

African Farming

and Food Processing

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Food security

Open Data for agriculture

Journey of tea

From harvest to market

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Better livelihoods in fisheries. p12

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Breaking new ground in farm tractor design

Case IH's axial-flow 250 combines

Pottinger unveils new mowers

ArmaTrac licensed Africa's GIAD to produce tractors

Cooper Pegler knapsack sprayers



Image Credit: Adobe Stock



Hybrid seeds for agricultural development.



The new models of Case IH help maximise performance.



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Farming Calendar 2019

MARCH

26-28	Agrofood Nigeria www.agrofood-nigeria.com	NIGERIA
13-15	HortiFlora Expo www.hppexhibitions.com	ETHIOPIA
12-15	Propak Africa www.propakafrika.co.za	NASREC
28-29	NAT Fair www.natfair.co.ke	NAIVASHA

APRIL

03-05	NIPOLI Expo www.nipoliexpo.com.ng	NIGERIA
11-13	Agritech Expo Zambia www.agritech-expo.com	ZAMBIA

MAY

13-17	Panafrican Poultry Conference(PPC) www.cersa-togo.org	TOGO
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JUNE

05-07	Fresh Produce Africa www.hppexhibitions.com	NAIROBI
19-21	Agritech Africa 2019 www.agritechafrika.com	NAIROBI

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

Smaller African nations should embrace AfCFTA

SMALLER AFRICAN ECONOMIES should not fear the African Continental Free Trade Agreement (AfCFTA) but rather embrace the accord for the benefits it will bring to the continent through expanded intra-African trade, says Economic Commission for Africa's (ECA) Executive Secretary, Vera Songwe.

"Beyond central technical considerations in relation to the design of AfCFTA modalities, ECA's assessment reveals that smaller economies should certainly not fear the AfCFTA reforms but rather embrace it; particularly, as African LDCs would be those getting the largest increase in intra-African exports of industrial products," she said.

"And of course, it must be underscored that such benefits will only materialize if the AfCFTA reforms are properly designed and effectively implemented."

Cassava plant in Tanzania nears completion

THE LINDI BASED Cassava Starch of Tanzania Corporation (CSTC) is close to completion, with 90 per cent work being done, said the government of Tanzania.

As reported in the Daily News, the CSTC has a capacity to process 60 tonnes of cassava per day.

Stella Manyanya, deputy minister of trade, industries and investment, said that the factory had started pilot production of cassava flour in January 2019, while responding to a question by Newala Rural Lawmaker Rashid Akbar (CCM).

Quoting the minister, the source further noted that Tanzanian farmers need to receive professional advice from Small Industries Development Organisation (SIDO) and Tanzania Industrial Research and Development Organisation (TIRDO) on how to process cassava.

This will help them to sell in other international marketplaces including China where cassava demand is high, added the source.

ExxonMobil, REG and Clariant advance research on producing biofuel from agricultural residues

EXXONMOBIL AND RENEWABLE Energy Group (REG) have signed a joint research agreement with Clariant to evaluate the potential use of cellulosic sugars from sources such as agricultural waste and residues to produce biofuel, which has the potential to play a role in reducing greenhouse gas emissions.

The new partnership expands a previously announced agreement for joint research between ExxonMobil and REG, in which the companies successfully validated the ability of REG Life Sciences bio-conversion technology to convert sugars from cellulosic biomass into biodiesel through a single-step process.

The new agreement with Clariant allows ExxonMobil and REG to further optimise REG's bio-conversion process using previously tested and benchmarked cellulosic sugars created through Clariant's sunliquid® process. The companies' ultimate objective is to combine Clariant's and REG's processes into a seamless cellulosic biomass-to-biodiesel technology.

"Over the past three years, our work with

REG has led to important advances in genetically improving REG's proprietary microbes for beneficial use in facilitating the conversion of cellulosic sugars into biodiesel," said Vijay Swarup, vice president of research and development at ExxonMobil Research and Engineering Company. "Applying Clariant's expertise and knowledge will help us better understand and advance a key stage in the overall cellulosic conversion process, and hopefully lead to the development of scalable biodiesel technology."

Clariant is one of the leading companies in Switzerland which provides integrated technologies and solutions for converting agricultural residues such as wheat straw, rice straw, corn stover and sugar cane bagasse. Clariant's sunliquid® process features chemical-free pretreatment, the integrated production of feedstock and process-specific enzymes and thus high yields of fermentable C5 and C6 sugars.

We are committed to innovation and R&D, together with a focus on sustainability, as the main pillars of Clariant's strategy," said

Christian Kohlpaintner, member of Clariant's executive committee.

Through its partnership with ExxonMobil, REG has developed proprietary technology that utilises industrial microbes to convert complex cellulosic sugars into low-carbon biodiesel in a one-step fermentation process.

"ExxonMobil has been an exceptional partner in developing this promising technology," said Eric Bowen, vice president of REG Life Sciences. "We are delighted to be able to add Clariant to the team with its market leading sunliquid® technology."

The partners will also work on a conceptual engineering study to validate the feasibility of the integrated process comprising the technologies of all parties.

ExxonMobil uses technology and innovation to help meet the world's growing energy needs.

Renewable Energy Group, Inc. is a leading provider of cleaner, lower carbon intensity products and services.

Clariant's corporate strategy is based on focus on innovation and R&D and adding value with sustainability.

Chinese companies explore agriculture investment in Ethiopia

THE ETHIOPIAN EMBASSY in Beijing has organised an "Ethiopia-China Pulses, Oilseeds and Spices Sellers-Buyers Matchmaking Seminar" on 11 January 2019 and a few days later in Hohhot, capital of the autonomous region of Inner Mongolia, to promote opportunities in agriculture and livestock processing in Ethiopia.

Bian Zhenhu, president of CFNA, emphasised the importance of Ethiopia for China-Africa cooperation and said the bilateral trade would benefit from the Eight Major Initiatives announced at the FOCAC Beijing Summit last September. He said that Ethiopian exporters and Chinese importers should make good use of China's economic development, its increasing market demands, upgraded consumption and further opening-up.

The Ethiopian delegation had fruitful business-to-business discussions and also visited Qingdao where they held talks with the heads of two major Chinese oilseeds and pulses importing and processing companies Yihai Kerry Oilseeds and Grains (Qingdao) Ltd. and Qingdao Bolan Group Co. Ltd. These companies are the largest buyers of Ethiopia's sesame, oilseeds and pulses. The Forum on Investment Opportunities in Agriculture and Livestock was held on 16 January in collaboration with the foreign affairs Office of inner Mongolia. The forum attracted representatives from the Bureau of Commerce, Department of Agriculture and Animal Husbandry, and corporate leaders from over 30 enterprises engaged in agriculture and livestock sector in inner Mongolia.

Ghana and Hungary join Forces to boost water management



Image Credit: Adobe Stock

The meeting emphasised a commitment to establish a framework for swift and seamless cooperation.

MINISTER FOR FOREIGN Affairs and Regional Integration, Hon Shirley Ayorkor Botchway (MP), on behalf of the Republic of Ghana, has signed a Memorandum of Understanding (MOU) with Hungary on cooperation in the field of water management with a commitment to work towards establishing a framework for a swift and seamless cooperation between the parties on the basis of equality, reciprocity and mutual benefits.

The signing ceremony took place on Tuesday 22 January 2019 in Brussels, Belgium on the sidelines of the just ended first annual European Union (EU) – African Union (AU) Ministerial Meeting.

Hungary's Minister for Foreign Affairs and Trade, Péter Szijjártó signing on behalf of his country pledged his support to the agreement, in accordance with the national laws and regulations in force in the two countries.

Hon Shirley Ayorkor Botchway also met with her counterparts from Malta and Portugal to explore possibilities of further deepening of bilateral relations between Ghana and the two countries.

The EU-AU ministerial meeting, the first annual inter-summit forum, was an

opportunity to take stock of the implementation of the outcome of the 5th AU-EU Summit in Abidjan in November 2017, marking a milestone in reshaping the partnership into an even stronger, mutually beneficial one, better adapted to a rapidly evolving global context.

The meeting brought together foreign ministers of the European Union and their counterparts from over fifty states across the African region including Ghana, Togo, Liberia, Senegal and Niger.

Participants deliberated on peace, security and governance, trade, investment and economic integration as well as multilateralism which they believe is the best recipe for deepened cooperation.

To solidify this agreement, the meeting among others adopted a communiqué where members confirmed their common determination to build on partnerships and move towards an even stronger, deeper and more political partnership and friendship between both continents.

It was co-chaired by High Representative for Foreign Affairs and Security Policy Federica Mogherini and Minister of Foreign Affairs and International Cooperation of Rwanda, Richard Sezibera.

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Bühler co-founds Future Food Initiative with ETH Zürich and EPFL

BÜHLER HAS COMMITTED to cofound the Future Food Initiative launched by ETH Zürich and EPFL (Ecole polytechnique fédérale de Lausanne), together with industrial partners Givaudan and Nestlé. The initiative aims to accelerate the development of healthy food products and more sustainable, plastic-free packaging. Its research lays the ground for secure access to affordable nutrition, addressing global challenges of hunger and malnutrition.

The Swiss federal institutes of technology ETH Zürich and EPFL have launched the initiative together with partners Givaudan, Nestlé and Bühler. "We are stepping up as an industry to address challenges in the food value chain," says Stefan Scheiber, CEO of the Bühler Group. "Bühler's ambition is to create innovative and sustainable solutions, partnering with leading research institutes, industrial partners, and promising start-ups in the world of food."

The Future Food Initiative brings synergies from academic and industrial research in food and nutrition sciences at ETH Zürich and EPFL. "We have launched this initiative to pool our expertise in research and innovation to find innovative approaches for healthy foods and a sustainable supply chain," says Detlef Günther, vice president for research and corporate relations at ETH Zürich.

AfDB helps transform agricultural production methods in Madagascar

THE INITIATIVES BY African Development Bank (AfDB) to transform agricultural production methods is getting popular in the region.

"Since they built the secondary irrigation channels and concreted the old ones, agricultural production has doubled or even tripled," said Mamanjisoa, mayor of Tsianisiha, a rural town in the district of Toliara in south-west Madagascar. About 20,000 inhabitants welcome members of the Federation of Water User Associations, among whose interests the management and upkeep of the irrigation canals feature prominently.

To support this expansion of local agriculture and to reduce poverty, the AfDB also financed the refurbishment of a 107 km section of the RN9 highway. Since then, Tsianisiha has been just an hour and a half's drive from the neighbouring town of Analamisampy. Before the refurbishment work, it took up to five hours to travel between the two towns.

