trends

Cocoa

Nutrient solutions for growth

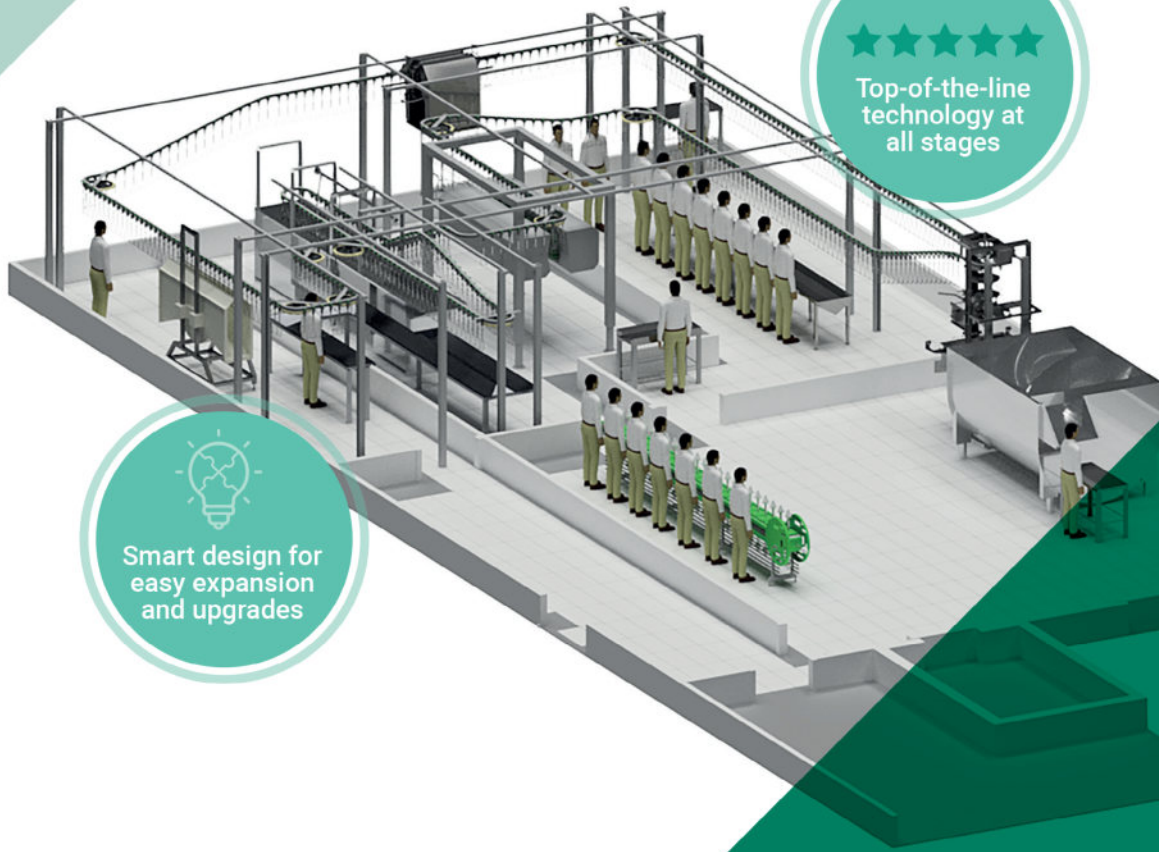
Combine Harvesters

Case IH's New Axial-Flow model



AGI opens three new facilities. p26





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Agricultural drones for spraying crops



Image credit: Adobe Stock



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African Farming and Food Processing

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Farming Calendar 2021

OCTOBER

14-16	Ethiopia agrofood www.agrofood-ethiopia.com	ADDIS ABABA
19-23	EIMA International www.eima.it/en/	BOLOGNA, ITALY
26-28	Nigeria agrofood www.agofood-nigeria.com	LAGOS

NOVEMBER

22-24	Kenya agrofood www.agofood-kenya.com	NAIROBI
23-26	AGRO PACK IRAQ ERBIL www.iraq-agofood.com	ERBIL
23-25	VIV MEA www.vivmea.nl	ABU DHABI

DECEMBER

02-04	FOOD AGRO AFRICA www.expogr.com/ethiopia/foodexpo/	ETHIOPIA
03-05	TANZ FOOD www.tanzfood.com	ARUSHA
07-09	MOROCCO FOOD EXPO 2021 www.moroccofoodexpo.com	CASABLANCA

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Zambia's Ross Breeders partners with Cellulant

ZAMBIA'S FIRST CHOICE for broiler chicken, Ross Breeders, have partnered with Cellulant to digitise their payments with Tingg.

Customers can pay for a range of products such as Chicken Feed, Day-old Chicks, and Supreme Chicken products at any Ross Breeders depot using any mobile money network. Tingg allows customers to pay with ease via a stable and secured channel, while Ross Breeders can collect and manage their payment processes on a single platform.

India extends US\$1mn for climate-resilient agriculture in Zimbabwe

THE GOVERNMENT OF India has contributed almost US\$1mn to the United Nations World Food Programme (WFP) in Zimbabwe to help affected populations tackle climate shocks.

The contribution, provided through the India-UN Development Partnership Fund, will be used to assist more than 5,200 smallholder farmers in Chiredzi and Mangwe districts.

Working alongside partners, WFP Zimbabwe will provide expertise through its Smallholder Agricultural Market Support (SAMS) programme to strengthen the resilience and capacity of selected smallholder farmers.

The project is set to promote the cultivation of drought-tolerant small grains and legumes – reducing the negative effects of recurring droughts in Zimbabwe.

Director of the United Nations Office for South-South Cooperation, Adel Abdellatif, said that the contribution will ensure the social protection and resilience of smallholder farmers.

"This project is focused on increasing small grains production and market access. It will provide a good opportunity for successful Southern practices to be tested and scaled, improving the lives of rural Zimbabweans," added Abdellatif.

This is a sound investment in Zimbabwe which relies heavily on agriculture – accounting for approximately 70% of the populations' livelihood activity

FAO'S initiative to strengthen fertiliser regulation in southern Africa

THE FOOD AND Agriculture Organization of the United Nations (FAO), the Southern Africa Development Community (SADC) and the government of Malawi have launched an initiative to establish a framework to improve regulation of fertilisers across southern Africa.

The programme, the Harmonised Fertiliser Regulatory Framework (HFRF) project, also seeks to enhance integration and improve access to regional fertiliser markets. This regional initiative is being implemented in the 16 SADC Member States.

"This project will be implemented in collaboration with the Hand in Hand initiative, an evidence-based country-led and country-owned initiative to accelerate agricultural transformation and sustainable development to eradicate poverty. It contributes to the sustainable development goal to zero hunger, and is aligned with the Malawi 2063 Agenda Pillar 1 of agricultural productivity and commercialisation, specifically to improve production and incomes of the majority of people, with emphasis on effective governance systems and institutions as an enabler," said Zhijun Chen, representative of FAO in Malawi.

By establishing the Regional Harmonised Fertiliser Regulatory Framework, the project will therefore help to amalgamate ongoing efforts on fertiliser quality control and enforcement of standards across the region.

In Malawi, adulteration of fertilisers, underweight packaging and poor quality of fertilisers are some of the challenges that smallholder



In Malawi, adulteration of fertilisers, underweight packaging and poor quality of fertilisers are some of the challenges that smallholder farmers face.

farmers face. Overall, the low agricultural productivity, which predominates in SADC countries, is due in part to misuse and underuse of low quality fertilisers.

"Access to, and judicious use of, high quality fertilisers is key to high agricultural productivity," stated Sandram Maweru, principal secretary for irrigation at the Ministry of Agriculture.

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Pieter Oosthuysen, senior manager, accounts and technical (Africa), Cobb Europe, speaks about the use of data in breeder management.

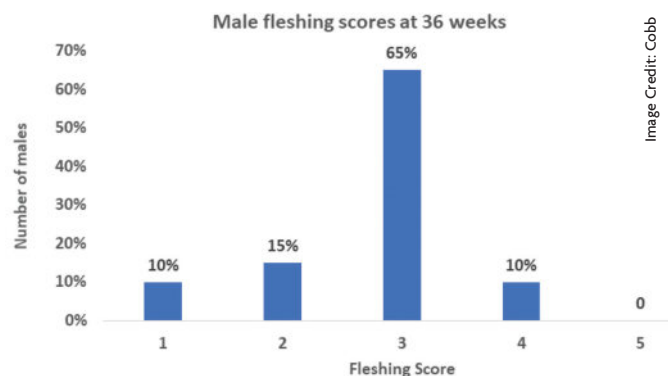
Using Data to solve problems in broiler breeder management

MODERN TECHNOLOGY IS increasingly being used on breeder farms for data generation. This data can be analysed to make smarter decisions and improve flock performance and efficiency.

Good data collection is crucial for many critical decisions, such as feed allocation, which is based on reliable body weight data.

Interpretation of the data requires local knowledge such as impact of seasonal effects or knowledge of breed-specific behavioural traits. However, the relationship is multi-factorial, because as hens age, they become heavier and egg production declines. Moreover, chick production is a function of both fertility and hatch of fertile (incubation).

But how do you measure a certain biological event that cannot be measured or weighed? First, find out if the males are getting enough feed. What is the cause behind low early hatchability or poor peak percentage of hatchability? The measurements are subjective but need to be quantified to produce data.



The condition of the males was quantified based on a breast muscle scoring system (Figure 1).

In the field case below, the breeder males were overweight and fertility was declining. The production graph indicated the males were heavy and considerably above their weight for the target age.

