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November/December 2019

Tractor progress Towards future growth in Africa

Revitalising agriculture Nigerian fertiliser focus

Micro irrigation Reducing dripper occlusion



Insect food industry in Africa. p22



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Farming Calendar 2019

DECE	MBER 2019	
6-8	4th Morocco Food Expo 2019 www.moroccofoodexpo.com	CASABLANCA
9-11	Food Africa 2019 www.foodafrica-expo.com	EGYPT
10-12	agrofood West Africa www.agrofood-westafrica.com/agrofood-westafrica0.h	ACCRA
24-25	The IRES - 750th ICFAE www.theires.org/Conference2019/SouthAfrica/3/ICFAE	CAPE TOWN
JANU	JARY 2020	
29-31	Africa Agri Expo www.africa-agriexpo.com	NIGERIA
28-30	Promoting climate finance for agriculture www.cta.int/en/event/promoting-climate-finance-for-ag southern-africa-sid038ace56c-a97b-49aa-810a-bec7ed	JOHANNESBURG griculture-in-east- 86e0bb4
FEBRI	JARY 2020	
19-21	Argus Africa Fertilizer www.argusmedia.com/en/conferences-events-listing/af	CAPE TOWN frica-fertilizer
20-23	Suan Poultry Expo www.10times.com/sudan-poultry-expo	KHARTOUM
MARC	CH 2020	
16-19	African Regional Conference on Irrigation and Drainag www.10times.com/arcid	e MARRAKECH

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

Boosting Ghana's cocoa production

THE AFRICAN DEVELOPMENT Bank (AfDB), Credit Suisse AG, the Industrial and Commercial Bank of China Limited and Ghana Cocoa Board (COCOBOD) signed a US\$600mn syndicated receivables-backed term loan to boost cocoa productivity in Ghana.

At a press conference following the signing, President Akufo-Addo said, "It was critical that we find a mechanism for scaling up the value chain for our farmers and that is where the Bank came in."

The COCOBOD transaction was launched at the Africa Investment Forum in 2018, and a year later, the signing is a demonstration of the Forum's ability to raise financing, including from international commercial financiers, for projects in Africa. Prior to the agreement, COCOBOD did not have access to long-term debt capital.

Making sure that Africa gets to the top of the value chain is one of the African Development's Bank's top priorities, President Adesina said, adding that Africa could become a global hub for cocoa and cocoabased products.

"All cocoa-producing countries will get similar support (from the bank). Ghana is bankable, cocoa is bankable and of course

Partnership for financial inclusion in Namibia

NAMPOST AND KFW Development Bank signed an agreement to provide micro-loans to micro-, small- and medium sized companies and households in rural and remote areas through NamPost subsidiary PostFin.

Due to the excellent footprint of NamPost's branch network, beneficiaries can be reached across the country. By enabling PostFin to greatly expand its loan book over the medium term, the funding directly supports poverty reduction and social progression; adequate financial products and access to finance create an enabling environment especially for micro and small entrepreneurs in the formal and informal sector. The funds provided within the German development cooperation aim at extending the respective access to finance for up to 28.000 households and micro-, small- and medium enterprises, with a special focus on women and disadvantaged persons. The agreement will be backed by a sovereign guarantee.

Improving Tanzanian rice production

REAL IPM, BIOBEST'S subsidiary in Kenya, has announced to be one of three collaborators in a project to improve rice production in Tanzania by developing innovative microbe-based methods to manage rice blast.

Funded by the UK's Development Fund for International Development (DFID), it is an Agri-Tech Catalyst project (managed by Innovate UK). With US\$259218 of funding, this collaborative project sets out to combine seed-coating/priming with root dipping in specific beneficial bacteria (PGPR), complemented with foliar applications of biocontrol agents (BCAs) and aims to take innovative ideas to tackle challenges in agriculture.

The project aims to optimise the effects of seed coating/priming and root dipping on rice endophytes and induced resistance, as well as the survival and dispersal of BCAs on leaf surfaces under field conditions.



The initiative aims to raise cocoa yields per ha and increase Ghana's overall production.

Africa is bankable," Adesina said.

COCOBOD will use the facility to raise cocoa yields per ha and increase Ghana's overall production. These include financial interventions to sustainably increase cocoa plant fertility, improving irrigation systems, rehabilitating aged and disease-infected farms. The funds will also help increase warehouse capacity and provide support to local cocoa-processing companies.

Ghana's cocoa sector employs around 800,000 rural families and produces crops worth US\$2bn in foreign exchange annually. COCOBOD is a fully state-owned company solely responsible for Ghana's cocoa industry, controlling the purchase, marketing and export of all cocoa beans produced in the country.

AB Sugar announces winning idea for irrigation water loss

SAMUEL MUKISA AND Yvonne Nalinnya, who studied civil engineering at Makerere university and have a keen interest in irrigation, have been announced as the winners of AB Sugar's Innovate Irrigation challenge.

Innovate Irrigation was an online event held by AB Sugar during June 2019, in partnership with WaterAid and the Centre for Industrial Sustainability at the University of Cambridge.

On announcing the winners, Katharine Teague, Head of Advocacy from AB Sugar said, "We are delighted with the winning idea and the potential to introduce the concept following the results of the feasibility study. We are continually taking steps to conserve water in line with our 2030 sustainability commitments and are always looking at ways to work with those within our supply chain to do so. The winning idea provides us with the opportunity to work together with our growers to put this into practice."

"The decision to award Samuel and Yvonne with the winning idea was unanimous by our prestigious panel of judges; representing a diverse range of experience and knowledge across a multitude of industry



A smart irrigation system can provide real-time data to estate managers and smallholder farmers and help them in making informed decisions on water usage.

sectors and geographies. The judges came together to review all the entries against a set criterion of relevance, feasibility, scalability, impact and measurability."

Samuel and Yvonne's idea focused on developing a smart irrigation system that would account for water used in irrigation, detect water losses in the system, plan irrigation schedules, monitor growth of crops and determine the irrigation water requirement of the crop during different growth stages. It could be connected into current processes, managed from afar and integrated with new technologies available in remote locations; allowing estate managers and smallholder farmers to understand, analyse and act on the information provided through the acquired data.

Two of the judges commented on the selection.

Jim McClelland, Sustainable Futurist, SustMeme remarked, "It's affordable, implementable at scale and would enable the all-important data points to be collated. When there is insufficient data, resource efficiency is lost, therefore, this idea warranted being the winner due to its critical data collection and direct impact on enhanced performance."

Ian Bamford, commercial director, Centre for Industrial Sustainability at the University of Cambridge said, "The need to encourage recurrent behaviour change from all those involved from the offset stood out; it's about continuing to build trust with users. Overtime, this will ensure a better chance of success when introducing other new technologies to meet the changing needs of the climate in less developed countries or rural locations."

US financial support for fish farm in Algeria's refugee camp

THE UNITED NATIONS World Food Programme (WFP) welcomed a US\$560,000 contribution from the US State Department to support the WFP's innovative fish farm in Algeria's Tindouf refugee camps.

This is the second US contribution to WFP's activities in Algeria that provide refugees with livelihood opportunities and enhance food security in the camps.

The US contribution will allow WFP to increase access to fresh fish produced at the world's first fish farm in a refugee camp, with an expected annual production of 21,000 kg of tilapia fish.

Tilapia, a resilient fish that can withstand high temperatures, is raised in cycles of eight months in several basins. The farm was built in partnership with French non-government organisation, Triangle Génération Humanitaire, with funding from the State Department's Bureau of Population, Refugees and Migration. WFP has been testing the technique since February this year and trained a team of 15 refugees.

Imed Khanfir, WFP representative and country director in Algeria, said, "A fish farm in the desert seems like a crazy idea at first but the technique has been successfully implemented under similar conditions in Algeria and the last months have shown that it can be replicated in these refugee camps where groundwater is available."

For more than 40 years, the refugees from Western Sahara have been living under extremely harsh conditions in five camps in the



desert, near the Algerian town of Tindouf. Despite regular food assistance, malnutrition rates and anaemia prevalence remain a challenge, especially among women and children. Refugees rely almost entirely on WFP monthly food rations and have limited access to fresh produce.

"This fish farm is a successful addition to WFP's low-tech hydroponic units introduced in the camp two years ago allowing refugees to grow fresh animal fodder in just seven days," stated Khanfir. "These food solutions can be replicated anywhere in the world to support the food needs of vulnerable families living in harsh environments."

The United Nations World Food Programme works in more than 80 countries around the world, feeding people caught in conflict and disasters, and laying the foundations for a better future.

HarvestEye Ltd partners with Grimme UK to provide crop information

LINCOLN-BASED AGRITECH COMPANY HarvestEye Ltd collaborates with root crop machinery specialists Grimme UK to deliver HarvestEye technology to the potato industry.

The exclusive partnership arrangement enables Grimme to be the sole UK distributor for HarvestEye for both new and existing harvesters and farm graders.

HarvestEye is a UK patented technology that provides insight on size, count and crop variation on unwashed potatoes as they are harvested.The integrated data analytics shows precisely what is being lifted and from where in the field.

Marel Poultry's new production facility in the Netherlands

MAREL POULTRY HAS opened its new production centre in Dongen, the Netherlands and announced that all production and office activities will take place in the building at the Tichelrijt II business park.

The new building features 40 production places as well as eight office places.

Folkert Bölger, executive vice president of Marel Poultry, said, "For our production location in Dongen, this means that we now have an optimally equipped business premises that meets the very latest requirements."

"When this new environment contributes to a higher job satisfaction, it will almost naturally lead to the best possible production," Bölger added.

Wefarm executive appointments to propel growth trajectory

WEFARM, FARMER-TO-FARMER DIGITAL network, has announced a series of executive appointments to accelerate its growth amidst securing US\$13mn Series A funding.

Amongst the new appointments, is a former Linkedin and Deliveroo Director Alex Sonnenberg as the new VP of Growth and former Hello Tractor COO Martha Haile joining as the VP of Africa.

Sonnenberg's experience spans across numerous high-profile tech businesses such as Tuenti, LinkedIn, Deliveroo and O², where he was responsible for driving relevant growth and engagement. Sonnenberg has been brought in to lead Wefarm's Growth team, a role that's becoming increasingly popular in hyper-growth companies, which helps to advance its marketing and communication efforts through close collaboration with the product and specialist teams

To date, Wefarm has built a community of 1.9mn farmers across Uganda, Kenya and Tanzania and has generated US\$1mn in sales since it launched its marketplace eight months ago. The executive appointments will cover the two main focus areas for Wefarm's projected expansion; growing the newly launched marketplace across its core markets and increasing its international community of farmers to become a complete ecosystem for smallholder farmers around the world.

Martha Haile has been appointed as the



Martha Haile has been appointed as the vice president of Africa to head the regional offices in Uganda, Kenya and Tanzania.

VP of Africa, to head up the regional offices in Uganda, Kenya and Tanzania, in order to build and develop the teams to reach more farmers, partners, and retailers. Haile brings a deep knowledge of the markets, and experience of building a strategic partnership from her time at Hello Tractor, Booz Allen, and the National Democratic Institute.

Haile commented, "Leveraging technology to improve and increase agricultural output is critically needed across Africa. I'm excited to continue working in this field with an innovative and mission-driven company like Wefarm, which is at the forefront of providing farmers with much-needed information, services, and products."

Kenny Ewan, CEO at Wefarm, said, "As we continue to grow our presence in Africa, and expand our recently launched marketplace, we're thrilled to welcome Alex and Martha to the team. Ultimately if we can inspire 100mn farmers to work together on one platform, we can fundamentally shift global agriculture and trade in their favour. Our new hires alongside our new funding will take us even closer to bringing this vision into fruition and help us become the network of trust for farmers, in what is ultimately the biggest industry in the world."

The Series A financing round is expected to help Wefarm further scale its network of 1.9mn farmers, and its newly created Marketplace, to connect farmers in Africa, even those without internet access, to the information, products and services they need to be more successful.

Farmers will be able to access quality products and services, such as seeds, fertilizers and a range of other items from trusted retailers and brands.

With the Wefarm's bottom-up model, all products, services and retailers on the platform have been recommended by users and can even be purchased through SMS.

Cattle keepers and farmers in Bahr El Ghazal agree on peaceful coexistence

WITH SOUTH SUDAN'S rainy season coming to an end, the challenges of finding water points and grazing land for cows and goats are soon set to dominate relations between farmers and pastoralists with their livestock.

To prevent potential conflicts, the United Nations Mission in South Sudan organised the meeting to find common ground.

Guiding the dialogue is the "Marial Bai" accords on seasonal cattle movement, which represents one of the most successful attempts at resolving issues related to a scarcity of grazing land and water. The resolutions agreed on are now set to be reviewed every three years.

"We hope to identify all the areas that require heightened security measures," said Abdulbaqi Ibishomi, a civil affairs officer serving with

the peacekeeping mission. "Only then can the seasonal cattle movements proceed peacefully."

"We are ready to compensate farmers if our cattle destroy their crops because we understand that crops are just as important as cattle," said Deng Akec Achuil, head of a cattle ranch. "If we don't compensate a farmer, he won't be happy, and we fear that he may do anything to our animals."

Although a conclusive decision was not reached on the issue of weapons, it was agreed that farmers whose harvests are destroyed by cattle will be compensated according to a committee formed to asses the number of crops that has vanished.

