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Abu Dhabi National Exhibition Centre

Abu Dhabi Agriculture & Food Security Week
أسبوع أبو ظبي للزراعة والأمن الغذائي

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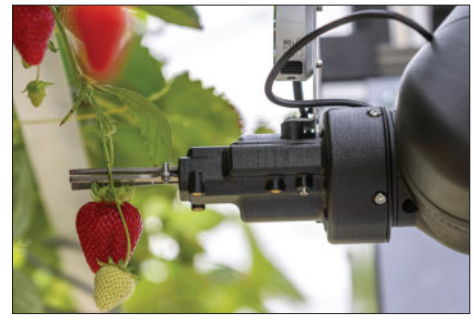
Image credit: Adobe Stock

The KC3 breed which is brown in colour, is cheap to maintain and possesses the ability to lay more eggs while consuming less feed.



The robot's arm uses cloud computing and AI to locate strawberries, determine their degree of ripeness and place the ripe fruit safely in a basket.

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Farming Calendar 2023

SEPTEMBER

22-23	**Naivasha Horticultural Fair** https://www.naivashahortifair.com/	NAIVASHA

OCTOBER

04-05	**Africa Agri Forum 2023** https://www.africaagriforum.org/	KINSHASA
26-28	**Ethio Poultry Expo (Ethiopex)** https://ethiopoultryexpo.com/	ADDIS ABABA
26-28	**African Livestock Exhibition and Congress (ALEC)** https://africanlivestock.net/	ADDIS ABABA

NOVEMBER

12-18	**AGRITECHNICA** *https://www.agritechnica.com/en/*	Hanover
20-22	**VIV MEA** *https://www.vivmea.nl/*	ABU DHABI
21-23	**agrofood Ghana** https://www.agrofood-ghana.com/	ACCRA

DECEMBER

12-14	**Food Africa** *https://foodafrica-expo.com/*	CAIRO

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

Ethiopex 23 to reflect ground-breaking innovations in animal science

ESTABLISHED AS THE must-attend annual poultry event in Ethiopia, Ethiopex is gearing up to welcome participants and visitors at the Millennium hall from 26 – 28 October.

The event is considered to be one of the largest gathering of animal science and trade professionals in the East Africa region. Some of the multiple areas of display at the exhibition include:

- Feedstuff preparation, conveyors and accessories
- Milling, mixing and metering systems
- Feed silos, feed containers and feed storage
- Compound feed and other commercial feedstuffs
- Feed and silage additives
- Cleaning and disinfecting products
- Water treatment additives
- Bedding and litter materials
- Insecticides, pesticides and manure additives
- Heating, aeration and controlled environment technology

The event provides exhibitors a fast and cost-effective platform to meet buyers and expand their brand into one of the fastest growing economies in the world. This year, Ethiopex is expected to welcome more than 100 exhibiting companies and 4,000 attendees from more than 20 countries.

"Ethiopia is a big market for us and we find it important to feed the population and to empower the Ethiopian population. It is part of our strategy to develop in Ethiopia and east Africa since the market is very demanding for chicken and we as a company in Kenya have to respond to the market in Ethiopia. I was satisfied with the amount of people and the questions they raise," said Jhon dantier, operations coordinator, Hubbard S.A.S, one of the exhibitors last year.

ALEC 23 to unite exhibitors from East Africa's diverse livestock industry

ALEC IS ONE of the prominent gathering of animal science and trade professionals in the East Africa region. The 2023 edition is all set to unite the regional livestock industry at the Millennium Hall, Addis Ababa, Ethiopia from 26-28 October.

ALEC has proved to be a valuable platform to bridge the various gaps in the livestock value chain by attracting exhibitors to do business and sharing their knowledge with sector stakeholders besides attracting investment, transferring technology, and serving as a professional development forum in one place a time. The platform is the primary event for the livestock sector development in the East Africa sub-region and mainly Africa's most considerable livestock-populated country of Ethiopia.

ALEC serves as a dynamic platform for exhibitors, covering a vast area of the animal and livestock industry. Some of the popular sections at the exhibition are:

- Animal breeding and reproduction technology
- Animal care and animal health products
- Animal housing and shed construction
- Environment technology equipment and accessories for livestock

Image Credit: ALEC

The prominent event offers huge networking opportunities to visitors.

- Feed production and storage feed, and farm inputs
- Husbandry and feeding technology management and consulting services

For professionals working in the livestock sector, the eighth edition of ALEC is a major event which offers a huge networking opportunity to all visitors as a unique platform into the latest information on instrumentation, applications and techniques used in the livestock industry. Besides attracting investment, transfer technology and serving as a professional development forum in one place a time, the event has proved to be a valuable platform to bridge the various gaps in the livestock value chain by attracting numerous first-class exhibitors to do business and share their knowledge with sector stakeholders.

VIV MEA: Your gateway to innovation in agriculture

STEP INTO THE world of agricultural innovation with VIV MEA, the premier event for staying ahead of new technologies and market trends. Hosted in the vibrant city of Abu Dhabi, the fourth edition of VIV MEA welcomes visitors and exhibitors from around the globe. Mark your calendars: this international trade show, dedicated to the entire chain from animal feed to food, covering poultry meat, eggs, fish, and dairy, is set to take place from 20-22 November 2023.

VIV MEA brings together the livestock community featuring more than 500 suppliers worldwide.

Image Credit:: VIV MEA

Unite and innovate with VIV MEA

VIV MEA brings together the livestock community, featuring more than 500 suppliers from across the world. This assembly covers the entire supply chain of animal production, showcasing a strong focus on business, innovation, technology, and scientific research. Since its inception in 2016, VIV MEA has taken its place as the leading trade show for the animal husbandry industry across the Middle East and Africa.

Introducing HORTI AGRI NEXT MEA 2023

Complementing VIV MEA 2023, a new innovative concept enriches the event's offerings. HORTI AGRI NEXT (HAN) MEA 2023, a co-located show, emerges as a platform for the horticultural and agricultural production and processing industry. Aiming to be an international hub for agri-business professionals in the region, HAN MEA's debut edition promises a lineup of exhibitors, brand names, and a plethora of new products, innovations, and technologies.

Empowering sustainable agriculture: Abu Dhabi Agriculture & Food Security Week

Initiated by the Abu Dhabi Agriculture & Food Safety Authority (ADAFSA) in 2021, the Abu Dhabi Agriculture & Food Security Week (ADAFSW) has evolved into a significant regional event. This convergence brings together farmers, growers, food producers, policymakers, scientists, and investors with a shared vision of advancing sustainable agriculture and food security. Building on the success of its first edition, ADAFSA partners with VNU Europe, the organiser of the VIV worldwide series of events, including VIV MEA, to elevate the Abu Dhabi Agriculture & Food Security Week.

Uniting global perspectives at VIV MEA

VIV MEA and HORTI & AGRI NEXT MEA together span the entire AgriFood supply chain, both horizontally and vertically. Renate Wiendels, senior project manager at VIV worldwide, emphasises the event's commitment to bringing together international delegations and industry leaders to discuss a wide array of agri-food topics. An anticipated 8,000 visitors from around the world, including the GCC region, are expected to participate.

Join the conversation in Abu Dhabi

VNU Europe extends a warm invitation to all professionals in the agricultural and horticultural sectors to join the event from 20-22 November in Abu Dhabi. Explore business networking opportunities, gain knowledge, and engage in discussions that shape the future and set new standards in agri-food production.

For more information and registration, visit: www.vivmea.nl

Photovoltaic irrigation: A turning point for sub-Saharan Africa's small-scale farms

A NEW STUDY published in 'Environmental Research Letters', reveals that solar powered irrigation systems have the potential to meet more than a third of the water needs for crops across small scale farms in sub-Saharan Africa.

As part of the research project Renewables for African Agriculture (RE4AFAGRI) in a new study led by the International Institute for Applied Systems Analysis (IIASA), an international research team developed an open-source modelling framework that used various datasets pertaining to agriculture, water, energy, expenses, and infrastructure. The purpose of this framework was to calculate local irrigation needs, determine the necessary size and cost of technology components like water pumps, solar PV modules, batteries, and irrigation systems, and assess the economic prospects and sustainable development impacts of adopting solar pumps.

Giacomo Falchetta, lead author of the study and a researcher in the Integrated Assessment and Climate Change Research Group of the IIASA Energy, Climate, and Environment Programme explained that an average discounted investment of US$3bn would be required annually, increasing yields of smallholder farmers and resulting in annual profits amounting to more than US$5bn. Additional co-benefits would include significant food security and energy access. “Reducing the irrigation gap with cost-effective solar pumps can boost food production and improve nutrition, contributing to SDG 2 (Zero Hunger). Furthermore, surplus electricity generated by these systems could serve other energy needs, aligning with SDG 7 (Affordable and Clean Energy),” said Falchetta.

IIASA Transformative Institutional and Social Solutions Research Group leader, Shonali Pachauri also pointed out one of the important highlights of the study, emphasising the importance of strong land and water resource management infrastructure and

Solar powered water pumping system.

Image Credit: Adobe Stock

governance, without which a widespread deployment of solar pumps may drive an unsustainable exploitation of water sources and reduce environmental flows. "Consequently, both investing in infrastructure, such as reservoirs for water management during seasonal variations, and enhancing water resource governance, are critical factors for ensuring the sustainability of widespread solar pump deployment,” noted Pachauri.

Overall, the analysis along with the novel open-source modelling framework can support public and private actors working along the water-energy-food-economy nexus in identifying economically feasible areas and quantifying the potential net economic benefit of developing solar irrigation, all of which can help foster investment in the sector.

For more information, visit: https://iiasa.ac.at/

Technical Cooperation Programme launched to combat FMD and TBD-induced cattle diseases

THE FOOD AND Agriculture Organisation of the United Nations (FAO) along with Mozambique and Zimbabwe, launched a US$500,000 Technical Cooperation Programme (TCP) to combat the spread of Foot-and-Mouth (FMD) serotype O and theileriosis, thereby improving food and nutrition security and market access.

Animal disease outbreaks like FMD often affect beef and related product exports, thereby negatively impacting the economy. FMD has been reported in Mozambique and Zambia, although no cases have been confirmed in Zimbabwe and until recently, South Africa. Moreover,

Image Credit: Adobe Stock

An emergency support has been launched to mitigate risks and to improve food security, nutrition and access to market of livestock farmers.

since Zimbabwe shares borders with both countries, chances of spread are very high. On the other hand, major tick-borne diseases (TBDs) namely theileriosis, babesiosis, ehrlichiosis and anaplasmosis have been affecting cattle in South Africa and Zimbabwe, with more than 60% of TBD-induced ruminant deaths since 2017 being attributed to theileriosis, a fatal protozoal infection of cattle.

“The rise in cattle fatalities in Zimbabwe due to theileriosis, and the imminent threat of spread of FMD serotype O in the region, jointly necessitated the development of this ‘Emergency support to mitigate theileriosis disease in Zimbabwe and the risk of FMD serotype O in Southern Africa’ project (TCP/SFS/3908),” said Patrice Talla, FAO subregional coordinator for South Africa and FAO representative to Zimbabwe, Lesotho and Eswatini.

In 2018, FMD serotype O which was the considered exotic to South Africa, was also reported in Zambia, later spreading to Nambia, Malawi and Mozambique. Building on Nambia's success in repelling the serotype O incursion, the TCP will intensify surveillance efforts and build capacity through training of key personnel and farmers to reduce the risk posed by FMD serotype O not only in Mozambique and Zimbabwe but the rest of the region. Also, the TCP complements country level efforts that are currently in place and is therefore not considered a stand-alone intervention by the FAO.

“In recent years, FAO has supported countries in the region to respond to several livestock-related emergencies occasioned by animal disease outbreaks and natural disasters. Technical assistance in the control of transboundary animal diseases (TADs), particularly efforts in mitigating the spread of the new serotype O of FMD virus has already been offered in Malawi, Comoros and Zambia,” added Talla.

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Agritechnica to attract industry's finest

RUNNING FROM 12-18 November in Hanover, Germany, Agritechnica will represent a central venue and major highlight for the global agricultural machinery industry.

As one of the world's leading trade fairs for the sector, an expected 2,600 exhibitors from more than 50 countries are preparing to display their wares and, according to organiser DLG, all major companies are operating in the international agricultural machinery have already signed up. These exhibitors will be spread across 23 halls and 400,000 sq m of exhibition space.