In Figure 1, 65% of the males had the desired fleshing score of three, while 15% of the males were too thin, and 10% were emaciated. Only 10% were well-developed with a fleshing score of four, leaving no males with fleshing scores of five, which would be deemed overweight and unfit for reproduction. This means that 75% of the males were in good reproductive health, indicating they were not overfed. The remaining 25% were off target for 36 weeks of age, indicating they may not be receiving enough feed, although they appeared overweight. Based on the body weight data alone, it appears the males were underfed to control the weight.

This demonstrates the difference between weight and size that the farmer experienced. Therefore, we increased the feed, and fertility began improving. **E**

For full article, please refer, africanfarming.net



The male breast scores are explained in Figure 2.

Crop Nutrition Laboratory unveils AI-driven platform for African farmers

CROP NUTRITION LABORATORY Services Ltd (Cropnuts) has launched AgViza, a disruptive AI-based soil testing and digital crop advisory service for smallholder farmers.

Soil testing services have been out of reach for smallholder farmers due to financial constraints. This is proven by the fact that poor soil fertility is one of the biggest reasons for yield loss in smallholder farms across Africa. AgViza soil testing technology aims to empower farmers with this critical soil management information.

The combination of different technologies reduces the cost of soil testing by more than 75%, making it more affordable for all types of farmers, especially smallholder farmers in remote locations.

Cropnuts is Africa's leading independent laboratory for agricultural and environmental testing and is backed by DOB Equity, a leading Dutch family-backed impact investor, and AHL Venture Partners, a leading impact investor investing in Africa.

Jeremy Cordingley, managing director at Cropnuts, said, "Soil

testing will help farmers know the right fertiliser requirements and in turn, will de-risk lending to farmers. The field specific input recommendations will improve farmers' yield, leading to higher incomes and improved repayment ability, giving financial institutions better assurance on their farmer loans."

Saskia van der Mast, DOB Equity co-CEO, added, "After years of development and capturing thousands of calibration soil samples, Cropnuts now has a scalable and digital solution to enable millions of farmers to become more productive and profitable. We believe Cropnuts has the potential to accelerate investment in the agricultural value chains, increase food security, and manage climate risk."

The company has more than 22 years of experience in providing soil testing and fertiliser recommendations to farmers across sub-Saharan Africa. Over the years, it has helped improve soil health, crop yields and post-harvest compliance across several value chains.

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Rafael Lera, veterinarian and technical poultry specialist, Hendrix-Genetics, speaks on the significance of lighting programmes for the growth and sexual maturity of laying hens.

Lighting programme as management tool to steer laying hens

IT IS WELL known that hens are sensitive to light and changes in daylength. When hens are reared only under natural light conditions, they reach sexual maturity at different ages depending on latitude and season. The lighting programme used in rearing, the moment of light stimulation, and body weight will highly influence egg production and related to that egg weight: this means that the right decisions in terms of management should be taken at the start of rearing.

The general aims of a lighting regime during the rearing period are to:

- control the timing of sexual maturity
- stimulate early feed intake and growth

When designing a lighting programme, there are some important aspects to consider:

- Pullets respond more to a change in daylength than to the daylength itself.
- Pullets do not respond to an increase in daylength until about six weeks of age.
- Pullets become more responsive to decreases in daylength as they approach natural sexual maturity.

The basic rule is that pullets should never experience an increase in daylength, until the moment of the scheduled light stimulation, and never experience a decrease in daylength during the laying period.

Based on this rule, all lighting programmes consist of three different phases:

- **1st phase:** decreasing daylength
- **2nd phase:** constant daylength
- **3rd phase:** light stimulation

Long light duration is essential during the first few weeks to encourage feed intake and early growth. Depending on the speed of reduction of daylength during the first phase, sexual maturity will be affected, and consequently, as will egg numbers and egg size.

Slow step-down lighting programmes will delay sexual maturity and, in addition to that, give more chance for the birds to eat, so reaching body weight targets on the upper part of the standard range is easier. Both factors, late sexual maturity and higher body weight, lead to an increased egg size.

On the contrary, fast step-down lighting



Pullets should never experience an increase in daylength, until the moment of the scheduled light stimulation.

programmes promote earlier sexual maturity, which is linked to smaller egg size. Total egg mass will not be significantly affected by reasonable variations in sexual maturity: earlier flocks will lay a few more eggs but of smaller size, while late flocks will lay a few less eggs but larger in size.

Phase of constant daylength, usually in a range between eight and 12 hours, can also be adjusted to farm conditions. In hot climates, or when reaching the target body weight is difficult, it is always preferred to keep a longer 'plateau' to help pullets to eat and grow.

Light stimulation

Light stimulation will determine the onset of lay, depending on:

- age at light stimulation
- body weight
- size and speed of increments in daylength

Light stimulation should be done based on body weight and uniformity. Heavier pullets will lay larger eggs, while lighter pullets will lay smaller eggs. If pullets that are too light in weight are stimulated, there is an increased risk of higher mortality due to prolapse and vent pecking, poorer laying persistency and eggshell quality problems.

Uniformity is of utmost importance: a minimum of 80% uniformity is required for secure light stimulation. Increase of daylength should not be too slow. In addition to the triggering effect on hormonal changes necessary for sexual maturation,

when daylength is extended, there is also an increase in feeding opportunity with positive effect in bodyweight and, therefore, a more rapid increase in early egg weight.

Lighting programme in open-sided houses

An abrupt increase in daylength (>two hours) should be avoided, as excessive light stimulation is a stress factor linked to nervousness, higher mortality, and increased incidence of eggshell defects at onset of lay. This situation can be especially challenging when pullets are reared in dark houses and later transferred to open-sided production houses: in these conditions, the lighting programme in rearing should consider the natural daylength at the age of transfer. Ideally, rearing houses should be light proof, so the most suitable lighting programme for every production target (larger or smaller eggs) can be used. In open-sided rearing houses it is harder to counteract the effect of daylength seasonal variations.

Lighting programmes can be adjusted by adding artificial light when birds are reared in increased daylength to set a constant plateau. This plateau is set according to the maximum natural light that pullets will experience during the rearing period, avoiding too early onset of lay. As an example, when the natural daylength during the rearing period is maximum of 12 hours, the plateau should not go under these 12 hours. Full control of sexual maturity is difficult to achieve under these circumstances. **E**

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Role of dietary fibre in GIT development

DESPITE BEING A monogastric animal, the GIT of poultry is different from pigs and humans. The GIT of poultry is notably different from other species as it is much shorter and lighter. However, it is relatively much longer (i.e., cm/kg body weight) and heavier (i.e., g/kg body weight) in poultry compared to other livestock.

The GIT system's function includes digestion, absorption, and protection, and the structure of the gut is well adapted to perform these functions. As the site of digestion, GIT maximises nutrient utilisation to reduce substrate for bacteria and support epithelial cell growth and differentiation.



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The development of the GIT is an essential aspect of growth, especially the development of functional digestive organs during the early post-hatching period of chicks.

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The GIT also supports gut tissue integrity, prevents adhesion of pathogenic bacteria, balances microbial populations with low numbers of potentially pathogenic strains, supports appropriate immune response, and controls inflammation. The effective functioning of the GIT and its health are important factors in determining animal performance in growth, meat, and egg quality. Also, the development of the GIT is an essential aspect of growth, especially the development of functional digestive organs during the early post-hatching period of chicks.

Dietary fibre affects the length and weight of the GIT. There is also strong evidence that the differences in the weight of organs are highly related to differences in the type of fibre. Diets with increasing levels of pea fibre decreased the dry matter (DM) in droppings and increased excreta output relative to DM intake.


However, the large particle size can promote GIT development, especially the gizzard function. When the gizzard is well-developed, an improvement in gut motility is also observed, which may reduce the risk of gut pathogens colonising the lower segments of the GIT, thus reducing the risk

The GIT also supports gut tissue integrity, prevents adhesion of pathogenic bacteria, balances microbial populations with low numbers of potentially pathogenic strains, supports appropriate immune response, and controls inflammation.

of gut diseases, including salmonellosis and coccidiosis. Diet rich in high fibre content may produce greater dilatation of proventriculus with the increase in size and its contents. The coarse fibre particles are selectively retained in the gizzard that ensures a complete grinding and a well-regulated feed flow and secretion of digestive juices.

Insoluble fibers comprise a large proportion of the endospore cell walls, which physically limit access of digestive enzymes to the nutrients within the cell. In contrast, the soluble fibres tend to result in viscous conditions in the digestive tract, which can adversely affect digestion and nutrient absorption. After escaping the small intestine, both soluble and insoluble DF are fermented by the microflora in the large intestine, accompanied by an increase in SCFA, resulting in a decrease in intestinal pH. Considering the prebiotic effect of DF,

the stimulation of beneficial bacteria such as *Lactobacillus* can optimise gastrointestinal health as the lactobacilli's attachment to the intestinal mucosa can prevent the pathogen growth in the distal part of the GIT and protect animals from GIT infection.

Dietary fiber may influence epithelial morphology, which depends on the characteristics of the DF, the level of inclusion, the age of the bird, and the site in the intestinal tract. 

Jha, R., Mishra, P. Dietary fiber in poultry nutrition and their effects on nutrient utilization, performance, gut health, and on the environment: a review. J Animal Sci Biotechnol 12, 51 (2021). <https://doi.org/10.1186/s40104-021-00576-0>

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Case IH's Magnum series tractor shows positive result during South African field trials

CASE IH'S MAGNUM AFS Connect tractor has performed successfully under local conditions in a series of field trials

AFS, the advanced farming systems, is the name of Case IH's precision farming range, and the wireless connectivity allows instant communication and two-way data transfer between the machine and its manager. The AFS Connect technology focuses on remote display viewing of the tractor's AFS Pro 1200 operating screen by farm owners, managers and, with permission, the dealer supporting their equipment, thereby providing exactly the same screen view the operator is seeing in the cab.