Ag biotechnology tops investor wishlist for 2020

NEW RESEARCH PUBLISHED by technology incubator Idea2scale and Agri-FoodTech venture capital firm AgFunder has revealed that food and AgTech investors are most excited by startups in the Ag biotechnology category.

The report details the results of an investor sentiment survey of 50 food and AgTech venture capitalists globally to discover their preferences and hopes for 2020.

Ag biotech is a wide-ranging category of agri-foodtech innovation encompassing all on-farm inputs for crop and animal agriculture including genetics, microbials, breeding and animal health. An important focus for startups in this category is to help farmers increase their yields in a more environmentally sustainable way and 58 per cent of investors surveyed put Ag biotech in their top three.

The next most popular categories were Innovative food (56 per cent), which includes the ever-exciting alternative meat segment, and Farm management software, Sensing and IoT (46 per cent). At the opposite end of the scale, 54 per cent of investors said the online restaurants and meal kits category was the most overhyped.

Danny O' Brien, CEO and founder of Idea 2 Scale, said, "Understanding the mindset of investors is intrinsically linked to predicting the direction of the industry itself and separating what's overhyped from what's garnering real interest."

"Although it's a hugely exciting time for the food and AgTech industry at large, this research has reaffirmed the need for businesses to ensure they are coming to investors with an 'investor ready' opportunity. Businesses must assess whether they're clearly communicating their value proposition, have a clear route to market and has assembled the right skillset in order to stand out from the crowd. These



An important focus for startups in agri-foodtech innovation is to help farmers increase their yields in a more environmentally sustainable way.

are non-negotiables for securing investment."

Louisa Burwood-Taylor, head of media and research at AgFunder, said, "While Ag Biotechnology has consistently been the best-funded upstream category across the food supply chain, it's interesting to see that it continues to grab investor attention, especially in light of recent prohibitive regulatory decisions in Europe. What's lesser-known is that Innovative food, the category including the trendier meat alternative segment, is still a very small part of the overall foodtech and agtech startup universe. With clear investor demand for more Innovative Food opportunities, including us at AgFunder with our New Carnivore Fund, it's very likely investment will have increased dramatically in 2019."



Saving lives in Somalia

SIXTY PERCENT OF Somalia's population depends on agriculture or livestock such as sheep, goats, camels and cattle.

Millions in Somalia need humanitarian aid because of extreme weather conditions and conflict. However, relief work is difficult and dangerous in a country that has been ravaged by armed conflict for almost 30 years.

The Norwegian Refugee Council makes

significant efforts to help people where they live so they are not forced to flee across long distances. However, there are major challenges to working in conflict-affected areas, and particularly one of the world's most dangerous countries.

"It is a great responsibility to make sure all staff know how to deal with the security challenges," says Stephen Akwabi, NRC's Safety and Security Adviser in Somalia, "to make it possible to conduct relief work in a country where attacks and explosions occur every day, and where kidnapping of relief workers is always a real danger and possibility."

By having robust security systems in place, NRC manages to reach people in some of Somalia's more remote and conflict-affected areas.

Fellowships for young African agribusiness innovators

THE WORLD FOOD Prize Foundation and the World Hunger Fighters Foundation are partnering to provide year-long fellowships for young African food innovators and entrepreneurs.

The World Hunger Fighters Foundation will award annual Borlaug-Adesina Fellowships to young Africans to develop new technologies, champion public policy, and develop viable businesses in the field of agriculture. The young leaders will gain experience in international agriculture research centres, including food and agribusiness companies.

Felix Tshisekedi, the President of the Democratic Republic of the Congo, a guest speaker at the launch of the foundation in Des Moines, Iowa, said: "Agriculture can be the source of peace in Africa. It can create jobs and act as a stabilising factor in countries witnessing conflict. Agriculture is helping to disarm former combatants in my country, for instance."

The president of the World Food Prize Foundation, Ambassador Kenneth Quinn, former Nigerian president Olusegun Obasanjo described the hunger fighters initiative as critical to Africa's food security.

"The problem of youth unemployment, criminality, and many other related problems will be solved substantially if we take agribusiness, food security, and social security altogether. One of the feedbacks from this year's World Food Prize event is that agriculture should not be taken as a



The World Food Prize Foundation and the World Hunger Fighters Foundation will provide year-long fellowships for young African food innovators and entrepreneurs.

development affair, but rather as a business."

Ending hunger and malnutrition will help achieve lasting peace in the world, African Development Bank President Akinwumi Adesina told guests at the launch.

"Together, let's end hunger in Africa. Together, let's end hunger in our world," said Adesina, who is the patron of the World Hunger Fighters Foundation. Of 1,300 applications, 10 outstanding African youth have been selected for the 2019 Borlaug-Adesina Fellowship.

The late Nobel peace prize laureate, Dr Norman Borlaug, whose work helped feed one billion people, used his award to set up the World Food Prize Foundation. It annually awards the prestigious World Food Prize, known as the Nobel prize for food and agriculture.

EU boosts sustainable fisheries and aquaculture in Africa, the Caribbean and the Pacific

FISH4ACP IS AN innovative EU-funded programme, devised with the African Caribbean and Pacific states (ACP) and to be implemented by FAO. It will invest in value chains to stimulate inclusive growth, bolster food security and minimise impacts on the marine environment.

Welcoming the initiative, European Commissioner for Maritime Affairs and Fisheries, Karmenu Vella, said: "The focus on all three aspects of sustainability - the economic, the environmental and the social - sets this programme apart. It will enable us to strike a balance between production and protection, to contribute towards fair income distribution; to promote decent working conditions, sound fisheries management and social inclusiveness; and to champion sustainable aquaculture practices."

FAO Director-General Qu Dongyu said: "We welcome this new,

comprehensive value chain approach to the development of fisheries and aquaculture that takes into account all players, at all stages from net to plate. This is an innovative approach that will boost economic returns and social equity, and reduce negative impacts on the marine environment."

"Within the ACP countries, there is a sense of urgency to boost our fisheries and aquaculture sectors because they greatly contribute to economic growth, decent jobs and food and nutrition security. We are happy to have our partners on board and launch this much-needed initiative, which will unlock the potential of fisheries and aquaculture in ACP regions," said ACP secretary -general Dr Patrick Gomes.

Fisheries and aquaculture in most of the 79 ACP countries have grown significantly over the last 20 years.

Agreement for joint sustainable development initiatives in Africa



The parties will evaluate projects to diversify local economies through sustainable and advanced agriculture techniques with a reduced impact on the ecosystem.

ETTORE PRANDINI, PRESIDENT of Coldiretti, Claudio Descalzi, CEO of Eni, and Federico Vecchioni, CEO of BF SpA, in the presence of Prime Minister Giuseppe Conte, have signed a cooperation agreement to start assessing the potential of projects abroad, particularly in Africa.

Projects are related to the development of local economies using innovative, sustainable and eco-friendly farming techniques.

Under the agreement, Eni, BF S.p.A. and Coldiretti are evaluating, as a priority, the possibility of an initial collaborative project in Ghana. The 'Ghana Project' is a pilot project developed by Eni in partnership with the local government, intended to have a lasting impact on development in particularly poor areas of the country.

The project involves setting up a training centre for agricultural development and businesses where their alumni can work, thus also creating an agricultural business community. Students will receive a daily allowance for the duration of their training, provided that they attend lessons. Specific indicators from the Ghana Project have been identified, which will be repeated on a larger scale in other regions of the country and elsewhere in sub-Saharan Africa.

"The target is to export a development model that focuses on the enhancement of local communities, exploiting the potential of family business and supporting small producers in the South of the world, who are threatened by distortion in the systems of production and distribution of food, that favours the hoarding of lands and causes the migration from the countryside to the richest countries where they often expect suffering and marginalisation," commented Coldiretti's president.

"Creating modern, integrated agricultural supply chains and transferring expertise on sustainable, innovative farming to younger generations are key goals for BF SpA's Africa Project, which aims to help reduce food and climate emergencies, and tackle endemic unemployment and lack of prospects that Africa continues to struggle with," said BF SpA CEO.

"We have formed an innovative partnership. It's a model of cooperation that uses expertise and technology to meet two pressing needs of our time: the need to make a sustainable contribution to the social and economic development of local communities in developing countries and, at the same time, the need to contribute to a model of energy production that is more and more sustainable and geared towards decarbonisation," Eni CEO concluded.



Western Cape launches producer/farmer register

DR IVAN MEYER, Western Cape minister of agriculture, has launched the Department of Agriculture, Forestry and Fisheries (DAFF) Western Cape's Producer/Farmer Register (PFR) at the Western Cape Department's Research Farm, Langgewens, outside Malmesbury.

The establishment of the Producer/Farmer Register for the Western Cape is set to assist the province to establish a baseline from which agricultural performance can be measured, provide credible data on the number of smallholder farmers, their geographic location and agricultural activities and assist in the development of performance indicators.

The project, which will run from 2019-2021, is expected to result in data on all smallholder as well as commercial farmers being registered through the Producer/Farmer Register.

The Western Cape Department of Agriculture embraces the project is set to drive registration of farmers through the extension and advisory as the government believes that a credible database will improve the quality of the support and services government renders to the sector.

Agricultural startup Agritask secures US\$8.5mn in Series A Funding

ISRAELI PRECISION AGRICULTURE startup Agritask has completed a US\$8.5mn Series A financing round, led by the InsuResilience Investment Fund and co-invested by Barn Investimentos.

The InsuResilience Investment Fund was set up on behalf of the German government by KfW and is managed by Swiss-based impact investment manager BlueOrchard Finance. Barn Investimentos is a Brazilian early-stage VC Investor focusing on high growth companies in ag-tech and in other industries.

Tel Aviv-based Agritask has developed a flexible and integrative data-driven software platform for agronomic management. With "One Platform, One Database" approach, it aims to provide a holistic solution to support real-time decision-making.

Agritask's agronomic management software platform serves farmers and other stakeholders in the ecosystem, covering 20 countries worldwide and more than 50 crop types. Agritask will use the proceeds to enhance its data analytics features and expand its customer reach, including smallholder projects and the agricultural insurance sector.

Agritask, which was founded in 2010, is currently active in 20 countries worldwide and covers more than 50 crop types. The client base includes farmers alongside food and beverage companies, agricultural insurers, input providers and governments or developmental organizations. The company



serves some of the most prestigious names in the agriculture industry such as General Mills, Suzano, and Bom Jesus.

With proceeds from the latest financing, Agritask will grow its farmer client base in the Americas, while continuing to expand the regional project and insurance sectors globally. For regional projects, the system enables better monitoring, delivery of agronomic services and risk management. For agricultural insurers, it revolutionizes their ability to perform risk analysis at unprecedented detail.

The vast volume of agronomic data accumulated in Agritask's platform will lead to the development of new techniques for optimizing crop growth models and agroeconomic decisions, benefiting large farmers and smallholders all over the world.

Agritask CEO Ofir Ardon said, "The datadriven insights generated by our system create an opportunity to build a new generation of precision agronomy tools that we're only beginning to understand. Our developments include cutting-edge tools in the field of smallholder projects and agricultural insurance. We intend to invest more resources in scientifically leveraging the huge amount of data in our system and given our unique geographic and sector-wide spread – we intend to push the boundaries of data analytics in agriculture."

Pöttinger introduces new glide bar on TOP 842 C

PÖTTINGER HAS INTRODUCED a new, optional glide bar replacing the jockey wheel on the TOP 842 C rotary rake. Dirt ingress is reduced by tracking the entire surface of the ground close to the tines.

The guide bar comes into a class of its own on wet and peaty soils with deep wheel marks. The feature of the new FLOWTAST glide bar is the wear-resistant plastic that is used as the ground contact material. Its high volume sabre shape delivers the best gliding characteristics even when moving sideways. The glide bar tracks the ground along the full raking length of the tine arc.

According to Pöttinger, the glide bar is very cost effective and therefore has a positive effect on yield: the suspension properties of the glide bar allow an approximately 10 percent higher driving speed. Thanks to lower vibration and smoother running as a result, the rake is subject to a much lower level of wear. Downtimes are reduced because repairs to worn or bent jockey wheel units are no longer necessary. A higher milk yield also increases profits. This is achieved by reducing the dirt ingress to the forage. Even in very difficult ground conditions, the glide bar provides uniform full area tracking to hold the tines at an ideal distance to the ground.

The Pöttinger FLOWTAST glide bar excels in problematic conditions, such as wet or peaty soils, when working with whole crops with an open sward, where there are deep tyre marks in the field (tramlines, irrigation system marks) or in areas damaged by wild boar or grazing animals.

Wefarm secures US\$13mn in funding to scale smallholder agricultural ecosystem

WEFARM, THE DIGITAL network for global small-scale agriculture, has raised US\$13mn in a Series A financing round led by Silicon Valley venture capital firm True Ventures.

This financing round is expected to help Wefarm further scale its network of 1.9mn farmers, and its newly created Marketplace, to connect farmers in Africa, even those without internet access, to the information, products and services they need to be more successful. Investing alongside True Ventures are AgFunder and June Fund, among others. The company received significant follow-on investment from LocalGlobe, ADV and Norrsken Foundation.

Farmers will be able to access quality products and services, such as seeds, fertilizers and a range of other items from trusted retailers and brands. In line with Wefarm's bottom-up model, all products, services and retailers on the platform have been recommended by Wefarm users and can even be purchased through SMS.