Timo Zipf, Agritechnica project manager, remarked, "The exhibitors from more than 50 countries include all market leaders. With the international dealer centre, the B2B marketplace 'Systems & Components' and the start-up area 'agrifood start-ups', Agritechnica 2023 will offer a complete overview of farm equipment and related topics, working as a much sought after business platform with international networking, especially after the hiatus due to the pandemic."

In addition to inspecting the banquet of machinery on display, visitors will also have the unique opportunity to learn from the technical programme under the main theme 'Green productivity – inspiration and solutions'. Across the various formats ranging from spotlights to forums, industry experts will get to the heart of the current challenge for socially acceptable agriculture and examine how to increase productivity using fewer resources at lower intensity while still ensuring food security.

Elsewhere at the show, DLG will recognise the importance of agricultural machinery in shaping sustainable agriculture with three different awards. The 'Innovation Award' will honour solutions ready for the agricultural machinery market; 'DLG Agrifuture Concepts' will focus on the pioneering ideas that will empower the industry to new heights; and the 'Systems & Components Trophy – Engineers' Choice' award scheme will highlight innovative technical systems and components for agricultural machinery.

Image Credit: DLG

More than 2,600 exhibitors from 50+ countries are expected to be in attendance.

Other notable highlights include live workshops throughout the conference; support for young professionals in the form of the campus & career platform, young farmers day and the Young DLG network; International Farmers Day focusing on France and Poland; agrifood start-ups; the DLG.Prototype.Club; the 'Systems & Components' technical forum; the 'Inhouse Farming – Feed & Food Show'; the 'AgEng-LAND.TECHNIK 2023' platform; and more.

All of these will be available in Hanover for visitors to experience alongside the wide variety of networking opportunities to help the community shape agriculture together.

Find out more at: https://www.agritechnica.com/en/

Leading the fight against foot-and-mouth disease

THE FOOD AND Agriculture Organisation of the United Nations (FAO) have launched a US$500,000 Technical Cooperation Programme (TCP) to improve food and nutrition security and access to markets for livestock and their products in southern Africa.

The initiative, which was launched in collaboration with the governments of Zimbabwe and Mozambique, will achieved this through the improved control of theileriosis and foot-and-mouth (FMD) serotype O. Outbreaks of such animal diseases can dramatically affect exports of products such as beef, resulting in a negative impact on the economy.

Josphat Nyika, the chief director, directorate of Veterinary Services in the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development (MoLAFWRD) in Zimbabwe, commented, "This TCP speaks directly to our livestock growth plan, one of the key focuses of which is animal health, and where the country has a goal of increasing the national cattle herd from 5.5mn to 6mn by 2030. This is not possible to achieve in the face of animal disease outbreaks."

Image Credit: Adobe Stock

The programme was launched due to the rise in cattle fatalities due to theileriosis in Zimbabwe and the threat of the spread of FMD serotype O in the region.

Américo Manuel da Conceição, chief veterinary officer for Mozambique, remarked, "The TCP is coming at an appropriate time when the country is fighting outbreaks of FMD serotype O as well as SAT2 (one of the seven major serotypes with significant genetic and epidemiological differences. These are O, A, C, SAT-1, SAT-2, SAT-3, and Asia-1)."

Drawing on its international expertise and experience, the FAO is seeking to develop capacity and advance knowledge in order to combat the animal diseases in a sustainable manner. The new TCP follows the organisation's success in Namibia and will intensify surveillance efforts. Capacity will be built through the training of key personnel and farmers to reduce the risk posed by FMD serotype O in Zimbabwe, Mozambique and the wider region.

Patrice Talla, FAO subregional coordinator for southern Africa and FAO representative to Zimbabwe, Lesotho and Eswatini, surmised, "In recent years, FAO has supported countries in the region to respond to several livestock-related emergencies occasioned by animal disease outbreaks and natural disasters. Technical assistance in the control of transboundary animal diseases, particularly efforts in mitigating the spread of the new serotype O of FMD virus has already been offered in Malawi, Comoros and Zambia."

Oiling the wheels for agricultural growth

THE OIL AND gas industry has long been the foundation stone of the Angolan economy accounting for US$39.94bn in revenue for the country in 2022 and representing 90% of the country's exports in the same year.

While ensuring this substantial sector continues to develop, the Angolan Government has recognised the importance of economic diversification to ensure security against market fluctuations. As such, the significant capital generated by the oil and gas industry is being partially redirected into other sectors in an attempt to catalyse wider growth, encourage private investment and create a more favourable business environment for micro-, small-, and medium-sized enterprises.

This is holding true for the agricultural sector as well, with Angola's Minister of Finance, Vera Daves de Sousa, indicating the country's oil sector will enable significant improvements in agriculture, fisheries and industry. The country boasts a diverse and fertile ecology and holds the potential to become of the leading agricultural producers on the continent. Yet, despite this, agriculture accounted for just 9.5% of Angola's GDP and only 10% of arable land is cultivated.

The country's high hydrocarbon and mineral wealth is being used to increase urbanisation, improve infrastructure, and increase imported product availability to drive the development of Angola's agricultural landscape.

Image Credit: Adobe Stock

To change this narrative, the Government's Angola Commercial Agriculture Project (co-financed by the World Bank and the French Development Agency) will mobilise up to US$230mn to increase agricultural productivity and market access for more commercial farms in the country.

This will build on the US$300mn approved by the World Bank for the Smallholder Agricultural Transformation Project in 2022 which aims to expand Angola's transition towards climate-resilient farming.

Together, these initiatives are set to increase resilience, food security and overall nutrition; reduce the sector's environmental footprint; and limit the country's dependence on imports.

Ghana sets food sufficiency goal

THE GHANAIAN MINISTER for Food and Agriculture, Bryan Acheampong, has assured farmers that he is determined to work closely with them to increase yields and productivity as well as reduce the importation of crops into the country.

The Peasant Farmers Association of Ghana (PFAG), a non-governmental organisation with a mandate for pro poor agriculture and trade policies, called on the Minister to discuss issues affecting the growth of the sector. Deliberations ranged from the ongoing onion crisis (more than 60 trucks of imported onions were locked-up at the Benin and Burkina Faso border); the implementation of PFJ 2.0 and the implications of the new Tax Exemptions Act on the prices of agricultural inputs.

In response, Acheampong, declared that the Ministry was taking the issues seriously and was implementing strategic measures to guarantee farmers have access to inputs and other production costs in order to less their burdens and boost incomes.

In regards to the onion issue specifically, he asserted the Government was working to ensure enough onions were produced locally to eventually stop importation and was working to diplomatically resolve the dispute around the goods in custody.

The Ministry, Acheampong continued, has now worked out the modalities for PFJ 2.0 which will be launched soon and will address the major concerns of farmers. The aggregator system of PFJ 2.0 will allow farmers to have access to seeds, fertilisers, extension services, mechanization, and post-harvest services and will only repay these costs after harvesting is complete. He added that the existing aggregators will not be crowded out due to the new programme and that the Ministry will endeavour to work with farmers to ensure that the right aggregators who are working with farmers are selected for the programme.

Finally, the Minister acknowledged the challenges of the Tax Exemptions Act but said the cabinet was considering the addition of agricultural inputs for exemptions. However, he added the Ministry is continuing to approve requests for exemptions for agricultural inputs by importers but lamented the failure of importers to reflect the exemptions in their prices. He urged them, therefore, to reduce the prices of their products.

Charles Nyaaba, executive director of PFAG, applauded the Minister for his resolve to work with farmers to improve the fortunes of the sector and pledged the associations cooperation to enable the Minister to achieve his long-term vision for achieving food sufficiency in the country.

The Minister assured he was working to lessen the burden on farmers and boost their incomes.

Image Credit: PFAG

A journey into automation and technology to redefine the future of efficient, sustainable, and high-quality chick production

Poultry hatcheries embrace state-of-the-art automation solutions

HATCHERY AUTOMATION PLAYS an important role in the poultry industry's growth, enhancing efficiency, quality, and animal welfare. But what is the estimated growth rate of the global market? The global market is projected to witness a significant 8.2% CAGR during 2023-2031. This growth is driven by the rising demand for poultry products, escalating labor costs, and the imperative need for cost-effective and efficient production. Automation solutions mitigate labour costs, reduce contamination risks, and enhance overall hatchery safety. Fastest growing region in the market? Notably, the Asia Pacific region is expected to experience the most rapid growth due to surging demand for poultry products in countries like China, India, and Japan.

Since its inception in the 1990s, Viscon Hatchery Automation has evolved and expanded in tandem with the poultry industry. Today, it holds a prominent position as one of the global leaders in delivering cutting-edge automation solutions for broiler, layer, and breeder hatcheries around the world.

Viscon Hatchery Automation has evolved and expanded in tandem with the poultry industry.

Image Credit: Adobe Stock

Viscon Hatchery Automation offers a comprehensive solution to streamline the hatchery process but how does the company's hatchery automation process work? Let's find out step by step:

Egg handling: Proper egg handling ensures that eggs remain in optimal condition, promoting hatchability and producing healthy, high-quality chicks. Viscon uses machinery to grade incoming eggs, sorting them based on specific criteria. These machines ensure precise grading, separating eggs with different characteristics like size and quality. The graded eggs are then gently transferred from farm trays to setter trays, minimising damage or cooling during the process. High-quality washing machines are employed to maintain optimal cleanliness of trays and trolleys, contributing significantly to hatchery hygiene.

Automation solutions mitigate labour costs, reduce contamination risks, and enhance overall hatchery safety.

Egg transferring: During this stage, eggs are unloaded from setter trays and moved to hatcher baskets. Viscon employs a quick and gentle transfer process to prevent damage or cooling, which could negatively affect hatchability. Live Embryo Detection technology identifies viable embryos, facilitating precise in ovo vaccination and transfer processes. This data helps predict hatching numbers and monitor breeding and incubation performance. To maximise bio-security, in-ovo vaccination is conducted efficiently, processing only eggs with living embryos.

Vinovo Select Line: What technology gives you the maximum hygiene level during in-ovo vaccination, transfer, hatching and chick processing? Read on: In the transfer room, Viscon's cutting-edge Live Embryo Detection technology identifies living embryos

within eggs and categorises non-viable ones. This data aids in predicting hatching numbers and monitoring incubation performance. It also allows for selective processing during in-ovo vaccination, egg transfer, and waste disposal. Viscon's specialised VINOVO Select Inject for in-ovo vaccination and Select Transfer machines exclusively handle viable eggs, enhancing biosecurity during these crucial hatchery stages. Infertile and dead embryos are segregated for processing in a separate waste room, ensuring maximum bio-security during vaccination, transfer, hatching, and chick processing.

Chick processing: With a focus on maintaining quality and animal welfare, Viscon handles day-old chicks efficiently. Chick unloading and de-stacking processes are carried out with precision and accuracy. Gender sorting technology ensures precision and accuracy, vital for various operations. Data collection during this stage assists in monitoring production figures and employee performance, enhancing overall hatchery efficiency.

Cleaning and storage: Cleaning and storage in hatchery automation ensure hygiene and maintain equipment readiness, critical for efficient, safe, and successful hatchery automation. Hence, Viscon utilises efficient cleaning machines and hygiene protocols to clean and dry product carriers such as setter trays and hatcher baskets. A key aspect is the separation of dirty and clean products to prevent cross-contamination. This reduces the risk of spreading contaminants in the hatchery.

Waste handling: Viscon offers sustainable waste handling solutions, including collection, separation, and storage of different types of waste. These processes ensure hygiene and eco-friendliness in waste management.

Service and training: In the next stage, to minimise equipment downtime, Viscon's service includes scheduled maintenance. Training modules empower hatchery staff with the skills to operate automation equipment effectively. The TREGG Information System gathers and analyses hatchery data to improve overall performance, ensuring hatcheries operate at peak efficiency.

Viscon's automation solutions address critical aspects of hatchery operations, enhancing efficiency, hygiene, and productivity throughout the entire process.

Viscon's specialised VINOVO Select Inject for in ovo vaccination and Select Transfer machines exclusively handle viable eggs, enhancing biosecurity during these crucial hatchery stages.