The machine was tested at a large maize, soybeans, dry beans and wheat operation.

The tractor boasts new features such as a new full-length door, cab interior, instrumentation and new brake-assisted steering, all of which were put to the test by in-field operators.

Jaco Prinsloo, Case IH's product marketing manager for crop production, who is also responsible for overseeing and supporting the South African product testing programme said, "First, we tested it on the new Case IH/CNH industrial RTK network. This enables customers to work in the most accurate way possible, giving them around two cm repeatable accuracy. We also tested the machine on the new AFS 1 and AFS 2 correction signals. With this we could see the accuracy on the ground and how the machine performed, and also if this satisfied the customer expectations," he said.

"We also connected remotely to the machine via our Remote Service Tool (RST) to run diagnostics and do software updates and helped the operator by connecting via a remote display," he added.



Image Credit: Case IH

Since it arrived in South Africa, the Magnum AFS Connect 380 CVT tractor has completed approximately 600 hours of rigorous testing.

One of the groundbreaking features of AFS Connect Farm is the ability for it to be linked with other cloud based farm management information systems (FMIS) such as Trimble and FarmersEdge FarmCommand platforms. The purpose of current FMIS is to meet the increased demands to reduce production costs, comply with agricultural standards, and maintain high product quality and safety.



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Nawa Mutumweno writes about the recent developments to boost livestock production and curb the spread of zoonotic diseases.

Animal health – a foundation for food security



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The commercial livestock sector is unable to detect and respond to the outbreaks of new diseases that can threaten public health and safety.

LIVESTOCK FARMING CONTRIBUTES up to 30% of agricultural GDP, making it a crucial component of Africa's economy.

Attaining good livestock health in Africa is an uphill task, as incidents of herds of cattle, facing extreme weather conditions, zoonotic diseases, and malnourishment, are quite common, due to lack of proper public veterinary services.

Some of these diseases, such as African swine fever, brucellosis, fowl pox and rift valley fever can wipe out entire herds, if left untreated.

To maintain healthy livestock production, it becomes mandatory to strengthen the capacity of African animal health disease surveillance systems, and enhance early detection and reporting of infectious animal disease.

Weaknesses in veterinary surveillance systems in Africa have surfaced during outbreaks of infectious diseases such as rift

valley fever and highly pathogenic avian influenza. To date, many countries are not able to sustain active surveillance activities.

Farmers also need to take good care of their animals, to provide humans with a healthy supply of meat, eggs, milk and fish.

Boehringer Ingelheim's "focus lies on an integrated approach that takes the animal, the environment and the food supply chain seriously in consideration," says Dr Oscar Mendoza-Vega, global head of market analytics, customer insights and marketing excellence at the company's Animal Health Business Unit.

"We are aware that consumers now want to know where their food comes from, how it is handled and what footprint it left behind. Customers understand that when animals are healthy, humans are healthy, too," he further added.

Public veterinary services and the commercial livestock sector are unable to detect and respond in a timely manner to

outbreaks of new disease threats, nor to manage successfully the control of trans-boundary diseases, many of which remain endemic in parts of the continent. This not only undermines the development of livestock trade, but also creates a continuing threat to human public health, since the majority of emerging infectious diseases are zoonotic, shared by animals and humans.

Animal feed and nutrition

The growing population in East Africa is expected to double from 170 million to approximately 340 million by 2050. With the increase in population, the demand for high-quality protein from the aquaculture and agriculture sectors will rise accordingly.

Nutreco has tapped into this opportunity to form two joint ventures with the largest feed miller in East Africa – Unga Group Plc. These will focus on fish feed development in East Africa and complete animal feed



Diseases such as African swine fever, brucellosis, fowl pox and rift valley fever can be lethal, if left untreated.

development in Uganda. The entities will make significant investments in production capacity in Kenya and Uganda to meet the anticipated future market demand.

"I am thrilled to partner with Unga Farm Care and Unga Millers, companies that, like Nutreco, have extensive knowledge within the animal nutrition and aquaculture industries," said Nutreco CEO Rob Koremans.

"Together, Nutreco and Unga Group will tap into each other's extensive expertise to continue meeting the growing demand for high quality protein," he added.

Nutreco was also a co-investor in the US\$24.6mn accelerated commercialisation of proteon pharmaceuticals products, which aim to reduce the reliance on antibiotics within aquaculture and livestock farming.

"The funds raised from investors will support the company's efforts to reduce the use of antibiotics in livestock farming and to promote sustainable protein production and ultimately improve human health," said Jarosław Dastyk, CEO of Proteon Pharmaceuticals.

Rob Koremans, Nutreco CEO said, "This investment underlines Nutreco's commitment to our purpose of Feeding the Future and to the partnership between Proteon Pharmaceuticals and Nutreco's aquaculture division Skretting. Together, Proteon Pharmaceuticals and Skretting are developing bacteriophage health products to support farmers in keeping their animals healthy without the use of antibiotics."

The global recurrence of diseases such as African Swine Fever (ASF) is driving high demand for poultry meat products. This increased demand puts pressure on poultry feedstuffs, calling for new feed resources and greater utilisation efficiency. The feed industry has been compelled to search for sustainable alternatives.

The inclusion of fish silage in broiler diets leads to improved growth performance and meat quality. Using materials that would otherwise be dumped offshore reduces waste and environmental pollution while providing a good source of essential amino acids and minerals.

Researchers from the University of Nayarit Mexico conducted a study to investigate the nutritional value of fish silage in terms of growth performance and meat quality in broilers (day-old to 28 days). The researchers found an increased body weight gain in chickens fed the fish silage-soybean meal mixture compared to the unsupplemented diet.

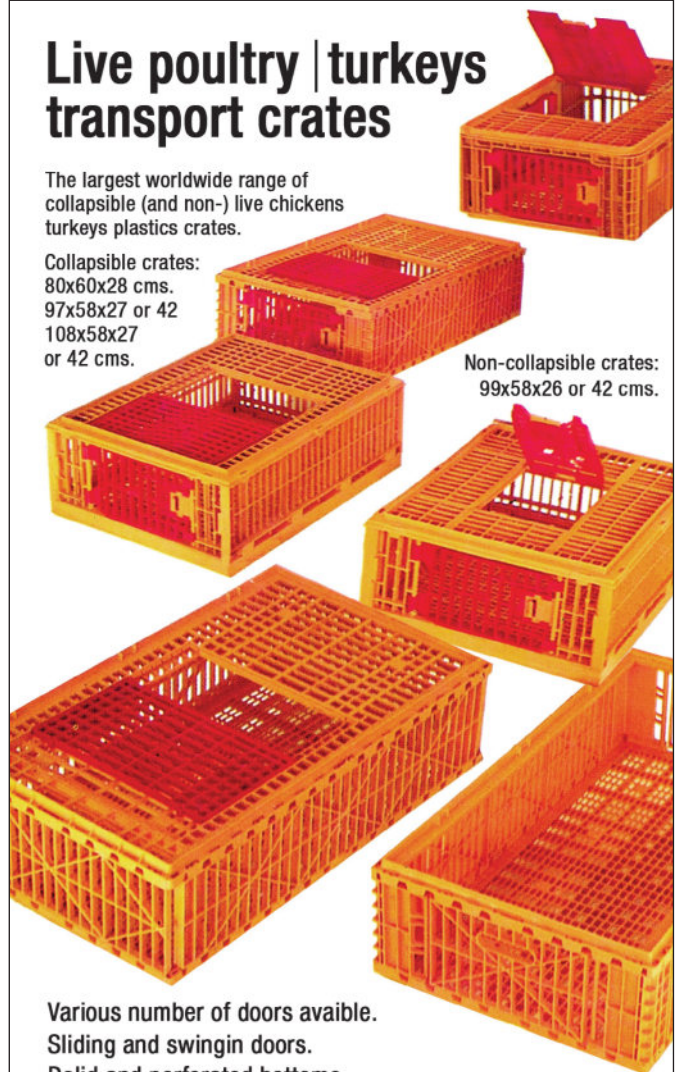
The German firm Evonik recently carried out a comparative Life Cycle Assessment (LCA) which demonstrated the ecological advantages of using its feed amino acids and feeding concepts compared with common animal nutrition practices. The assessment,

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which covered swine, broiler chickens and laying hens, discovered that the feeding concepts and amino acids could have a significant effects in reducing climate change, with the option to use regional raw materials as another advantage.

Animal nutrition and feed additive firm BIOMIN has recently published a book detailing the latest scientific knowledge about zearalenone, a mycotoxin that is commonly found in feed materials, which is associated with reproductive challenges in animals. The Zearalenone Compendium provides an overview of the symptoms caused by zearalenone in different animals and the strategies available to counteract them.

Disease management

There is a lack of comprehensive national programmes for the prevention, control and eradication of endemic diseases on the continent.

Despite some minor achievements in the past to manage these recurring diseases of public health, trade and economic importance, the risk still rages.

The focus of the veterinary services (VS) provided in many countries on the continent was from the national borders inward. With the continuing development of the international transportation of people, increased understanding of veterinary public health and food safety matters, the changing international standards for trade, climate change, and other factors, VS should adopt a broader approach.

A number of negative issues spring up during disease outbreaks - farming and trade activities are disrupted, rural livelihoods are jeopardised, food security is threatened, scarce personnel resources are mobilised, and emergency funds have to be organised.

There is need for a paradigm shift in animal health to convince both policy makers and stakeholders of the need to promote more regular contact between farmers/animals and veterinarians.