Disproportionally, smallholder farmers lose too much time and money due to fake or faulty agricultural products. Farm yields in many parts of Africa are just one-fifth of farm yield in the United States or Europe. Poor-quality seeds and fertilisers also limit growth in plants and animals. Given that smallholder farmers grow roughly 70 per cent of the world's food, Wefarm intends to use its technology to help close this yield gap.

The company's funding announcement coincides with another notable growth milestone of reaching US\$1mn in total sales from the Wefarm Marketplace in just eight months since launch; that's faster growth than both Amazon and eBay in their early stages.

With Marketplace sales growing at more than 40 per cent month

IFAD's help for smallholder farmers in Sudan

THE PROJECT WILL benefit about 720,000 smallholders, pastoralists and agropastoralists in nine states, across three regions, according to the International Fund for Agricultural Development (IFAD). The new US\$85.7mn programme that aims to increase food security and ensure access to natural resources is a vital investment in Sudan's future.

The new programme will help smallholder farmers manage natural resources to better farm their lands and improve their incomes. It will help agropastoralists to gain access to better feed and animal health services and enable pastoralists to diversify their livelihoods through small enterprises.

"This new programme will not duplicate our past investments in Sudan but will capitalise on them to consolidate social infrastructures and strengthen natural resources management, and thereby amplify the benefits and sustainability of the previous projects," said Tarek Ahmed, IFAD country director for Sudan.

The financing agreement for the Sustainable Natural Resources and Livelihoods Programme (SNRLP) was signed by Cornelia Richter, vice-president of IFAD, and Abdelwahab Mohamed Elhijazi, ambassador extraordinary and plenipotentiary of the Republic of the Sudan.

SNRLP will be implemented in Butana in the east, Sennar in the south-east and Kordofan in the west. It will target poor smallholder farmers and give special attention to youth (30 per cent of participants) and women (50 per cent).

The programme will introduce gas stoves to replace dependency on firewood, which will benefit women. Training in better nutrition practices and promotion of rural youth involvement in crop, fodder and forestry development activities are also planned.

More than 80 per cent of the Sudanese labour force is engaged in agriculture.



Farmers will be able to access quality products and services, such as seeds fertilisers etc

on month, the business is on a rapid growth trajectory. Over the next 12 months, it aims to diversify into supporting farmers with both financing and delivery, as well as enabling them to trade the commodities and crops they grow, with the goal of becoming a key part of the global supply chain on behalf of the farmer.

Wefarm CEO and founder Kenny Ewan said, "If we can inspire 100mn farmers to work together on one platform, we can fundamentally shift global agriculture and trade in their favour, and this round of funding will take us even closer to bringing this vision for improved farm yields into fruition."



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From insects as viable poultry feed to reducing antibiotics in the poultry industry, several trends are shaping poultry health and nutrition.

Looking to the future in poultry nutrition

HE EVER GROWING demand for poultry is evident, globally. At the official opening of Poultry Africa 2019, Gerardine Mukeshimana, Rwanda's minister for Agriculture and Animal Resources said, "For those who want to engage in poultry, this is the time."

The quality of feed remains the main factor determining successful poultry farming. From adequate feeder line height as per the height of the birds, to reduction in the feed wastage, there is a lot to incorporate.

These are some points that continue to be of utmost significance in the nutrition and health of the flock:

Gut health and gastrointestinal functionality

The main functions of the gut are digestion and absorption of nutrients and the interface between organism and the outer world.

The efficiency of feed digestion and absorption is directly proportional to the healthy surface of the intestine. Additives to enhance gut health are gaining popularity to support host defence, gut barrier management and integrity and recovery of the intestine or control of the microbial ecosystem.

Gastrointestinal functionality is defined as a steady state where the microbiome and the intestinal tract exist in symbiotic equilibrium and where the welfare and performance of the animal are not affected by intestinal dysfunction. Maintaining this encompasses a tailored diet, effective digestion and absorption of feed as well as optimal animal welfare.

The gut is important for health and wellbeing in poultry. In the context of overall reduction of antibiotic use, it is necessary to use a holistic approach including the improvement of the technical aspects of farm management, such as water quality or biosecurity as well as well-chosen products of nutrition.

Water: The most important nutrient

Free access to fresh, clean water is most important. Purging water lines during production and between flocks as well as



cleanliness of drinking lines prior to flock placement are all vital.

Proficient brood management

The period immediately after hatch requires special care and attention. It ensures a good start in poultry production and has a lot of impact on teh future health and performance of the birds.

Water provided for drinking must be free from microbial contamination that could potentially cause disease or lead to food safety issues in poultry.

Three natural alternatives to include in the diet of poultry are probiotics, prebiotcs and organic minerals.

Probiotics, prebiotics and going antibioticfree

Reducing and even preventing the use of antibiotics in poultry producing has been the cause of a lot of debate.

Increased bacterial resistance to antibiotics has caused regulatory boards to become stricter in view of the antibiotic residue in the meat being transferred to the food consumed.

Researchers have been working to find solutions that are not harmful to human health while maintaining the quality and productivity of poultry operations.

Three natural alternatives to include in the diet of poultry are probiotics, prebiotcs and organic minerals.

Probiotics are beneficial microorganisms that keep the intestine healthy and support the bird's development. Probiotics prevent the growth of harmful bacteria in the animal's gut and organic minerals are essential for the general development of all animals.

Insect-based poultry feed

In poultry, the use of insect, meal is increasing. The potential benefits of insect feed are many, including helping to tackle the sustainability and supply concerns relating to soy, which is full of protein content yet comes with environmental baggage.

Temperature and feed intake

Adequate feed and water supply, along with housing and climate control, helps in birds'

welfare and maximising economic performance. Additionally, there is a close relationship between the temperature and feed intake in broiler breeding processes. Birds tend to increase feed uptake if the temperature is too low and reduce feed uptake if the temperature if too high, in order to convert the feed and water into energy they use for body maintenance.

Sustainability and poultry health

Maintaining good poultry health is critical to the strategy of increasing production on existing land while reducing the pressures on the environment. How the industry keeps the flock healthy is also an important factor.

As producers work to optimise bird health and performance in intensified settings, they also must answer the growing concerns of consumers about how birds are raised and the constituents of the feed and water.



As producers work to optimise bird health and performance in intensified settings, they also must answer the growing concerns of consumers about how birds are raised and the constituents of the feed and water.

In conclusion

In view of the population increase the poultry industry needs to respond to the rise in the need of meat and eggs.Running a poultry farm is not as easy as it appears, As new technologies evolve and impact the industry every day, poultry farming needs to keep in mind the importance of feed as the major determinant of productivity and success.

Feed is a crucial input for poultry production and the availability of low-priced, highquality feeds is critical if poultry production is to remain competitive and continue to grow to meet the demand for animal protein.



Tetiana (Tanya) Miroshnychenko, the ALPHA initiative lead at Zoetis, talks about how training and infrastructure developments are helping those working in agriculture in sub-Saharan Africa, especially women, develop more sustainable futures.

Enhancing livestock productivity in sub-Saharan Africa

DASEN EJIROGHENE FROM Warri, Nigeria, a poultry farmer who owns a farm producing layers and broilers, says that the Zoetis ALPHA training has made her more observant, which means there are fewer errors and a lower mortality with the broilers on her farm.

She believes the initiative's focus on ensuring women are included in the training, is a step in the right direction to improving the agricultural sector in Africa and taking the necessary action to reach its potential.

The training from the ALPHA initiative has helped expand her knowledge about how to run a successful farm, for instance, by ensuring to keep the deep litter dry and open for cross ventilation. She also learnt more about the correct timings for administering medication and is now more confident about the appropriate dispensation of antibiotics, in particular, to avoid health issues.

Adasen learned more about how to effectively manage and optimise the gut health of her flocks and the warning signs to watch out for if things are not as they should be.

Bridging the gender gap

Sub-Saharan Africa is home to some of the largest livestock populations anywhere in the world. However, due to current low productivity levels, it also has the highest density of impoverished livestock farmers.

Added to this issue is the fact that the population of the region is projected to double by 2050, presenting an increasingly large challenge in terms of making sure there is sufficient food for everyone.

This is one of the motivations behind the Zoetis African Livestock Productivity and Health Advancement (ALPHA) initiative – cofunded by a US\$14 mn grant from the Bill and Melinda Gates Foundation. The initiative is working to positively impact farmers' livelihoods in Uganda, Nigeria, Ethiopia and Tanzania, through improved livestock health and productivity. It is doing this by increasing access to animal health education, diagnostics and modern medicines. Now in its third year, Zoetis ALPHA will run until the end of 2021.

An important aspect of the initiative is its emphasis on providing equal access for women. Historically women have all too often been overlooked when it comes to training and development initiatives, yet they are often responsible for daily animal care, including feeding and cleaning. Training and educating women on animal nutrition, disease detection and other animal health issues can improve farm productivity, livelihoods, and ultimately help raise productivity levels.

Empowering through knowledge

A sustainable and efficient agricultural system is essential to livelihoods and the economic potential of the whole region. Apart from helping farmers directly, the ALPHA initiative believes that empowering the veterinary industry is crucial. Investing in access to



Adasen Ejiroghene, poultry farmer.

critical veterinary products and services, and building the infrastructure required for quality animal healthcare and increased productivity, make a positive and sustainable long-term impact and could help to tackle the emerging global food crisis. This is particularly important in areas of high animal disease incidence and where there is a lack of feed for animals.

An important aspect of Zoetis ALPHA is its emphasis on providing equal access for women.

Farmers often have limited access to veterinary services and may therefore undervalue the available services. Through the initiative, Zoetis has encouraged and funded the production of quarterly veterinary association newsletters in the targeted countries. These publications provide a platform to share best practices and identify the needs of the country's thousands of association members and highlight the work they do to improve animal and human health. In Uganda, the veterinary newsletters are unprecedented and were launched by the minister of agriculture. Alongside the newsletters, Zoetis has also introduced an educational learning platform called 'Learn & Grow' for various stakeholder groups. This includes business training courses through VetVance and a reference library for veterinarians and veterinary students, called Vetlexicon Bovis. In addition, our veterinary experts held technical training sessions for local veterinary service providers and distributors to help their continued professional development.

To maximise the impact of the training, a 'train-the-trainer' approach was implemented. In-country teams were chosen who could transfer the expertise gained to a wider audience. The initiative team is concurrently working to strengthen the quality and outreach of the distributor network.

Widespread benefits

Several thousands of farmers, hundreds of veterinarians and paravets, diagnostic lab and feed miller personnel have received specialised training. In Uganda, for example, more than 40 per cent of the training participants are female. More than 100,000 smallholder farmers are estimated to have benefited from training thanks to the 'train-the-trainer' approach being delivered.

As well as training and education projects, the initiative also helps to develop the necessary animal health infrastructure to ensure sustainable long-term benefits. This has involved collaboration with suitable diagnostic laboratory private and public partners. One example is the successful project with the Uganda Meat Producers Co-operative Union (UMPCU) to develop new diagnostic facilities.

As well as training and education projects, the initiative also helps to develop the necessary animal health infrastructure to ensure sustainable long-term benefits.

The new laboratories provide diagnostic services, including premovement tests, microscopy for internal blood parasites (Trypanomosiasis, East Coast Fever, Anaplasmosis, Babesiosis, Helminthiasis), screening and confirmation of Brucellosis and Bovine Tuberculosis, and the use of ultrasound to detect pregnancy.

These labs are now available to over 2,600 beef livestock farmers who are focused on producing high-quality meat for local and international markets. ALPHA provides vital support in the form of high-quality training, laboratory equipment, personnel, and access to international support and knowledge.

It is important that along with increased theoretical knowledge the required products and services are available to vets and farmers. With this in mind, registrations have been submitted for more than 70 animal health products, diagnostics and vaccines in





nage Credit: Zoetis ALPHA

Uganda, Ethiopia, Nigeria and Tanzania. When they are approved, they will offer a large range of solutions for disease diagnostics, prevention and treatment in livestock and poultry.

Partnering for success

The ALPHA enables Zoetis to boost and elevate its activities with numerous partners in sub-Saharan Africa, making it possible to work with different partners in training and education, providing services, diagnostics and bringing products to the markets to succeed in years to come in a sustainable manner.

The organisation believes that working together with local partners makes it capable of rising to the challenge and that the investment in support of veterinary and farming communities, delivered in close collaboration with local partners, will help open the door to better facilities and practices across sub-Saharan Africa.



Australian researcher and professor John Howieson at Murdoch University in Perth has been leading a breakthrough project called Lebeckia. He speaks to *African Farming* about this South African shrub, designed to be used by farmers on soils that may otherwise be completely unproductive.

Seeds of hope for arid soils

What is the Lebeckia project and how is it proving useful in overcoming challenges posed by climate change in food production?

Working with the University of Johannesburg we have identified a number of indigenous rangeland legumes growing in the low rainfall and infertile soils of the western Cape Fynbos that have potential to be domesticated. These are small shrubs or herbs that can be eaten by stock and whose development might assist farmers in both countries adapt to the variable climates. Having more robust pasture plants can build resilience in rainfed farming systems with rainfall variation. One particular plant that has shown promise is a species of Lebeckia and over the last decade, Murdoch University has been developing a new cultivar derived from a sample collected in 2005 in South Africa.

These plants are small shrubs or herbs that can be eaten by stock and whose development might assist farmers in both countries adapt to the variable climates.

After concluding the required commercialisation agreement with the government of South Africa, we have now launched this new cultivar commercially. First, it is being rolled out to assist farmers in Western Australia who are seeing much greater variability in rainfall due to climate change. We have also made the same cultivar available in South Africa.