South Africa's Westfalia launches Hass avocado processing plant in Colombia

WESTFALIA FRUIT COLOMBIA, part of South Africa's Westfalia Fruit, has launched a new processing plant for Hass avocados in Sonsón, Colombia, featuring the latest grading and sorting technologies of world-leading packhouse technology provider Compac.

The new plant significantly extends the processing capacity of Westfalia Fruit Colombia, adding to the two facilities it already runs in Antioquia. With the investment in the new facility in Sonsón, the company expects to triple its production capacity to support its continued growth.

Pedro Aguilar-Niño, general manager of Westfalia Fruit Colombia, stated: "This inauguration is an event of great significance for Colombia's Hass avocado export industry. Such an investment on the

the Compac Multi Lane Sorter (MLS) and Inspectra² systems.

"These solutions will provide the answers to Westfalia Fruit Colombia's requirements," explained Jacinto Trigo, Compac Latin America regional director. "They ensure the consistently high quality of its product and optimise grading precision. Together with the high quality after-sales service that Compac is able to deliver, its packhouse technology enables the company to meet its requirements in post-harvest processing capacity, minimise waste, and ensure its customers' satisfaction."

The 5-lane Compac MLS can process 25 tonnes of avocados per hour, ensuring the capacity required by Westfalia Fruit Colombia. The fruit is then



Image Credit: Westfalia

Westfalia plant in Columbia equipped with Compac.

part of a global company is a sign of great confidence in this country. This processing plant has the highest capacity and the most advanced technology in the country – it is a strong statement of belief in the region, which becomes a true cluster for the production and export of Hass avocados. For us at Westfalia, our experience with the community in this municipality has been instrumental in our decision to make this further significant investment. We have equipped the plant with the advanced systems provided by New Zealand company Compac, part of TOMRA Food – a true leader in cutting-edge fruit grading and sorting technology. Together, we will be able to contribute to the development of our sector."

The new processing plant benefits from the advanced packhouse technologies of

ready for inspection by the Inspectra² platform, which uses Near-infrared (NIR) technology to test the internal properties of each piece of fruit and deliver consistently high grading accuracy. It detects defects that are not visible externally and sorts the good from the bad, eliminating the need to cut samples of fruit.

Most importantly, it grades the avocados on dry matter and softness – which indicate the maturity of the fruit. This allows Westfalia to pack the produce according to the customer's requirements and where they are in the supply chain, ensuring they receive the highest quality fruit at optimal maturity for their operation.

With this technology Westfalia is able to deliver consistently high quality, enhancing its brand perception and increasing export opportunities.

Fully-funded places in plant science training for Africa-based early career researchers

APPLICATIONS ARE NOW open for V4: The Connected Development Programme for early career researchers - a fully-funded ten-day residential course at the University of Bristol, UK.

The purpose is to create a cohort of early career researchers (ECRs) with a joint understanding of virology and entomology which enables them to collaborate effectively on the research challenges of plant vector-borne diseases in Africa.

The programme will combine scientific talks, general lab training skills, specific virology and entomology lectures and practical work, workshops, desk-based projects and soft skills training.

Places will be awarded by competitive application, and the aim is to attract both virologists and entomologists. Funding is available to cover travel, accommodation, subsistence and all training costs of successful applicants.

The programme will aim to provide those who attend with - new scientific knowledge, practical and technical experience, knowledge for cross-disciplinary working, knowledge and experience of writing collaborative funding applications to tackle important plant vector-borne disease problems, and a new network of fellow ECRs.

Participants will be able to make use of the skills in their home place of work, building capacity, for example, in managing existing projects, developing new projects and techniques, and applying for research funding.

V4 will run from Monday 10-21 June 2019 at The School of Biological Sciences, University of Bristol, UK.

Joining forces for a world without hunger

AGCO, WORLDWIDE MANUFACTURER and distributor of agricultural equipment and solutions, has signed a Letter of Intent (LOI) with the German Federal Ministry of Economic Cooperation and Development (BMZ) to implement a joint agricultural project in Africa. The potential project is subject to further talks but the aim is to make measurable contributions to increasing agricultural productivity and skills development, thereby boosting income and employment in African rural households.

"We expect that the collaboration between the BMZ, an important institution for international cooperation on agricultural projects, and AGCO, one of the world's largest producers of farm machinery, to trigger significant synergies," said Martin Richenhagen, president, chairman and CEO of AGCO. "We both seek to foster mechanisation to facilitate sustainable agriculture."

The mechanisation activities of both the BMZ and AGCO are designed to contribute to the United Nations' 2030 Agenda and Sustainable Development Goals (SDG) to eradicate extreme poverty and end hunger by 2030. The Goals also aim to double the agricultural productivity of small-scale food producers, ensure sustainable food production systems and implement resilient agricultural practices.

"With the 2030 Agenda and SDG as a globally binding framework for action, cooperation between the German Development Ministry and the private sector is becoming increasingly important," commented Gerd Müller, federal minister for economic cooperation and development. "A world without hunger is possible if we join forces."



LEMKEN mechanical seed drill Saphir 7

The Saphir 7 mechanical drill enables the timely and exact placement of fine seeds to give plants the ideal head start. A reliable mechanical metering system is combined with double disc openers to ensure that seeds are drilled at constant depth, even in tough, dry or reduced tillage conditions. The Saphir 7 mechanical seed drill can be combined with the Zirkon 8 rotary harrow to create the ideal seedbed, or with roller frame only.

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1

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2

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3

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MALLFORAFRICA, A LEADING homegrown African e-commerce app, utilises local payment methods and addresses security and delivery concerns through its partnership with global shipping leader DHL. For African consumers, MallforAfrica translates to the best of Western goods with the ease of the payment systems they know and use already. The e-commerce powerhouse offers the convenience of the most prestigious US

and UK brands delivered to their doorstep or a local pickup location, with the convenience and trust of African-centric payment systems.

MallforAfrica makes it turnkey for US and UK retailers to tap into one of the fastest growing emerging markets in the world, while speaking the local financial language and without the overhead for creating a platform designed for cultural and market preferences.

AGCO launches Farm in a Box initiative

AGCO, WORLDWIDE MANUFACTURER and distributor of agricultural equipment, unveiled its pioneering Farm in a Box (FIAB) initiative for Africa at Germany's International Green Week, 18-27 January 2019.

"With this brand new concept, we aim to take farm mechanisation plus all its necessary support facilities deep into previously underserved rural communities in Africa," said Martin Richenhagen, president, chairman and CEO of AGCO at the launch event.

FIAB offers a package of essential farm equipment including a tractor and implements together with the crucial support mechanisms such as parts, workshop tools, training and expertise to ensure sustainable and productive machinery operations. Some of the equipment is packed inside a box – a modified shipping container – which is then used as an office or workshop.

In sub-Saharan Africa, humans provide 65 per cent of the power required for land preparation. Capacity-building and agricultural mechanisation are a priority to facilitate food security and unlock the potential of small-scale farming in Africa.

AGCO's FIAB is an innovative solution for small-scale farmers to gain access to the machinery they need to transform their operations and achieve profitable businesses.

Designed to provide a holistic solution, FIAB is localised farm support centre which delivers mechanisation services to rural communities.



FIAB is an innovative solution for small-scale farmers to gain access to the machinery they need to transform their operations and achieve profitable businesses.

FIAB offers a 45-80hp tractor and implements - such as a ripper, disc harrow, trailer and planter - to carry out land preparation, planting and crop transport, plus parts and workshop tools for their service and maintenance. The objective is to offer 'for-hire' mechanisation services to small-holder farmers, enabling them to reap the benefits of agricultural equipment without having to invest in capital assets. The package includes training programmes and support from a dedicated AGCO Operations Support Centre which provides technical advice and guidance. Importantly, FIAB takes maximum advantage of the latest telemetry and mobile technology to enable remote monitoring of the equipment and the use of mobile apps. This high level of monitoring, support and guidance from AGCO really sets the concept apart.

"The thinking behind FIAB is definitely outside of the box but the benefits literally come inside a box!" remarked Richenhagen at the launch event. "It's a win-win situation for all participants."

Acting as a localised hub of know-how and practical help, the franchise partner offers hire of equipment and drivers to local farmers and small-holders, enabling them to boost their crop production processes and output. Furthermore, franchisees expand their businesses and provide potential new employment opportunities in the locality. Local communities benefit from improved economies as a result of the enrichment of the agricultural value chain. For AGCO, it leads to increases in sales of products and services and further develops the company's footprint in Africa.

"With AGCO's wide-ranging experience serving African farmers, the company is uniquely positioned to develop innovative solutions to meet the challenge of sustainable and productive farming on the continent," said Richenhagen "There is an urgent need to empower the millions of small-holder farmers in Africa to ensure food security. Tailored, inclusive and integrated approaches to agricultural mechanisation can increase the welfare of farm households and create opportunities for economic growth in rural areas. Our Farm in a Box is yet another initiative fulfilling AGCO's commitment to 'Run Africa from Africa'."

DuPont Industrial Biosciences to expand research capabilities

DUPONT INDUSTRIAL BIOSCIENCES officially broke ground on its new site at Leiden Bio Science Park in Oegstgeest, the Netherlands. The state-of-the-art, multidisciplinary facility will utilize the tools of modern biotechnology to make industrial processes more efficient and products more sustainable.

The bio-based solutions created in Leiden will have a direct impact on some of the most pressing societal issues of today: reducing food waste; reducing the environmental impacts of livestock farming and improving animal health; producing renewable fuels; and lowering environmental impacts in the textile and laundry industries.

"Our Leiden scientists have been developing innovations that enable our customers to improve the efficiency and sustainability of their processes and products for many years," said Simon Herriott,

vice president and global business director for Bioactives at DuPont. "This new facility will enable our teams to do even more – to improve the pace of biotechnology and the speed with which we can deliver it to market."

DuPont has partnered with Dutch developer and construction company Dura Vermeer on the building in Oegstgeest, which will cover 7250 sq m, a doubling of the capacity of the current facility for the business. The project will receive a BREEAM "Excellent" rating – an impressive measure of a building's sustainability and environmental footprint. The construction is scheduled to be completed in 2020.

The construction marks an important milestone in the growth of the company, with the new site in Oegstgeest being an important hub for business in Europe, Middle East and Africa.

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Transforming Africa's poultry enterprise

RAISING POULTRY IS an important source of income for poor, rural communities in many African countries. In these countries, the small-holder farmers make an important contribution to poultry production. In Ethiopia, for example, small-holder farmers are responsible for 90 per cent of the egg production. Currently, the local indigenous breeds available to these farmers are very inefficient and less productive compared to other alternative breed options such as Sasso. Unfortunately, the small-holder farmers in rural areas do not have access to these improved genetics and are left to use birds that have low levels of productivity and high mortality rates. The access to an improved dual-purpose chicken could transform the rural poultry enterprise.