"Future policies should also clearly define 'public good' activities, that are official programmes established to control zoonotic diseases, epizootic diseases or diseases of major economic importance which need to be tackled in a common and rigorous manner, and 'private good' services that benefit individuals or companies," the South African Department of Agriculture, Forestry and Fisheries (DAFF) says.

Current trends/research

Without sustainable growth of its livestock sector, Africa is expected to import up to a fifth of meat and milk within the next 30



Image Credit: Adobe Stock

The global recurrence of African Swine Fever (ASF) has increased demand for poultry meat products.

years, according to the Malabo Montpellier Panel.

Africa will be unable to meet the demand for meat and milk by 2050, and will benefit from growth in the livestock sector, according to a recent report.

While Africa's livestock sector accounts for as much as 80% of agricultural GDP in some countries, on current projections, the continent is likely to need to import 20% of the beef, pork, poultry and milk needed by an estimated population of 2.2 billion in 2050.

Agricultural experts at the Malabo Montpellier Panel analysed lessons from four African countries (Ethiopia, Mali, South Africa and Uganda) that have sustainably grown their domestic livestock sectors to provide recommendations for unlocking the economic potential of animal agriculture and becoming self-sufficient.

"With rising incomes and urbanisation quickly shifting dietary habits across Africa towards increased meat consumption, the livestock sector will play a crucial role in ensuring food and nutrition security and fostering economic growth in the years ahead," said Ousmane Badiane, co-chair of the Malabo Montpellier Panel.

"In this new report, we review the policy and institutional innovations that can strengthen Africa's livestock sector and provide a major opportunity to boost economic growth, improve livelihoods and advance progress towards development targets," he adds.

The Panel highlighted options for promoting sustainable growth in the livestock sector in terms of institutional and policy innovation as well as programmatic interventions.

In Ethiopia, the Ministry of Livestock and Fisheries coordinated a Livestock Master Plan, covering livestock production and fisheries, veterinary services, and pastoral development. Carefully adapted policies for

pastoralist and non-pastoralist producers, and an integrated approach to building capacity in animal health, research, and marketing attracted significant investment, both from the private sector and development partners, further ensuring that the sector thrives.

"The expansion of Africa's livestock sector will create new opportunities for the continent's rural populations, especially women," said Noble Banadda, panel member and professor and chair of the Department of Agricultural and Bio Systems Engineering at Makerere University, Uganda.

Simple mobile technology in Ghana will provide veterinary information and advice to livestock farmers. Within two years of the launching of information service CowTribe, vaccine coverage among its users increased from less than 20% to 65%, reducing livestock diseases and loss, and adding an estimated US\$300 to their annual household income.

One innovation worth of note is Smart Vaccination by HIPRA. This is a revolutionary concept that combines a smart vaccine, a vaccine device which ensures precision and efficiency, and a new world of digital solutions. Smart vaccination is available for poultry and swine.

HIPRA has developed a professional veterinary app, HIPRA Link, to provide traceability and relevant information for vaccination processes for animal health.

Lessons can be drawn from past livestock growth in other developing regions, to design and implement policies that effectively manage the trade-offs between the livestock sector transformation and the environment. With human and livestock populations going up, regenerative approaches to livestock production and management will secure environmental services and the sector long-term. **E**

Evonik's GuanAMINO improves growth rate and hatchability when mixed with poultry feed

FEEDING OF LIVESTOCK accounts for approximately 70% of the total cost of production, and within this cost, energy is the most expensive nutrient. So, anything that can reduce this cost will be attractive to the feed producer, the farmer and the consumer.

Energy is supplied in feeds for terrestrial animals, mainly as carbohydrates (cereals and byproducts) and oils (oilseeds such as full fat soya and pure oils and fats). However, the efficiency of utilisation of these energy sources depends on other components being available as well, and one of these components is creatine.

Creatine performs essential steps in the transformation of energy – supplying nutrients such as carbohydrates into the form used by growing cells – ATP. If there is a shortage of creatine, the efficiency of utilisation of energy supplying nutrients is reduced, and animal performance suffers; slower, less efficient growth, higher Feed Conversion Ratio (FCR) and potentially more nutrient loss through excretion (meaning more adverse impact on the environment).

Animals can produce some of their creatine requirement themselves, but need supplementation in their diet. Creatine is only found in animal byproduct raw materials. In some countries where such raw materials are not allowed in feeds, this source is therefore unavailable. Even in countries where such raw materials are allowed, the creatine content is extremely variable in all animal byproducts, so cannot be relied upon as a creatine source.

Unfortunately, we cannot simply add creatine to the feed, it is not heat-stable, and will be broken down in the feed manufacturing process.

GuanAMINO from Evonik offers a solution. It is composed of guanidinoacetic acid, the immediate precursor to creatine, and is efficiently converted to creatine after consumption. It is completely



GuanAMINO is converted to creatine after consumption.

Image Credit: Evonik

heat stable, which means it can be added to feed with no concerns.

Addition of GuanAMINO into diets for poultry has been shown to improve growth rate, increase muscle deposition (as measured by breast meat yield) and improve efficiency, shown as lower FCR.

Furthermore, as GuanAMINO improves energy utilisation, it can effectively replace some of the energy in the diet. Numerous trials have concluded that as little as 600 g/ tonne of GuanAMINO can replace 50 kcal of AME in poultry feeds. This will help to reduce feed cost.

The use of GuanAMINO is currently being investigated in breeder feeds and evidence is accumulating, that hatchability and the number of day-old chicks per bird is increased, as the hatching bird is endowed with enough energy to complete the arduous process of hatching. In addition, the newly hatched chick also contains reserves of creatine, meaning it starts the growing process in a much better manner.

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Dr Terry Mabbett writes about Omex Agrifluids' nutrient solutions for cocoa production.

A nutrient solution for African cocoa

COCOA REQUIRES HIGH rainfall conditions which are conducive to soil saturation and soil nutrient leaching, but despite these clear pressures on soil fertility, the use of soil-applied fertiliser has never featured prominently in cocoa cultivation. Significant amounts of nutrients are removed from the cocoa plantation when the ripe pods packed full of beans are harvested for processing. Risk of spreading Phytophthora pod rot and other pod diseases means the husks cannot be returned to the cocoa estate after the pods have been cracked open and the beans removed for curing (fermentation and drying).

However despite all these factors, which point towards potential nutrient deficits in cocoa, there has always been a certain negativity in the traditional commentary on fertilisation, whether for nursery or field-grown cocoa and for both young and old trees. Suspicions remain that the deep leaf litter which builds up under the closed cocoa canopy, prevents efficient uptake of soil-applied fertiliser by the roots.

Foliar feeding – the right way forward

Experience gained over the last fifty years strongly suggests foliar feeding, by spraying the foliage with soluble nutrients, is the logical way forward, and by using leaf nutrient analysis, rather than soil analysis as the arbiter. What's more, the large, oval leaves of the cocoa tree canopy provide an ideal template for interception and deposition of the spray droplets.

Cocoa requires high rainfall conditions which are conducive to soil saturation and soil nutrient leaching.

I visited the East of England headquarters of Omex Agrifluids, a UK company which designs and manufactures an in-depth range of soluble liquid and powder nutrients for use, on a huge range of crops, including cocoa, in all four corners of the world. Omex's expertise and experience extends throughout the cocoa-producing nations of West Africa, South America and South East Asia, the three main hubs of world cocoa production.

I spoke with Dr Ben Odunlami, technical sales manager for Africa, and managing director, Peter Prentis. Prentis' Far East remit covers a number of South East Asian nations, including Malaysia and Indonesia, which together with West African Nations, such as Nigeria, Ghana, Cameroon and Cote d'Ivoire, forms the largest portion in world cocoa production. I proceeded to ask Odunlami and Prentis for a contemporary perspective on nutrient requirements for fast, sustainable growth of cocoa beans, their resilience to diseases, and maximum yield of high quality cocoa beans.

The cocoa nursery is the logical place to start. The prime purpose of tree nurseries, whether for cocoa, coffee or tea, is rapid root growth, to produce seedlings large enough and sufficiently well-established, to withstand 'seedling shock' following transplantation of the seedlings into the field. Factors contributing to



Image Credit: OMEX Agrifluids Limited

Cocoa pods tend to be borne in the lower reaches of the tree, directly on the trunk and main scaffold branches of the tree.

'seedling shock' include heat and drought (abiotic factors), and biotic factors, such as insect pests and competing weed growth.

The company's answer to cocoa seedling nutrition is Omex Bio 20. "Our Omex Bio 20 is a highly concentrated liquid emulsion product, containing Nitrogen (N), Phosphorous (P) and Potassium (K), all at 20% weight/volume (w/v), Magnesium (Mg) at 1.50% and a full range of micronutrients, most of which are in a chelated form," said Prentis. Omex Bio 20 also has a bio-stimulation function, provided by a seaweed-derived organic addition to the formulation, which stimulates and sustains root growth and development.

Omex involvement with cocoa

Cocoa is grown throughout the wet and humid tropics but commercial production is concentrated in definite regions within the Equatorial tropics. West Africa's quartet of top cocoa-producing nations (Cote d'Ivoire, Ghana, Nigeria and Cameroon), are four of the major cocoa producers in the world. West Africa is the largest cocoa producing hub in the world.