How is it proving beneficial to arid regions of Australia and Africa?

South Africa shares a climate similarity with Western Australia and also has a rich floral diversity and that is why we chose to work there. Other countries in Africa along the Mediterranean shores also share that climate, and positive outcomes from the programme could realistically be expected to have value in those regions. There are also opportunities to develop programmes in managing arid rangelands in sub-Saharan



David Morrison, deputy vice chancellor, Murdoch University, Shadrack Moephuli, CEO, ARC of South Africa, Alannah MacTiernan, minister for regional development, agriculture and food at the signing of Lebeckia commercialisation agreement.

Africa. Lebeckia, in particular in Western Australia, will provide a summer fodder crop that is otherwise unavailable for many of the now marginal farming communities. With increased climate variability, it is often these marginal areas that are the first to experience sustained economic losses moving them closer to becoming non-viable farming areas with the traditional methods, crops and animal husbandry practices.

Please tell us more about the focus of Murdoch University's Third Comission.

It is a two-year consultative project of Murdoch University that is focusing on concrete actions that support inclusive economic growth on the continent. We are taking as our starting point, the final report of the Africa Progress Panel in 2017 and are looking in detail at:

- Promoting Health Futures
- Boosting the Blue Economy
- Increasing Power and Light

• Ensuring equity in the extractive industries We are also exploring the major demographic shifts occurring on the continent (rural – urban migration patterns and burgeoning youth cohort), the role of young people and women and girls in the development of inclusive growth solutions and the cross-cutting issue of climate change (mitigation and adaption).

We are intending to launch the final report in September 2020, timed to the 10th annual Africa Australia Research Forum held in Perth, Western Australia. We will then be conducting a number of workshops on the continent with major African partners targeting stakeholder groups aligned with the themes of each chapter.

How is Lebeckia helping to empower the smallholder farmers in African countries?

The commercialisation agreement struck with the government of South Africa will allow for the release of the cultivar in other suitable regions. The introduction into a new region will need to comply with all of the appropriate regulations. In the first instance Lebeckia's value will be for those regions whose climate and soil mirror that of the Western Cape where the plant was first collected. Murdoch University's Future Food Institute and the Centre for Rhizobium Studies, is working on a number of tropical legumes that may have enormous appeal to smallholder farmers in Africa. Innovations in grain storage are set to help achieve greater food security. The continuing development of technology is bringing along several improvements for grain silos.

New technologies for silos

ITH GRAIN, INCLUDING maize, wheat and several other crops, set to remain the staple diet for South Africans for many years to come, it is essential that the industry is supported in order to thrive.

This is the view of AFGRI, one of South Africa's leading agricultural companies, home to AFGRI Grain Management, which handles and stores not only maize, but also wheat, sunflower, soya beans, barley and sorghum at more than hundred operational points throughout South and Southern Africa, including Congo-Brazzaville, Uganda, Tanzania, Zimbabwe, Mozambique and Zambia.

New technology also benefits smaller scale operations. These include grain

temperature monitoring devices and moisture meters inside the silo that improve them and are more cost effective, weather stations on the outside which compare moisture and temperature inside the silo with that on the outside and security cameras coupled with devices that indicate when electric motors are started have greatly improved the risk management capabilities of smaller facilities without necessarily appointing a large security force. Warnings are sent by an SMS and/or a control room could remotely log in.

Sensors installed inside silo bins constantly monitor grain volumes, thereby improving security, online system capabilities in managing producer profiles, deliveries, out-loading and stocks are more accessible, equipment and testing in the intake laboratory are more cost efficient.

The most advanced versions of these systems can monitor grain temperatures remotely, manage fans, and even prevent grain theft. With every system, it is possible to obtain real-time readings that alert in case of any problems, to take swift action. One of the newer technologies has helped pave the way for flat storage grain buildings that use the latest in grain pump and aeration technology to make them low cost and simple to use.

Significant investment is an important factor for using these technologies , however it needs to be weighed against long-term benefits.



Devakumar Edwin, group executive director, Dangote industries, speaks to African Farming about how the Dangote fertiliser plant will help improve the ecosystem in the country.

Dangote Industries: Revitalising Nigerian agriculture

Please tell our readers more about the new fertiliser plant how is construction progressing and when will it be ready? The plant is practically completed, however, there is a small gap, since it is a very large fertiliser plant and it will be difficult to commission two trains simultaneously.

Now we are in the last stretch of completing the gas pipeline, and then we will test the pipeline for a period of ten days before commissioning the plant. Our intention is to start getting the fertiliser out before the end of the year.

Normally the commissioning time for a fertiliser plant is three months, but while getting the gas plant ready, we had done a lot of pre-commissioning, so the main commissioning will be shorter.

What is the production capacity for the plant?

Three million tonnes per annum of urea, the last stage is to produce ammonia. We use natural gas as the feedstock.

What does the plant mean in terms of job creation and meeting local requirements?

The direct jobs created in the factory will be a thousand but the number of indirect jobs is going to be huge. It will add 30,000 people to the fleet in the area of transportation for instance, there will be maintenance staff, people in distribution and increased jobs in the farms.

Nigeria imports a lot of agricultural products today. That will reduce with the commissioning of the fertiliser plant and local

processing of these products which hitherto were imported. So, that will create lots of jobs in agricultural processing.

Today, the returns that the farmers are getting is not much because the yields are low, but once the fertiliser plants are ready, the yields will improve.

Our focus in agriculture is on how to grow the economy of the country, not just in employment but adding value.

We are also involved in seeds distribution. The farmers are getting seeds from us. For rice production, we had started giving them seeds and pesticides. The yields have increased from three tonnes to six tonnes per hectare, and since the farmers can also now plant twice in a year, they can now do 12 tonnes, leading to the farmer having more money. The farmer will get the fertiliser at his door step and at the right time.

We are also helping with soil testing, so the farmer is working with the right soil and fertiliser plant. We are not stopping at urea, and are already adding the NPK plant, as well as micro nutrients, to reduce the inefficiency in the soil, as this will really help boost farm yields, which means creating a lot of employment for the farmers. With the potential of increased yields, the farmer will employ more hands. With increased yields and processing of the farm products, the employment potentials will be enormous.

Helping boost farm yields



Devakumar Edwin, group executive director, Dangote.

What is the local content component of what Dangote is doing? We are supporting the farmers in a large measure and we have a team of trained agronomists as well as agricultural engineers, who go into the farms to help farmers.

Even for seeds that used to be imported, we have set up a process to obtain them locally - the feedstock, the gas are all obtained locally. We used to just export the feedstock and gas, now we are using them locally and adding value. The feedstock is 100 per cent natural.

The investment is also huge - in sugar, rice and tomatoes, it is about US\$1.5bn, because it is not just in agriculture - processing plants, irrigation, money in communities and green houses. This is excluding the investment in the fertiliser plants, which is around US\$2bn.

Our business model is to obtain our raw materials locally. We are getting out of flour mills, for instance, because the wheat has to be imported. The climate conditions in Nigeria are not suitable for growing wheat.

However, we are involved in sugarcane production as well as rice and tomatoes. Our primary focus is local, so we can add value.

Nigeria depends on imported tomato paste, we will grow the tomatoes, process them and add value. We will work with farmers on rice production, help with the polishing, and help put the product in the global market.

What we are doing is not only in the area of employment but principally in improving the ecosystem and adding value.

Probably it may not be as financially attractive as other businesses, but the employment potential is huge. Today, we are the second largest employer in the country next to the government, but we plan to do more as the level of employment in agriculture is higher than in manufacturing.

There is high unemployment in the country especially among the youth, and this is an area where we can create massive employment, and help the country stabilise. So our focus in agriculture is on how to grow the economy of the country, not just in employment but adding value.

Do you have any ambitions for expansion beyond West Africa and outside Africa?

Currently we are focusing within Nigeria because that in itself is a huge challenge. Engaging in agriculture on such a massive scale is a challenge - getting the land, working on irrigation and with the communities.

The investment is also huge - in sugar, rice and tomatoes, it is about US\$1.5bn, because it is not just in agriculture - processing plants, irrigation, money in communities and green houses. This is excluding the investment in the fertiliser plants, which is around US\$2bn.

We want to take one step at a time. The focus is now on Nigeria and when settled, we may be thinking of going elsewhere.

What is your feedback on the African Farming's Abuja Agribusiness summit where you were the opening keynote speaker?

It was very well organised, quite educating. A project such as the Agribusiness Summit helps create not just awareness but interest among investors, the research institutes, experts in universities, government agencies as well as educated youth to get involved in agriculture.

When we wanted to include sugarcane as a part of our project, we went to many parts of the world to get the best samples of seeds but in the process. We also discovered that we have these products in our agricultural research institutes. Almost all the best of the varieties, and people should be made aware of these things. This kind of programme is beneficial in spreading such information.



Fertigation helps improve yield and quality of crops.

There is increasing potential for fertigation as a part of precision technology.

Precision farming

ERTIGATION OR THE application of fertilisers to the crop through the irrigation system is a technology that provides the opportunity to apply precise rates of water and fertilisers to the crop, and therefore, if designed correctly, can be an important precision agriculture technology.

Usually, concentrated fertiliser solutions are prepared in stock tanks, and are then injected into the irrigation water, using fertiliser injectors.

Innovations in precision irrigation technologies are increasingly important today, as farmers face challenges including water scarcity due to drought, water allocations, among others.

Fertigation allows precise and targeted application of water and fertilisers, to the root system. Nutrients can be applied at the time they are needed by the crop, enabling the precise timing for application.

Advanced fertigation systems can reach high-accurate application rates by using high-tech equipment, such as injectors and computerized control systems, which are carefully calibrated and adjusted.

The use of fertigation, coupled with micro-irrigation provides a technical solution whereby nutrients and water can be supplied to the crop with high precision in terms of time and space, thereby allowing high nutrient use efficiency. However, it is necessary to correctly ascertain the crop nutrient and water needs.

To meet the needs of farmers today, fertigation is widely practiced as a cost effective and convenient method for applying soluble fertilisers to crops. Along with efficiency and adequacy, uniformity is also an important measure of performance.

By 2050, an estimated 52 per cent of the world's projected 9.7 bn people will live in water-stressed regions, according to researchers from MIT. To feed the extra three billion people, 56 percent more food than was produced in 2010 will also need to be grown.

The answer may well be through fertigation: applying fertilisers dissolved in water through precision irrigation systems which allows plants to receive water and nutrients in precise amounts and locations at the same time.

Applying fertilisers dissolved in water through precision irrigation systems allows plants to receive water and nutrients in precise amounts and locations at the same time.

Research

According to the International Fertilisers Association, a recent CIMMYT study in India found that sub-surface drip fertigation systems combined with conservation agriculture approaches such as zero till, retaining residues on soil surface and dry seeding, could be used to grow rice and wheat using at least 40 per cent less water than flood irrigation for the same amount of yields while also using 20 per cent less urea.

The study has helped emphasise some of the numerous benefits of fertigation:

effectively improving the yield and quality of crops, as well as allowing farmers to grow produce on marginal soils with limited amounts of water and a reduced environmental footprint. By using partially treated wastewater, the technique can also help turn waste into a resource.

However, despite its numerous benefits, managing the potentially complex combination of nutrient and water supply can make fertigation a challenging technique.

Technology

Technology is helping to make fertigation easier and more efficient. A growing range of optical, multispectral and soil-based sensors can measure plant stress in addition to nutrient content both in the canopy and at the root zone.

Providing proper training and equipment to irrigators helps improve the uniformity of irrigation and fertigation applications. Irrigators should know how to use calibrated gauges and make adjustments so drip systems are operating at the pressure required for maximising application uniformity. Training on the best practices for fertigation will improve fertiliser application uniformity, too.

Conclusion

With a quarter of the world's population across 17 countries already living in regions of extremely high water stress, according to the World Resources Institute, there seems to be a pressing need to use fertigation to help grow enough food in many parts of the world including in India, the Middle East and North Africa.





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The farming and eating of insects is set to solve food security and sustainability issues in the years ahead, not just in Africa, but all over the world. *Tim Guest* reports.

Edible insects for a food-secure future

N AUGUST 2019, the first African Conference on Edible Insects, organised by Chinhoyi University in Zimbabwe and the AgriFoSe2030 Programme saw pioneers of innovation and research in the field of edible insects come together, recognising that this area of 'agriculture' will transform livelihoods across Africa and the wider world.

The event's aim was to consolidate research and innovations with industrial developments. It looked at captive rearing of insects as food and animal feed, insect processing, product development, nutrition, and food safety, as well as enterprise development, stewardship and legislation in relation to insects as human food and livestock feed. It also addressed the importance of relying on indigenous knowledge, experience and social systems in Africa, established over centuries. But while the congress acknowledged that edible insects are already consumed in most parts of Africa, speakers cautioned that the development of this sector has been slow on the continent and that many edible insect species are still collected from the wild, which makes entomophagy less sustainable, as well as posing food safety challenges.

Additionally, few African governments have embraced insects as food and feed, leading to either poor legislation, if any, to support this emerging industry. The organisers said such factors mean most African countries will lag behind as the rest of the world advances in using insects for human food and animal feed.

Aspire sells a primarily whole product, which is where existing demand lies. "Akokono, as its locally called in Twi, is used as meat and fish are used - in stews, local soups like palm nut soup, and kebab," Shobita Soor said.



Aspire Ghana farms Akokono, as palm weevil larvae are locally called in the Twi dialect, used as meat and fish alternatives.