At VIV Asia 2023, Petersime showcased cutting-edge hatchery solutions:

Eagle Trax: Petersime's intelligent hatchery software optimises processes, enhancing efficiency, productivity, and chick quality. It digitises operations, securely harnessing data in the cloud for data-driven insights and improvements.

X-Streamer: This latest line of single-stage incubators maximises incubation performance while minimising operational costs.

X-Streamer Chick-Store: Petersime's dedicated chick storage machine maximises day-old chick potential and minimises losses.

These innovations aim to elevate hatchery performance and deliver a strong return on investment.

The adaptability and disease resistance capabilities of indigenous chicken have made them a popular choice among farmers in tropical countries like Kenya.

Boosting production with improved indigenous chicken breeds

INDIGENOUS CHICKEN BREEDS, in both developed and underdeveloped countries, have been well praised for their hardiness, and play a vital role in rural households as a source of top-quality animal protein. In addition, local breeds can be produced at a lower cost and require simple management practices, while having quick returns to investment and numerous market outlets.

Kienyeji chicken – popular for their high disease resistance – are the original indigenous chickens native to Kenya. However, one major drawback is their productivity, which is found to be comparatively much lower than other chicken breeds in country. Under the Arid and Semi-arid lands Agricultural Productivity Research Project (ASAL APRP) which was implemented from 2012-2017, the Kenya Agricultural and Livestock Research Organisation (KALRO) developed two improved indigenous chicken breed lines, KC1 and KC2, which have been registered with the Kenya Livestock Breeders' Association. These two breed lines known for their high egg production and enhanced growth rates have been widely distributed to farmers. However, the high cost of commercial feeds and low farm level hatchability of eggs, are some of the biggest constraints in the adoption of indigenous chicken such as these.

Image Credit: Adobe Stock

The KC3 breed which is brown in colour, is cheap to maintain and posesses the ability to lay more eggs while consuming less feed.

Kenyan poultry farmers are all set to boost production with the newly established US$3.4mn poultry centre project in Kakamega County, Kenya.

KALRO introduces improved KC3 chicken breed

In March this year, KALRO unveiled the high production KC3 breed, which is an update to the KC1 and KC2 indigenous chicken breeds. Research has shown that the KC3 breed, which is brown in colour, is cheap to maintain and possesses the ability to lay more eggs while consuming less feed. This means that they can lay upto 280 eggs per year, which is a huge increase when compared to only around 100 eggs that could be produced prior to the upgrade. Moreover, unlike exotic breeds which take a total of eight months to reach their full size, KC3 birds have a rapid growth rate and can reach table weight and point of lay in just four months.

Kenyan poultry farmers are all set to boost production with the newly established US$3.4mn poultry centre project funded by the European Union (EU), in collaboration with the Kenyan government through the Agrifi Kenya Climate Smart Agricultural Productivity project. According to KALRO, the poultry breeding and multiplication centre based in Kakamega County, Western Kenya, will have the capacity to house 2,000 birds and produce new improved KC3 breeds.

Future of indigenous chicken production in Kenya

A number of factors such as global population explosion, urbani-

Research suggests that the commercialisation of indigenous chicken farming along with genetic improvement of indigenous chickens could improve productivity.

sation and changes in consumption trends have increased the demand for animal protein. Given their adaptability and disease resistance capabilities, indigenous chicken have become a popular choice among farmers in tropical countries like Kenya. However, the economic potential of these birds remain underexploited. Research suggests that the commercialisation of indigenous chicken farming along with genetic improvement of indigenous chickens could improve productivity.

This is made possible through the application of modern breeding biotechnologies, including genetic selection and the use of contemporary chicken husbandry practices. Upscaling government support to farmers through the provision of extension services and financial incentives also plays a role in accelerating commercialisation.

It is always important to be cautious while using the genetic approach to improving productivity through crossbreeding. For example, crossbreeding with exotic strains is not considered an appropriate model, and should be avoided. If done however, it is highly recommended that it is carried out in a controlled manner in order to prevent the extinction of local strains. Therefore, any genetic improvement of local strains must be preceded by the identification, phenotypic characterisation, and performance assessment of the available local strains. In addition, the sustainable use of the crossbreeding approach should include a plan for the conservation of the native genetic pool.

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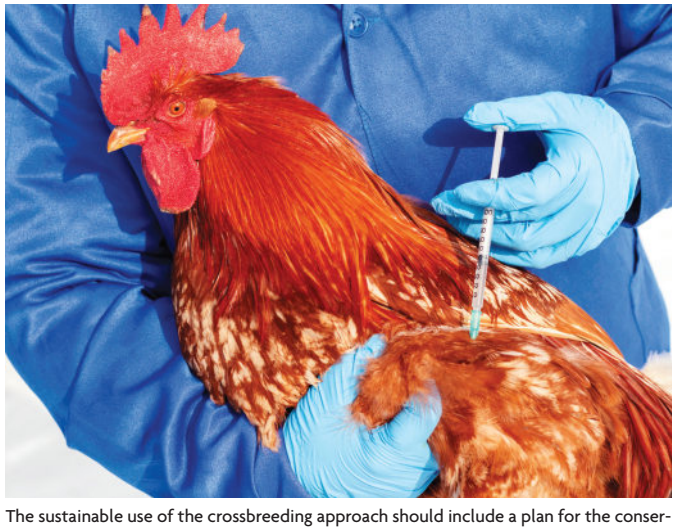


The sustainable use of the crossbreeding approach should include a plan for the conservation of the native genetic pool.

To do this, various other challenges including adequate access to water, affordable and good quality feed, appropriate housing facilities and healthcare will need to be addressed. Farmers should also receive training regarding good animal husbandry practices. Initiatives such as farmer training groups, field demonstrations, farmer-to-farmer training and farmer clubs are among the elements to be included in the training model. This will greatly help with keeping farmers informed about the different types of dietary resources which can substitute the conventional ingredients in poultry diets. Moreover, since women and children in rural areas generally handle local chickens, training should therefore also be focussed on women.

In the search for a sustainable and effective diet for poultry, BSF could hold the answers.

Poultry powered by insects: gut health and growth boost

POULTRY GUT HEALTH is a pivotal factor influencing the well-being and growth performance of birds. The intricate balance between intestinal microscopic structures, dietary components, and the composition of beneficial and harmful microorganisms within the gut is essential. Researchers have increasingly turned their attention to the potential benefits of incorporating insect larvae into poultry diets to enhance gut health, morphological development, immune response, and overall productivity.

Studies have shown that insects, such as yellow mealworms and black soldier fly (BSF) larvae can be safely integrated into poultry feeds, providing a rich source of protein with an optimal amino acid profile. These insects are also prized for their antioxidant properties and natural antimicrobial compounds. The effects of insect-based diets on poultry are twofold, offering both valuable nutrients and bioactive compounds that modulate gut functionality and microbiota composition.

"Studies have shown that insects, such as mealworms and BSF larvae, can be safely integrated into poultry feeds."

Insects can be fed directly to chickens or processed into insect meal, which can be seamlessly incorporated into poultry diets. Recent studies have emphasised the efficacy of insect meal, highlighting its potential to promote a healthier gut microbiota, enhance gut development, fortify the immune system, and ultimately improve poultry growth performance. The inclusion of insect meal in poultry nutrition appears promising, particularly due to its protein and chitin content.

The utilisation of BSF meal can have both positive and negative effects on the cecal microbiota and gut mucin composition of broiler chickens, offering valuable insights into the delicate balance of insect-based diets.

At lower inclusion levels, typically around 5%, BSF meal has demonstrated a positive influence on poultry gut health. It fosters the preservation of physiological microbial populations and promotes the selection of potentially beneficial bacteria. This results in an increase in villi mucins, which is indicative of improved gut mucosal integrity. Moreover, the low inclusion levels have been associated with the maintenance of microbial diversity within the cecum.

Image Credit: Adobe Stock

Insects can be fed directly to chickens or processed into insect meal.

Conversely, when BSF meal is included at higher levels, notably at 15%, there is the potential for a negative impact on gut health. This higher inclusion level may lead to a partial reduction in microbial complexity, a decrease in potentially beneficial bacteria, and the selection of bacteria with mucolytic activity, which could compromise gut integrity. Additionally, there is a decrease in villi mucins, suggesting a potential disruption in mucosal function.

The observed changes in butyrate- and short-chain fatty acid (SCFAs)-producing bacteria seem to play a crucial role in these dynamics. However, further studies including metatranscriptomic and meta-metabolomic approaches are essential to gain a more comprehensive understanding of these findings and their implications.

Despite the potential negative modulation observed at high inclusion levels, it is noteworthy that all animals, regardless of insect meal utilisation, maintained a physiological cecal community and intestinal mucin dynamics. This is a positive outcome in terms of preserving gut health. These findings underscore the potential of using insects, such as BSF meal, in poultry feeding while highlighting the importance of precise inclusion levels to optimise gut health and overall bird well-being.

Enhanced training solutions and ventures:

The Insects4Feed Entrepreneurship Incubation programme, organised by New Generation Nutrition (NGN) and the International Institute of Tropical Agriculture's Business Incubation Platform (IITA-BIP), seeks to bolster food security and sustainability in Nigeria and Africa. The recent four-day training of trainers, part of the Insect4Feed Project, aimed to prepare instructors who will subsequently educate entrepreneurs in BSF farming.

Funded by the Netherlands government, the Insects4Feed Impact cluster addresses the pressing need for affordable, locally sourced animal protein in Nigeria's fish and poultry feed industry. NGN, a Dutch social enterprise focused on insect sector development, leads the project's implementation, with IITA BIP responsible for training and entrepreneurship development.

According to Debo Akande, CEO of IITA

Image Credit: Adobe Stock

Poultry gut health is an important factor which influences the well-being and growth performance of birds.

BIP, the Insect4Feed Project will significantly reduce poultry and fish farming costs by introducing cost-effective, local feed alternatives, thereby boosting the livestock sector and improving food security in Nigeria.

John Amole, Nigeria project lead for NGN, explained, "The black soldier fly is a common tropical fly species. Unlike some other insects or the regular house flies, black soldier flies are not pests, they do not transmit diseases and they are not poisonous. They do not sting or bite. Rather, they are beneficial to man and the ecosystem as they act as decomposers, recyclers and scavengers."

"They [BSF] are beneficial to man and the ecosystem as they act as decomposers, recyclers and scavengers."

The Insects4Feed programme aims to establish sustainable insect farming business models through research, education, and support services. It seeks to enhance the livestock industry, create jobs, improve food security, and promote organic waste utilisation for environmental sustainability.

Also seeing the benefits of BSF utilisation, Maltento, a South African GreenTech company, is leading a pioneering protein production venture, converting organic waste into protein-rich biomass with BSF larvae. This sustainable approach feeds fish, animals, and pets while establishing a circular system to minimise waste and maximise resource utilisation.

Operating near Cape Town, Maltento breeds and processes BSF larvae, offering them in various forms for animal feed enhancement. With US$788,000 in co-financing from DEG's Up-Scaling programme, Maltento has doubled production capacity and expanded growth chambers for larvae, aiming to produce more than 100 tons monthly.

Maltento is among 11 firms that received co-financing in 2022 through DEG's Up-Scaling Programme, supporting early-stage SMEs in GreenTech and FinTech in developing and emerging-market countries.

The company not only transforms sustainable protein production but also showcases innovation in African business and investment, utilising organic waste and BSF larvae to address food production and waste challenges.

Seasonal variations play a role in influencing the risk of disease spread.

Image Credit: Adobe Stock

Disease control strategies for livestock in East Africa

A number of disease control strategies and programmes have been established to combat the increased incidence of zoonotic livestock diseases in East Africa.

EAST AFRICA, WITH its diverse population of free-ranging wild and domesticated animals, is a hotspot for zoonotic disease outbreaks such as rabies, brucellosis, anthrax, bovine tuberculosis, and salmonellosis, among others.

Although wild animals are often capable of harbouring pathogens without showing any signs of illness, zoonotic diseases when transmitted to livestock or humans may express themselves more severely through multiplication or mutation, thereby becoming more infectious in the process. Also, given the plethora of new or undocumented pathogens that are known to exist, some wild animal populations, including those that co-exist with livestock and other domesticated species, markets that sell meat or by-products of wild animals are found to be particularly high risk.