Odunlami, whose remit covers cocoa in West Africa told us, "We do considerable business throughout West Africa in Francophone countries like Cote d'Ivoire, as well as English speaking nations such as Ghana and Nigeria." Such is the individual importance of cocoa to this region and to us as a company that we have designed and developed two specialist products dedicated to cocoa in West Africa. They are:

CocoBoost is a highly concentrated water soluble suspension product for cocoa in Ghana, Nigeria and other English speaking countries. CocoBoost is a foliar-applied product containing N, P and K at concentrations of respectively, 8.30%, 32.40% and 21.10% w/w; chelated Mg and a full complement of micronutrients Iron (Fe), Manganese (Mn), Zinc (Zn), Boron (B), Cobalt (Co) and Molybdenum (Mo), with most of these in chelated form.

Omex have used the same 'broad-brush' approach for Francophone West Africa by designing a foliar-applied soluble product possessing all nutrients required by cocoa. 'Folicao' (Engrais Foliaire pour Cacaoyers – Foliar Fertiliser for cocoa) is a water soluble suspension product containing N, P and K at 13.5%, 27.00% and 27.00%, Mg and the same micronutrients (most chelated), as contained in Omex Cocoboost.

"This pair of completely soluble nutrient products is applied by foliar spraying on to the leaf canopy for subsequent rapid absorption of the nutrients by the leaves, although they may also be absorbed by the roots. This means any spray liquid which runs off of the leaves and onto the soil can be intercepted and absorbed by the roots," said Dr Odunlami. "Both products are designed to provide cocoa with a full complement of nutrients and right through to pod harvest," said Prentis.

"Calcium (Ca) is important for structural support as the tree begins to branch, and additionally for good pod growth and development," says Ben Odunlami. Significance of calcium in this respect is two-fold, through the provision of high cocoa bean yields and as a structural component of cell walls to maximise resilience of pods to infection and disease development.

K, N and Ca accumulate at high levels in cocoa to become effectively immobilised, and are only available to the cocoa crop again via recycling of the leaf litter. Accumulation and effective immobilisation of calcium in six-year-old cocoa trees has been calculated at 300 kg/ha. A significant amount of calcium is lost at harvest. Malaysian research showed it was 4.9 kg/ha/year on a yield of one tonne of dry beans/ha. "This is why we recommend Omex CalMax (22.5% w/v calcium plus magnesium and a balanced range of micronutrients) as a standard, frequently-applied foliar spray to cocoa throughout Asia," said Prentis.

Managing nutrient deficiencies in cocoa

Specific nutrient deficiencies in cocoa are well documented, with shortfalls in zinc (Zn) and boron (B) being the most common. Zinc deficiency may be associated with low soil zinc, but just as often is caused by high pH and poor soil aeration, which combine to 'lock up' soil-based zinc, and reduce its uptake by the roots. I asked Odunlami and Prentis if Omex has anything specific for correcting zinc and boron deficiency in cocoa. "We do have a product that was originally designed for coffee but which may prove entirely appropriate for simultaneously correcting zinc and boron deficiencies, which frequently occur in cocoa," said Ben Odunlami. The product is called 'Zibo', a 'two in one' formulation based on boron and zinc, and initially designed for use on coffee in Africa. "Zibo is applied as a foliar spray to mature coffee trees, but may well prove equally useful for cocoa," said Peter Prentis.



Flowering in cocoa is an example of cauliflory whereby flowers, and subsequently the pods (fertilised flowers or fruits), are borne in cushions on the bark of the trunk and scaffold branches.

Image Credit: Dr Terry Mabbett

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Phosphite and Phytophthora

Phytophthora (pod rot and stem canker) is the single most damaging disease of cocoa worldwide, and as such, the single largest limiting factor on cocoa production. Furnishing fertiliser at optimum rates, and timing are important in maintaining general health, and resilience of cocoa to infection and disease development. But is there a more specific and targeted way to deal with Phytophthora, while staying within the boundaries of plant nutrition?

The answer is yes, by utilising the biostimulation properties of phosphite (PO_3^-), the salt of phosphorous acid (H_2PO_3). Phosphite is a reduced form of phosphate (PO_4^-) the salt of phosphoric acid (H_3PO_4). Phosphite ions have the ability to suppress diseases, not directly like a fungicide or a bactericide, but indirectly by eliciting an anti-pathogen response in the host plant, when applied as a foliar spray.

CocoBoost is a foliar-applied product containing N, P and K; chelated Mg and micronutrients such as Iron (Fe), Manganese (Mn), Zinc (Zn), Boron (B), Cobalt (Co) and Molybdenum (Mo).

Unique properties of phosphite make it well suited to this role, and especially in cocoa. Exceptionally high solubility of phosphite offers distinct advantages in the formulation of a soluble liquid product, for rapid entry into leaves and movement within the plant. Furthermore, phosphite is mobilised and transported in the xylem tissue (upwards into the leaf canopy) and also in the phloem tissue (downwards to the roots). Phosphate moves only in the xylem tissue.

Two-way transport of phosphite is especially important in cocoa, because the leaves form a distinct canopy at the top of the tree, while pods are attached to the trunk and main scaffold branches, mostly in the lower part of the tree. This pattern of pod distribution



Phytophthora pod rot is an ever present threat wherever cocoa is grown in West Africa.



Large oval cocoa leaves present an ideal template for interception and deposition of spray droplets.

arises from a 'condition' called cauliflory, where flowers are borne in 'flower cushions' on the bark of the trunk, and scaffold branches.

I asked Prentis and Odunlami whether Omex is 'exploiting' this dimension in cocoa crop nutrition. "We most certainly are, by using Omex DP98 based on potassium phosphite and used as a foliar spray," said Prentis.

Phosphite is transported downwards in phloem to suppress Phytophthora pod rot, and stem canker, as well as stimulating root growth and development," said Odunlami.

Phytophthoras are no longer regarded as true fungi but 'fungus-like pathogens', classified in the same group as algae and water moulds.

Peter explained how DP98 is used in an even more highly targeted way, by painting on Phytophthora stem canker lesions to provide an alternative route of entry for phosphite into the tree, while bolstering tree resilience to the disease. "CocoBoost contains phosphorous as phosphite, to offer West African cocoa farmers a dual crop nutrition and disease management dimension," said Dr Odunlami.

More cocoa is lost to Phytophthora in West Africa than anywhere else in the world and largely due to the prevailing climate and weather, with cocoa-growing areas of countries, such as Nigeria experiencing ferociously wet seasons, during which these Phytophthora pathogens thrive.

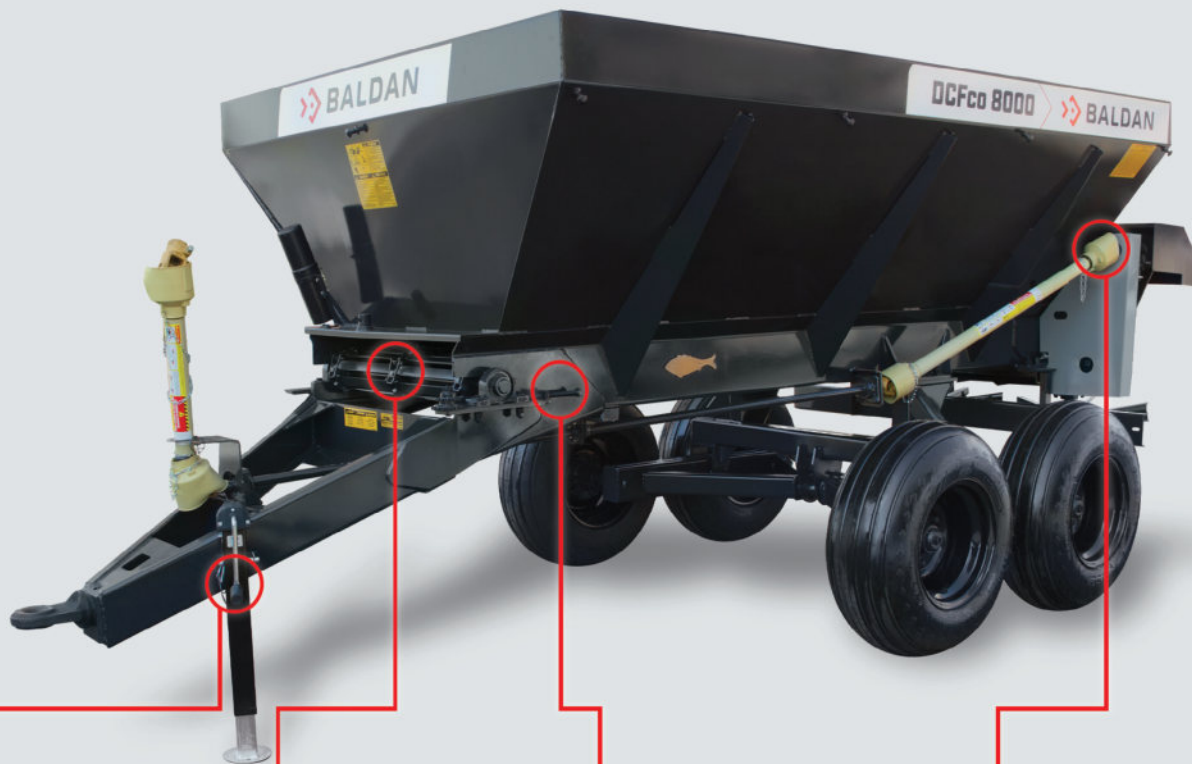
Early mycologists called Phytophthoras 'the water fungi', due to a total reliance on water for pod infection, disease development and spore production, liberation and dispersal; a reliance which extends to water in the liquid phase, as free water on the plant surface, and water in the vapour phase, expressed as relative humidity of the air. The Phytophthoras are no longer regarded as true fungi. They are now described as 'fungus-like pathogens' and are classified in the same group as algae and water moulds. **E**

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 **BALDAN**

This year, 32 Spanish companies will be present at the EIMA international exhibition.