Hendrix Genetics has been awarded a multi-year grant from the Bill & Melinda Gates Foundation to improve poultry production in Africa. The goals of the Sustainable Access to Poultry Parental Stock to Africa (SAPPSA) project are to secure the supply of parent stock genetics to Africa and to set up a breeding programme to further develop breeds for the small-holder farmers in Africa.

Established projects such as the African Poultry Multiplication Initiative are aimed at securing the chain from hatchery to brooder units to small-holder farmers. This initiative depends on the availability of improved breed parent stock genetics such as Sasso, where the SAPPSA project will help to fill this gap.

One of the initiatives the SAPPSA project will collaborate with, is Poulet de Faso, founded by Ceva and Sasso, and supported by the Bill & Melinda Gates Foundation. In this programme, located in Burkina Faso, a local sire line is bred with a Sasso poulet. The resulting day old chicks will provide the benefit of high quality genetics, are well suited for the



The project aims to secure supply of parent stock genetics and to develop breeds.

Image Credit: Adobe Stock

African climate, and can provide a good income for small-holder farmers. All local members involved in the initiative will be supported with education on best practises for nutrition, housing and biosecurity.

The SAPPSA project will also include establishing a breeding programme to study and measure traits specifically for performance within Africa. This will ensure the bird is adapted for the local needs and environmental pressures so that these birds will perform well for a backyard farmer. With tailored breeds, farmers are then able to increase their income and grow their farm.

The SAPPSA project addresses issues such as supporting African farmers, many of whom are women raising small children, feeding the growing population with nutritious protein, and investing in the future of agriculture in Africa.

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Training programmes are helping the African fisheries sector to improve through learning and knowledge-sharing.

Paving the way for better livelihoods in fisheries



Image Credit: Adobe Stock

Developing the aquaculture sector for better food security.

“IF ONLY WE could have this in our country,” says Manding Saidykhan from Gambia in West Africa, referring to an industrial shrimp farm he visited in Vietnam to see new aquaculture technology and fisheries management techniques.

“Our country needs this type of aquaculture, so we can have food security and reduce pressure on the seas.”

Perceptions of the potential of the fisheries sector to support some of the world’s poorest nations – the Least Developed Countries (LDCs) – are changing.

Saidykhan was among more than 50 participants of an UNCTAD-led workshop at the Regional Centre of Excellence at Nha Trang University from states as diverse as Cambodia, Comoros, Mozambique, Myanmar and Uganda.

Another participant, Paul Omani, who is the regulatory head of inspection services at Uganda’s agriculture ministry, says that Vietnam’s success as a leading exporter of high-value fish products is an inspiration to LDCs.

UNCTAD’s recent partnership with the Nha Trang University of Vietnam to train people working in fisheries and aquaculture in African and Asian least developed countries includes modules such

as the methods and systems necessary to develop the aquaculture sector and also to consider the social dimensions, the potential poverty reduction and employment generation, as well as some of the labour standards applicable to the fisheries sector.

Concrete changes

The UNCTAD-led fisheries diversification training programme is having a tremendous ripple effect in other policy and regulatory circles.

Mozambique, for example, has taken important steps to develop a domestic aquaculture sub-sector.

It also established a multi-sector task force of key ministries, the private sector and civil society to develop a model for developing the marine-based and freshwater aquaculture.

Meanwhile, the government of Comoros has gone all the way, introducing a strategic piece of crucial legislation.

It penned a law requiring all vessels fishing in its sovereign waters to offload on Comorian soil, ensuring the island nation adds value to its economy, creates employment opportunities and generates more income to vulnerable sections of its society.

“We have already seen tangible impacts, with concrete changes in domestic legislation, institutions and policies in some of the participating countries,” says UNCTAD’s Mussie Delelegn, from the division for Africa, LDCs and special programmes.

“The policy and legislative changes are one development in what we anticipate will be a slew of knock-on impacts that will reshape fisheries and aquaculture in economies that need it the most.”

Beyond diversification, the fisheries sector holds significant potential for economic and social development.

Providing livelihoods to millions

Beyond diversification, the fisheries sector holds significant potential for economic and social development.

Shallow waters

The opportunity to use fisheries and aquaculture for export diversification is very real and important for LDCs, says UNCTAD's Africa, LDCs and special programmes director, Paul Akiwumi. Fish are already the most traded agricultural commodity by value.

Global production is set to increase from 187 million tonnes in 2018 to 250 million tonnes by 2030.

But this will only be possible if some significant hurdles – the lack of productive capacities, inadequate infrastructure, and stringent food safety and quality standards – are overcome.

LDC's face many difficulties in exporting their fishery resources. Even though six of the top 16 producers of fish from inland waters are from developing countries, not one of the world's 47 LDCs – categorised for structural economic and geopolitical disadvantages – features on the list of the top 10 exporters of fish products.

The share of LDCs in global fisheries exports remains at two per cent, in sharp contrast with other developing countries whose export share increased from about 35 per cent in the 1980s to more than 55 per cent today.

Training focuses on how to harness the potential of the fisheries sector for socio-economic development, improve fisheries resources management and meet food safety and quality standards.

Add in the pressure of keeping up with changing food quality and standards, the world's poorest countries keep wading shallow waters. That is why knowledge remains the key to unlocking opportunities.

Achieving the dream

Vietnam is delivering fisheries development training to the world's poorest countries on behalf of UNCTAD. It hosted its first training course in October and November 2018 and 55 participants from 14 countries, including 11 LDCs, participated in the training.


"LDC's can benefit from Vietnam's lessons and experiences," says Kim Anh Nguyen, coordinator of the learning centre.

"Vietnam's fisheries sector has achieved significant growth, especially in aquaculture. We encouraged private sector investment in fish with export potential and supported the creation of vibrant institutions, such as training centres, universities and laboratories. As a result, Vietnam has seen its fish-exports increase rapidly."

"The dream is to help LDC's gain in the same way."

Training focuses on how to fully harness the potential of the fisheries sector. It also helps in identifying pressing challenges for the fisheries sector, and articulate policy and institutional responses to the challenges.

To date, eight workshops have been hosted, and there have been some big wins along the way. More than a quarter of the participants have been women. "The goal of this groundbreaking UNDA project is to assist LDCs to develop their fisheries sector for export potential," says Mr. Akiwumi.

"This will allow several LDCs to draw on their abundance of marine resources to make progress towards the Sustainable Development Goals." 

-Source: United Nations Conference on Trade and Development

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Tracing the journey of premium tea



Image Credit: Adobe Stock

Polyphenols and tea caffeine are concentrated in the bud and the youngest two or three leaves.

TEA (*CAMELLIA SINENSIS*) is the most intriguing of the three mainstream beverage crops grown in tropical Africa. Harvested from a woody, evergreen plant, it is one of the three biggest foreign exchange earners for the continent.

Success in the marketplace depends on developing specific and pleasing flavours as well as aromas derived from naturally occurring chemicals in the harvested crop. Unlike coffee and cocoa that are produced from seeds contained inside brightly coloured fruits and 'packed' with a wide variety of flavour-producing chemicals, the amber-coloured and flavourful infusion of black fermented tea in steaming hot water finds its humble origins in green leaves.

However, the fresh green leaves plucked from the bushes of *Camellia sinensis* are not just any old leaves. Hidden away under the tough and shiny outer layers are cells packed with polyphenol compounds (tannins). These compounds are chemically modified during leaf processing to give the

infusion its amber or red colour, body strength, taste, aroma and flavour, all of which are hallmarks of premium quality teas. Separate but just as important, is a high level of 'tea caffeine', a stimulant which imparts extra refreshment and an additional lift for tea drinkers.

Tea picking

Harvesting coffee berries and cocoa pods at optimum maturity and ripeness is a relatively straightforward operation compared with picking and harvesting fresh, green tea leaves. Polyphenols (tannins) and tea caffeine are not evenly distributed amongst all the leaves on a tea bush, but are concentrated in the bud and the youngest two or three leaves. Tea production and marketing is not only concerned with crop and commodity quality in general but is based on a series of grades, the definition of which can be traced back to the types of leaves plucked from the bush.

The act of picking literally makes or

breaks the value of the tea crop and forms the very foundations on which grading of black fermented tea are based. Failure to consistently select these specific parts of the foliage during picking for processing in the factory will destroy any opportunity to produce high grade black teas, such as the Orange Pekoe or Pekoe grades. There are two grades of bud, the 'Pekoe' comprising a series of buds as yet unfurled and the dormant bud or 'banjhi'.

The person in charge of the factory is responsible for the grade and quality of the commercial product under production at any particular time and provides directions to the tea pickers about the type of shoots required. They are recommended to always pluck dormant buds to allow axillary buds to unfurl and also to ensure that at least three quarters of the harvest are of 'good leaves'. These are defined as a bud with two leaves, a bud with three leaves or banjhi plus one young leaf. The harvested fresh green tea leaf now has a long and 'tortuous' way to

go before it becomes a marketable product, but the quality has already been determined at the point of picking.

At the factory

Tea pickings arriving at the factory are checked to ensure that at least 75 per cent of the contents are of 'good leaves' and that fermentation has not yet started. Regular sampling is carried out with specific checks to ensure that any loss of weight incurred from field to factory does not exceed 0.5 per cent. Processing the leaves into black fermented tea comprises the six main sequential steps of withering, rolling, fermentation, firing, sorting and packing.

Fermentation is the 'body and soul' of the procedure which releases the potential for colour, flavour and aroma previously locked away in the leaves. Like the fermenta-

Processing the leaves into black fermented tea comprises the six main sequential steps of withering, rolling, fermentation, firing, sorting and packing.



The act of picking literally makes or breaks the value of the tea crop.

Image Credit: Adobe Stock

tation of cocoa beans, fermentation of tea leaves is enzyme driven. Enzymes are biological catalysts which speed up specific chemical reactions, when the right conditions of pH range (acidity or alkalinity), aeration (concentration of

oxygen) as well as temperature are provided. Enzymes need sufficient warmth in order to work but are rapidly destroyed at temperatures much over 40°C because the proteins they are made of become denatured or lose their specific shape.



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Image Credit: Adobe Stock

Fresh tea leaves are withered (dried) to reduce moisture content to 50-60 per cent.