Developing disease control strategies from livestock movement information

A recent study published in June 2023 highlights how livestock mobility can magnify the risk of infectious disease spread across sub-Saharan Africa. In order to identify locations of greatest traffic and resulting high disease transmission potential, data on local livestock movements in agropastoral and pastoral livestock production systems was gathered and analysed.

Various drivers of livestock movement in both rural and urban locations were identified, along with time and seasons when livestock movement was at its peak. In addition, a rural-urban trajectory trading driven by regional demand was also picked out from the study. Findings enabled a targeted approach to limiting livestock movement or other relevant interventions, such as strategic vaccination at key locations or times, or market closures. Fragmentation of the connectivity network by removal of central nodes (important villages that control livestock movement) was found to help decrease the probability of large epidemics.

In order to identify locations of greatest traffic and high disease transmission potential, data on local livestock movements in agropastoral and pastoral systems were analysed.

Moreover, seasonal variations were also found to play a role in influencing the risk of disease spread. For example, the higher prevalence of foot-and-mouth disease (FMD) in wet compared to dry seasons is due to the fact that pastoral systems experience a general increase in livestock movement and contacts in the wet season compared to the dry season. Therefore, to keep fast-spreading diseases such as FMD under control, measures would have to be season-specific and target villages that are important in the epidemic window. On the other hand, long-term control plans that focus on important areas regardless of season would be more appropriate for slow-spreading diseases such as bovine tuberculosis. Prophylactic interventions such as routine vaccinations that are focused on important areas all year round will yield better outcomes.

Combatting tick-borne diseases amid acaricide resistance

Tick-bourne diseases are a common occurrence in livestock production systems across the globe, particularly sub-Saharan Africa. Acaricide application is the most commonly used control measure for ticks and tick-bourne diseases. However, the development of resistance to major classes of acaricides, synthetic pyrethroids, organophosphates, amidines and macrocyclic lactones has been widespread across Africa, bringing out concerns regarding efficient tick control.

A number of newly established networks, coordinated by FAO, an African module of the World Association for the Advancement of Veterinary Parasitology (WAAVP-AN) and the MAHABA (Managing Animal Health and Acaricides for a Better Africa) initiative of Elanco Animal Health, focus on the control and management of livestock ticks in Africa and globally.

The objective of the MAHABA programme is to deliver a practical strategy for managing ticks and the impact of tick-borne disease. In addition, the programme also equips small-scale producers in Uganda and Nigeria with the necessary tools (acaricides) and knowledge (through a digital platform) to realise livestock productivity gains. The WAAVP-AN on the other hand intends to improve knowledge on veterinary parasites as well as communication and networking on parasitology in Africa.

Certis Belchim has conducted trials with its new solution, Botiga, a post-emergence selective foliar herbicide for weed control in maize.

Boosting maize output

MAIZE IS AN important crop globally, grown in many countries and widely utilised for human consumption, animal feed and as an industrial raw material for both food and non-food uses. With growing demand, a major objective for maize growers is to increase yields. The challenges they face are many, including climate change-induced drought and stress, but also significant crop losses and yield reduction as a result of weed interference.

Certis Belchim has conducted trials in Africa, Europe, Turkey and the US with its new solution, Botiga, a post-emergence selective foliar herbicide for weed control in maize. Excellent results were recorded, comparing favourably to current treatments against a wide spectrum of broad-leaved weeds and grasses. Active ingredients of Botiga are pyridate + mesotrione (concentration 300 + 90 gr/kg) in an oil dispersible (OD) formulation.

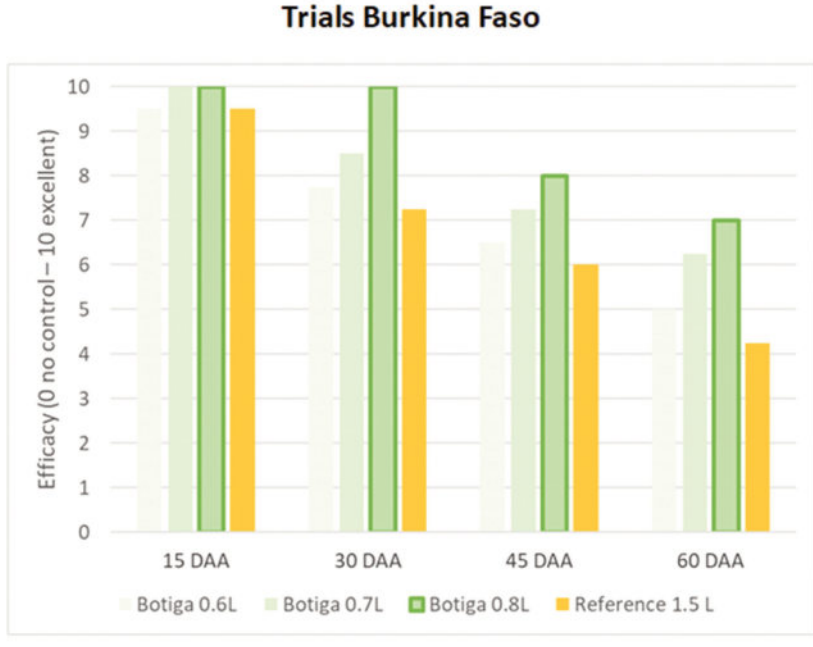


Image Credit: Certis Belchim

Field trials have consistently produced results that are on par with, or even better than, reference products.

Botiga provides long-lasting control of 42 days or more, covering broad-leaved weeds and grasses.

How it works

The two active ingredients have a synergistic effect, working together to cause the fast knock down of weeds in just a few days. Pyridate is quickly absorbed by the leaf, destroying plant cells and resulting in the death of the weeds. Mesotrione works through two different routes inside the plant to kill the weeds quickly. However, since it is selective, it has zero effect on the maize plants, leaving them undamaged. Trials have shown that it can safely be used in maize seed production as well as grain and silage maize, and sweet corn.

The challenge: Glyphosate-resistant weeds

Weeds are already showing resistance to many of the herbicide products that have in the past been effective in controlling post-emergence weeds in maize. Even in the GMO system, there is an increasing number of glyphosate-resistant weeds, which means that farmers have a diminishing number of crop protection options available, leaving them vulnerable to reduced yields and lower income.

Botiga brings the advantage of a different mode of action to which no resistance has been recorded in Europe, making it the best product to combat weeds that are already resistant to other chemicals. In general, even weeds that are resistant to triazines are sensitive to pyridate and can therefore be controlled by Botiga. As a result, it will also help to maintain good weed resistance management practices in maize.

Benefits of Botiga

Botiga can be used post crop emergence, from growth stage 12-16 and is compatible with numerous adjuvants. Field trials in South Africa, Mali, Burkina Faso and Turkey have consistently produced results that are on par with, or even better than, reference products. Botiga provides long-lasting control of 42 days or more, covering broad-leaved weeds and grasses. Used in a mix with nicosulfuron, it offers increased efficacy against grass weeds and sedges.

The product has a favourable tox and eco-tox profile with low risk of harmful effects on mammals, birds, soil and aquatic organisms, and the environment.

It is already registered for use in many European countries, the US and Burkina Faso, Mali, Zambia and Senegal in Africa. Further developments are expected in Egypt, Turkey and elsewhere.

From the field

Issiaka Idani, a Botiga distributor in Burkina Faso, was delighted with the results his customers saw from using the product successfully to control key weeds last season, and welcomed the benefits it brings.

"Botiga has certainly shown itself to be the solution to our maize farmers' difficulties. It provided effective control of the major weed problems they faced. In addition, the use of this product allowed them to reduce their labour and also contributed to an increased yield of five tons per hectare, compared to the average of 3-3.35 tons they would normally expect," he explained. "The fact that there is no evidence of resistance to the product is an added bonus for the future use of this effective product."

For more information, visit:

Field trials conducted throughout the world have shown that phosphate fertilisers with an all-important, water-soluble property have a residual availability that may extend for at least two to three years, writes Dr. Terry Mabbett.

Image Credit: Dr. Terry Mabbett

Potato (Solanum tuberosum) requires phosphorous (as phosphate) at planting time for the development of a strong root system.

Enriching soil fertility with phosphate fertilisers

PHOSPHOROUS AS PHOSPHATE salts is an essential major nutrient for plant growth and development, generally coming second after nitrogen in regard to the amounts required. However, there are particular times during plant growth and development which appear to coincide with high-energy usage and the very times when phosphate is required in greater amounts. These times and stages in the cropping cycle include seed development, seed germination and periods when root growth is both rapid and far-reaching and also, for example, during the establishment of seedlings in nursery beds and young plants which have been transplanted in the field.

The range of commercially available phosphate fertiliser is wide and farmer choice will depend on whether the requirement is for water-soluble materials or water insoluble rock phosphate.

Phosphorous occurs naturally in the soil but, like all other plant nutrients, is depleted when green plants are grown intensively as agricultural and horticultural crops. Phosphorous deficiency commonly occurs when land is brought into cultivation for the very first time, although such initial deficiencies can generally be overcome where there is an established history and practice of using phosphate fertiliser. From then and there on, the priority and requirement is to maintain enough plant-available phosphate in the soil.

The range of commercially available phosphate fertiliser is wide and farmer choice will depend on whether the requirement is for water-soluble materials like single super-phosphate, triple super-phosphate and two ammonium phosphates (mono-ammonium phosphate and di-ammonium phosphate) or the water 'insoluble' rock phosphate. In situations where transport costs are limiting, triple super-phosphate fertiliser is more economic to use (on per unit of phosphorous basis) than the single super-phosphate fertiliser.

But single super-phosphate does contain sulphur and calcium as well as phosphorous. So, where deficiency of these nutrients also occurs, single super-phosphate may be preferred and may be more economic to use. Similarly, ammonium phosphates supply nitrogen along with phosphorous, and in a concentrated form. For this reason, ammonium phosphates are commonly utilised in compound fertilisers, to produce and provide different and dedicated ratios of Nitrogen (N): Phosphorous (P): Potassium (K). Compound fertiliser offering different ratios of NPK on spec is the obvious fluid solution for changing plant requirements related to crop growth and development.

Rock phosphate, which contains the mineral 'apatite', is 'insoluble' in water, but it will provide a useful fertiliser for perennial crops growing on acid soils, since they only require a relatively small supply of phosphate to the roots. The relative availability of phosphate to the root systems of crop plants varies depending on the type and source of phosphate fertiliser applied to the crop and soil. For instance, rock phosphates of sedimentary origin are generally more readily available to plants than are those of igneous rock origin. The value of such phosphates from different rock sources is generally appraised by measuring the total phosphorous content and the fraction of that which is soluble in dilute mineral acid.

Single super-phosphate is manufactured by treating rock phosphate with sulphuric acid. However, sulphuric acid can be prohibitively expensive, and in countries where this is so, an equally effective but cheaper fertiliser called 'partially acidulated rock

phosphate' is manufactured by using 50% of the normal amount of sulphuric acid. Basic slag is also a useful alternative source of phosphate, but generally less important now than it was in the past.

Ironically, water-soluble phosphate fertilisers suffer a reduction in water solubility as soon as they are applied to the crop, caused by a variety of natural chemical reactions in the soil. Also, these produce a range of intermediate phosphate products including the less water soluble di-calcium phosphate and complex iron and aluminum phosphates. By further reaction in neutral to acid conditions (pH 7 and below), phosphate ions (negatively charged particles called anions) become tightly bound by the oxides of iron and aluminum. In alkaline conditions (over pH 7), calcium phosphates (including apatite) of low water solubility are formed. Owing to these chemical reactions in the soil, phosphate fertilisers generally become more plant available and therefore more economic to use when placed below the seed in the soil profile.

Most plant species have a symbiotic association at their roots with a range of highly specialised fungi called mycorrhizas, which provide mineral nutrients to green plans in exchange for carbon compounds.

The chemical reactions that reduce phosphate concentrations in the soil solution additionally reduce phosphate availability to the roots of crop plants. Even so, field trials conducted throughout the world have shown that phosphate fertilisers with an all-important, water-soluble property do have a residual availability that may extend for at least two to three years. The effective value of phosphate residues in the soil will be determined by the amounts that are taken up by plants and removed by successive crops at harvest, as well as the phosphate buffering capacity of the soil.

Image Credit: Dr. Terry Mabbett

Phosphorous (as phosphate) has a key role to play in photosynthesis, to provide soluble glucose sugar for conversion into insoluble starch to bulk up the potato tuber.