AGRAGEX to showcase agricultural solutions at EIMA

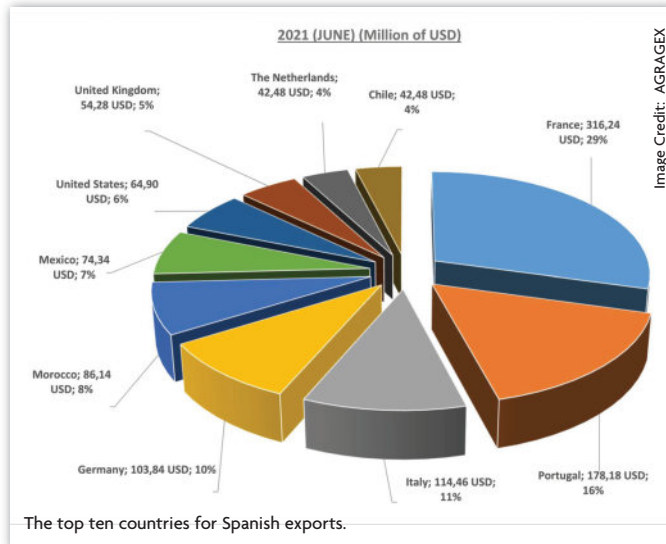
AGRAGEX, THE SPANISH Exporters' Association of the agricultural sector, is dedicated to promoting the products and equipment of Spanish agricultural manufacturers, throughout international markets.

AGRAGEX organises several promotional activities including direct trade delegations, group participation in major international trade shows, visits of foreign buyers' delegations to Spain and market studies.

AGRAGEX at EIMA 2021

This year, 32 Spanish companies will be showcasing their products at EIMA, to be held in Bologna, Italy from 19-23 October.

EIMA, the international agricultural machinery exhibition will welcome business operators from all over the world. AGRAGEX will also be present at the VIV MEA in Abu Dhabi



from 22-24 November, and at GROWTECH in Antalya, Turkey, from 24-27 November.

"COVID-19 has left us unable to travel for almost a year and a half. Under normal conditions this anomaly would have been a catastrophe for our companies, but the work of

promoting and disseminating Spanish agricultural and livestock machinery across the five continents, over the last 35 years, has enabled the spread of information across all countries. Importers of machinery, equipment and products for the agricultural

sector, have continued to buy our products during this period of pandemic," said Jaime Hernani, director of AGRAGEX.

"Spain continues to export agricultural machinery to the five continents on a recurring basis, and sales are going at a good pace, despite the price rises in raw materials and sea containers," he added. Hernani pointed out that Spain has continued to export agricultural machinery, worldwide, despite being unable to travel due to the pandemic.

AGRAGEX in Africa

Every year, AGRAGEX organises promotional activities and commercial trips to African countries. For the last quarter of this year, AGRAGEX is preparing a working trip to Kenya, Uganda and Rwanda to see first-hand, the possibilities of a market in these countries for their products.

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Tractor of the Year awards ceremony at EIMA International 2021

THE TRACTOR OF the Year awards ceremony is a new addition to this year's edition of EIMA International exhibition.

The 44th edition of EIMA International 2021, will host the Tractor of the Year awards ceremony, and feature a parade of the fourteen finalist models

The Bologna-based event focuses on new products and offers a wide-ranging showcase for Tractor of the Year competition, promoted by Trattori magazine, which selects the best models among those produced during the year, and awards prizes to the winners from different categories.

During the exhibition, the awards ceremony will be held for four models - Tractor of the Year, Best Utility, Best of Specialised and Sustainable TOTY - that have been selected on the basis of votes cast by an international jury of 26 journalists from trade publications.

The Tractor of the Year event will be a major attraction throughout the five days of the event, and is expected to be one of the most interesting new features of this year's EIMA International exhibition.

The open-air arena within the exhibition complex, between halls 37 and 35, has been chosen to display the finalist tractors. The audience can expect to see the fourteen models that competed for the "Tractor of the Year" on display, while a speaker will introduce the technical features of each of the models.

TOTY is an important promotional and marketing platform for the manufacturers of the tractor sector, which is able to develop substantial technological innovations every year, improve vehicle performance, and capture new user segments.

agrofood and plastprintpack Nigeria coming up

THE SIXTH EDITION of agrofood and plastprintpack Nigeria will be held in October 2021.

Organised by the German trade show specialists, Fairtrade, the sixth edition of agrofood Nigeria and plastprintpack Nigeria is scheduled to take place from 26 to 28 October this year, at the Landmark Centre in Lagos - Victoria Island Annex.

Exhibitors from 14 countries, including Belgium, Germany, India, Italy, Lebanon, Nigeria, Portugal, Saudi Arabia, South Korea, Spain, Switzerland, Tunisia, Turkey, and USA, have registered to attend the event.

Global technology leaders will showcase adapted technologies and solutions for the Nigerian and West African market, which is expecting to see more than two thousand specialised trade visitors from different industries, such as agriculture, food processing, ingredients, plastics, printing and packaging.

The exhibition will be complemented by a three-day conference, featuring more than 40 Nigerian and European experts.

Some of the official country pavilions which will be present at the exhibition are—Belgium, organised by Flanders Investment and Trade, supporting the international activities of Flemish companies; Germany – The German Pavilion features 19 leading suppliers, presented by the German Federal Ministry for Economic Affairs, in cooperation with the Association of the German Trade Fair Industry (AUMA), and supported by VDMA Food Processing and Packaging Machinery. Taste Tunisia, the agrifood consortium for Africa offering finished agrofood products and related equipment from Tunisian market leaders will also be present there.

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Case IH's Axial-Flow single-rotor technology has become the benchmark for harvesting quality and performance, since 1977, when it was first launched in the USA.

Morocco farmers participate in Axial-Flow 4088 demonstration

AROUND 75 farmers have taken part in a demonstration of the new Axial-Flow 4088 in Morocco, as part of the product's official launch.

Case IH's Axial-Flow single-rotor technology has become the benchmark for harvesting quality and performance, since 1977, when the first Axial-Flow combines were launched in the USA.

The Axial-Flow includes some characteristic benefits, such as compact dimensions, operator comfort and advanced features, combined with high harvesting capacity, thorough crop threshing, low grain losses, gentle grain handling and exceptional sample quality.

Designed in the USA, and built in Case IH's state-of-the-art manufacturing facility in Harbin, China, the Class 4 Axial-Flow 4088 combine harvesters incorporate a high level of American-made components for maximum reliability.

According to Case IH business manager for West Africa Region, Hassib Thabet, farmers in Morocco are contending with larger fields and longer work days, and require powerful machinery to get through their harvests efficiently.

"Moroccan farmers need a reliable, fast, and productive machine to get every grain in the tank as fast as possible," Thabet said. "In this respect, the Axial-Flow 4088 is way ahead of any other combine present in Morocco today," he added.

"The Axial-Flow 4088 provides the highest productivity of any combine in its

The Axial-Flow includes some characteristic benefits, such as compact dimensions, operator comfort and advanced features, combined with high harvesting capacity, thorough crop threshing, low grain losses, gentle grain handling and exceptional sample quality.



The simple design of the Axial-Flow 4088 can adapt to different harvesting requirements, field conditions and crops.

Image Credit: CNH

class, and at the same time reduces the time and expense of maintenance."

With its rotary threshing system, maintenance on the Axial-Flow is quick and easy. Daily maintenance can be conducted in considerably less time than it would take for a conventional harvester, so the Axial-Flow 4088 would be ready to go in the field earlier each day.

"The simple design of the Axial-Flow 4088 allows it to be quickly adapted to different harvesting requirements, field conditions and crops, making them the perfect choice for contractors and farmers with multiple crops," Thabet said.

"Owners can move from corn, to wheat, to sorghum in hours, compared with almost two days for conventional or hybrid combines, so more time is spent harvesting and seasonal output is increased."

"Axial-Flow 4088 combines are very easy to use, so even operators who are new to the Axial-Flow concept can quickly learn how to harness their full potential," Thabet said.

"Customers who got to test drive the Axial-Flow 4088 at our demonstration day were impressed by the simplicity and speed

of work, and most importantly were thrilled with the quality of the grain in the tank," he added.

The demonstration was conducted in demanding conditions, with the wheat crop yielding between nine to 10 tonnes per hectare. The Axial-Flow 4088 was able to make the most of this high-yielding crop with a fast, efficient harvest which protected grain quality. This demonstrates the swift return on investment farmers can achieve with Case IH's latest combine harvester offering in Morocco.

The SB531 small square baler, which produces 36cm x 46cm bales, was also part of the demonstration day.

The Case IH SB531 small square baler has a reputation for reliability, standing up to season after season of heavy-duty baling. The gear-driven twine tying system provides consistent, dependable tying with minimal maintenance.

"The SB531 performs exceptionally in wheat straw, as well as being superb in corn stalk and other crops," Thabet concluded. "Our knotters are well-proven, so you can be confident you won't have any snaps or twine failures." **E**

President Akufo-Addo commissions US\$16mn tomato processing factory in Ghana

THE PRESIDENT OF the Republic of Ghana, Nana Addo Dankwa Akufo-Addo, has commissioned the Weddi Africa Tomato Processing Factory, under the 1-District-1-Factory initiative, at Domfete, in the Berekum West District of the Bono Region.

The government has facilitated a loan of US\$16mn, through Ghana Exim Bank and ADB Bank Ghana, to support the establishment and operations of the factory, owned by Weddi Africa Limited, a Ghanaian company.