There is a major biological difference between the fermentation of cocoa beans and the fermentation used to process tea. The former relies on enzymes provided by microbes whereas in tea the fermentation is entirely intrinsic, using enzymes liberated from the cells of crushed tea leaves.

Fresh tea leaves are withered (dried) to reduce moisture content from 70-80 per cent down to 50-60 per cent and then rolled during which the leaves are twisted through a mechanical process. This tears the leaf tissue and ruptures the leaf cells, liberating and mixing polyphenols and enzymes called polyphenol oxidases that were kept apart in intact cells. On mixing, the enzymes oxidise the polyphenols into theaflavins which give the infusion (cupped tea) its bright orange colour and the thearubigins which give tea its body and strength.

Fermentation is brought to an abrupt halt by firing. Intense heat (90-100°C) is applied for 20-25 minutes to destroy the enzymes of fermentation and to reduce the moisture content of black fermented tea down to two to three per cent and therefore ready for packing and storage. Various winnowing machines (myddleton, stalk extractor, winnower) are used to sort the tea by extracting the fibres and to grade it according to size and volumetric weight using a series of different mesh sizes (0.5-1.5 mm).

The tea market

Grades of tea depend primarily on leaf plucking quality, the method of processing

and market preferences. The finished black, fermented tea is classified as whole leaf or broken leaf tea depending on the type of processing employed.

Whole leaf teas are of three different types:

- **Orange Pekoe** - The top quality tea comprising long pieces of yellowed leaf and many golden tips to give a well scented and flavoured product.
 - **Pekoe** - With shorter leaf pieces and no tips is less fine and of lower quality.
 - **Pekoe Souchong** - The lowest grade of coarse tea derived from older leaves.
- Broken leaf teas are similarly graded into:
- **Broken Orange Pekoe** - An extremely fine tea of yellowed leaves and tips which have been broken during the rolling process.
 - **Broken Pekoe** - made from broken sections of rolled leaf but without any tips.
 - **Broken tea** - A rougher and coarser tea made up of broken pieces of leaf, no more than several mm in diameter.
 - **Fannings** - A term used to describe smaller and flatter pieces of leaf, possibly with tips and used for packaged tea and tea bags.
 - **Tea Dust** - Very fine particles of tea resulting from the break up and rupture of leaves and used for filling tea bags.

In tea the fermentation is entirely intrinsic, using enzymes liberated from the cells of crushed tea leaves.

Precise picking and processing steps in Kenya

There are no prizes for 'guessing' which country is the biggest producer of tea in Africa. By weighing in some 300,000 tonnes per annum Kenya is by 'far and away' the biggest African producer and the only African nation to feature in the top ten world producers. Kenya occupies third position in world rankings and is exceeded only by China and India with one million and 900,000 tonnes, respectively.

Picking is a precise business with only the top two youngest leaves and the bud harvested from tea bushes. Fresh, green tea leaves are carried in open airy baskets to local collection centres for sorting and weighing. Trucks transport the harvest to the factory where leaves, which will have lost some water and therefore some mass, are weighed again. After being spread out evenly on long, wire-mesh trays the leaves are dried by a continuous blast of warm air directed from underneath the trays and subsequently passed through a system of rollers to chop the leaves into small pieces.

Chopped-up leaves are put into containers for fermentation. Now grey-brown in colour, the fermented leaves are delivered on a conveyor belt system into the drying tunnel (100°C) to produce the familiar black tea. Penultimate stages are sifting, grading and tasting to classify tea by quality. Graded tea is finally packed in chests for export markets or in small packs for the local Kenyan market. **B**

Feature by Dr Terry Mabbett



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Programmes that make available good quality hybrid seeds to small-holder farmers in Africa can help revolutionise food production.

Reinventing African agriculture through sustainable hybrid seeds

AFRICA'S DEMAND FOR food will more than double by 2050, driven by population growth and rapid urbanisation. A growing population is not the only challenge. Africa has to contend with new enemies such as climate change and the traditional ones such as pests, poor infrastructure and post-harvest losses.

At the moment, yields from Africa's farms are lagging far behind the rest of the world. Harvests per hectare for crops such as maize can be as much as 80 per cent below their potential. As a result, estimates indicate that the continent's annual food import bill will stand at US\$110bn by 2025. Providing farmers with new high-yielding and hybrid seed varieties is an important part of the solution to agricultural development. These seeds will help farmers generate higher crop yields and overcome the constant barrage of plant pests, drought and disease that are the enemies of agriculture everywhere in the continent.

Through PASS, AGRA has trained and certified 15,000 rural agro-dealers in 16 countries that now provide farmers with over 500,000 metric tons of seed and one million metric tonnes of fertilizers

Now, just about one-third of farmers in Africa have access to these good quality hybrid seeds, meaning that the continent is missing out on one factor that has revolutionised food production elsewhere in the world. Even though adoption of new technologies requires time, other structural challenges exacerbate the situation, such as lack of public research programmes to supply affordable, locally adapted, improved varieties of popular crops.

Making a difference to small-scale farmers

Private seed production companies have



Providing farmers with new high-yielding and hybrid seed varieties is an important part of the solution to agricultural development.

other bottlenecks to surmount, such as import policies, high initial costs, research and qualified human resources. A combination of public and private interventions seems to be a good approach for establishing an effective system for providing the farmer with quality seed. At the Alliance for a Green Revolution in Africa (AGRA), the Programme for Africa's Seed Systems (PASS) brought together practical training of breeders in Africa to address the crop challenges, breeding programmes to develop new crop varieties, private companies to produce seeds and agro-dealers to make the seeds available to farmers. By nurturing small seed businesses located near the farmers they serve, the programme aimed at establishing resilient, African-owned seed production capacity that can be self-sustaining.

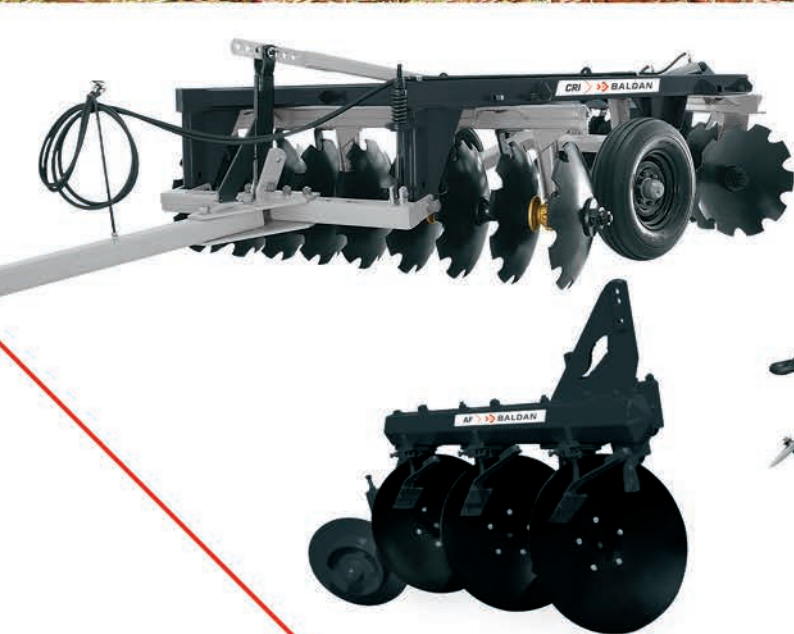
Today, AGRA is working with more than 110 such seed companies across Africa that are producing more than 120,000 metric tons of certified seeds each year. National research programmes working with AGRA have generated more than 650 new, improved varieties of 15 important crop species, over 450 of which are now commercially produced. The training of about 450 breeders and more than 150 plant breeding research technicians at the National Crops Resources Research

Institute in Uganda (covering East Africa) and at the International Institute of Tropical Agriculture (covering West Africa) contributed to release of quality hybrids that are easily adopted by small-scale farmers.

Through PASS, AGRA has trained and certified 15,000 rural agro-dealers in 16 countries that now provide farmers with over 500,000 metric tons of seed and one million metric tonnes of fertilisers. Such investments are making real differences to small-scale farmers. A 2013 survey of farmers in nine countries found that the majority who invested in improved crop varieties achieved yields 50-100 per cent above local varieties. This is not just more food on the table but could mean the opportunity to take a child to school or to pay for a family member's hospital bill. Still, there are not enough seed companies in the continent to meet farmers' demand for improved crop varieties. In addition, the evolving threat from pests and disease because of factors like climate change means that innovation must stay ahead for continued production of resilient crops. Agriculture presents the best pathway towards lifting the continent out of poverty, and one of the strategies must be investing in a steady supply of plant breeders who in turn continue to sustainably generate new varieties resistant to diseases, insects, droughts and floods. **E**

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The CEO of Global Open Data for Agriculture and Nutrition (GODAN) talks to African Farming about the benefits of the initiative for agriculture, the strategies in place for Africa and the need for cooperation among stakeholders in solving food problems.

Towards greater food security

Please give us an overview of the GODAN initiative and how it will help transform farming and prove beneficial for consumers.

Currently, more than 795 million people across the world do not have enough food to live a healthy and sustainable life. Improving access to and promoting the use of Open Data in agriculture needs to be considered as a major solution to solving the world's food crises and the GODAN (Global Open Data for Agriculture and Nutrition) initiative is pioneering the proactive sharing of Open Data to make information about agriculture and nutrition available, accessible and usable to the public to deal with the urgent challenge of ensuring world food security.

The initiative focuses on building high-level support among governments, policy-makers, international organisations and business in both the public and private sectors all over the globe, to promote the collaboration and cooperation among stakeholders in the agriculture sector to harness the growing volume of data generated by new technologies to solve long-standing problems and to benefit farmers and the health of consumers. This information is easily accessed through the click of an app on their mobile phones.

Open Data, if used correctly, has the potential to foster economic growth and job creation, improve efficiency and effectiveness of public services by allowing the cross fertilisation and synergy of different industries, sectors and governments leading to new practices, new equipment and new technologies that in turn, will lead to better yields and the stimulation of private and public economies. Increasing access to Open Data will trigger innovations that will bring both agriculture and nutrition to the next, higher level of impact, improving efficiency, yields, competitiveness and ultimately increasing food security across the world.

How helpful is this initiative in the context of African agriculture and what strategies are in place for the continent?

Africa presents a prime example of how the use and improved access of Open Data is



Image Credit: Chad Skeers

With increased Open Data access, farmers can be better informed about improving farming practices and output.

helping to combat the agricultural crisis currently residing in the continent. The farming industries have been suffering due to the lack of shared information and data where most small-scale isolated farmers in rural Africa are missing out on new and improved methods and best practices of farming and agricultural processes.