Most plant species have a symbiotic (mutually beneficial) association at their roots with a range of highly specialised fungi. These associations or relationships are of benefit to both 'parties' and are called mycorrhizas, which literally means 'fungus roots'. The fungus benefits by receiving carbon compounds from the green plants, which have been manufactured by photosynthesis and the fungus supplies the plant with mineral nutrients extracted from the soil. Phosphate is generally the most important nutrient supplied to green plants via mycorrhizal association.

Dr. Terry Mabbett in conversation with Omex Agrifluids' technical manager for Africa, Dr. Ben Odunlami providing insight on cocoa production and the benefits of using fertilisation by foliar spraying.

Foliar feeding is the way forward for cocoa

AS A NATIVE species in the Amazonian rainforest understory, Theobroma cacao is a super-shade loving tree, and grown as a monoculture crop throughout the Equatorial tropics. You might think cocoa is an easy crop to cultivate, with growers simply planting the trees and picking the pods, but nothing could be further from the truth. Apart from being plagued by Phytophthora and enveloped by epiphytes, which thrive on the high humidity created by the intense rainfall and deep shade, cocoa and cocoa growers are presented with potential nutritional problems.

The deep leaf litter which accumulates beneath the cocoa canopy creates a barrier to the availability of base fertiliser applied as solid formulations to the ground, while high rainfall conditions can pose problems with leaching. These are most certainly the main reasons why agronomists have consistently failed to obtain a perpetual positive performance and response to base fertiliser treatments ever since cocoa was first grown as a commodity crop. So what are the other options? Foliar fertilisation by spraying solutions of soluble nutrients onto the leaves using nutrient product profiles and application timing synchronised with growth and development of the cocoa tree crop is the obvious way forward.

Foliar fertilisation and application timing synchronised with growth and development of the cocoa tree crop helps achieve fast-growing and resilient root systems.

Cocoa is grown throughout the wet and humid tropics but the single biggest hub of cocoa production now centres on the lowland areas of coastal West Africa. So who better to speak with about cocoa production and the use of fertilisation by foliar spraying than Dr. Ben Odunlami, technical manager for Africa at Omex Agrifluids, a global player in research, development and marketing of fully water soluble suspension fertiliser and soluble powder delivery systems (formulations).

I started by asking Dr. Odunlami about the cocoa-growing countries across West Africa where Omex Agrifluids is actively involved. "We work alongside and together with distributors and cocoa growers in all cocoa-growing countries of Africa, both Anglophone and Francophone nations including Nigeria, Ghana, Côte D'Ivoire and Cameroun," said Dr. Odunlami. Omex is renowned worldwide for its comprehensive product portfolio, comprising soluble nutrient products designed to cater for almost every crop nutrition eventuality in the widest range crops. So, I asked Dr. Odunlami for an insight into the range of Omex products applicable to and appropriate for cocoa in West Africa.

Cocoa in Ghana.

Dr. Odunlami began with needs of nursery cocoa. "As with most other tropical tree crops seedling cocoa trees are raised

in a nursery and planted in the field," said Ben, adding how it is essential to nurture fast-growing, resilient trees with strong root systems to withstand transplanting and reach pod bearing development stage as quickly as possible. "Rapidly growing and resilient seedling root systems are achieved with foliar sprays of Omex Bio 20 containing the trio of macronutrients – Nitrogen (N), Phosphorous (P) and Potassium (K) – together with magnesium (Mg) and a full range of micronutrients, most in chelated form. Moreover, Omex Bio 20 features a biostimulant fraction sourced from a species of marine alga (seaweed).

Omex Bio20 is used on a wide range of crops, but I was keen to know whether Omex had products custom-designed for specific use in cocoa. "Yes we do," said Dr. Odunlami, who explained how Omex had one designated product for use in Anglophone countries and another for cocoa growers in Francophone countries. "Cocoboost which is used in Ghana and Nigeria is a foliar applied product containing N, P and K at 8.30%, 32.40% and 21.10% w/v, respectively, chelated Mg and the full range of micronutrients – Iron (Fe), Manganese (Mn), Zinc (Zn), Boron (B), Cobalt (Co) and Molybdenum (Mo) and most in chelated form," Dr. Odunlami told African Farming. Applications are timed from the start of pod development with five spray applications in total made to the foliage and fruit (pods) and at 21-day intervals. "Recommended rate is 2 litres (L)/product/ha mixed at 40 ml in 15 L water," said Dr. Odunlami.

"We have developed the same type of 'broad-base', 'broad-brush' product for Francophone countries like Cote d'Ivoire and Cameroun," said Ben. Folicao (Engrais Foliare pour Cacaoyers) – Foliar fertiliser for cocoa contains N, P and K at 13.50%, 27.00% and 27.00% w/v, respectively with Mg and the same full spectrum of micronutrients contained in Cocoboost. Folicao is applied as a spray to the foliage during periods of active growth. Applications should be made every 10-14 days to trees showing any nutrient deficiency. The Omex recommended rate is 2.0-4.0 L/ha mixed at 30-60 ml/15 L water.

Of particular interest is Omex Zibo, one of the company's newest products. Zibo was initially designed and developed for coffee, but is now used on a wide of range tree crops, especially cocoa. Containing Zinc (22.10% w/v) and Boron (7.30% w/v), Zibo was specifically designed with a ratio of Zinc to Boron that most closely matches the requirement for these two essential micronutrients by tree crops like cocoa and coffee. Zinc and boron both have key strengthening-related roles in the synthesis of cell wall material as well as the transport of soluble sugars.

"Pollination success is greatly influenced by the availability of Boron," said Dr. Odunlami, adding, "how application timing is therefore synchronised with the onset of flowering in cocoa." An initial application made at the pre-flowering stage, and during the tree's initial growth flush, is followed up and sustained with a repeat application made four weeks later. Zibo is used at a concentration of 60 ml product/20 litres of water and at a rate of 0.5-1.0 litre of product/ha.

However, the single most strategically important nutrient for plant tissue strength and stability is calcium as calcium pectate, the gelatinous material forming the middle lamella and cementing cells together. Dr. Odunlami told African Farming how Omex Calmax containing 22.5% w/v soluble calcium is recommended as a frequently applied foliar spray to provide good pod growth and bean yield as well as structural support within the entire cocoa tree.

Last but not least, I asked Dr. Odunlami about the perennial problems of yield loss and even tree mortality caused by the combined effects of Phytophthora pod rot and Phytophthora stem canker disease, the single biggest limiting factor operating against commercial cultivation of cocoa. These diseases have traditionally been managed using chemical fungicides but increasing scrutiny on all-round safety of chemical pesticides is leading, slowly but surely, to a phased withdrawal.

Image Credit: Omex

First foliar application of Omex Zibo is made before the onset of flowering in cocoa.

Being well aware of the company's interest in a nutrient-based alternative for Phytophthora management, I asked Dr. Odunlami to expand on the company's interest. "Our key interest is in the development of phosphite (soluble salt of phosphorous acid) as a so-called elicitor which generates a metabolic response in the host plant (cocoa) for suppression of disease. "To this end, we already have a phosphite-containing product called Omex DP98 which can be used to this end as a foliar spray, a root drench or for direct application of stem cankers on the trunk and branches of the cocoa tree," said Dr. Odunlami.

In the diverse climates of Africa, where farmers grapple with everything from drought to flooding, one crop stands out for its remarkable adaptability and versatility: sorghum.

Sorghum: The resilient crop for Africa's diverse climates

SORGHUM, AN ANCIENT grain, which is a staple in many African countries, is proving to be a resilient solution for sustainable agriculture in the face of climate change.

Sorghum's role in climate change mitigation

Climate change significantly threatens food security across Africa, with increasing temperatures and unpredictable weather patterns disrupting traditional farming practices. However, sorghum offers a beacon of hope with its inherent drought and heat tolerance. This hardy crop can thrive in a variety of climates, from arid regions to tropical zones, making it an ideal choice for farmers grappling with the effects of climate change.

"Sorghum's adaptability to diverse climates is truly remarkable," says Nate Blum, CEO of Sorghum United. "Its resilience in the face of drought and heat stress can significantly contribute to easing the impact of climate change on food security in Africa."

Economic benefits of sorghum production

Sorghum's versatility extends beyond its climatic adaptability. This crop has a wide range of applications, from feed to biofuel, making it a valuable commodity in both local and global markets. Investing in sorghum cultivation can provide significant economic benefits for farmers in arid and semi-arid regions, where crop choices are often limited.

Image Credit: Nate Blum

Investing in sorghum cultivation can provide significant economic benefits for farmers in arid and semi-arid regions with limited crop choices.

"Sorghum is not just a crop; it is an economic opportunity," Blum explains. "By diversifying their crop portfolio with sorghum, African farmers can tap into new markets and boost their income."

Sorghum as a staple and forage crop

In many parts of Africa, sorghum is a staple food crop, providing essential nutrients for millions of people. But its utility doesn't stop there. Sorghum and sorghum-sudan hybrids are excellent choices for livestock feed, as they are drought-tolerant and can provide high-quality forage.

"Sorghum and sorghum-sudan hybrids can be a game-changer for livestock producers dealing with dry conditions," says Blum. "These crops can provide ample forage, even in drought conditions, ensuring that livestock producers can maintain their operations without compromising on feed quality."

Advancements in sorghum cultivation

The future of sorghum in Africa looks promising, thanks to recent advancements in farming practices. Innovations in crop management and ongoing research into sorghum genetics are paving the way for more sustainable and productive sorghum cultivation.

"We're seeing exciting progress in sorghum farming," Blum says. "These advancements are not only improving yields but also contributing to sustainable agriculture by promoting soil health and reducing water usage."

Sorghum's adaptability and versatility make it resilient in Africa's diverse climates. As the continent faces the challenges of climate change and food security, it's time to give this ancient grain the recognition it deserves. With its ability to thrive in diverse climates and its wide range of applications, sorghum is poised to play a crucial role in the future of African agriculture.

Image Credit: Nate Blum

Sorghum has a wide range of applications, from feed to biofuel, making it a valuable commodity in both local and global markets.

GrowPods: ACTX announces innovative solution to boost food safety and traceability

ADVANCED CONTAINER TECHNOLOGIES, Inc (ACTX) announces plans to improve food traceability and safety through its innovative GrowPods – a premiere line of Controlled Environment Farms.

Food safety and traceability is a major concern for consumers and within the food industry. The recent increase in food-bourne illnesses and contamination incidents have urged consumers and regulatory agencies to demand greater transparency and accountability in the food supply chain. This is where Controlled Environment Agriculture (CEA) comes into picture. CEA offers innovative solutions to enhance food traceability and safety, ensuring a reliable and secure food production system.

Often referred to as 'the future of farming,' CEA is an advanced farming technique that involves cultivating crops within enclosed structures known as GrowPods. These structures precisely control environmental factors including temperature, humidity, light, and nutrient levels, while also controlling exposure to external contaminants. This helps minimise or eliminate the risk of pests, diseases, and chemical contamination, thereby enhancing food safety.

CEA is also considered an eco-friendly and sustainable alternative to conventional agriculture due to the ability of its closed-loop system to reduce the risk of contamination from external sources such as soil erosion, pesticide drift and runoff. Moreover, this method allows for safer and more efficient water management, preventing contamination from agricultural runoff and waterborne pathogens.

GrowPods foster ideal conditions for plant growth, ensuring higher yields and superior crop quality. These self-contained units are highly efficient and contribute to sustainable and environmentally friendly

GrowPods herald a new era in agriculture, promoting food security, transparency, resource conservation, and resilience.

practices by consuming comparatively lesser amounts of water and energy than traditional farming methods. In addition, the compact and modular design of GrowPods enables year-round cultivation, allowing farmers to cultivate fresh produce regardless of geographical constraints or seasonal limitations.

Embracing technology, data analytics, and automation, GrowPods empower farmers with real-time insights and precise control over various growth parameters, resulting in optimised resource allocation and minimal waste. These cutting-edge practices will not only benefit the food industry but also contribute to safeguarding public health and building consumer trust.

For more information about sustainable farming with GrowPods, visit: www.AdvancedContainerTechnologies.com

With the advent of artificial intelligence and automation, concepts such as robotics are largely being applied to agricultural practices around the world, thereby reducing labour and increasing overall yield.