The factory will process some 40,000 mt of fresh tomatoes per annum, and will have a 500 metric tonne cold room facility, to store fresh tomatoes. In addition, the facility will have a model farm and research centre, designed to conduct seed trials and train farmers on best farm practices, along with an agricultural-input shop, to supply inputs to the farmers at affordable prices.

According to President Akufo-Addo, the establishment of the factory is an example of how the private sector can help in Ghana's industrial transformation. He further added that the setting up of this manufacturing facility, outside the traditional areas of Accra, Tema and Takoradi, underscores the commitment of the government towards decentralising industrial development, and stimulating economic activity in the rural areas. He explained that Domfete was chosen for establishing the factory because the town is a major catchment area for the cultivation of fresh tomatoes, and will help in reducing rural-urban migration.

This will boost the profitability of the factory and improve income levels for the farmers engaged by the company.

In addition, a 2,400-acre farmland as nucleus farm has been set up by Weddi Africa. The company is also spearheading the establishment of a Tomato Outgrower Farmers Association in Tano North, and Berekum West districts, with 2,000 registered farmers from Ahafo and Bono regions.

Hemp processing machine to reduce CO₂ levels

A STARTUP BUSINESS, eHempHouse, has filed two patents for a hemp processing machine that produces energy without using electricity or releasing CO₂.

The SmartBox is powered by hemp oil, and eHempHouse plans to give the box free of cost, to farmers



Image Credit: eHempHouse

eHempHouse aims to incentivise the growing of hemp.

in Africa, to incentivise the growing of hemp, that will help reduce CO₂ levels in the environment. The company aims to sell the carbon offsetting benefits to companies with high carbon footprint.

eHempHouse is the brainchild of Andy Neal, an engineer based in New York, Steven Putter, an agricultural specialist based in Zambia and Peter Miles, the CEO, who runs the business in London.

Peter explained, "Growing hemp removes 66 tonnes of CO₂ per hectare per annum. Yet for too long, we have ignored hemp's environmental benefits (and multiple uses), and instead demonised the crop. We are giving African farmers the means and technology to grow, and process the crop in a profitable way."

eHempHouse founders will be showcasing their ideas at the 26th UN Climate Change Conference of the Parties (COP26), to be held in Glasgow, from 31 October – 12 November.

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AGI EMEA's new facilities in Italy will serve customers across Europe, Middle East and Africa, with innovative equipment and enhanced storage solutions.

AGI EMEA's new facilities provide enhanced storage solutions

CUSTOMER EXPERIENCE (CX) is an enterprise-wide priority at AGI. This is demonstrated by AGI EMEA, which has introduced three new state-of-the-art manufacturing facilities to serve customers across Europe, Middle East and Africa.

These new facilities are located in the Bologna region of Italy, where AGI EMEA is headquartered. They will help the company increase manufacturing capabilities, produce high quality equipment and provide exceptional customer service.

AGI EMEA's objective is to provide the best possible customer experience faster, and with lower costs and efficient engineering support.

The new facility in Este is equipped with laser cutting and press break machines, an automatic lathe cell and a milling machine station.

To achieve this goal, they invested in building new state-of-the-art facilities capable of serving their expanding global demand better, with shorter turn around time. These facilities include new product lines and increased manufacturing and engineering capabilities in grain storage and handling solutions.

The facility in Fiesso D'Artico was specifically designed to enhance the capabilities of AGI FRAME, one of the most respected



AGI EMEA has launched three new manufacturing facilities in the Bologna region, Italy.

Image Credit: AGI

engineering companies in Europe. AGI FRAME manufactures high quality storage silos and ancillary equipment, including round hoppers, sweep and discharge augers, cleaning, drying and other equipment associated with both commercial and cereal storage systems. With the Fiesso D'Artico facility, AGI FRAME now includes three new lines for roof, stiffeners and wall sheet capabilities, in addition to commissioning innovative robotic welding cells, that will automate welding activities.

In this new facility, AGI FRAME provides cost-effective, high quality, technically advanced, environment-friendly solutions, that meet customers' individual storage requirements in the fastest timeframe.

The AGI facility in Este is the centre of the well-known brand AGI PTM, a top-tier manufacturer of handling equipment for

grain storage and processing.

The AGI PTM product range includes bucket elevators, chain conveyors and belt conveyors.

The handling capacity ranges from 20 to 2000 t/h. AGI PTM delivers solutions across a range of applications and industries including storage and mechanisation of port installations, to serving industry grain traders, millers, feed-mills, pelletisers, bio-fuel processing plants, engineering companies and contractors around the world.

The new facility in Este has benefited from not only new laser cutting and press break machines, but also an automatic lathe cell and milling machine station that will manage the majority of the components for mechanical handling. This innovation aims to provide competitive cost and delivery time solutions to clients.

The facility in Ozzano has been doubled in size to provide additional space for engineering and project management departments, to keep up with AGI EMEA's growth. As a company that prioritises innovation and provides industry leading customer experience, AGI EMEA is truly excited for the future.

"We are thrilled by our potential to continue moving the dial forward on effective grain storage and handling solutions. Our new facilities play a significant role in raising the bar on what the agriculture technology industry can offer," said a company representative. 



The new facilities include new product lines and increased manufacturing and engineering capabilities in grain storage and handling solutions.

Image Credit: AGI

LEMKEN has optimised its front hopper and coultter bar system for its seeding machines.

Efficient seeding with new innovations

LEMKEN, A COMPANY that specialises in arable farming, has optimised its front hopper and coultter bar system, adding greater versatility to its range of seeding machines.

The latest addition of the ISOBUS technology to the Solitaire 23+ front hopper and OptiDisc 25 coultter bar ensures precise, convenient adjustment and optimal utilisation of the machine fleet.

The new technology allows adjustments to be made to the seeding rate or width section control, via the MegaDrill control on the tractor terminal. It takes strain off the operator, and ensures efficient use of consumables and seeding, without overlap of up to four width sections.

Combined with the rotary harrow Zirkon 12 and the OptiDisc 25 coultter bar, the Solitaire 23+ front hopper forms a compact, agile drilling combination. This enables a better distribution of weight, compared to rear-mounted systems, allowing smaller tractors to be used for efficient drilling technology.

The front hopper is suitable for both seeds and fertiliser, and is therefore, ideal for sowing maize in combination with the Azurit precision seed drill.

In addition to the 4 metres and 4.5 metres folding versions, the OptiDisc 25 coultter bar will be available in three metres and four metres rigid, and five metres and six metres foldable versions. These new




Image Credit: LEMKEN

Combined with the rotary harrow Zirkon 12 and the OptiDisc 25 coultter bar, the Solitaire 23+ front hopper forms a compact, agile drilling combination.

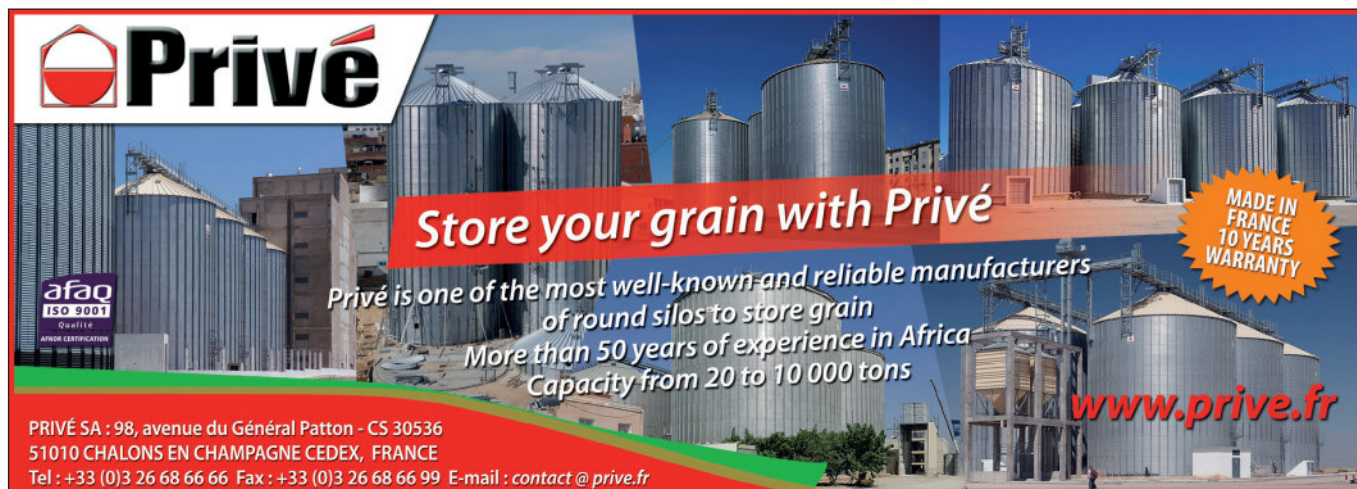
folding variants feature an additional transport system for road use.


The transport support wheels take the load of up to 3.5 tonnes off the tractor's

rear axle, ensuring that the tractor's maximum permissible axle load, and gross weight, are balanced. The additional transport system locks and unlocks easily.

The parallelogram-controlled double disc coultters form the core of the OptiDisc 25 coultter bar and depth control rollers ensure seeds are placed precisely at the pre-set depth, with both mulch and conventional tillage. Also, coultter pressure can be mechanically or hydraulically adjusted independently of the seed depth. The Solitaire 23+ front hopper is available now and the new OptiDisc 25 coultter bars will be available from January 2022. 

The latest addition of the ISOBUS technology to the Solitaire 23+ front hopper and OptiDisc 25 counter bar ensures precise, convenient adjustment and optimal utilisation of the machine fleet.