In partnership with GODAN, Ghana-based organisation, Esoko, enabled farmers and their buyers in the region access to Open Data through mobile phone technology to both obtain and share information relevant to the markets to encourage fairer pricing based on shared feedback. Through utilising Open Data, their solution TradeNet enabled farmers to both share and access data, such as the prices of seeds and fertilisers, collected through both existing channels such as weather data channels and other basic technology, to enable a self-sustainable business model combining data, farmers, customers, markets/ dealers and phone companies on an open system.

Today, more than 350,000 farmers have joined the Esoko platform in 10 countries in Africa and it is continuing to expand. This is just one example of how Open Data access

is improving the sustainability and changing livelihoods in Africa for the better.

How important is the collaboration and cooperation among stakeholders of the growing volume of data generated by new technologies to solving long-standing food problems?

Open Data has the potential to increase transparency across the globe when it comes to solving world hunger and food security issues. Only through collaboration and cooperation amongst governments, private/public sector organisations, academics, scientists and technology companies can we harness this growing volume of data and utilise efficiently in relevant sectors.

It is important that data is shared across borders and between nations to learn from one another. With a presence in over one hundred and ten countries, GODAN facilitates learning and exchange of ideas across different industries, sectors and countries across the globe.

With greater innovation and transparency to help engage global partnerships by sharing this data, Open Data will help drive and improve access and awareness across

the food and agricultural industry bringing it closer together like never before and solving long-standing food problems.



André Laperrière, CEO, GODAN

Please comment on the tve Global Sustainability Award 2018 conferred by GODAN for the Open Water web series about the fishermen of South Africa.

GODAN was awarded the Digital Futures Award at the tve Global Sustainability Awards last year, recognising films that most powerfully portray solutions for sustainability. The winning nomination of the category was our Open Water documentary web series following the lives of fishermen in South Africa who have seen their livelihoods improve considerably through improved Open Data access.

The series documented how the fisher community in South Africa are collaborating with the University of Cape Town to co-design a suite of mobile accessible apps to support and improve the small-scale fisheries industry. This includes a free Abalobi Fisher downloadable app which provides valuable information about the weather and climate from open sources, plus records data about fisher practice and catch information.

The series follows small scale fishermen as they demonstrate how the data received through the app identifies the likes of wave height, so the fishermen know when is the right and safest time to catch and sell fish. They exemplify how access to Open Data has helped improve their fishing practices, making processes more organised and efficient by cutting down paper work and time, improving the economic aspects and improving their livelihoods.

Please elaborate on the benefits of the initiative with regards to climate change and its impact on farming.

Open Data can help grow economies, change societies for the better, end world hunger and help protect the environment.

As it removes barriers and restrictions, Open Data helps stimulate innovation as farmers and others look to new ways to make farming and business more efficient, productive and effective.

With increased Open Data access, farmers can now be better informed to improve their farming practices and increase production output. This will result in the minimizing of waste and output energy, heavily impacting the climate. Important information surrounding weather patterns, diseases, pests and other factors impacting crop production and farming processes are being identified and shared

through Open Data which is now increasing the output of healthy crops and seeing production increase positively.

This efficiency is much better for the environment because this collaboration between sectors, and governments is helping improve practices and share key learnings, enabling the avoidance of issues before they become any major threat. We can unlock new possibilities and opportunities based on increased access to data. Ultimately, leveraging the potential of Open Data in the agricultural space could facilitate the rapid increase and access to the information necessary to make ¹

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African Farming held its 2nd edition Agroinvestment Summit, organised by Alain Charles Managed Events, on 3-4 December 2018 at the Shehu Musa Yar'Adua Foundation Conference Centre in Abuja, Nigeria.

Agroinvestment Summit a resounding success

ACROSS AFRICA, AGRICULTURAL development, food, beverage products and services are gaining unprecedented focus. The Nigerian agriculture and food markets, in particular, are witnessing a growth in market and investment opportunities. However, despite the output growth over the past years, supply response has not kept up with the demand growth. The Agroinvestment Summit was organised by African Farming to showcase the developments of the agricultural industry in Nigeria as well as the challenges involved.

Endorsed by the Federal Ministry of Industry, Trade and Investment, the Federal Ministry of Agriculture and Rural development and the Nigerian Investment Promotion Commission (NIPC), the event helped provide a dynamic setting for discussions and sharing of experiences with the aim of boosting investment opportunities across the agricultural value chain, improving rural development and increasing awareness for improved productivity, food security, food self-sufficiency and local job creation.

The lineup included Eric Nyikwagh, country representative - Young professionals for agricultural development (YPARD), Macauley Atasie, CEO, Nextzon business services, Edu Ogbonnaya, founder, Farm awareness for Food Preservation initiative as well as other industry experts, senior decision-makers and major stakeholders.

The summit was opened by Martyn Diamond Black, Head of Events at Alain Charles.

This was followed by a presentation by Byron Isi, deputy director, Department of Strategic Communications, NIPC. His address looked at promoting long-term finance for agriculture in Nigeria from a global perspective, outlining the opportunities and challenges involved as well as some solutions. This was followed by a session on coffee farming, a vital component of global trade and a presentation about improving standards in packaging and access to equipment.

The audience received valuable information regarding investment opportunities in the agribusiness and investment sectors of Jigawa by the deputy governor of the state, Ibrahim Hassan Hadejia. The presentation emphasised the importance of agricul-



The two-day event facilitated discussions and learning about emerging trends in agricultural development and food markets.

ture in the state with effective land reforms and policies to support agribusiness and also highlighted the numerous areas available for investment. More than 80 per cent of the Jigawa population is engaged in agriculture. This implies that there is an availability of human resources that investors can leverage on for farm operations.

In response to the emphasis on increasing the participation of youth in agriculture, the summit focused on a sustainable future for agriculture. 'The development of the next generation of agripreneurs' - presentation by Eric Nyikwagh, looked at greater engagement of youth in agriculture including the incubator platform providing professional training, mentorship and access to new technologies. Leveraging technology has much potential and comparative advantages to boost food security as well as GDP. Also the presentation emphasised that innovations such as block chain, hydroponics, crowd funding, use of drones and robots, precision farming, digital media and ICT applications need to be incorporated.

Funding and growing agribusiness from startup to growing acreage and creating better awareness about farming and initiatives in food preservation as well as storage to reduce post-harvest loss were the other topics discussed at the summit.

The presentation on improving regional food trade across Africa by David Adama, programme officer, policy and advocacy, AGRA, highlighted its potential for increased productivity and to speed up the economic transformation in the continent, creating additional jobs, mitigating food shortages and gaining improved food security. The coordination of players and sectors as well as

'The development of the next generation of agripreneurs' looked at greater engagement of youth.

addressing the unpredictability about policy environment and government interventions were identified as the major areas to focus on. Regional market development will promote specialisation and efficiency, boosting agriculture productivity and taking advantage of the complementarity of agro-ecological zones. Improving regional food trade will catalyse Africa's industrial transformation, boost trade and investment between countries and regional economic communities as well as increase market volume and value for producers and manufacturers alike.

Day two started with a keynote presentation by Dr Muhammad Kagu, group head of First bank of Nigeria on the access to agricultural finance, the constraints in financing agriculture in Nigeria, the investment of the right skill sets as well as funding mechanisms. Dr Kagu emphasised that funding is central to agricultural development and how it is necessary to throw light on the low level of exposure of small firms or farmers in Nigeria's agricultural sector to modern practices such as book-keeping and financial skills. The present commitment of policy makers and regulators to improve efficiency and de-risk the agricultural sector should be sustained as it provides strong justification for greater participation of the private sector financial system in the agricultural development process.

A panel discussion on green space development for economic benefits and social impacts provided insights by industry experts and senior executives. The spotlight on rural transformation and sustainable development through long-term, early stage financing was provided by David Adama, programme officer, Alliance of a green revolution in Africa (AGRA). He highlighted case studies across Africa on the impact of early stage investment, raising agricultural productivity, increasing incomes, creating employment opportunities and reducing food insecurity, hunger and malnutrition in rural communities. The conclusions drawn included building an inclusive pattern of public expenditure in favor of rural poor in early stages of development increases productivity in agriculture and rural development; reallocation of resources from low-to-high productivity both within and across sectors; and to create balanced growth and allow for private sector investments. Also, structural change must be beyond economic, it must involve social transformation for inclusive development and opportunities for all irrespective of age, gender, religion or ethnicity.

"The presentation from the deputy governor of Jigawa state was excellent and empirical."

This was followed by a presentation by the tomatoes and orchid producers association of Nigeria (TOPAN) that emphasised the benefits of providing proper training and empowerment to farmers, youth and women.

It highlighted the new challenges of agriculture to meet growing demands for food, to be internationally competitive and at the same time meet sustainability goals. Building youth capacity in agriculture has multi-faceted dimensions and helps improve the ability of the youth in agriculture, as a community. The role of government and other stakeholders becomes imperative for a successful empowerment outcome.

The interactive sessions during the summit enabled the delegates to benefit from the expertise of the speakers and also to share their knowledge and experience as stakeholders in the agricultural sector. The two-day event also facilitated discussions and learning about emerging trends in agricultural development and food markets besides providing for numerous networking opportunities.

Derrick Osafo, Abuja Technology Village FZ company commented, "It is very encouraging to see that the Agroinvestment Summit has brought together excellent and diverse speakers."



A panel discussion on green space development.

Another delegate, Andy Oga, POFAN, said at the summit, "The presentation from the deputy governor of Jigawa state was excellent and empirical."

The summit received support from sponsors including Alvan Blanch and Ingreen irrigation solutions and the exhibitors included TOPAN, RDO Equipment Africa, Ltd., Invest Jigawa and Ingreen irrigation solutions. Commerce, the Nigeria Agribusiness Group as well as the Business Council for Africa.

Encouraged by the keen interest generated and the overwhelming response, the Agroinvestment Summit will be back with the 3rd edition next year. 

The 5th international tradeshow, agrofood Nigeria 2019, which will be held from 26-28 March 2019 at the Landmark Centre in Lagos, prepares for record participation.

Agrofood Nigeria continues steady progress

AFRICA'S LARGEST ECONOMY is now back on the growth track as Nigeria's GDP is expected to grow from US\$409bn in 2018 to US\$476bn in 2019 (GTAI).

Nigeria is the fifth largest oil-exporting and eleventh largest gas exporting country. With 194 million inhabitants, it is also Africa's most populous country.

All these are excellent pre-conditions for agrofood Nigeria 2019, and it enjoys excellent support as in the earlier years, from Nigerian and international institutions.