Certainly, in places like Australia, the US and very much in the Netherlands, the farming of insects has been pioneered for years. Organisations like the Insect Protein Association of Australia Tjirp Insect Food in The Netherlands and, the 40-year-old pioneering insect farming company Protifarm, also from Holland, producers of the AdalbaPro product line. The company believes, that "in the years to come eating insects will be the new normal for a healthy lifestyle".

From 2013-2018, the Dutch Ministries facility for Sustainable Entrepreneurship and Food Security and the Achmea Foundation sponsored the Flying Food Project (FFP) involving Africa and edible crickets. It began as a Public Private Partnership between governments, industry and NGOs, as well as academia and had 12 initial partners: TNO (coordinator), VENIK, Kreca, NGN Pro-Active, Nostimos, M. Ruig en Zonen, ICCO, BoPInc and HAS University of Applied Sciences in the Netherlands, JOOUST University, ADS, MIXA Foods and Beverages and KBL in Kenya and ICCO ROCEA, FXSsalango and EntoAfrica in Uganda. The initiative continues today as more partners join to make the cricketrearing value chain a success.

Expanding insect farming industry in Africa

Africa has the opportunity to catch up, as pioneering companies increase in number and develop skills and techniques for insect husbandry across this continent.

One such company is the Aspire group, a US player whose Aspire Ghana subsidiary is building its prowess in palm weevil farming. In Sept 2013, members of the Aspire team went to Thailand and studied palm weevil farming and initiated Africa's first pilot scheme to farm the insect with the University of Ghana in 2014. In 2015, Aspire began its own farm for centralised production in Kumasi and by July that year, more than 400 farmers, a large proportion of them women, were empowered in Kumasi to produce palm weevil larvae.

Today, the company's Ghana operations commercially farms palm weevil – entire life cycle: adult – egg – larvae – cocoon, back to adult – and runs a programme, which empowers peri-rural farmers to raise palm weevils locally.

Aspire co-founder and President, Ghana, Shobhita Soor, informed African Farming that they now have more than 40 team members and the output from its R&D facility is up to one tonne per month, with plans to increase further. Larvae are fed primarily agri-waste and other agrisubstrates, locally produced. Currently, Aspire sells a primarily whole product, which is where existing demand lies. "Akokono, as its locally called in Twi, is used as meat and fish are used - in stews, local soups like palm nut soup, and kebabs," Soor added. Other shelf-stable forms of the larvae have been created and are in 'prototype stage'. With lots of palm weevil larvae opportunities across the continent, Soor said, "We are looking for the right partners to bring those products to market".

Shea in Burkina Faso

In Burkina Faso, agribusiness FasoPro has been pioneering large-scale insect farming for more than five years now, as a way of countering malnutrition using the shea caterpillar, an insect that is particularly rich in proteins, iron, omega-3 and essential fatty acids. The company has established an equitable network for harvesting shea caterpillars and has identified local partners, and bringing together and training women's associations to increase their skills in collecting caterpillars. The company is marketing consumer products that are based on



processed shea caterpillars through a strong distribution network and is conducting research to commercialise five consumer products for the Burkinabe market

Women collect the caterpillars from July to Sept and a product – a caterpillar powder to be added to milk and other food to boost protein and nutrition, is prepared in labs and monitored by public health authorities. At the same time, to ensure profitability, FasoPro also distributes whole dried caterpillars, which are popular.

In conclusion

According to the United Nation's FAO, more than 1,900 species of insects have so far been identified worldwide as food for human consumption. That number will surely rise as more companies set out to explore the massive opportunity offered by the farming of insects. Entomophagy – the eating of insects – comes naturally to many in developing regions of the world, supplementing diets, all-too-often low in protein and basic nutrition. It's time for the world to wake up to this amazing sector – the fate of many, if not all, may depend on it.



The origin of a deadly wheat pathogen which threatens a vital global food source has been identified by an international team of academic researchers including two professors from the University of the Free State in South Africa.

Breakthrough for rust resistant wheat

HEAT IS WIDELY used for both food and feed so it is therefore important to protect it against fungal diseases.

First identified in Africa two decades ago, the strain of the stem rust fungus, 'Ug99,'(named for its discovery and naming in Uganda in 1999) was found to threaten the global wheat supply due to its ability to attack most varieties planted across the world. Rust diseases cause substantial crop losses each year. It was first detected in Uganda in 1998 and has since given rise to an asexual lineage that has spread through Africa to the Middle East causing devastating damage to wheat crops. The ability of Ug99 to attack so many wheat varieties has confounded scientists and farmers since its discovery in Africa two decades ago.

Professor Zakkie Pretorius and Professor Botma Visser, researchers from the Department of Plant Sciences, University of the Free State in South Africa, joined forces with the University of Minnesota; the Commonwealth Scientific and Industrial Research Organization (CSIRO); and Australian National University, to uncover the basis of the stem rust fungus strain Ug99's virulence by examining the pathogen's genome.

They determined that the pathogen can be traced to a rarely observed phenomenon where two different rust strains fuse together and exchange intact nuclei. This is said to create a hybrid strain with a wider host range than its original parents.

"Ug99 is an imminent threat to global food security due to its wide virulence and potential ability to spread across continents

This latest discovery has the potential to prevent a devastating impact on the world's food supply, Professor Francis Petersen, rector and vice-chancellor of the University of the Free State.



The pathogen can be traced to a rarely observed phenomenon where two different rust strains fuse together and exchange intact nuclei.

and oceans to infect distant wheat crops," said Professor Zakkie Pretorius of the University of the Free State.

Dr Melania Figueroa, from the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, added, "This information will be critical for deciphering the genetic basis and evolution of rust virulence on wheat and for monitoring the global movements of the pathogen."

Significance of the discovery

Dr Figueroa commented, "The more you know your enemy, the more equipped you are to fight against it. Knowing how these pathogens came about means we can better predict how they are likely to change in the future. This discovery also means that we can better identify the resistance genes, which can be bred into wheat varieties to give crops long-lasting protection against rust."

Dr Feng Li from the University of Minnesota and joint first author on the study said, "As plant scientists, we are always looking for an advantage over stem rust in order to develop more durably resistant crops. The data obtained from this study will provide us with new insights on how Ug99 emerged to threaten wheat across the world."

Rector and Vice-Chancellor of the University of the Free State, Professor Francis Petersen, comments:

This latest discovery has the potential to prevent a devastating impact on the world's food supply. A problem first recognised in Africa 20 years ago has found part of the solution at an African University."

Stem rust is a devastating wheat disease that has caused famines and undermined economies around the world for centuries.

Rust diseases possess the ability to spread and travel long distances by dispersal of windborne spores and can rapidly develop under optimal weather conditions.

Besides the practical implications of the study, researchers say they were surprised to learn that hybridization and a nucleus swap were the basis for the virulence shift in Ug99. These events were thought to be rare in nature.

Such research that can create new insights in wheat diseases can have a far reaching impacton global food security.

Source: University of the Free State, South Africa

The second edition of Poultry Africa, held in October this year in Kigali, gathered the poultry industry that attracted 70 per cent more exhibitors than the first edition and 2,026 professional visitors over three days, according to organisers.

Poultry Africa: a food to feed show

XHIBITORS HAD THE opportunity to meet the regional decision makers such as farm owners and industry experts as well as farm employees, marketing and sales professionals, as well as vets, technicians, government officials, associations, and others.

Layer and broiler poultry farms represented altogether the 48 per cent of visitor business profiles, followed by feed ingredients and additives operators, feed mills, animal health and pharmaceutical sector, processing and handling companies, and animal industry equipment.

Among this year's activities, the show also offered two field visits to broiler and layer businesses in Rwanda.

"Exhibitors awarded a 7.4 on a satisfaction scale of 10, to the event, while visitors rated the appointment with a significant 8.2 out of 10. This was possible to achieve thanks to a combination of factors such as the support from local and regional authorities and associations, the commitment in the region to develop the poultry sector as a way of improving people's lives, and the VIV worldwide network of professionals that the event organiser manages in Africa and in the world." says Diana Tóth, Poultry Africa event manager. The show thus seems to meet the current needs of both supply and demand.

All sectors of the poultry production supply chain were represented by the 128 international and African exhibitors.

227 delegates took part in the Leadership Conference thanks to



The event represented all sectors of the poultry production supply chain.

a strong line-up, starting with a presentation by Rabobank senior global animal protein analyst, Mulder, who discussed the poultry market outlook and strategic perspective on investments in sub-Saharan Africa. The presentation about Ghana egg consumption campaign aimed at expanding the trade in eggs.

A session on poultry nutrition and the use of amino acids concluded the Leadership conference this year. Over the three days, more than 22 sessions involving 52 African and international speakers unlocked the debate between regulators, experts, producers and the operators of the industry.

One of the highlights was the Women in Poultry Business session presented the poultry production in Africa with relation to women involvement in the value chain: how to empower women in rural areas and increase their productivity; financing and training women to increase rural production.

Poultry Africa 2020 will take place on 21-22 October 2020 at the Kenyatta International Convention Centre (KICC).



The **Rubin 10** is an excellent choice for any full-width, shallow stubble cultivation. With its new, symmetrical disc arrangement, it provides intense, homogeneous mixing of organic matter and soil – even at high working speeds! Discover its many other benefits for yourself:

- High-comfort adjustments of impact and levelling harrows for optimal incorporation and levelling of the soil and regrowth
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The seventh edition of Agritech Expo Zambia, is set to take place from April 2-4, 2020.



HOUSANDS OF SMALL-SCALE farmers, commercial farmers, leading agribusinesses and agricultural professionals will converge at the Golden Valley Agricultural Trust (GART) Research Centre in Chisamba.

This year, South Africa-based Spintelligent has passed on the baton of organising the event, to DLG International of Germany . DLG has, in the past years, been an active participant at the expo where it has also been involved in organising the German joint pavilion.

With decades of experience, a global network of experts and a keen instinct for spotting emerging trends and issues, DLG International has pioneered the successful development and implementation of international trade fairs and specialist exhibitions in the fields of agricultural machinery, crop production, livestock, farming and bioenergy.

"Our global platforms are designed to foster dialogue between policymakers, the scientific community and the business world. We are also involved in the Zambian-German Agricultural Knowledge and Training Centre (AKTC), a bilateral cooperation project under the auspices of the German Federal Ministry of Food & Agriculture," said Bernd Koch, DLG International managing director, at a media briefing held in Lusaka in November, 2019.

"We promise to use our expertise to deliver a quality and successful event for the benefit of all stakeholders in the agricultural value chain in the country and the region," he added.

We are bracing for a re-branded Agritech expo, one that would come up with solutions to evolving challenges that farmers in this country continue to face, such as poor rainfall patterns, electricity and energy deficits, alternative energy mix, the livestock burden, poor production and issues of value addition at farm level, among many other things. There will not be much change in the event organisation in the first instance but the organisers have pledged to improve and build on what the event has achieved so far in the long run.

Agritech Expo Zambia is a business-tobusiness platform for agricultural professionals from small-scale to commercial farmers, to engage and conduct business with some of the world's leading suppliers to the agricultural industry.

From live trials and machinery demonstrations, to technical and practical workshops for emerging farmers and VIP business interaction for commercial players, Agritech Expo is simply the only business event servicing the needs of the entire agricultural value chain in Zambia and its neighboring countries.

As has been the tradition over the years, there will be live planting demos, a versatile platform for seed firms to practically provide training sessions to feature the best way to plant seeds with the right mix of agrochemicals and technology to attain solid yields.

The organisers have also promised more AgriTEACH workshop zones. Previously, AgriTEACH workshop zones were featured in a single workshop zone. In the upcoming edition, farmers will have the opportunity to attend multiple workshop sessions taking place across five different industry themes, allowing farmers a more focused and detailed knowledge building experience. Workshop zones will encompass crops, irrigation, machinery and equipment, finance and livestock.

Speaking for the owners, Zambia National Farmers Union (ZNFU), said:

"We are bracing for a re-branded Agritech expo, one that would come up with solutions to evolving challenges that farmers in this country continue to face, such as poor rainfall patterns, electricity/energy deficits, alternative energy mix, the livestock burden, poor production and issues of value addition at farm level, among many other things.

"We have no shade of doubt whatsoever that with DLG, we will experience another surge in revelations of agricultural technologies and machinery," she added.

In fact, the Agritech dream is growing and changing the face of agriculture and agribusiness in Zambia and in the region.

Zambia continues to offer great agricultural potential in sub-Saharan Africa, as it has a politically stable market environment



that is increasingly attracting investors from abroad.

Over the last six years, Agritech Expo has grown to become the largest event on the Zambian agricultural calendar. This year's event will build on the many successes of the previous editions, underscoring, inter alia, increased exhibition space, an expanded irrigation zone and sprayers arena, diverse crop trials/demonstrations, equipment display arena, VIP business area, the agro SME village and the 4×4 vehicle testing track. The annual exhibition of agricultural technology and crop production focuses on tractors, agricultural implements, seeds, pesticides and fertilizers.

Zambia offers great potential fro agricultural growth, with about two thirds of the population employed in the sector and contribute for more than 40 per cent to the GDP.

Developing poultry in Sudan The event will focus on poultry, livestock and agricultural production in Sudan as well as in Africa

THE 11[™] SESSION of Sudan Poultry Expo (SPE) will be held from 25-27 February 2020 at Khartoum International Fair Ground.

The event will be dedicated to the development of poultry, livestock and agricultural production in Sudan and the entire African region.