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CLAAS has launched new combine harvesters in the TRION model series. The renewed range can cater to customer requirements from Europe, North America and South Africa.

CLAAS launches TRION model series of medium combine harvesters

WITH THE LAUNCH of 20 new combine harvesters in the TRION model series, CLAAS is taking another step in its harvesting machinery model initiative.

The state-of-the-art TRION model series comprises 5 and 6-walker machines and hybrid combine harvesters with single or twin rotors, as well as TERRA TRAC and MONTANA versions. The TRION is suited to every market – whether in Europe, North America or South Africa – and is aimed at customer segments ranging from family farms to large farms and high-tech contractors. Four attributes allow the TRION to meet a wide range of customer requirements from all over the world.

Adaptability

The new TRION is adaptable to the requirements of the individual farm and the particular crop during the harvest – with fast, easy and tool-free crop type changes, and a large number of cutterbar types



The TRION is suited to every market – whether in Europe, North America or South Africa.

Image Credit: CLAAS Group

with widths up to 12 m or 12 rows.

Performance

The proven APS threshing technology with JETSTREAM cleaning, a large grain tank and high offloading rates contribute to its impressive capability. A straightforward, efficient and low-maintenance drive train combined with intelligent engine technology featuring DYNAMIC POWER keeps fuel consumption to a minimum.

Precision

The use of the latest technologies and assistance systems, such as CEMOS AUTOMATIC for automated harvesting, helps to deliver optimised performance and a high level of operator comfort and convenience, regardless of the size of the farm.

Reliability

The TRION has been assured by a worldwide testing programme. Straightforward and time-saving customer maintenance tasks combined with a reliable drive train, longer maintenance intervals and excellent drive status monitoring save time and make costs more predictable.

Two separation concepts, three model series

With the unprecedented variety of machines that make up the three new TRION model series, CLAAS is able to occupy the spectrum from the 258 hp five-walker all the way up to the 435 hp hybrid combine harvester with twin rotors. The 20 new models feature many state-of-the-art assistance systems and provide a high level of driving comfort as well as user-friendliness.

Meeting the highest performance standards

Primary separation in all TRION models is performed by the APS threshing unit with an accelerator drum (450mm diameter) and a large threshing drum (600mm diameter) which provides a consistent, high crop flow and allows sustained operation throughout long working days. **E**

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AGRICULTURAL MECHANISATION & IRRIGATION

The adoption of drones is bringing transformation in African agriculture and revolutionising agricultural activities, saving time and money, while boosting yields and productivity. Vinita Tiwari reports.

Future forward: driving agricultural innovation

DRONES ARE NOW extensively used in agriculture, for crop spraying, data mapping, detecting diseases among plants and keeping pests away. In the last decade, companies and start ups in African countries have joined the cause. e-AgriSky is a Lomé-based vocational school for training farmers, set up by Edeh Dona Etchri, an entrepreneur who leads CLIN SARLU. Others, such as DJI and XAG, have commercialised the use of drones and made them accessible in Africa.

With each passing year, industry leaders are bringing in innovations and enhanced features.

DJI

The DJI AGRAS T30 comes with 16 nozzles, a 30 litre spray tank, and a payload capacity of 40 kg. The branch-targeting technology, with adjustable arms allows the gadget to navigate thick canopies, and the oblique spraying allows more leaf coverage area. The Smart Agriculture Cloud Platform and cloud-based mapping helps



Image credit: XAG

XAG has more than 66,000 unmanned spraying systems in operation.

users manage a 3D orchard, which serves as an introduction to digital agriculture.

Agras T30 has a spray range of nine metres, and covers 40 acres in an hour. The Agras T10 on the other hand, is a compact yet powerful solution. Both Agras T30 and T10 have been built with a focus on flight safety, and their spherical radar systems scan surrounding areas at all times, when in motion. The Smart Agriculture Cloud Platform's AI recognition system allows users to identify diseases or pests, as well as agricultural conditions.

XAG

XAG has more than 66,000 unmanned spraying systems in operation, and has covered more than 52 million ha, which makes it the largest agricultural drone company in the world.

XAG will be releasing two new generation drone models toward the end of 2021, which include the new 40L payload P80, and the innovative V40 which runs on only two sets of propellers. The reduced number of propellers improves swath spread and efficiency, while reducing maintenance.

"We have sold quite a few drones in Africa over this year, about 16 now and also the R150 buggy, a very exciting new product from XAG," said Ross Walters, director at Specialised Agricultural Services, South Africa. "I expect to see a rapid rise in the use of this technology in Africa, especially where there are no alternative options such as planes and helicopters for aerial application of agricultural chemicals. The XAG drones are also very cost effective in comparison to traditional aerial application methods."

FIXAR

FIXAR's unmanned aerial vehicle FIXAR 007, with swappable payloads allows users to carry out diverse precision agriculture missions. The drone can be equipped with a photo or video camera for aerial photography or video monitoring of livestock, with a multispectral sensor for vegetation monitoring, and identification of plant diseases. It can take off and land vertically, with an accuracy field of one metre.

Despite positive technology developments, the restrictions imposed in some African countries are restricting the widespread adoption of agricultural drones across the continent. **E**

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Sanjay Borkar, CEO and co-founder of FarmERP, speaks about the importance of agritech in achieving Zero Hunger, UN's Sustainable Development Goal 2.

Zero hunger and agritech: how are they related?

MODERN PROBLEMS REQUIRE modern solutions. However, is the problem of hunger really modern?

Global hunger has always been a problem. Though the Sustainable Development Goal to make the world hunger-free was adopted in 2015, as per a 2019 article, the situation has not changed. According to a UN report in 2019, one in nine people on the planet face a problem in regular access to a basic meal.

This is exactly when a local issue becomes an international fiasco: when the numbers are posed by international organisations on a global forum. That is solely shining a light on the problem. The solution is, in fact, provided by the concepts that the pioneers of the industry swore by.

Agritech offers solutions

When it comes to the field of agritech, the industry itself has faced exponential growth. The Journal of Development and Agricultural Economics states that there is more than enough evidence to claim technology is the best alternative to increase productivity in the agricultural sector. It is agritech that allows the enhancement of production and productivity, lowering operating costs, facilitates access to markets, information, credit, and capacity-building. By doing so, it serves as an effective solution to the problem of global hunger.

Using technologies such as artificial intelligence, machine learning, computer vision, blockchain and deep learning enhances the daily agronomic processes of farmers and agribusinesses alike, and can bring a sense of streamlining throughout the entire agricultural value chain.

One important point to note while examining hunger as a problem, is to understand its complexity. It is not a simple



demand-supply equation at hand. The food security issue is the falling bridge between the two variables of this equation.

Though we do not produce enough to meet the demands of all the people on the planet, there is another reason for the way this issue has escalated. That reason is the inefficiency of the storage and distribution sector.

Even if large quantities of food are produced at the farms, all of it does not reach the market for sale. This is where agricultural technology (agritech) offers solutions.


Geographical Information Systems (GIS) enable farmers to maximise their produce. Post this, several systems aid proper storage conditions, the transmission of produce and help in accounting, for the market sales. However, the most imperative aspect of these operations is that the systems display this entire process on one screen, thereby preventing errors and minimising loss of produce.

Digital solutions

Agritech companies backed by AI, which supported climate-resistant farming, are now leaning towards digital mandis. This new 'e-mandi' systems relieve pressure on farmers by eliminating travel costs for transporting the produce to the markets and auctions. They also reduce food wastage substantially, and are a positive step towards the zero hunger initiative.

Digital mandis propose a comparatively simpler, warehouse-based trading module, which puts the power back in the farmer's hands. A local producer can upload inventory to a digital portal, which can be accessed by interested buyers all over the country.

It is a step forward in digitising the agricultural sector, and is inextricably linked to technology for the growth and betterment of the sector, in the face of climate change and Zero Hunger. Therefore, besides being the future, agritech is the solution and bridge to a world that can achieve Zero Hunger.

FarmERP is an intelligent and next-generation farm management platform, leveraging the power of advanced technologies to help businesses form elements of strategies around farm, farmer, procurement, processing, supply chain, financial data management, and analysis. It serves agribusinesses in more than 25 countries since 2001. 

Agritech companies backed by AI, which supported climate-resistant farming, are now leaning towards digital mandis. These new 'e-mandi' systems relieve pressure on farmers by eliminating travel costs for transporting the produce to the markets and auctions.

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Bühler's DA MultiVision optical sorter boosts annual savings for coffee co-op in Tanzania

Tanzania-based coffee exporter Kijani Hai Tanzania Limited has been able to increase its annual savings by 20%, after installing Bühler's DA MultiVision optical sorter in its new export line in 2019. The move has resulted in less physical loss of coffee and increased savings.

The Bühler DA MultiVision optical sorter features a high-resolution RGB colour camera, which enables Kijani Hai to detect up to five colour defects in one sorting pass, minimising the need for product re-sorting.

Kijani Hai procures, processes and exports green Arabica coffee from the Ilela Coffee Plateau, located approximately 50 km

from the Mbinga region, to different countries. It exported more than 2,800 tonnes of coffee in 2020, and expecting to achieve the export target of 5,000 MT within the next two seasons.

"In the past my team and I have operated both the SORTEX A and B and they work well withstanding the tests of volume and time, so Bühler was already on my radar," said Alexander Wied, coffee trader at the CTCS Group.

Kijani Hai holds an Organic and Rainforest Alliance certification (RFA) and implements sustainable agricultural practices to reduce the impact of deforestation.



Image Credit: Bühler Group

The Bühler DA MultiVision optical sorter features a high-resolution RGB colour camera, which can detect up to five colour defects in one sorting pass.

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