International market leaders from around the world will be back for this year's event and official country pavilions include those of Belarus, China, Germany, France, Italy, the Netherlands, Switzerland and Turkey. Several individual exhibitors from other countries will also be present. According to the organisers, names such as Bosch Nigeria, Krones, KHS Machines Nigeria and Machhi will participate as exhibitors.

Agrofood Nigeria 2019 enjoys excellent support as in the earlier years, from Nigerian and international institutions.

The exhibitor profile includes agriculture machines, farming tractors, harvesting equipment, analytical equipment, feeding equipment, grains and grain systems and irrigation systems in the agro section.

Once again organised by the German trade show specialists fairtrade Messe together with its partner event plastprint-pack Nigeria, the show covers the entire value chain - from field to fork consisting of the three sub-brands agro AgroTech Nigeria, food + bev tec Nigeria and food + hospitality Nigeria.

agro AgroTech Nigeria 2019

Since 2015 agro Nigeria has been organised by fairtrade as part of agrofood Nigeria. Now DLG German Agricultural Society enters into strategic partnership with fairtrade and brings in its agro and



Image Credit: agrofood Nigeria

trade fair expertise by introducing its AgroTech brand to the agrofood trade show. The focus of the cooperation lies on agricultural technology, animal production, flori- and horticulture and hot-house technology. DLG organises professional trade fairs in the fields of agricultural engineering, crop production, animal production and bioenergy.

food + bev tec Nigeria 2019

The food and beverage technology exhibitor profile includes process technology, refrigeration and air-conditioning, packaging technology and conveying, transportation as well as storage.

food + hospitality Nigeria 2019

Nigeria invests heavily in the food and beverage industry and remains one of Africa's biggest food importers despite high investments in local food production. And with its large population it is considered the largest food stuff market in Africa.

Food trade with Nigeria is a US\$6.154bn business, with food imports from Nigeria amounting to US\$4.348bn and food exports of US\$1.806bn in 2016 (WTO).

The visitors at agrofood Nigeria 2019 will include farmers, breeders, keepers, food and drink manufacturers, companies active in food or drink packaging, food traders, hotel professionals, and caterers.

Agrofood Nigeria 2018 had witnessed participation by 142 exhibitors from 21 countries and the organisers confirm high satisfaction ratings on the part of exhibitors. There were 1,554 professional visitors and the show served as a great platform to create valuable business contacts, according to organisers.

After attending agrofood Nigeria 2018, Marco Spinger, director of global markets & IT division - AUMA Association of the German Trade Fair Industry, remarked, "Our exhibitors in the German Pavilion had an average of 30 contacts. And the strategy of the organisers to concentrate on trade visitors has proved successful." **E**

Ethiopia's international horticulture and floriculture trade fair

IN THE RUN-UP to the international horticulture and floriculture trade fair, Ethiopia is busy in preparing the ground-work for the event. HortiFlora Expo, will be held from 13-15 March 2019 in Millennium Hall, Addis Ababa, showcasing several flower, vegetable and fruit industries.

The last time it took place was in 2015, making it already four years since Ethiopian horticulture and floriculture was presented in a specialized international trade fair in Ethiopia.

The interest to exhibit has been rapidly growing in the last months and as a result the number of exhibiting companies is now more than a hundred. The organisers have confirmed that all important Ethiopian companies involved in horticulture and floriculture as well as many international companies have booked stand space.

The Ethiopian horticulture and floriculture Industry developed in the past 15 years into a full-grown player and put itself on the world map as one of the leading exporters of cut flowers.

The Ethiopian government – by putting a lot of emphasis on the development of the industry – is responsible for a great deal of



Image Credit: Adobe stock

The event will showcase several flower, vegetable and fruit industries.

progress achieved in the sector.

Specialised trade fairs are a great thermometer for the state of the industry that they promote. "Having a 'full-house' with exhibitors already at this stage at this year's

HortiFlora, is a good sign and increases chances considerably for a successful trade fair", Dick van Raamsdonk, spokesman of the fair said, when asked about the outlook of the fair.

Impacting food and agriculture

AGRICULTURE IS THE foundation of the Ethiopian economy and accounts for about 50 per cent of the GDP, 84 per cent of exports and 80 per cent of total employment. This has contributed in making the food processing sector not only the largest manufacturing industry in the country but also one that offers several opportunities for investment.

Foodagro Ethiopia is aimed to tap this huge investment potential and will be held at The Millennium Hall, Addis Ababa, from 21-23 March 2019. It will showcase products, equipment and machinery presented by exhibitors from over 20 countries.

The event will target the Ethiopian food processing and agricultural industry and the focus will be on fortified foods, packaged foods, agricultural machinery, processing and commodities. After 20 successful editions in Kenya and Tanzania, it promises to bring together industry professionals, exporters, manufacturers and importers, in one of Africa's fastest growing economies.

Ethiopia is the second most populous countries in Africa with a population of more than 100 million people. It is also the leading producer in Africa of many agricultural products. The government of Ethiopia provides huge opportunities in every sector and industry in order to mitigate the challenges such as the quality of raw products, technical skills and productivity. This offers numerous business opportunities for the international market and also has an impact on the food products and processing industries..

Also, investment potential exists in large-scale commercial production as well as modern farming technology and tools, irrigation systems, processing, distribution and modern packing and blending industries.

With a line-up of both local and international companies, Foodagro Ethiopia 2019 provides an ideal platform for product launches, finding new buyers and distributors, promoting brand names, updates on the latest trends in the food, agriculture and hotel industry.



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AWILA Workshops Germany

The co-founder of Trantor International Limited, Graham Edwards speaks to *African Farming* about the fundamental changes in farm tractor design.

Breaking new ground in farm tractor design

FOOD AND AGRICULTURE Organisation's worldwide promotion of Conservation Agriculture (CA) or the zero-tillage system has paved the way for innovative designs and changes in farm tractors and agriculture implements.

Conservation Agriculture (CA) is a relatively new but holistic farming system that is directed towards conserving soil-structure and soil-health, whilst maintaining a sustainable quality of food production. The benefits are widespread and include the reduction of soil degradation, better moisture retention, and an improved ability for the soil to absorb and drain the rain.

By adopting this approach, the farming system is different from the conventional one of ploughing and, the number of mechanised operations between each harvest, the fertiliser-usage and crop spraying are substantially reduced.

The worldwide tractor market is currently in excess of two million units per year and 32 million tractors are being used daily. India manufactures 700,000 and Turkey makes 70,000 per annum. The USA and European markets are 200,000 and 165,000 per annum respectively. Tractors have always played an integral role in mechanised agriculture but now fundamental design change is arriving.

Worldwide CA adoption levels vary greatly, due to resistance to change but 65 per cent of the world is directed to dryland agriculture and CA is more easily implemented in drylands. In the 35 per cent where temperate agricultural conditions prevail, there is more "resistance to change", due to the absence of soil-health reasoning, and because of the widespread belief in and usage of the ploughing system. Over 160 million hectares are currently cultivated using CA methods. The majority of these are found in North and South America and Australia. This figure is continuing to grow, as the cost of farm inputs, low productivity and high fuel-costs rise. When farmers use CA, the number of field operations is reduced, a saving in fuel occurs and less fertiliser is needed. One of the main benefits, however, is in the lowering of labour costs.



There is no question that the proportion of farming conducted using CA methods is increasing.

There is no question that the proportion of farming conducted using CA methods is increasing, and there is certainly a need for a tractor designed for high-speed transport and zero-tillage.

"We learned about the importance of open-cabin tractors in the African farming context and how it is much more common than the ROPS safety-cabins"

Conservation agriculture (CA) in Africa

Conservation agriculture has been promoted by a growing movement of international organisations, governments and farmers in Africa over the past decade.

According to a United Nations sustainable development journal, its benefits to farmers and the environment include: higher productivity gains through improved and sustained yields with less time, labour and inputs required; contribution to climate change mitigation efforts through increased soil carbon sequestration benefits; and strengthening farmers' capacity to adapt to future changes through improved soil organic matter and water retention.

Trantor International Limited

Trantor International is working closely with FAO, InnovateUK and ECAF in the design and development of a wide range of transportation and CA tractors with greater


efficiency and increased productivity. The company recognises the need for fundamental changes in the farm machinery industry and the emphasis on new tractor models which are tailored to farm transportation and the requirements of the zero-tillage farming system.

Trantor believes that a tractor that is designed for CA needs to efficiently carry out the range of duties required in it, including seed drilling; fertiliser spreading; chemical spraying (herbicides, pesticides & fungicides); harvesting and transporting the crop.

When there is no need to conduct low-speed ploughing, the farmer's tractor can be lighter and faster and, therefore, use less fuel. Less weight helps to reduce unnecessary damage to the soil, requiring less remedial action. The higher speed permits reduced cycle times, safer and timely transportation of agricultural produce and both features contribute to lower fuel-use.

"We learned about the importance of open-cabin tractors in the African farming context and how it is much more common than the ROPS safety-cabins," says Graham Edwards, co-founder at Trantor.

"It has always been our intention to manufacture and assemble our 'vehicle-like tractors in South Africa," he adds.

Trantor has conducted detailed analysis of the tasks performed in CA as well as the range of a farm implements used with tractors to determine the necessary features required in a no-tillage tractor. 

- Source: Trantor International Limited

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Case IH's axial-flow 250 combine updates boost productivity

CASE IH HAS introduced three new 250 series Axial-Flow combines for 2019, replacing the existing 7240, 8240 and 9240 models, to allow operators to maximise machine performance in terms of crop throughput and quality.

"The 250 series Axial-Flow upgrades focus on improving both combine and operator productivity," explained August von Eckardstein, harvesting product marketing manager for Europe, the Middle East and Africa at Case IH.

New AFS Harvest Command automation

This completely new technology package utilises sixteen sensor inputs to continuously monitor the machine and adjusts seven different settings to maximise combine performance. Managed through the in-cab AFS Pro700 terminal, the automation system is currently capable of working in wheat, oilseed rape/canola, corn/maize and soybeans.

The next version, with Feedrate Control, adjusts ground speed based on crop load to cater for the desired outcome – performance to control losses, maximum throughput, or fixed throughput. The operator sets the target maximum engine load and ground speed, and Feedrate Control will operate up to those limits. The new Feedrate Control system more accurately controls ground speed based on crop and ground drive load. Feedrate Control, which can be used as a stand-alone function, works in all crop types.

The top specification option is full AFS Harvest Command automation, which automatically makes threshing and cleaning system adjustments based on the same desired outcomes as Feedrate Control, with the addition of grain quality monitoring. This uses camera-based technology and sieve pressure sensing to provide further guidance to the machine's automatic adjustment process to minimise impurities in the grain sample and maintain the best grain quality, a trait for which the Axial-Flow combine has earned its reputation.