Robotic harvesters: Redefining the future of agriculture

THE EXPLOSION OF human population - which is expected to surpass nine billion by 2050 - is intensifying the pressure on food production. At the same time, we are living in an era of rapid technological advancement, which is transforming the agriculture sector by introducing new and innovative ways to meet the growing global food demand. With the advent of artificial intelligence and automation, concepts such as robotics are largely being applied to agricultural practices around the world, thereby reducing labour and increasing overall yield. Harvesting is a crucial step in agriculture since it marks the end of the growing season and the efforts of farmers. Hence, the use of efficient harvesting techniques can help boost yield, quality and nutritional value of the crops, while also contributing to food security and the economy.

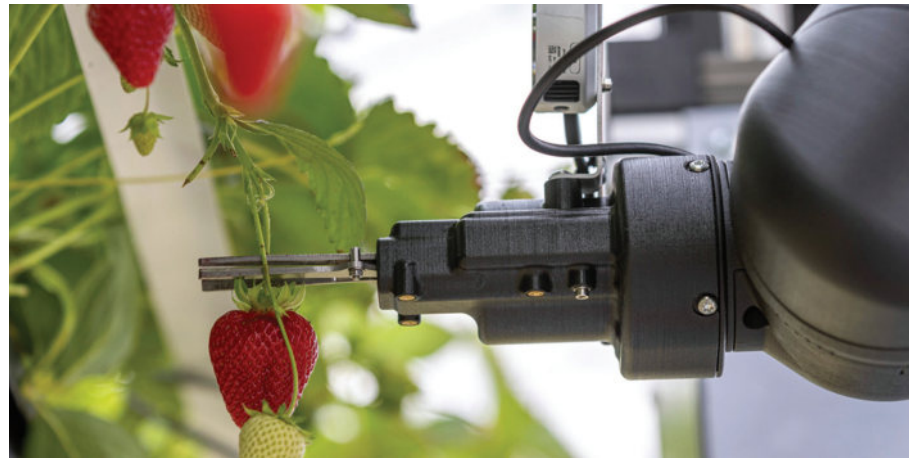


Image Credit: IAV Global

The robot's arm, equipped with a camera and a patented gripping system, uses cloud computing and artificial intelligence to locate the strawberries, determine their degree of ripeness and place the ripe fruit safely in a basket.

Application of AI in fruit/crop harvesting

Against the backdrop of farming, the data obtained from farm fields is translated into commands by AI, which are followed by robotic components or sensors to attain the required result. According to a 2021 research study exploring various robotic harvesting systems, an AI driven agricultural harvester can be divided into the following three mechanism layers:

Data sensing layer: In this layer, a sensor or vision system obtains data comprising either of fruit data used for fruit/crop detection or localisation data used for navigation or arm manipulation for fruit harvesting.

Decision making layer: In this layer, the data acquired from the previous step is processed for decision making. Prior to this, the entire plant is first mapped in order to identify crop areas, individual crops or ripe fruits as data sets or action points. After these data sets are ready, actions are then relayed to the robotic harvester by utilising various techniques such as image segmentation, data augmentation, data/feature fusion, deep learning, transfer learning and reinforcement learning.

The data obtained from farm fields is translated into commands by AI, which are followed by robotic components or sensors to attain the required result.

Robotic actuating layer: In this layer, the actions relayed by the previous step are implemented by the robotic component. Various actions including drilling, seeding, weeding, irrigation and fruit picking/harvesting are assigned to the robot, which is required to complete these actions by appropriately navigating through a field or greenhouse setting. Navigation, either for harvesting or fruit picking requires robot motion planning. This is carried out by a number of approaches such as drone-based navigation or motion planning frameworks like MoveIt. With the emergence of AI, several deep learning approaches such as the convolutional neural network (CNN) model, VGG-16 is being utilised. Following identification of a fruit/crop, the robot moves its end effector to pick/severe it from the plant. Methods for plucking may however vary depending on the plant. For example, while methods such as visual sevoing are a common choice for most crops, other methods that utilise approaches such as Learning from Demonstration (LfD) are often utilised for plucking certain crops such as tea leaves, that are prone to damages due to oxidation or cutting.

In recent years, several private companies and start ups around the world have began incorporating AI and deep learning concepts in the manufacture of agricultural robots. Results have shown great success, indicating potential for further precision and advancement.

IAV's strawberry-picking robot shows promise

At last year's AgEng-LAND.TECHNIK Conference held in Berlin, engineers at IAV Global, one of the world's leading engineering partners for the automotive industry, presented a self-developed strawberry-picking robot for the first time.

The robot works by moving autonomously through the planting aisles with the elevated planting troughs. The robot's arm, equipped with a camera and a patented gripping system, uses cloud computing and artificial intelligence to locate the strawberries, determine their degree of ripeness and place the ripe fruit safely in a basket after separating the strawberry from the plant by the stem. Moreover, the system can also operate at night, with around 20 hours of picking without a break made possible with the robot.

Having successfully completed this process 3.5 million times in so-called endurance tests in the field, the robot was thought to be suitable for addressing various challenges including lack of manpower.

While currently trained to specifically pick strawberries, IAV assured that the robot can be trained to pick other target crops in the near future.

Tevel's autonomous harvesting technology receives recognition

At this year's World Ag Expo held in California, Tevel Aerobotics Technologies, a developer of AI-powered autonomous drones for fruit harvesting, has emerged as winner of the 'Top-10 New Product Competition.'

Weighing in on this accomplishment, general manager of Tevel USA Ittai Marom said, "Thank you to the panel of judges of the World Ag Expo for recognising our autonomous harvesting solution in this distinguished list of winners. With three out of 10 winners hailing from Israel (Tevel, BlueWhite, and BeeWise), this is an incredible testament of Israeli innovation being at the forefront of the global agtech industry."

Also, in May 2023, Tevel announced its partnership with Unifrutti – one of the world's leading players in the production, marketing and distribution of fresh fruit – to revolutionise agriculture in Chile. Tevel's autonomous harvesting system was deployed in Unifrutti Chile's apple orchards from March to May, harvesting several varieties of apples with unparalleled efficiency.

Tevel's harvesting system features eight Flying Autonomous Robots powered by AI, computer vision and machine learning algorithms.

Throughout the harvesting operations in Chile, Tevel made significant strides in the overall system performance and reliability, and selective picking to ensure the harvesting of the highest quality fruit. The fruits picked by the robots were delivered to onboard bins, and were subsequently sent to Unifrutti's packing facility for detailed data analysis, which demonstrated the system's ability to successfully perform selective picking as well as minimise bruising.

Tevel's harvesting system features eight Flying Autonomous Robots mounted on a ground harvesting platform developed by Darwin Harvesting Group. Powered by AI, computer vision and machine learning algorithms, the company's autonomous harvesting technology helps address challenges that the global agriculture industry has faced in the past decade. These include labor shortages during harvest time, resulting in lower fruit quality, higher labour costs, and lost revenue from unpicked fruit.

Researchers design tomato picking robot using Chat-GPT

In a recent study published in Nature Machine Intelligence, researchers at the Technical University in Delft, Netherlands and the Swiss technical university EPFL utilised the popular large language model (LLM), Chat-GPT to design a fully functional tomato-harvester robot.

During the first stages of the study, researchers conversed with Chat-GPT regarding solutions to some of the most pressing challenges faced by humanity. The LLM pointed out that robotic crop harvesting would be an efficient solution to global food supply challenges. Deeper conversations with the AI platform helped researchers gain access to various academic publications, technical manuals, books, and media, which helped identify a basic robotic format. The researchers also went one step further by trying to obtain technical suggestions from the AI including materials and computer code for controlling the device.

Image Credit: Unifrutti and Tevel

Tevel's Flying Autonomous Robots harvesting apples in Unifrutti's orchards in Linares, Chile.

Although Chat-GPT appears to be valuable tool for the design process, researchers warn that results obtained from LLMs like these may be biased and involve plagiarism, which is why it is still unclear whether these designs can be considered novel.

In an article published on EPFL, Josie Hughes, head of the Computational Robot Design & Fabrication Lab in the School of Engineering said, "In our study, Chat-GPT identified tomatoes as the crop 'most worth' pursuing for a robotic harvester. However, this may be biased towards crops that are more covered in literature, as opposed to those where there is truly a real need. When decisions are made outside the scope of knowledge of the engineer, this can lead to significant ethical, engineering, or factual errors."

The researchers however concluded that LLMs did indeed have a great potential to be a force of good, if managed well.

Local feed millers in Uganda have been facing numerous challenges in regard to production capacity and sustainance. The launch of De Heus's new feed plant has kickstarted the growth of the aquaculture sector, promising a bright future for farmers in the country.

Ups and downs of Uganda's aquaculture sector

AQUACULTURE IN UGANDA is said to have started in the early 1940s, when carp began to be imported into the country. Although the use of carp was riddled with controversies, an FAO-supported comparative evaluation of carp and tilapia endorsed the use of carp, which further propelled the expansion of aquaculture in the country. However, as subsistence farming – which involves the supply of seed from farmer to farmer – began to grow, aquaculture expansion gradually began to fall, which resulted in an abandonment of several fish ponds. The sector finally began to pick up speed after receiving support both from the government and development partners such as FAO.

Eventually, the limited availability of fish seed caused carp to fall out of favour, with North African catfish and Nile tilapia taking its place. Despite fish farming in Uganda mostly being pond and subsistence-based, there has been a growing interest in commercial aquaculture.

Lack of production capacity along with a failure to sustain production are key challenges that domestic feed millers face in Uganda.

Such as improved market prices for fish, government intervention for increased production and stagnating supply from capture fisheries, have begun attracting entrepreneurial farmers seeking to exploit the business opportunity provided by the prevailing demand for fish. Over the years, around 20-30% of smallholder subsistence ponds have been transformed into profitable small-scale production units. Marketing of farmed fish is also better organised at this level, and fish is either sold away from ponds or processed for better paying markets in the neighbourhood. Industrial aquaculture is in the starting stages of development with most farms and companies being either at the stage of putting infrastructure in place or at the beginning of the production process.

Image Credit: Adobe Stock

Local feed production in Uganda remains constrained due to a number of reasons including high prices, quality inputs and unreliable production.

Since the last three years, commercial cage production has been exponentially growing with a CAGR of 46%, largely driven by the entry of international investors in the sector.

Aquafeed market landscape

Although aquaculture holds immense potential in Uganda, fish feed in the country is mostly imported. This is because the local feed production remains constrained due to a number of reasons including high prices, quality inputs and unreliable production. Among the very few fish producers operating in the region, the two prominent ones include Ugachick and Afro Kai Ltd. While Afro Kai won the bid to provide starter feed under the Operation Wealth Creation (OWC) programme, Ugachick on the other hand, has considered exiting the market following several quality-related complaints as well as competition from imported commercial feed. Apart from these, relatively smaller producers include Nsava Feeds and Sante fish feeds. Nsava Feeds also appears to have drastically scaled down production owing to low quality ingredients.

Quality of domestic feed production is crucial for the sustainable growth of the sector. Unfortunately, the high cost of sourcing protein sources, including alternative protein sources such as the black soldier fly (BSF), have resulted in many domestic players often compromising on quality. Ingredients such as silver fish, for example are mixed wth sand to increase their weight. This is an obvious reason why most farmers associate domestically produced feeds with low quality.

Lack of production capacity as well as a failure to sustain production are two of the key challenges that domestic feed millers face in Uganda.

Due to high costs and inconsistencies in local production, many small-scale farmers have began mixing their own feed on the farm. Some of the feed mills that produce for own-farm consumption supplement their produce with imported feed products.

Uganda's first aquafeed plant takes root in Njeru

In June this year, De Heus Animal Nutrition, successfully held the groundbreaking ceremony for its new state-of-the-art aquafeed plant in Njeru, near Jinja.

The facility will be the first dedicated aquafeed plant in Uganda and marks an important milestone for the company. At full capacity, the plant will have the capability to produce approximately 50,000 metric tonnes of fish feed per year, catering to the growing demand in the East African market.

By launching this plant, De Heus aims to provide a positive boost to the aquaculture industry in Uganda and the surrounding

countries. Although the industry has shown promising growth in recent years, it requires affordable and reliable quality feeds for further development. Currently, most feeds are imported, but the company's local factory will offer a shorter, more flexible supply chain.