The expo is expected to provide the exhibitors and visitors with knowledge-sharing across a wide range of topics and is considered as one of the leading poultry expos in Africa and the Middle East.SPE is a specialised event dedicated to the development of poultry, livestock and agricultural production in Sudan , with animal numbers exceeding 120 million cattle one of the largest in Africa and Middle East

SPE was widely promoted in international events and magazines. The upcoming edition of SPE will be held under the patronage of minister of animal resources and under the auspices of the Ministry of Animal Resources, the Ministry of Industry & Trade and Ministry of Agriculture and Animal Resources Khartoum State (Sudan).

SPE is supported by Sudanese Veterinary Association; Sudanese Agricultural Council; Sudan Poultry Science Association; Sudan Chamber of Commerce and the Middle East and North Africa Poultry Magazine (MEAP).

The 11th session of SPE will include the sectors such as Sudan dairy & meat cattle show; Sudan fish tech show; milk technology show; refrigeration exhibition; poultry, meat and milk festival.

The great revolution in Sudan which paved the road for political and economic development in the history of the country was the dawn of the new civil era.

The major opportunities in the economy include huge agricultural potential, an improved national policy environmen as well as private sector potential. The country has also witnessed the development of the poultry industry which survived the bad times and holds promise for potential growth. Christopher Armstrong, Marketing and Communications, DLG International GmbH, in an exclusive interview with African Farming about Eurotier Middle East and the company's future plans for the region.

Synergising for agriculture

DLG Credit: I Image (



Can you give a brief about EuroTier Middle East 2019 and its impact in the region?

The EuroTier brand, which is 30 years in the making, is the leading trade fair brand for animal farming professionals in the world. EuroTier in Hanover hosts more 155,000 visitors and 2,586 than exhibitors in Germany every alternate year in November.

In 2019, based on our experience, market insights and a strong partner network we successfully launched the series of EuroTier branded trade fairs outside Germany.

It started with EuroTier South America in July in Brazil, followed by EuroTier Middle East in Abu Dhabi and EuroTier China in Qingdao, the latter two being launched in the month of September.

EuroTier Middle East 2019 welcomed more than 10,000 visitors from across the region to Abu Dhabi from 2-4 September. The event drew the participation of over 120 exhibitors and 150 companies from 16 countries, including Saudi Arabia, the country of honour at EuroTier Middle East 2019.

With EuroTier Middle East we are working with our prestigious strategic partner the Abu Dhabi Agriculture and Food Security Authority (ADAFSA). With their support we have been able to bring the EuroTier platform to the animal farming sector in the region.

Abu Dhabi and the UAE is a global animal production hub. The farmers and professionals here face distinct challenges on their path to growth and self-sufficiency, which need lucrative and sustainable solutions.

We pride ourselves in our global network of experts, strong local and international partners and our extensive experience in organising trade fairs. EuroTier Middle East was created to be the ideal platform not only to showcase the latest in technological innovation in animal farming but also as a platform to share knowledge and expertise on emerging trends and important market developments.

What have been the highlights for **EuroTier Middle East?**

The event covered all segments of the animal farming sector as well as other related sectors including feed manufacture and dairy.

Over the three days there were a number of high profile contracts and MOUs signed by exhibitors at EuroTier Middle East. The primary objective of a trade fair like EuroTier Middle East, is to be the meeting place of the livestock industry where new and crucial partnerships are forged in order to shape the future of the industry.

For example: Agthia Group PJCS, one of the UAE's leading food and beverages companies and producer of market leading animal feed Agrivita, signed an MoU with Jenaan Investments, an agricultural group of companies, to further support local farmers in Abu Dhabi and Al Ain. The MoU revolves around integrating Agthia's animal feed products and nutrition expertise to further contribute to food security for the UAE.

A major attraction at EuroTier Middle East 2019 was the live animal show featuring more than 6,500 animals and drew the participation of 175 breeders. The animal auction and the beauty contest that was held over three days was the largest ever indoor live animal show in the region.

The event was targeted in the MENA region and showcased products and offered a technical programme suited to the region.

Visitors from African countries including Morocco, Egypt, Nigeria, Ghana, Tunisia and Algeria were able to speak with the exciting exhibitors in the field at the event and take part in the comprehensive technical programme. The hope is that they have been able to gather fresh ideas to invigorate agriculture throughout their respective regions addressing the challenges facing them and prepare for the future.

The exhibitors offered innovative technologies and solutions for animal husbandry farmers in the region The technical program at EuroTier Middle East offered visitors from the African markets a tailored conference programme with an inclusion of several region- specific topics for example, dairy production in arid climates, precision farming and managing heat stress. We received extensive support from the International Livestock Research Institute (ILRI), based in Kenya and the Abu Dhabi Agriculture and Food Security



Christopher Armstrong, DLG International

Authority ADAFSA to design and deliver the technical programme.

As the first edition of EuroTier Middle East came to an end, the organisers announced a further development in their relationship that will see the DLG and Abu Dhabi Agriculture and Food Safety Authority (ADAFSA) working together to establish a demonstration farm in the region. Likely to begin in 2020, this new resource for the livestock sector in the Middle East will allow new farming concepts to be put to the test in a practical way that can educate and inform farmers and assist them in their future investment decisions. The outcomes from this initiative and forged partnerships will be presented at the second edition of EuroTier Middle East, scheduled from 29-31 March 2021.

What specific trends do you notice in the region?

As with governments across the globe, there is an emphasis on the adoption of sustainable farming practices and a push towards knowledge sharing for the benefit of all stakeholders.

In this region new and upcoming nonconventional farming sectors such as beekeeping, aquaculture, and date production are currently in the spotlight. Camel rearing has also been an area that has received a lot of attention, with regards to genetics, milk and meat, all generating immense interest in the past few years. There is a lot of scope for the right technology and products for this segment.

In addition there is an emphasis on optimising feed utilisation to reduce costs. The region has a strong interest to improve selfsufficiency, especially in terms of animal protein.

The next edition of EuroTier Middle East will feature not only a larger number of exhibitors and therefore an increased product offering but a wider technical programme and more live animals especially small ruminants.

agrofood West Africa 2019 set for growth.

ONCE AGAIN ORGANISED by the German trade show specialists fairtrade Messe, West Africa's 6th international trade show on agriculture, food processing and packaging, ingredients, bakery and confectionery as well as food and hospitality takes place from 10-12 December 2019 at the Accra International Conference Centre, together with its partner event plastprintpack West Africa.

The 2019 event features seven country pavilions - China, Flanders/Belgium, Germany, Morocco, Netherlands, Sri Lanka, Turkey.

Agrofood West Africa 2019 enjoys the support of institutions including the AHK Delegation of German Industry and Commerce in Ghana, DLG German Agricultural Society, Embassies of France, Germany, Italy, the Netherlands and Turkey to Ghana, Flanders Investment & Trade and the Ghana - Ministry of Trade and Industry.

agrofood & plastprintpack West Africa 2019 will again be supplemented by a 2-day program full of presentations and conferences, organised jointly by fairtrade and AHK Delegation of German Industry and Commerce in Ghana. Among the most important topics worth mentioning are: Food Processing Value Chain Market Analysis, African Continental Free Trade Agreement – Challenge or Opportunity for the Food and Packaging Sector? Financing Your Business: Where to Go and Who to Approach? Agrofood and Packaging Facing the 21st Century: What Impact do Big Data and Digitalisation have? Packaging: The Way Forward for Ghana and West Africa.

agrofood West Africa covers the entire value chain, from field to fork, consisting of the three sub-brands .

Now DLG German Agricultural Society enters into strategic

partnership with fairtrade and brings in its agro and trade fair expertise by introducing its AgroTech brand to the agro event of fairtrade's agrofood trade show. The focus of the cooperation lies on agricultural technology, animal production, flori- and horticulture and hot-house technology. Organisers of the world's No. 1 trade shows Agritechnica and Eurotier, DLG is the global leader in professional trade fairs in the fields of agricultural engineering, crop production, animal production and bioenergy.

With 388 million inhabitants, West Africa is Africa's most populous region and one of the most populous regions in the world. West Africa's GDP is expected to grow from US\$563 bn in 2017 to US\$585 bn in 2018 and US\$610 bn in 2019.

According to the agrofood West Africa 2018 exhibitor survey 90 per cent of the exhibitors were satisfied with the services provided by the organisers, 86 per cent intend to participate again, 80 per cent recommend the event and 77 per cent are satisfied or even very satisfied with the trade show as a whole.

Visitors were similarly positive about the event, the analysis being based on a response rate of as much as 20% of visitors.

Thousands of B2B meetings created high satisfaction rates among exhibitors and visitors, according to organisers.

The organisers are expecting an succesful event and conference programme, in view of the strong institutional support in West African and internationally.

Exhibitors from 17 countries have already registered for agrofood & plastprintpack West Africa 2019, according to organisers.

Ensuring the safety of water is integral to food manufacturing and reverse osmosis (RO) is set to eradicate pathogens, organic microorganisms, chemicals, total dissolved solids and suspended solids.

Reverse osmosis boosts food processing

OST OF THE reverse osmosis treatment plants are situated on the whims of the ocean or water bodies. So are many industries including the food processing industry. Agriculture alone takes up more than half of our freshwater reserves as vegetables, fruits and grains require it to grow. At least 33 per cent of consumers are concerned about whether the food processed is safe for consumption.

"There's always the fear of diseases like E. Coli that can cause serious health problems. Food processing industries, therefore, remain careful in their approach and dread an outbreak. Every system and process they use has to be up to the health standards specified by regulatory boards and the facility has to remain hygienic. As a precautionary measure, almost every food processing industry has systems that are run on reverse osmosis," said Sammy Farag, CEO of AMPAC USA.

Reverse osmosis is a process used for purification of incoming water to be used for a wide range of purposes. But it is a big asset for industries manufacturing goods that will be consumed like the beer breweries, beverage, dairy and especially the food industry.

How RO aids food processing

Osmosis is a natural process of flow of water or liquid through a semi-permeable membrane when two solutions of differing concentrations are placed on either side. The liquid passes from a solution of lower concentration to higher concentration in order to balance the amount of salt in each.

As a result, reverse osmosis was developed since it puts pressure on the water to be on the lower concentration. This semipermeable membrane acts as a filter for stopping harmful chemicals, organic materials, sediments, and other impurities to pass through. The water thus obtained is fresh and free of any contaminants.

"These reverse osmosis filters are used in almost every purification purpose and in every sector of industries. It is even used for household purposes. Food processing is very important considering it deals with the health of the people directly and so uses this method of water purification to use it in various functions of production," added Farag.

RO uses in food processing

Tasks such as boiling, washing the raw materials, cleaning the systems and utensils used, cooling the food prepared, require the use of water and need raw materials like potatoes, tomatoes, chilli, pepper, beans and more. For example, for the canning of diced tomatoes:

- Raw tomatoes are washed thoroughly
- They are passed through the dicing machine which has to be absolutely clean, for which water is a necessity
- The tomatoes are then poached in boiling water and
- Finally, the product is pressure canned in a water bath.

Now that the activities are decided and their importance



The liquid passes from a solution of lower concentration to higher concentration in order to balance the amount of salt in each.

understood, food processing industries are left with three choices.

- To choose a source, using municipality supplied tap water has mineralization and even if you treat it for pathogens and bacteria, the mineralisation gives a funny taste to the product.
- Treating the municipal supply with chlorine the organic matter present in it dies but the taste again varies.
- Opt for reverse osmosis applied processes to purify the incoming water for balanced health and taste.

"Here reverse osmosis comes in to play. The procedure eliminates every contaminant including chlorine to give ready to use healthy and safe drinking water. This, in turn, gives palatable results," Farag remarked.

Wide choice

Based on the size of the industry, a company can choose between a commercial RO for small and medium scale industries and industrial RO for the facilities operating at a much larger scale. These systems are available in automatic and manual settings, however, with a lot going on in the facility, it is suggested to get an automated system with less manual supervision.

These come very well equipped with reverse osmosis systems and give the quality of water customised for the facility's needs. Also, both commercial and industrial reverse osmosis systems come in wide ranges of capacities to choose from. However, before a choice is made, it is important to understand what the supply is made of. The best decision would be to get an expert to do an analysis of the incoming water based on which the best strategy of RO systems to be operated for the best results will be suggested. A combination of water saving and optimisation of the purification of water are essential to the efficiency of irrigation systems.

Irritec: Overcoming driptape clogging in micro-irrigation

RIP IRRIGATION WORKS thanks to drippers that deliver small hourly flow rates ranging from 0.5 to four litres – or slightly more. With this particular feature the system may be clogged when poor quality water is used and the right filtration techniques are not adopted.

Two categories of water can be used for irrigation purposes: surface water and groundwater. The quality of water depends in particular on the temperature, suspended and dissolved substances and the pH level. Deep waters are generally clear waters, that is, they do not contain suspended substances but only dissolved ones. In these cases, the main problem is the presence of sand which can be easily solved by means of a hydrocyclone or a disk filter.

For well water, it is necessary to identify the chemical characteristics such as pH, electrical conductivity (EC) and the presence of bicarbonates or other metals such as iron and manganese that could obstruct the dripper labyrinths. These characteristics are common in every part of the world and in some cases certain aspects may prevail depending on the geology of the territories of origin, the depth and proximity to the sea. Increasingly often, seawater intrusion in coastal aquifers makes groundwater brackish. Surface waters, on the other hand, have suspended substances, that is, they have a certain coefficient of turbidity.