"The AFS Harvest Command automation grain camera utilises a patented multi-spectral light emission – visible and invisible – to more accurately identify broken grains and impurities," says August von Eckardstein.

"AFS Harvest Command automation is not designed to replace operator decisions, but to enhance them, identifying the factor limiting combine performance as conditions change, displaying it and making adjustments to address it," says Eckardstein.

Rotor cage and sieve upgrades Axial-Flow 250 series combines with AFS Harvest



Image Credit: Case IH

The new models help maximise machine performance in terms of crop throughput and quality.

Command automation are fitted with in-cab adjustable rotor cage vanes, actuated from a right-hand console switch when not using the automation facility, or automatically adjusting themselves when AFS Harvest Command automation is engaged. The rear six vanes are linked, include a greater range of adjustment, and can also be manually adjusted from ground level. By changing the pitch of the vanes, the crop will move faster or slower through the rotor cage, tuning threshing and separation performance to crop conditions for improved efficiency.

In conjunction with upper and lower sieve control, the full AFS Harvest Command automation package also features new in-cab pre-sieve adjustment, allowing AFS Harvest Command automation to automatically adjust all sieve settings according to feedback from the loss sensors, grain camera and sieve pressure sensors. This can also be manually activated when AFS Harvest Command is not in use. The in-cab adjustable pre-sieve is also available as a stand-alone option, which includes a remote switch allowing setting from the removable side covers.

Transmission changes

A new hydrostatic transmission, featuring a field and a road mode and on-the-move two-speed range control, provides increased traction and means there is no need to stop and shift while working or travelling on hills. Operated via a scalable multifunction handle speed controller, it

features a closed-loop speed control which maintains the set speed in changing ground conditions. Maximum respective speeds in range one and range two are 18km/hr and 40km/hr, although reduced maximums can be set according to operator preference and field conditions.

"With a reduced need to change ranges, and controllable maximum speeds for, say, in-field travel to the headland, downtime is cut and harvesting time increased," Eckardstein points out.

Improvements to X-tra Chop package

The X-tra Chop straw chopper package is now fitted with a new remote switch for ground-level spreader board actuation, to make accessing the engine deck easier for fuelling and maintenance.

Feeder/intake elevator upgrades

In addition to the existing feeder/intake elevator lift capacities of 4.5 tonnes and 5.2 tonnes, a new 6.1tonne lift capacity is available on the largest Axial-Flow models, to enable them to handle 13.5m draper heads and 18-row corn heads. Factory-fit dual lateral tilt can now also help to provide enhanced control of 13.5m draper heads.

"Model year 2019 Case IH 250 series Axial-Flow combines offer significant technology, durability and productivity enhancements," says Eckardstein. "At the same time, they preserve the simplicity, grain saving and grain quality performance for which Axial-Flow has a well-established reputation."

Pöttinger unveils new mowers

PÖTTINGER HAS UNVEILED the new CROSS FLOW auger that merges the swath immediately after mowing.

This system is versatile in the range of applications that it offers to make the working day in the field a great deal easier. The NOVACAT 352 and NOVACAT A10 are available with CROSS FLOW.

Feedback from professional farmers was the basis for this development, following demands for a cost-effective and straight-forward system for swath merging that would also be suitable for simple rear-mounted mowers.

Pöttinger makes this possible with the CROSS FLOW auger that merges the forage to form one swath right after mowing. The enclosed design prevents forage losses. CROSS FLOW works without a conditioner and is characterised by its light tare weight. The result is that it not only conserves the soil but also saves fuel. Compared to cross conveyor belt systems, the cross-flow auger consumes 20 per cent less power.

In addition, the forage is handled extremely carefully. The NOVACAT CROSS FLOW is highly versatile and can be used on grassland as well as with whole plant silage.

Whole plant crops mowing

If the users combine the NOVACAT 352 CROSS FLOW / NOVACAT A10 CROSS FLOW with a three-metre wide front mower, they can mow a width of 12 metre / 19 metre on two passes with both swaths placed within a width of approx. six metre / 12 metre. A two-rotor centre-swath rake is then sufficient as the next machine (or a four-rotor rake on a single pass). This signifi-



Image Credit: Pöttinger

The latest development from Pöttinger enables swaths to be merged for the first time without a conditioner.

cantly reduces the number of passes and conserves the soil and the forage. This process also saves fuel.

When mowing along the field boundary, the cross-flow auger can transport the crop to the inside. This is done by closing the rear flap on the NOVACAT 352 CROSS FLOW or closing the rear flap on one side of the NOVACAT A10 CROSS FLOW. This method ensures that the forage remains within the boundary during the tedding sequence.

This innovative solution still provides a conditioning effect, however, because the auger turns the flow of forage to accelerate the drying of the mown crop. For a more intensive drying effect, the rear flap is opened to place a wider and airier blanket of forage.

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3 agro AgroTechs organized by fairtrade & DLG:

5th Nigeria agro

26 – 28 March 2019
Landmark Centre - Lagos
agro AgroTech Nigeria
www.agrofood-nigeria.com

3rd Ethiopia agro

09 – 11 May 2019
Millennium Hall - Addis Ababa
agro AgroTech Ethiopia
www.agrofood-ethiopia.com

6th West Africa agro

19 – 21 November 2019
Accra International Conference Centre
agro AgroTech West Africa
www.agrofood-westafrica.com

1st Iraq agro

15 – 17 April 2019
Baghdad International Fair Ground
agro Iraq
www.iraq-agrofood.com

26th Iran agro

18 – 21 June 2019
Tehran International Fairgrounds
agro Iran
www.iran-agro.com



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ArmaTrac licensed Africa's GIAD to produce tractors

ARMATRAC, THE EXPORT brand of Erkunt Tractor Industries Inc, has licensed GIAD, one of Africa's largest industrial enterprises, to produce ArmaTrac tractors.

With this agreement, Erkunt became the first manufacturer in Turkey to license abroad.

ArmaTrac was founded in 2003 in Turkey that has the world's fifth largest agricultural economy, attained the third place in the Turkish market among 31 companies in six years.

ArmaTrac tractors are being produced with Perkins (UK) and Deutz (Germany) engines and transmissions from ZF (Germany) and Carraro (Italy).

Designed, engineered and built with simplicity and efficiency in mind, the entire range is focused on providing easy solutions to farmers. Each tractor is tested both in

simulations and in the field with attention to detail.

"After these examinations, products are allowed to leave the factory, confident that no matter what you put your tractor through, day after day, year after year, they will perform to the high standards you expect," according to ArmaTrac.

Zeynep Erkunt Armagan, chairperson of Erkunt Tractor, stated the importance of this project in ArmaTrac's journey to become a global brand and explains the details of this new agreement in Sudan.

"Sudan, which is one of the fastest developing countries of the African continent, has a great potential for the agricultural sector. We consider Sudan as a very accurate market since 2009 and keep it as a priority among our target markets. GIAD is one of Sudan's most

professionally working and important enterprises, which we have worked with for years."

"After this production agreement, I believe that we will make our relationship which continues as a distributorship, more creative and wealthy. With the production of our ArmaTrac tractors in Sudan, we are going to take important steps not only in the Sudanese market, but also in the market of 19 countries in the Common Market for Eastern and Southern Africa (COMESA)."

"What makes us different is the tractors that we design according to the needs of the farmers and the land of the country we export to. I hope that this agreement we signed for Africa is going to contribute to new license agreements in other countries," Armagan concluded.

Cooper Pegler knapsack sprayers offer promise of better crop yield

KNAPSACK SPRAYERS, THE core products of Cooper Pegler are known for the safe, punctual and precise delivery of a liquid from a sprayer tank to its intended destination.

CP 15 Evolution knapsack sprayer

For herbicide, insecticide and fungicide treatment, Cooper Pegler provides farmers with the CP15 Evolution knapsack sprayer, available in 15 and 20 litre tank capacities.

Due to its unique diaphragm pump, all working parts of the sprayer are mounted inside the tank, to guarantee better shock-resistance. Additionally, the pressure control valve is also mounted inside the tank to prevent any damage, ensuring accurate spraying action over the years.

Through the use of the Cooper Pegler technology, there is no direct friction between the diaphragm and the surface of the pump, making pumping easier and more comfortable compared to a piston pump. Therefore, there is no requirement for lubrication of the pump or any other kind of service maintenance other than routine cleaning, thus ensuring long-life and performance of the product.

CP 12 knapsack sprayer

For herbicide, insecticide and fungicide treatment at heights, such as required for cocoa trees, Cooper Pegler provides the farmers with CP12 knapsack sprayer, to spray up to a height of six meters without any motor, due to its double "action syringe"

operating at extension and compression. With its specific technology, the CP12 knapsack sprayer provides the solution for a weightless and a costless knapsack sprayer for height.

CP ULV battery sprayer

Ultra-low volume treatment for crops such as cotton also find solutions in Cooper Pegler sprayers with CP ULV battery sprayer. It enables to choose different

widths of treatment and different nozzles for droplets size targeted.

Designed for durability, Cooper Pegler provides farmers with a complete service case with all consumables such as seals, nozzles, for quick and efficient repairs.

Cooper Pegler, a part of the Exel Industries group, boasts a heritage of more than 120 years of worldwide expertise. The company enjoys a strong reputation for spraying precision, durability and ease of use, continuing to maintain its close liaison with chemical manufacturers as well as constant product development to meet the evolving needs of the future.

The brand commits itself to offer for every product in its range - Robust and lightweight design; Wide range of accessories; Very few wearing parts; low cost maintenance; ready availability of all parts.

The Cooper Pegler brand is present on the European, African and Latin American continents, selling 70 per cent of its turnover outside of Great Britain, its native country.

In the main zones where agricultural crops are manually maintained, Cooper Pegler sprayers have proved their robust and reliable characteristics, essential when choosing professional equipment.



Cooper Pegler - CP 15

Image Credit: Cooper Pegler

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

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

While every care has been taken to avoid errors and omissions, they may occur; the Editor would like to be notified of these so that the 2020 edition of the Directory can be kept up to date.

Supplier Listings
start on page 35

Agent Listings
start on page 39

Classified Listings

Agricultural Consultancies

Fieravicola - The International Poultry
Fair in Italy
ICS
Jain Irrigation System Ltd.

Agricultural Equipment - General

A a Z Performance
Alvan Blanch Development Co. Ltd.
Baldan/Pan Trade Services Ltd.
Bentall Rowlands Storage Systems Ltd.
ICS
Jain Irrigation System Ltd.