At full capacity, De Heus's dedicated aquafeed plant will be capable of producing approximately 500,000 metric tonnes of fish feed annually, catering to the growing demand in the East African market.

The impact of this plant goes beyond employment at the facility itself. De Heus anticipates a significant positive effect on employment among fish farmers and suppliers, as the company aims to replace imports and source raw materials such as maize, cassava, soy, and others locally as much as possible.

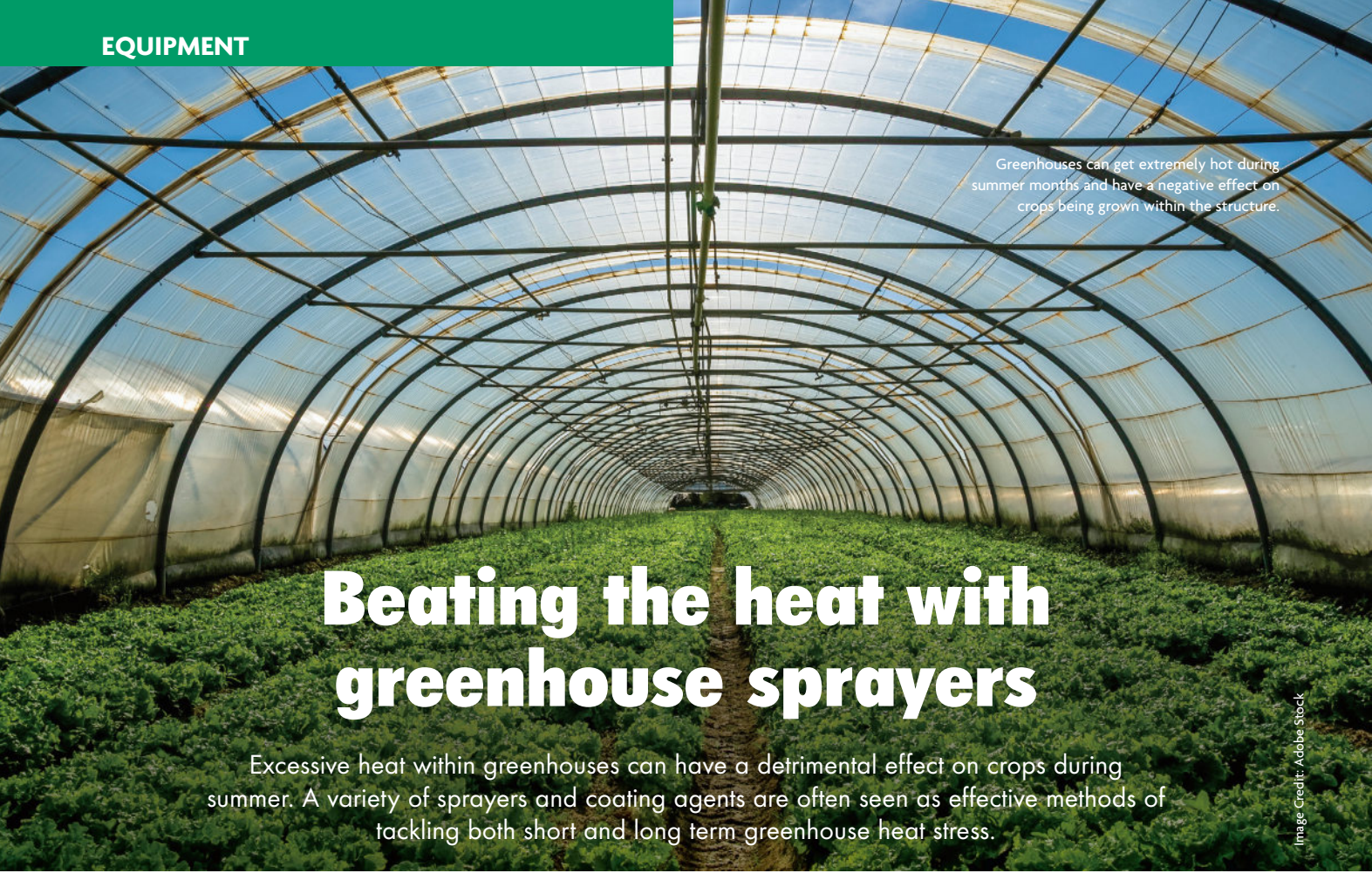
"At De Heus we believe in the potential of Africa and that is why we are investing in expanding our footprint: in South Africa, Egypt, Ethiopia, and recently with modern factories in Ghana and Ivory Coast. And now in Uganda," said business group director of Africa & Middle East, Theo Smalbraak.

By launching this plant, De Heus aims to provide a positive boost to the aquaculture industry in Uganda and the surrounding countries.

Image Credit: De Heus

Future of Uganda's aquafeed market

In order to secure feed input supply, feed producers can consider supply chain investments and linkage through relationships where plant or alternative protein producers can be supported. Such relationships will also enable guaranteed offtake of quality products for producers of raw feed materials. Given the high risk and size of this investment, and the high impact on Ugandan food security and private sector development, this would be a great opportunity for project-based support from development partners. This would in turn incentivise international fish feed producers to start production in Uganda, while at the same time improving the livelihoods of many farmers of soy or alternative protein ingredients.



Greenhouses can get extremely hot during summer months and have a negative effect on crops being grown within the structure.

Beating the heat with greenhouse sprayers

Excessive heat within greenhouses can have a detrimental effect on crops during summer. A variety of sprayers and coating agents are often seen as effective methods of tackling both short and long term greenhouse heat stress.

Image Credit: Adobe Stock

CROP CULTIVATION IN harsh and constantly fluctuating weather conditions is not only tedious, but also affects the livelihood of farmers by causing them to incur huge losses. Greenhouses therefore, offer the perfect solution by providing an ideal microclimate to grow crops in extreme climates year-round.

Greenhouse farming offers a plethora of advantages including increased crop production, decreased production risks, profit maximisation, disease and pest prevention, year-round growing, as well as greater stability and security. To make the best use of greenhouses, the temperature within these structures must be regulated to match external seasonal changes.

Heat stress during summer

Greenhouses can get extremely hot during summer months and have a negative effect on crops being grown within the structure. For example, very high internal temperatures can hamper root development, photosynthesis and nutrient absorption, resulting in consequences such as flagging (droopy leaves), cupped leaves, leaf scalds, leaf abscission as well as a drastic decrease in overall growth.

The optimum cooling conditions in a double layered greenhouse include 120 degree double nozzles, 6 MPa water supply pressure, 0.3 mm nozzle diameter and 15 min spraying duration.

Sprayers are the most common type of equipment used to tackle greenhouse heat stress.

Double-layer spray greenhouses

During winter, many regions make use of double-layer plastic greenhouses to maintain internal temperature. However, such greenhouse designs are not sustainable during summers as their high insulation along with external solar radiation can cause an unbearable increase in internal temperatures that are not suitable for plant growth. An experimental study published in July 2023 proposed a double-layer spray greenhouse using a high-pressure spraying system placed inside the double film, that allows for additional cooling capacity during the summer in order to sustain plant growth.

The impact of internal spraying on the microclimate in the greenhouse under various atomisation indexes, spraying times, and nozzle angles was studied and the following two results were inferred:

Firstly, nozzle diameter and water pressure were found to have a significant impact on the effectiveness of spray cooling. A greater diameter and water supply pressure would therefore indicate a greater spray flow, which would in turn produce a more profound cooling effect. Ideally, 120° double nozzles measuring 0.30 mm each in diameter each, along with 6 MPa water supply pressure would serve as optimum conditions for cooling. On the other hand, the cooling effect was not found to be significantly related to the atomisation index, but rather more closely related to the volume of the spray flow rate.

Secondly, different spray durations were found to have a significant impact on greenhouse temperature and humidity. For example, the longer the spray was used, the greater the cooling effect it produced. However, once the spray duration reached 20 min, no significant increase in cooling effect was observed. Prolonged spraying can cause high humidity within greenhouses which can cause plant pests and diseases. Therefore, an ideal spraying duration of 15 min should be maintained in order to minimise the risk of high humidity. Moreover, the study also suggested the design and use of a water recovery device to reduce water energy consumption. The device could help collect water from the spray that has not evaporated to form droplets, and provide a portion of the water for the spray.

Coating with Redusol

Traditionally, growers have utilised shade cloths or sprayed their greenhouses with chalk to repel external heat. However, these methods have now been replaced by liquid greenhouse coatings that are comparatively easier to apply and remove, while also

providing uniform shading.

One of the modern options is to apply wear resistant ReduSol on the outside of the greenhouse to reduce heat radiation. ReduSol is basically a wear-resistant shading agent developed by ReduSystems, a global leading brand in developing coatings and cleaners for greenhouse cultivation. ReduSol works by reflecting large amounts of solar energy and is easy to remove with the help of ReduClean, a special agent developed by Mardenkro, that can easily remove ReduSystems coatings from the greenhouse cover.

Wear-resistant shading agents like ReduSol work by reflecting large amounts of solar energy, thereby bringing down the average greenhouse temperature by five degrees.

ReduSol can be applied to both glass and plastic greenhouses and is capable of reducing average greenhouse temperature by five degrees. Application of the agent is quite simple and involves the use of a spraying machine. ReduSol is added to a mixing tank filled with the required quantity of clean water and stirred continuously. The spray liquid is then stirred frequently during the application and applied evenly to the greenhouse using a spraying machine. Furthermore, certain precautions need to be taken while using the product. For example, it is important to keep in mind not to use any non-ReduSystems shading products in combination with ReduSol, and to not apply the product when rain is expected within six hours.

The application of ReduSol can also be customised to suit growers' needs. For example, the product can be applied in multiple layers and increased when needed as the light intensity increases. The product can also be reapplied in places. The advantage of applying two layers is that they mix together well, resulting in a long lasting uniform layer on the greenhouse roof. Some countries like Germany also mix ReduSol in multiple colours, which allows the greenhouse to merge in with the surrounding landscape. These colours serve aesthetic purposes and do not have any effect on the removal of the product from the greenhouse.

Image Credit: ReduSystems

Redusol can be applied to both glass and plastic greenhouses and is capable of reducing greenhouse temperature by five degrees.

In case of short heat waves, products such as SprayChalk, a liquid solution without a binder can be used to provide immediate relief by reducing the amount of sunlight, momentary creating a more comfortable climate. Moreover, it has a temporary effect since it washes off during rain.

For best results, growers must choose products carefully, based on factors like location and cultivation.

GRIMME introduces new generation of potato harvester, EVO 280

Image Credit: GRIMME

The new EVO 280 comes with many innovations in terms of maintenance and user-friendliness.

PACKED WITH INNOVATION, the new generation of GRIMME's potato harvester, EVO 280 is now equipped with a completely hydraulic drive-system delivering comfort, power and tenderness.

Thanks to the completely hydraulic drive-system, all main webs, including the optionally available intake web, as well as the separators can be adjusted independently of the engine speed (PTO speed) of the tractor. The speeds of all main webs, including the deviner web, are now displayed in km/h, making it easier for the driver to adjust the web speeds to the selected harvesting speed. If desired, electronic assistance systems like Speedtronic-Web and Speedtronic-Sep can relieve the operator by automatically regulating all web speeds depending on the load. The operator can then easily concentrate on monitoring the machine, thanks to the impressive size of the SmartView display, which also helps reduce fatigue when working long days.

The optimisation of the intake design ensures reduced weight as well as improved contour adaptation, which prevents build-up and blockage by haulm. For improved crop protection against possible losses, the overlap between the first and second main web as well as between the second main web and the first separator has been increased. By optimising the positioning of the drive for the diviner web, it was possible to further increase both the pulling power and the stability. In combination with the newly positioned scraper comb, the tubers are separated from the haulm even more effectively. For maximum pushing power in difficult harvesting conditions, the new generation can also be equipped with a hydrostatic wheel drive.

With the eight tonne bunker still fitted as standard, the machine can alternatively be equipped with the 7.5 t, patented NonstopBunker with a very large transfer distance, making it easy to unload during the harvesting process, even on platform trailers with two rows of boxes. The optional bunker web with canvas and all-round padding on the bunker bars ensures maximum crop protection. In addition, there is the optional lubrication system for the bunker chain, whereby oil is automatically applied to the chain links during the bunker unloading process.