The suspended solid matter can be of various origins and nature. In order to verify how much of this organic matter is biodegradable and the degree of water contamination, two indices are used: the B.O.D.5 and the C.O.D. Irritec S.p.A., in addition to producing increasingly precise and functional filtering systems, has launched an innovative product that represents a revolution in micro-irrigation for the reduction of the risk of dripper's occlusion in the cases of poor-quality irrigation water or low degree of filtration. This product is eXXtremeTape light dripline, whose special plug resistance helps the farmers to overcome one of the main problems of micro-irrigation which is the clogging of the drippers when adequately clean water is not available. eXXtremeTape dripline with continuous



Irritec eXXtreme Tape[™] dripline on strawberry crop

labyrinth is the most recent product developed and patented by Irritec. It is characterised by a double continuous inlet filter extending over its whole length. For each linear metre, there is a filtering area of 254 mm² and 2120 holes. The lateral surface of the pre-filter is 20 to 50 times longer than traditional driptape. This makes eXXtremeTape particularly suitable for water with high content of suspended solid particles. Its higher plug resistance allows eXXtremeTape to perform perfectly and constantly until the end of the season.

The evolution involved the raw material used, the thickness, the wide range of the hourly flow rates and the diameters. eXXtremeTape is available in 16-22 – 25 and 29 mm diameter allowing to reach long lines with maximum supply uniformity once impossible. The reduced spacing (7.5 - 10 - 15 etc cm) and low flow-rate of the drippers (even 0.6 Lit/h) make it particularly suitable for draining soil and to facilitate rooting of plants in sandy soils.



Smart solutions in the agricultural industry are aiming to meet the diverse needs of farmers and provide greater impetus to agricultural operations.

Continental unveils intelligent hybrid agricultural tyres

HE NEW HYBRID tyres incorporate pressure sensors to help the operator minimize soil compaction in the field and reduce wear on the road.

The Continental VF TractorMaster Hybrid tyres are designed to give operators the technology to efficiently adjust the pressure to correspond with the task. Developed in Lousado, Portugal, in close cooperation with other European research and development units, the very high flexion (VF) tyres feature a new hybrid tread pattern that is designed to offer traction in the field and be more comfortable on the road.

The structure of the Continental VF TractorMaster Hybrid tyre carcass is more resistant than standard tyres so it can operate at lower pressures in the field and at higher speeds on the road while carrying the same load. This has added importance as under-inflated tyres on the road increase fuel consumption, whilst overinflated tyres in the field lead to increased soil compaction.

Tyre technology with automotive electronics

Continental developed a completely integrated tyre pressure monitoring system consisting of different components, which include the sensors, a yard reader station, backend management as well as a web portal and notification service.

With ContiConnect, the data gathered by the sensors will be collected by a yard reader station as the vehicle passes by the receiver in the yard and sends the data to the backend where it is analyzed and interpreted. The yard reader station is installed at the fleet s frequent touchpoints, like washing bays, gas stations, the farm or other check-points.

ContiPressureCheck operates on individual vehicles to provide the operator with real-time tyre data. Together the technology offers a comprehensive insight into how agricultural machinery tyres are performing. The sensor in the tyre measures and communicates the pressure and the tyre temperature to help the operator decide on the optimum running pressure.



Continental VF TractorMaster Hybrid.

Both systems are quick and easy to install and guarantee a high data accuracy since measurement errors are avoided through the sensors mounted inside the tyre.

Digital solutions for enhancing farming operations

The regular control of the right tyre pressure and the temperature is crucial for safety and efficiency during daily farming operations and to save time and money. Farmers, for example, often drive long distances of 30km and more when harvesting cereals or transporting goods. Over long distances, the tyres often overheat, which affects the steering ability of the vehicle and can lead to permanent damage and even premature tyre failure.

Both ContiConnect and Contipressure

The regular control of the right tyre pressure and the temperature is crucial for safety and efficiency during daily farming operations and to save time and money. Check ensure safety and reliability for farmers and drivers by constantly monitoring tire pressure and temperature. They display the tyre sensor's data on a screen in the driver's cabin and warn before a condition becomes critical. For example, an alert can be sent if the tire temperature is too high (more than 100 degrees). Thus the correct air pressure for steering the vehicle can be matched and the lifetime of the tyre can be extended avoiding high financial expenditure for the farmers.

Reducing soil compaction

ContiConnect and ContiPressureCheck can reduce soil compaction and resulting fluctuations in plant growth by ensuring a constantly low, correct tyre pressure on farming machinery through accurate and automatic measurement of tyre conditions.

An additional for ContiConnec is the browser-based web portal offers various display options. It shows the history of the tire data and enables retrospective analyses.

The web portal allows a remote monitoring of the entire fleets tyre performance and puts control into the hands of the fleet managers and co-workers to guarantee correct usage of tire pressure for optimal growth conditions.

Agricultural tyres have to master a variety of challenges, including switching from the road to the field with varying loads and at different speeds.

Tires with VF technology are robust, durable all-rounders that remain drivable at low air pressure. They can carry greater loads with less soil compaction due to a larger contact surface area. The materials and construction of VF tires strike a perfect balance between flexibility and robustness.

Innovations such as these, aimed to increase productivity, yield and operator comfort, while reducing fuel consumption, tyre wear and maintenance costs will bring added benefits to the agricultural industry. More so, since digitalisation and smart solutions are becoming increasingly important to feed the world.

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e-mail: comms@fareasternagriculture.com web: www.alaincharles.com www.fareasternagriculture.com Several initiatives in financing opportunities, technological advances as well as agtech developments point towards an increase in tractor use across Africa.

Africa's tractor tale progress



thrive working at the intersection of agriculture and technology, because I believe in the significant impact it can have on smallholder farmers. Leveraging technology to improve and increase agricultural output is critically needed across Africa," says Martha Haile, Wefarms's VP of Africa and former Hello Tractor COO.

Agribusiness, whether large like John Deere or relatively smaller such as Hello Tractor, has been crucial in the growth and development of the sub-Saharan agricultural sector.

However, the latest year-to-date tractor sales up to the end of September, according to the South African Agricultural Machinery Association, show a decline of 22 per cent to 3,919 from 5,034 in 2018. This figure shows a reduction from the five-year average of 4,671 units sold for the corresponding period. In major parts of Africa, tractor sales were affected due to uncertainty regarding crop yields and exchange rates.

However, there is a lot of evidence to suggest that farm-level mechanisation is slowly increasing across Africa.

For instance, the agricultural show 2019, highlighted the scale and sophistication of South African farming, with the organisers confirming that more than 85,000 visitors attended.

There are several governmental as well as private-sector initiatives across the continent, working to improve access to tractor services and allowing farmers to be more productive and have better incomes. According to the research survey conducted by Agri evolution Alliance, Africa holds a great market potential for agricultural tractors. The increasing support by governments to develop the agricultural sector is expected to drive this sector. For instance, the government in Ghana provides tractors at subsidized rates to entrepreneurs.

There are several governmental as well as private-sector initiatives across the continent, working to improve access to tractor services and allowing farmers to be more productive and have better incomes.

One example is The International Maize and Wheat Improvement Centre 's (CIMMYT) mechanisation training programme implemented under the Farm Mechanisation and Conservation Agriculture for Sustainable Intensification project, benefiting more than a hundred young people from Ethiopia, Kenya, Tanzania and Zimbabwe.

The NAMPO Harvest Day 2019, which was attended by more than 75, 000 saw many tractor innovations being exhibited.

The first John Deere 9570 RX '4-Track' articulated tractor was the star of the show. The New Holland Smart Trax system combines the overall versatility of a wheeled tractor with the high traction and floatation of rubber tracks.

Case IH, a brand of CNH Industrial and Northmec, its distribution partner in South Africa, highlighted the New Case IH SoilXplorer sensor/mapper.

Positive trends

With population increasing rapidly, samllholder farmers want to increase food production, but there are several challenges including expensive equipment, financing problems and often the scale of operations is too small.

Several initiatives from private sector companies, government agencies as well as public-private partnerships ensure a greater level of farm mechanisation and tractor use across Africa.

Access to finance

Access to finance is a major hindrance across the value chain, to unlock Africa's agricultural potential. This is pivotal for smallholder farmers who increasingly depend on borrowing or pooling resources.

The integration of digital technology into farming is a major opportunity in Africa. Simple mobile-based and internet solutions could significantly boost access to financing for agriculture, according to experts.

A recent development is of Equity Bank partnering with American agricultural equipment manufacturer AGCO to enable its farmer customers acquire the firm's Massey Ferguson tractors and accompanying implements through an 80 per cent credit line payable within 48 months.

The deal will see sole franchise holder FMD East Africa channel funding from AGCO to local agribusinesses and individuals.

"This partnership provides the missing link from those wishing to own by enabling them to actualise their plans on making farming profitable. FMD will also provide after-sales services that it includes [making available] spare parts and equipment maintenance," said FMD general manager Fergus Robley .

The integration of digital technology into farming is a major opportunity in Africa.

Digitalisation in tractors

Digitalisation has definitely arrived in tractors. In this year's Agritechnica, an event regarded as an important platform for innovations in agricultural machinery, numerous products were presented by manufacturers.

These include telemetry systems with different focuses. For instance, with Valtra Connect, this involves efficient fleet management. TIM remote diagnosis from Kubota is focused on the simplified, brand-independent fault analysis of tractor/implement combination and Trachink Smart from Linder is concerned with automatic implement recognition using SmartTags and web-based setting recommendations. FendtOne from Fendt has a new operating philosophy aimed to integrate boundaries between onboard world on the tractor and the office.

Hello Tractor grants tractor owners the ability to track their tractor and expand their tractors' serviceable geography to grow their business and create equitable access to tractor services for smallholder farmers, allowing them to be more productive on the farm and earn more.

Hello Tractor whose smartphone app connects samllholder farmers with tractor owners looking to rent, dubbed the "Uber of Tractors", was first launched in Nigeria in 2014 and the company is poised for further expansion with testing underway in other parts of the world.

African agri-tech is booming, according to a report published last year, with more than US\$19 mn invested in the past two years and the number of start-ups more than doubling over the same period. Kenya, Nigeria and Ghana are the top three countries for agricultural innovation.

Technology for the future of African agriculture

Experts say, it is proving really beneficial to farmers to access upto-date information as climate change brings erratic weather and traditional knowledge is unreliable.



mage Credit: Adobe Stock

Experts say, it is proving really beneficial to farmers to access up-to-date information as climate change brings erratic weather and traditional knowledge is unreliable.

The free app, created by the FAO, for instance, also provides information on weather, market prices for crops and producing and conserving nutritious food.

FAO and the African Union's strategy acknowledges that "there is great potential for innovation in African agriculture" - notably with the proliferation of mobile technologies and access to information and services - and that a significant effort in capacity development will have to be made to rise to related challenges.

International organisations such as the Centre for Agricultural and Rural Co-operation's (CTA) "Transforming Africa's agriculture: Eyes in the sky, smart techs on the ground," project supports the use of drones for agriculture.

There are other initiatives. Ghana's agriculture is the country's most important economic sector. However, many farmers lack the tools they need to prosper. Majority of Ghana's farmers need ploughing services. But it's either the lack of tools they need, or



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their inability to easily connect with operators of mechanized tractors to help them do their work.

Trotro Tractor connects farmers to nearby tractor operators. By using a phone, a farmer can request a tractor service from an individual or company in their vicinity. Requests are made through text messages or on the platform. This is so that services can be accessible to farmers even in the most rural areas.

Wefarm empowers farmers to access tailored information directly from other farmers through SMS. Their mission is simply to connect every farmer – as they believe farmers know best about farming, particularly what they need and what works for them allowing users to share and access vital information on anything and doing all this without leaving their farm, spending any money or going online.

Sustainability

SAMA or the Sustainable Agricultural Mechanisation framework for Africa is the result of discussions with policy makers from AU member states, the AU Commission, FAO and key partners. It offers a detailed look at the history of machinery in Africa, and points the way towards addressing challenges and creating new opportunities to assure the successful adoption of mechanization.

"Doubling agricultural productivity and eliminating hunger and malnutrition in Africa by 2025 will be no more than a mirage unless mechanization is accorded utmost importance," AU Commissioner for Rural Economy and Agriculture, Josefa Sacko, said at the launch of the framework at FAO.

Remarkably more than three-fourths of farmers in sub-Saharan Africa prepare their lands using only hand tools, a practice that entails poor productivity, repels youth and is incompatible with the continent's Zero Hunger goal.

"Farmers in Africa should be able to use modern agricultural technology, both digital and mechanical, to boost the agricultural sector in a sustainable way," said FAO deputy director-general Maria Helena Semedo.

The new framework identifies 10 priorities for AU member states to include in their national plans, ranging from the need for a stable supply of machine spare parts and innovative financing mechanisms, and the importance of regional collaborations that allow for cross-border hiring services.

The framework notes that successful national mechanisation strategies will address key sustainability issues including gender, youth, environmental protection and the overarching principle that farming must be profitable. It also emphasizes that these strategies should cover the entire agrifood value chain, including harvesting, handling, processing and food safety aspects, with an eye to reducing food losses, boosting rural employment and bolstering the links between farmers and consumers

Increasing focus on Conservation Agriculture

Currently, around 60 per cent of Africa's population depends on

agriculture for livelihood, yet the sectoral contribution to the gross domestic product was paltry 21 per cent in the year 2016. So, there is a dire need to increase the crop yields in the coming decades to keep pace with food demand driven by population growth and rapid urbanisation in Africa. Therefore, the mechanisation through tractors can, directly and indirectly, bridge the yield gap.