Agricultural Projects

A a Z Performance
Bentall Rowlands Storage Systems Ltd.
ICS
Jain Irrigation System Ltd.
Symaga SA

Animal Health Products

Ayurvet Ltd.
Eurofeed Technologies S.p.A.
Germiteira Prod. Com. e Exp. de
Sementes Ltda.

Antioxidants

Eurofeed Technologies S.p.A.

Automatic Chain Feeders

Big Dutchman International GmbH

Bagging plant

Awila Anlagenbau GmbH
Bentall Rowlands Storage Systems Ltd.

Biofuel/Biodiesel

Bentall Rowlands Storage Systems Ltd.

Breeding

Hendrix Genetics

Briquetting Plants

Alvan Blanch Development Co. Ltd.

Broilers

Cagemax

Bulk Storage Equipment

Bentall Rowlands Storage Systems Ltd.
Symaga SA

Cages & Batteries

Big Dutchman International GmbH

Cassava Processing Equipment

Alvan Blanch Development Co. Ltd.

Centre Pivot Equipment

T-L Irrigation Co.

Chicks

Cagemax

Chicks - Day Old

Cagemax

Cocoa Production

Alvan Blanch Development Co. Ltd.

Coffee Processing, Handling & Storage

Bentall Rowlands Storage Systems Ltd.
RIELA Karl - Heinz Knoop e.K.
Swingtec GmbH

Colour Sorting Equipment

Alvan Blanch Development Co. Ltd.

Concentrates

Cagemax

Consulting Services

A a Z Performance
Fieravicola - The International Poultry
Fair in Italy

Conveyors and Elevators

Awila Anlagenbau GmbH
Big Dutchman International GmbH
RIELA Karl - Heinz Knoop e.K.

Coolers - Environmental

Big Dutchman International GmbH

Cotton Handling & Storage

Swingtec GmbH

Crop Drying and Ventilation

Alvan Blanch Development Co. Ltd.

Crop Handling & Storage

Alvan Blanch Development Co. Ltd.
Bentall Rowlands Storage Systems Ltd.
RIELA Karl - Heinz Knoop e.K.
Swingtec GmbH

Crop Protection Equipment

Bentall Rowlands Storage Systems Ltd.
Swingtec GmbH

Cultivators

Baldan/Pan Trade Services Ltd.
Monosem

Diagnostics

A a Z Performance

Disinfectants

Eurofeed Technologies S.p.A.
Intraco Ltd.

Drinking Systems

Big Dutchman International GmbH

Dry Rendering

Cagemax

Dryers

Alvan Blanch Development Co. Ltd.
RIELA Karl - Heinz Knoop e.K.

Egg Collection

Big Dutchman International GmbH

Egg Layer Parent Breeders - Brown

Hendrix Genetics

Egg Layer Parent Breeders - White

Hendrix Genetics

Egg Layers

Hendrix Genetics

Electronic Monitoring & Control

Promptek Limited

Exhibitions and Conferences

Fairtrade Messe GmbH

Extruders for Food, Feed

Alvan Blanch Development Co. Ltd.
Yemmak

Feed Additives

Ayurvet Ltd.
Cagemax
Eurofeed Technologies S.p.A.
Evonik Nutrition & Care GmbH Animal
Nutrition
Intraco Ltd.
Unipoint AG

Feed Compound

Cagemax
Eurofeed Technologies S.p.A.

Feed Concentrates

Cagemax
Eurofeed Technologies S.p.A.
Intraco Ltd.

Feed Flavours

Eurofeed Technologies S.p.A.

Feed Ingredients

Cagemax
Eurofeed Technologies S.p.A.
Intraco Ltd.
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Feed Pharmaceuticals

Cagemax

Feed Premixes

Ayurvet Ltd.
Cagemax
Eurofeed Technologies S.p.A.
Intraco Ltd.
Unipoint AG

Feed Processing Plants

Alvan Blanch Development Co. Ltd.
Bentall Rowlands Storage Systems Ltd.
Promptek Limited
Yemmak

Feed Supplements

Cagemax
Eurofeed Technologies S.p.A.
Unipoint AG

Feeding Systems

Big Dutchman International GmbH

Feedstuffs

Cagemax

Fertiliser Processing Machinery

Yemmak

Fertiliser Spreaders

Baldan/Pan Trade Services Ltd.
Monosem

Fertilisers

Omex Agrifluids Ltd.

Fish Farming

Cagemax

Fish Feeds - Frozen

Cagemax

Fish Feeds - General

Alvan Blanch Development Co. Ltd.
Cagemax
Eurofeed Technologies S.p.A.

Fogging Machines

Big Dutchman International GmbH
Swingtec GmbH

Foliar Fertilisers

Omex Agrifluids Ltd.

Food Processing Equipment

LIMA S.A.S.
Marel Poultry

Fruit Processing

Alvan Blanch Development Co. Ltd.
Jain Irrigation System Ltd.

Genetic Research

Hendrix Genetics

Grain - Drying & Ventilation

Alvan Blanch Development Co. Ltd.
Bentall Rowlands Storage Systems Ltd.

Grain - Handling, Cleaning & Processing

Alvan Blanch Development Co. Ltd.
Bentall Rowlands Storage Systems Ltd.
RIELA Karl - Heinz Knoop e.K.
Yemmak

Grains, Grain Projects & Edible Oils

Bentall Rowlands Storage Systems Ltd.

Grass

Germiteira Prod. Com. e Exp. de
Sementes Ltda.

Groundnut Handling Equipment

Alvan Blanch Development Co. Ltd.

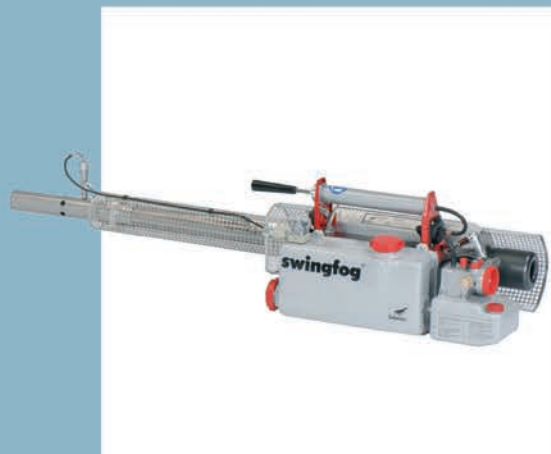
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Baldan/Pan Trade Services Ltd.

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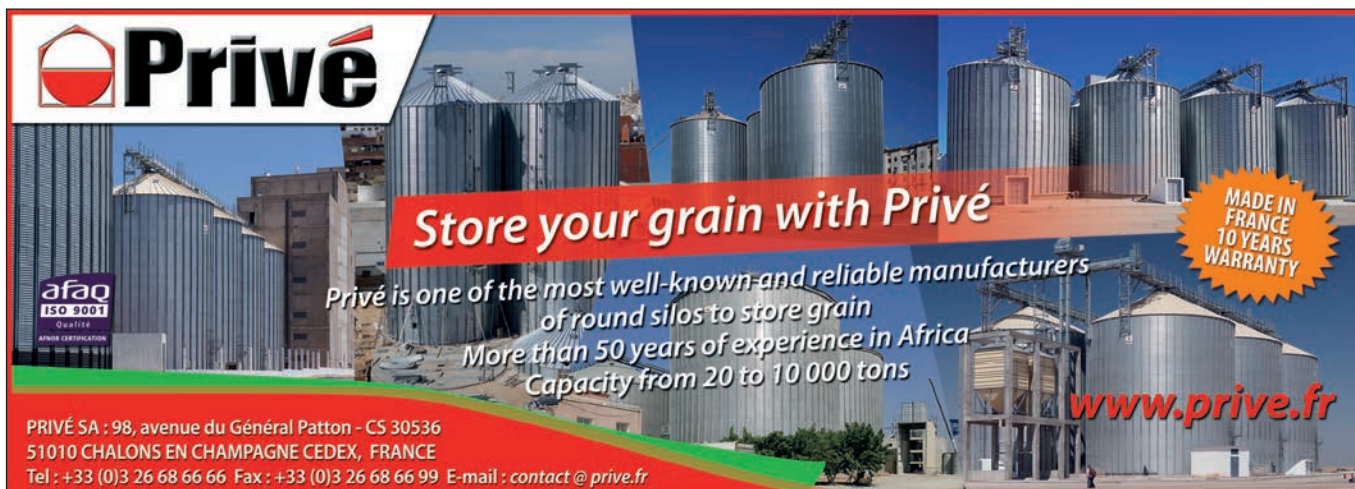
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Commonwealth governments to benefit from research for good ocean governance

FIRST DESCENT, A collaboration of ocean research institute Nekton, the Commonwealth and other partners will launch a multidisciplinary exploration of never before accessed ocean territory.

The expedition ship, a floating research station, will set sail from Seychelles in March equipped with cutting-edge subsea technologies, including a submersible capable of descending hundreds of metres into the ocean, and some of the world's top scientists on board to test the health of the ocean.

In December, the Commonwealth and Nekton signed a memorandum of understanding to boost actions under the Commonwealth Blue Charter – a joint commitment by member countries to protect the ocean and sustainably manage its resources.

"This is a mission of world firsts - including the first live subsea TV series and an examination of previously unexplored ocean depths with cutting-edge technologies. But what is most important is the insight that this will offer governments and those who make decisions on important ocean governance issues such as conservation, climate change and fishing," said Commonwealth director of trade, oceans and natural resources, Paulo Kautoke.

He continued, "This important partnership with Nekton and governments who recognise the need to take urgent action to protect our ocean will not only support the uptake of new marine science technologies and platforms to improve access to ocean data, it will also facilitate science-based policies and laws, and develop training materials for capacity building."

First Descent will kick-off in Seychelles, where Nekton is working on behalf of the Seychelles Government and partners. The country has committed to protect 30 per cent of their ocean territory by 2020 and



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champions the issue of marine protection in the Commonwealth's Blue Charter.

CEO of the Nekton foundation, Oliver Steeds described the initiative as "a bold bid to help accelerate our scientific understanding of how the Indian Ocean is changing".

He said, "Sustainable ocean development is the heart of what we are doing to support a blue economy and we are delighted to partner with the Commonwealth to support regionally led ocean governance for the Indian Ocean region. We are seeking other Commonwealth nations to participate in future expeditions after the Seychelles in 2019 through to 2022."

The Nekton Indian Ocean Mission will run from 2019 to 2022. Three research expeditions will be deployed in distinct regions of the Indian Ocean.

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