Besides the already familiar comfort packages for the picking table, the picking staff also benefit from a more attractive working environment thanks to extended comfort packages with additional cleaning spades, storage boxes and an aluminium ladder, as well as a re-designed canopy. The elimination of mechanical drive components also improves accessibility for cleaning and maintenance work, which is aided by the central lubrication points at various locations. For the coming year, a central lubrication system can also be selected as an option. Thanks to the position lights fitted as standard, the machine contour is visible to the driver even in the dark. Moreover, the new LED peripheral lighting ensures optimal illumination of the working environment.

For more information, visit: www.grimme.com

Happy customer story with Farmet company technology in Lithuania

EKKO, AN INNOVATIVE organic rapeseed, flaxseed and hemp seed oil producer, has its factory located in Zarasai, Raudondvaris – a beautiful Lithuanian village surrounded by breathtaking nature.

Their modern production facilities and a team of experienced professionals allow them to specialise in the finest quality cold-pressed rapeseed oil & cake production, offering only officially certified – organic premium quality products.

During the production process, EKKO ensures the highest product quality and adheres to the strictest production standards. Thanks to advanced production technology, their product retains the natural smell and taste which are typically only found in natural rapeseed oil and are extremely beneficial to human health, as it retains all the biologically active nutrients.

All of EKKO's products are produced at their factory and only from the locally grown rapeseeds. Their oil is produced using the most advanced cold pressing technique and the most modern equipment.

The chosen production process allows the company to ensure the full preservation of all the beneficial nutrients, microelements and vitamins in the final product.

Using modern presses Farmet models, EKKO's set of presses is made of extremely durable metals, thanks to which the production process can operate all year round without interruption. This ensures a smooth work process and high production efficiency.

EKKO is able to press more than 5,000 tons of organic seeds per year. Made only from finest quality ecologically grown rapeseeds complying with the strictest quality standards & using the most advanced cold-pressing technique, the company produces organic cold-pressed unrefined rapeseed oil that is officially certified – 100% organic, completely clean & natural product.

Image Credit: Farmet

Using modern presses Farmet models, EKKO's set of presses is made of extremely durable metals, thanks to which the production process can operate all year round.

Their selected production process ensures the retention of all valuable substances present in rapeseeds. Organic cold-pressed unrefined rapeseed oil is extra rich in Omega-3, Omega-6 and Omega-9 fatty acids, and Vitamins E & K – all necessary for human health. The human body is not capable of producing the said substances, thus it is very important to consume food saturated with them.

Moreover, it is also excellent for everyday cooking as well as salads & salad dressings. The oil retains all of its best qualities while cooking in up to 190°C, and is a healthy addition for various meals and cuisines.

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- **Local mechanical processing from small to large capacities**
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  - pressing with extrusion
  - feed extrusion and production of feed mixtures
  - physical vegetable oil refining
- **Patented system of energy recovery**
- **Complex approach**
- **Unique combination of extruders and screw presses**
- **Processing of wide range of oilseeds**
  - soybeans, castor seeds, cottonseeds, sesame seeds, maize germs, palm kernel, ...etc.

www.farmet.eu

An increase in awareness of drone technology among African populations, along with improved drone performance and drop in costs, are some of the core factors shaping the adoption and upscaling of this revolutionary technology in the continent, particularly sub-Saharan Africa.

Drone technology picks up steam in sub-Saharan Africa

SMALLHOLDER FARMERS IN sub-Saharan Africa contribute immensely to food security in the continent. However, a lack of access to modern farming technologies has prevented these farmers from harnessing their full potential, threatening their livelihoods as a result. Moreover, as the world population continues to rise, global food demand is expected to increase by 60% in 2050, with an even greater increase projected in sub-Saharan Africa.

While the booming adoption of drone and precision agriculture technologies have transformed the agricultural landscape in developed countries, a number of factors including cost constraints, a lack of trained personnel, and insufficient infrastructure, have resulted in a low uptake of these technologies in Africa.

Research has shown that drones have the potential to improve agricultural productivity by assisting farmers with numerous tasks such as field mapping, crop monitoring, evaluation, and classification. Besides this, drone technology adapts well to climate change and facilitates better resource management, thereby supporting climate-smart agriculture. In addition, the ability of drones to fly thousands of kilometres enables them to perform instant deliveries of food, feed and vaccines, thereby reducing the cost of travel, especially in rural areas.

Drone technology has the potential to transform the agricultural landscape.

Image Credit: Adobe Stock

Scepticism hampers drone technology uptake in Malawi

A study published in May 2023 conducted a survey of Malawian farmers' perceptions and attitudes towards the use of drone technology in agriculture. Results have shown that although smallholder farmers generally view drone technology in a positive light, a majority of them remain skeptical about the accuracy of the data obtained from drones, thereby questioning the outcomes of investing in such expensive technology. Data privacy and security also seem to be a major concern, since most farmers are reluctant to share their personal information with government agencies or private companies. In addition, the study also pointed out that despite their readiness to incorporate drone technology into their agricultural practices, subsistence and commercial farmers expressed varying levels of interest in specific applications.

Research has shown that drones have the potential to improve agricultural productivity, support climate-smart agriculture and perform instant deliveries of food and animal vaccines.

The solution would therefore be for policymakers and stakeholders to take into consideration the differing levels of interest, trust, and perceptions surrounding this technology, by tailoring their policies and programmes to address the unique needs and concerns of smallholder farmers. For example, implementing policies that focus on cutting down drone costs or providing subsidies, along with training programmes that educate

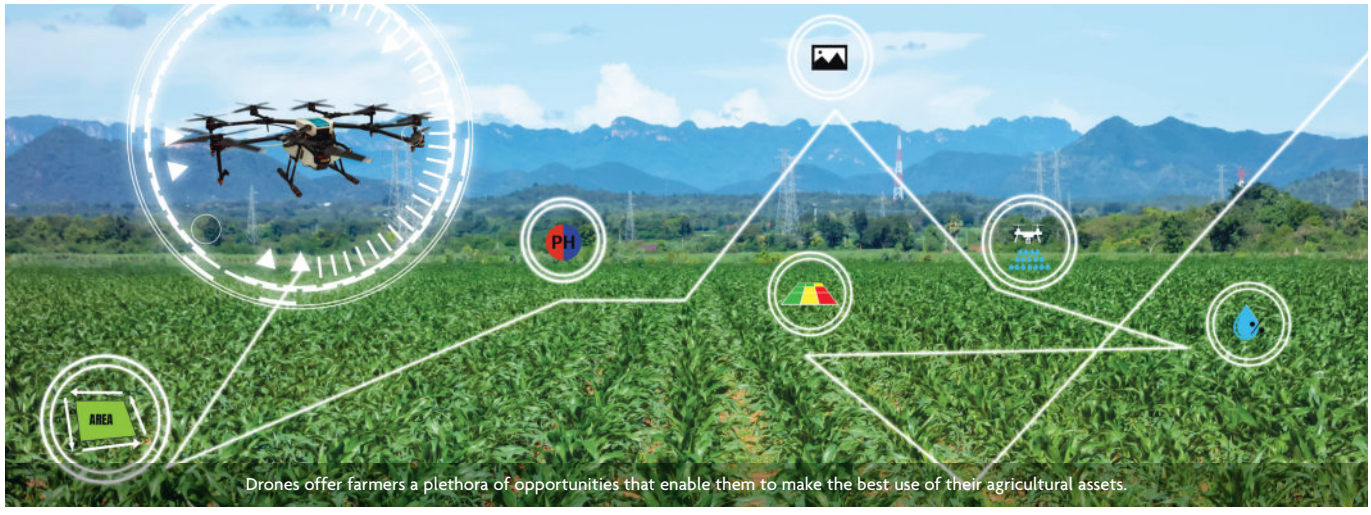

Image Credit: Adobe Stock

Drones offer farmers a plethora of opportunities that enable them to make the best use of their agricultural assets.

farmers regarding the benefits of drone technology, open data and data privacy regulations, would help boost the adoption of drone technology among smallholder farmers.

Role of drone technology in precision agriculture

Drones offer farmers a plethora of opportunities that enable them to make the best use of their agricultural assets. Being equipped with specialised sensors, agricultural drones provide an aerial view of crops, managing to detect even the most subtle changes. Multispectral images captured by these sensors help to generate a variety of crop data including normalised difference vegetation index (NDVI), leaf area index (LAI) and photochemical reflectance index (PRI).

NDVI images provide detailed information about various conditions affecting crop development namely, water pressure, nutrient deficiencies, pest infestations, and crops diseases, among others. PRI on the other hand, is a measure of photosynthetic light-use efficiency, which allows users to view crop changes or stress conditions that are far too minute to be detected by the common eye.

The following examples highlight how drone technology is currently being incorporated into precision agriculture practice in East and West Africa:

In Nigeria, Aerobotics employs drones equipped with light spectrometers to map and analyse soil, aiding farmers in optimising crop yields by assessing nutrient levels and moisture content.

Kenya's Precision Hawk employs drones with thermal cameras to detect pests and diseases in crops, facilitating timely interventions.

Emergence of PPPs in Africa

Pubic-private partnerships (PPPs) play an important role in representing an avenue for addressing some of the challenges involved in the introduction and upscaling of drone technology in African countries. Moreover, they also improve the uptake of these technologies among smallholder farmers. In recent years, a number of PPPs have emerged in various regions of the continent.

PPPs help address some of the challenges involved in drone technology upscaling, while boosting their uptake among smallholder farmers.

One notable example is the partnership between the Rwandan government and the global leader of instant logistics and deliveries, Zipline, which was announced in December 2022. Instant logistics has helped solve some of the world's more pressing issues such as hunger, malnutrition, road congestion and environmental pollution. Besides this, it has also contributed hugely to the country's agricultural sector.

According to a press release, the Ministry of Agriculture, last year, delivered more than 500,000 doses of animal health vaccines and more than 8,000 units of swine semen to vets and farmers using Zipline. Access to animal husbandry products has increased the fertility rate by 10% among farmers using Zipline deliveries, compared to the national average. This enables farmers to raise more pigs with a healthier genetic profile, grow their businesses, and ultimately provide better access to protein for communities and improve population health.

As the performance of drone technology is rapidly improving, their costs are also gradually dropping. This, along with an increase in their awareness among African populations is shaping the adoption and upscaling of this revolutionary technology in the continent, particularly sub-Saharan Africa.

Thulit: LEMKEN's harrow champion on uneven ground

WITH THE THULIT, LEMKEN presents its first weeder harrow and rounds off its range of mechanical weed control implements. In developing this machine, the agricultural machinery specialist broke new ground to now launch a new concept with four beams and eight rows of harrow tines. Complex spring combinations are replaced by an innovative hydraulic tine pressure adjustment, which ensures that the tines deliver more even pressure across the full working surface. The pressure can be continuously adjusted to up to five kilograms while driving. As a result, the Thulit does an outstanding job during the sensitive crop growth stages.

Systems & Components: Showcasing the evolution of mobile machinery

DRIVEN BY RAPID advances in sensor technology, Systems & Components trade fair taking place from 12-18 November in Hanover, Germany, will showcase the evolution of mobile machinery, presenting powerful assistance systems that unburden the driver and increase efficiency.

Working alongside their OEM customers from the outset, the exhibitors at the B2B platform, taking place in parallel to Agritechnica, are developing market-relevant solutions that meet their customers' automation needs.

Smart sensors that not only measure but also process data into a usable form are already used extensively on off-highway commercial vehicles. Where several measurements of the same scenario, for example the state of a crop in the field, are taken using different sensors, 'sensor fusion' algorithms can combine and compare this data from different sources and offer more reliable recommendations. Exhibitors at the show draw on a broad technology portfolio from the automotive sector, which they are continuously developing for off-highway use, above all, 24 Volt compatibility and the IP69K rating. In addition to radar sensors, systems using other sensors like ultrasonics or cameras can be flexibly configured and tailored to the requirements of the specific application. In order to interpret the sensor data, powerful 'data fusion' algorithms that are increasingly using artificial intelligence (AI), provide a detailed representation of the environment surrounding the vehicle.

Engineers, developers and fleet managers will be able to find a complete toolbox for almost all sensor applications in mobile machinery.

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