For intensification to occur sustainably, with minimum negative environmental and socila consequences, it is widely recognised that resources must be used with much greater efficiency. Although much emphasis is being placed in current research for development work on increasing the efficiency with which land, water and nutrients are being used, farm power is important, too. Sustainable intensification will require an improvement of farm-power balance through increased power supply via improved access to mechanisation and/or reduced power demand through energy saving technologies such as conservation agriculture techniques.

The Farm Mechanisation and Conservation Agriculture for Sustainable Intensification project examines how best to exploit synergies between small-scale-mechanisation and conservation agriculture.

In conclusion

Agriculture is crucial to Africa's development but needs increased mechanisation to boost economic productivity, reduce harvest and post-harvest losses and meet growing demand for food. This is one of the messages that has emerged during the seventh Tokyo International Conference on African Development held in Tokyo this year.

The chairperson of the African Union Commission, Dr Nkosazana Dlamini Zuma called for the hand hoe to be sent to the museum, liberating the African farmer from the drudgery associated with it. Both the Malabo Declaration and the Agenda 2063 are clear about the mechanisation of agriculture.

Sub-Saharan Africa has the world's highest area of uncultivated arable land but productivity lags behind other developing countries. Mechanisation can significantly help bridge the yield gap.

In order to raise agricultural land and labour productivity, to generate rural employment and make it more attractive and to achieve future growth and poverty reduction agendas, governments must embrace technological, policy and institutional innovation opportunities afforded by mechanisation.

There are several indicators that the use of tractors as well as farm mechanisation in general, are increasing across teh African continent, though recent sales of tractoprs shows a fall in figures.

The use of technological innovations to reach smallholder farmers, imparting knowledge on their use, improving the financial capabilities of these smallholder farmers through co-operatives as well as increased partnerships in both private and government sectors will pave the way for greater improvements.



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The Pöttinger machines that can be fitted with the TEGOSEM cover crop sowing unit now includes the LION power harrow and FOX compact combination harrow.

Cover crop sowing innovations

LREADY OFFERED ON the TERRADISC disc harrow and SYNKRO stubble cultivator, mounting brackets are available to fit the Tegosem 200 (200 litres) on the rear roller of all rigid versions of the LION and on FOX 3.0m and 4.0m models.

The Pöttinger TEGOSEM cover crop sowing unit used in combination with a LION power harrow or FOX compact combination harrow enables seedbed preparation and sowing of a cover crop to be carried out in a single pass.

The TEGOSEM is designed for three-point machines and is equipped complete with mounting brackets and a loading platform. The loading platform, steps and seed hopper form a compact unit which is mounted on the rear roller. They are perfectly integrated and comply with safety regulations.

Precision sowing

The Pöttinger TEGOSEM can be used for sowing a wide spectrum of seed material, from mustard to grass and rapeseed through to cereals at a lower seed density.

The metering system is driven electrically. The seed material is distributed pneumatically using reversible distribution plates. The seed can be deposited either in front of or behind the rear roller. All that is needed is for the distributor rail to be repositioned. The great advantage of placing the seed in



front of the rear roller is that the tine rotors cover the seed with soil before the roller passes over. The rear roller consolidates the soil while pressing the seed down at the same time.

Using a TEGOSEM to sow a cover crop on a LION power harrow or FOX compact combination is increasingly being used with success for the reseeding of grassland especially following an invasion of white grubs.

Equipment and operation

The TEGOSEM is fitted as standard with an



intuitive control terminal that regulates and monitors the metering shaft and sets the seed flow rate electronically. The metering shaft is controlled electronically independently of driving speed and can be set infinitely-variably from the tractor cab. The control terminal also has a kg/ha display, a priming function, a headland management system, a tank emptying function, automatic calibration and counters for total hours, hours per day, total hectares and hectares per day.

The push-button calibration is claimed to provide ease of operation and a calibration bag is provided as standard equipment.

The level indicator for monitoring the contents of the seed hopper, a DGPS ground speed sensor, a sensor on the top link for starting and stopping metering, and the loading platform, are all part of TEGOSEM.

There are also two metering shafts (fine and coarse) that can be interchanged without the need for tools to complete the package.

The rigid three-point machines the unit is mounted on the rear roller, provide better accessibility and ease of filling. The seed hopper has a volume of 200 litres.

The technical prerequisite for using the TEGOSEM on a LION or a FOX is a threepin socket for controlling the machine and the fan drive.

These compact combinations for seedin can be used for many different applications and are cost-effective and efficient.

LEMKEN unveils new field sprayer

LEMKEN HAS LAUNCHED the self-propelled field sprayer Nova, suitable for a variety of operations. Attention to the comfortable cab, essential for long working hours as well as sound insulation for reducing noise and stress so that operators can focus fully on driving are provided.

The Nova is available with an optional Category 4 three-stage air filter system, which creates permanent positive pressure in the cab to prevent any fumes from entering. Automatic climate control, Bluetooth radio and numerous storage options help to make work a lot more enjoyable.

The innovative joystick with numerous freely assignable function keys can be configured in keeping with individual needs. The application technology is controlled via the proven LEMKEN MegaSpray on the CCI 800 or CCI 1200 terminal. Functions include width section and application rate controls, GPS track guidance and job management. The agrirouter, the new cross-vendor data exchange platform, handles communications with the farm management system back in the office.

LEMKEN's AdaptiveBalancingControl(ABC) with automatic, proactive guidance keeps the boom in an optimum position and maintains the correct distance to the target surface. Up to five sensors ensure that the individual boom arms adapt directly to uneven terrain or changes in the crop. A circulation line with individual nozzle control within the boom provides for precise application and absolutely minimal residue.

The inductor has a capacity of 55 litres and provides flow up to the top edge without producing spray mist. It is additionally prepared for a closed transfer system (CTS) and is height adjustable for improved ergonomics.



The LEMKEN Nova

A colour display above the inductor allows the water hydraulics to be operated easily. An electrically regulated injector agitator with fill level-dependent control maintains a consistently homogeneous mixture inside the tank. Any residue collects in the lowered sump, which can be drained fully.

An electrically regulated injector agitator with fill level-dependent control maintains a consistently homogeneous mixture inside the tank.



Technological developments are bringing far reaching changes to African agriculture and impacting the livelihoods of smallholders.

Digital solutions changing agriculture in Africa

ECHNOLOGY HAS THE ability to facilitate the achievement of development goals through rapid scale, and also impacts the world's poorest people. Digitalisation is transforming African economies in four major ways: retail payments systems, financial inclusion, sustainable business models, and revenue administration.

Andre Laperrière, the executive director of Global Open Data for Agriculture and Nutrition (GODAN) commented on the World Food Day, 2019:

"The UN report revealing that more than 820 million people around the world did not have enough to eat in 2018, a number that continues to climb in the years, is a stark reminder on how far we are from achieving the Sustainable Development Goal of Zero World Hunger by 2030.

World Food Day provides the much needed opportunity to spotlight these issues once again and the call to action to do what we can to tackle the crisis, particularly in countries where income inequality is growing and only compounding the challenges faced by where hunger is growing and low-income households impacted the most.

In order for us to increase the rate of progress to tackle the crisis today and future-proof our food systems for the rapid growth of our global population predicted, we need to acknowledge the key structural issues hampering progress and the profound transformation of food systems needed to provide sustainably-produced healthy diets for a growing world population. The time to act is now, and the only way we can do that is by being smarter in our approach. Radical technological and Al induction is required in the field to revolutionise it."

Role of women

It is also important to increasingly recognise the need to improve the role of women in the use of technology and digitalisation.

According to 2018 UN FAO statistics, women in Southern Africa make up 40 per cent of the agribusiness workforce. Yet, while they are responsible for growing over 70 per cent of Africa's food, they often have few rights over the land they tend. Additionally, women, above other demographics, often lack the education and skills necessary to access, use the data and technologies that would both be of benefit to them and to wider communities - in helping to address food security and nutrition challenges.

Benefits to smallholders

Digital solutions in agriculture offer small-scale farmers a range of opportunities. They can more easily exchange know-how, remain in closer communication using digital communication technologies, and access information about markets and prices, weather conditions, and cultivation methods.

There are several initaitves taking place across the continent for the benefit of smallholders.

The centre for Agricultural and Rural Cooperation (CTA) focuses on poverty reduction through modernising smallholder farming by fostering innovation and knowledge sharing.





In Ghana, for instance, online platforms such as Esoko, Farmerline, and Trotro Tractor have provided farmers with accessible services. These have included voice messages and SMS extension advice. This helps farmers obtain information about how to access markets and extension services.

There are also local and global organisations which believe that digital technologies can create employment for young people in the agricultural sector, promote economic activity, and enhance food security.

African entrepreneurs are now trying to improve the lives of farmers and how they can help improve yields. The barrier of entry into farming technology has dropped, as cloud computing, computing systems, connectivity, open-source software, and other digital tools have become increasingly affordable and accessible.

Aerial images from satellites or drones, weather forecasts, and soil sensors are making it possible to manage crop growth in real time. Automated systems provide early warnings if there are deviations from normal growth or other factors.

There is also a significant rise in the use of technolgy that offers better financial solutions for farmers.

Conclusion

From precision farming to an efficient food supply chain, technology could bring major economic, social, and environmental benefits.

The latest Digitisation of Africa Agriculture (D4Ag) report has stated that there has been significant growth in digitalisation for agriculture over the last 10 years.

However, despite the growth, progress toward D4Ag has been somewhat slow to serve the smallholder famers that produce 80 per cent of Africa's agricultural output. Nevertheless, the opportunity is there, as agriculture is expected to be a trillion-dollar market by 2030.

Throughout Africa, technology-led transformation of the agriculture sector is progressing rapidly, from farm to fork. And as technology improves and becomes more widely available, disruption in agriculture promises to accelerate.

Nokia launches smart agriculture service in Algeria

NOKIA HAS SET up a Worldwide IoT Network Grid (WING) to equip farmers with practical data and help them achieve better yields in partnership with Algeria's mobile network operator Djezzy.

The IoT technology was developed to shape the future of agriculture and other industries, to create a smarter and more interconnected world, according to Ankur Bhan, founder and head of WING Business Line, Nokia.

With WING, Nokia ran a smart farm-as-a-service trail in Algeria to help a peach farmer increase his yields, reduce the environmental impact and reduce the costs of irrigation.

The IoT technology has allowed the farmer to track soil moisture, water patterns, salinity and more via computing devices. The soil probes were placed along the irrigation line, gathering soil information from a depth of 120 cm to the surface. Various data have been collected, such as soil temperature, humidity, volumetric water content, water evaporation or salinity. These measurements were analysed and allowed the farmer to accurately manage the irrigation cycles and soil nutrition deployment.

The company stated that after only one month of testing, the farmer was able to reduce water consumption by 40 per cent on a single irrigation line. "The IoT solution linked the farmer to his crop, driving efficiency, cutting costs and unlocking new incomes. This unpredictable connectivity transformed his world," said Bhan.

He added that not only farmers can benefit from the solution, but communication service providers around the world can accelerate their IoT revenues with limited investment and risk through this technology.

Not just farmers can benefit from the solution: communications service



providers around the world can accelerate their IoT revenues with limited investment and risk. Smart Agriculture-as-a-Service is just one example of how Nokia WING can provide seamless global IoT services and give access to best-in-class industry partners, offered through flexible, pay-asyou-grow business models. And ultimately, when the time comes, the capabilities of 5G will push remote sensing to the next level, opening up currently unexplored new revenue streams.





Solutions for Ethiopia's energy and infrastructure challenges

AT THE G20 summit, Siemens committed to supporting and contributing to Ethiopia's Growth and Transformation Plan II and its objective of electrifying Ethiopia. Siemens will install a solar-hybrid plant in Sodo supplying reliable, sustainable and affordable electricity to the FruitBox farm as well as to the surrounding communities.

"The Fruitbox Farm project is a major Siemens lighthouse project aimed at demonstrating the importance of corporates aligning to a national vision that will ultimately benefit the lives of people in different societies," said Sabine Dall'Omo, CEO for Siemens Southern and Eastern Africa. "Government plans supported by business initiatives are essential and play a crucial role in moving economies forward and ensuring economic prosperity for all," she adds.

Cannon Equipment's dairy crate cleaning solution

The company, solution provider in designing and deploying custom material handling carts, equipment, conveyance and aftermarket parts, has launched the Infinity Sidehill Washer.

This is a sidehill screen technology in cleaning applications for the dairy industry.

The Infinity Sidehill Washer aims to revolutionise crate cleaning for the dairy industry, said Robyn Walker, president at Cannon Equipment. He further added that the



crates, reduced routine maintenance and less risk of equipment failure.

Credit: Canno

solution is set to meet the demand for cleaner dairy crates with simplified machine maintenance.

"By incorporating patent-pending sidehill parabolic screen technology-which has never been used in dairy washers-this washer removes solid waste from the washing system before it can contaminate wash and rinse water or damage pumps and clog nozzles," the company stated.

The technology aims to achieve cleaner crates, reduced routine maintenance and less risk of equipment failure. According to the company, compared to conventional washers, the Infinity Sidehill Washer allows users to spend up to 80 per cent less time on washer maintenance and up to 70 per cent less money on annual operating costs.

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