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Crop Protection, Boosting Farming Productivity

Crop protection helps to keep plants healthy and maintain sustainable yields. The choice of plant protection strategy depends on the type of cultures grown and the threat. It can be diseases, insects, or weeds. At the same time, measures must be timely and, wherever possible, preventive. Modern crop protection compounds make extensive use of digital solutions. They enable the precise analysis of soil and plant conditions and provide accurate information about external factors such as weather conditions. At the same time, they allow optimizing the use of

resources. As a result, farmers can protect crops, increase profits, and minimize environmental damage.

Crop protection combines strategies, tools, and products that protect against various pests. These include diseases, viruses, weeds, and insects. All of them can significantly lower or even kill plants. The best decision is to control the situation by reducing the risks rather than deal with the problem's consequences. Crop protection allows farmers to monitor climate change and notice the appearance of

dangerous weeds, pests, or diseases timely.

There are many organisms in the agricultural ecosystem that can cause harm to plants. They slow down the development of plants, reduce their thickness, and generally harm yields. Timely preventive steps minimize the dangers. Moreover, the importance of crop protection in agriculture lies in conserving biodiversity and nutrients in the earth, optimizing the resources used, such as water, land, and labor, and consequently increasing the quality and lowering the food cost.



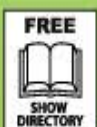
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SPACE 2022: A focus on climate and youth

SPACE took place from Tuesday 13 to Thursday 15 September in a very warm and positive atmosphere, marking its 35th anniversary. Attendance was very high over the three days of this 36th edition at the Rennes Exhibition Centre. The full scope of the livestock industry was represented, from cattle, pigs, goats and sheep to poultry, rabbits and aquaculture, in a very positive and constructive ambience.

SPACE 2022 was extremely successful, with over 90,000 visitors (90,108, of whom 8,406 came from 120 different countries), and close to 1,200 exhibitors (of which 300 were international businesses and 250 were taking part in SPACE for the first time).

The event recovered its full international dimension after two years during which travel by visitors from abroad was heavily restricted. Delegations from around the world came to meet exhibitors, visit farms and draw inspiration from our organisational models. Many contacts were established with delegations from West Africa (Senegal, Côte d'Ivoire, Mali, Benin, etc.), Cameroon, the Democratic Republic of the Congo, Morocco, Algeria, Vietnam, the Philippines and numerous European countries. Talks organised for the first time in partnership with Promosalons led to important business exchanges with top buyers from Colombia, Chile, India, Saudi Arabia, Turkey, Morocco and Nigeria.

In a context marked by drought and the soaring price of energy and raw materials, climate was the annual theme developed by the Espace for the Future. Through the numerous debates, conferences,

products and equipment presented by exhibitors, SPACE 2022 provided an opportunity to show that agricultural stakeholders are already taking measures aimed at reducing the impact of livestock farming on the climate. The livestock industry provides solutions to face climate challenges, and SPACE was able to demonstrate this.

Innovations in the sector, rewarded with the Innov'Space label (36 winners this year), also highlighted the continuous progress achieved by the world of agriculture. The winners offered visitors new solutions for animal welfare, protecting the environment, health and safety and improving farmers' working conditions.

One of the biggest new features of this year's event was the first Youth Forum, a space for young people organised in collaboration with agricultural teaching networks and opened by the Minister of Agriculture and Food Sovereignty, Marc Fesneau, at the start of the Expo. This new space enabled young people to voice their visions for their future jobs. They could also express their motivations and questions to Loïc Chesnais-Girard, President of the Brittany Region, who paid very close attention to their points of view.

SPACE is also unique for its capacity to host around 100 conferences each year, allowing all stakeholders in the agricultural sector to learn about and discuss topical issues such as new technologies, solutions for reducing climate impact, establishing and selling farms, protein self-sufficiency, research into new fodder crops, CAP issues, etc.

Livestock presentations, with 550 cattle of 13 breeds and 150 sheep and goats of 11 breeds, provided a magnificent showcase for genetics and the breeders' know-how. A special focus was placed on the Jersey dairy breed with more than 60 cattle on show and in competition. The European Jersey forum was held during the event and the World Jersey Cattle Bureau had the opportunity to discover SPACE's unique position for livestock breeders. The Blonde d'Aquitaine was the beef breed under the spotlight, with a national challenge that proved highly popular with 80 cattle on show. The champion of the Normandie breed competition was voted supreme champion of SPACE 2022. This dimension as a genetic showcase and the high-level competitions and presentations are also what makes the Expo a driver for progress for livestock farmers.

For its anniversary, SPACE 2022 was the epitome of a professional, international and convivial trade show. Despite a difficult context, these three days have proved that with abundant and constructive dialogue, high attendance by visitors and exhibitors and the expo's very positive dynamic, 35 years after its first edition SPACE is an exceptional showcase for the livestock industry. A modern, constantly-evolving industry with a bright future and a resolve to feed society and meet its requirements. This positive energy and optimism inspire confidence in our farmers' determination to carry out their jobs with conviction and to ensure our food sovereignty, while remaining in tune with their fellow citizens.

We look forward to seeing you from Tuesday 12 to Thursday 14 September 2023 for the next edition of SPACE at the Rennes Exhibition Centre!

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Nature-inspired crop protection



Plant extracts, proteins and pheromones aiming to replace conventional chemical pesticides

As regulators look to limit the use of many synthetic crop protection chemicals, alternatives derived from or inspired by biology offer the promise of potentially safer, more environmentally benign substitutes.

The European commission this summer proposed halving the use of synthetic pesticides in the EU by 2030. If accepted, an enforcement framework would compel farmers and groundskeepers to consider alternative pest controls – such as insect predators, microbes or substances extracted or copied from natural sources – with synthetic pesticides as a last resort.

Yet the biocontrol industry complains that the regulatory system is not well set up to deal with such products. That is causing excessive delays in getting them onto the market, despite demand from growers and policymakers.

Volatile innovations

Grapes infected with *Botrytis cinerea* Plant extracts and antibody-based fungicides are initially targeting high-value crops like fruit, since they tend to be more expensive to produce than synthetic chemicals. Insect pheromones are among the most popular and established biocontrol agents, with some being used since the 1960s. Many are volatile esters that female moths emit in low concentrations to attract males.

Synthetic versions can be slowly released to lure male moths into traps – either to monitor for their presence or to trap and kill them. Another strategy is to release high enough concentrations to confuse the males, preventing them locating females. 'You are not actually killing the insect, but instead putting

the natural insect pheromones out there to disrupt mating,' explains Corey Huck, head of biologicals at Syngenta.

Huck suggests that, particularly for moths and their caterpillars, there is a need to provide new approaches to supplement ageing synthetic chemicals. Modern integrated pest management (IPM) strategies combine pheromones and other control methods with synthetic sprays.

'Pheromones to control and monitor pests have grown significantly over the last ten years,' says Sam Jones, scientific manager at UK company International Pheromone Systems (IPS), adding that these are predominantly sex pheromones. Important target pests for IPS include codling moths in fruit orchards, tomato leaf miner moths and, more recently, the box-tree moth which is spreading rapidly through garden hedging and topiary across northern Europe. Earlier this year, Syngenta introduced new pheromone products for rice stem borer in Indonesia and the European grapevine moth in France.

But there are also new strategies. Jones recently added a pear ester, used by female codling moths to locate plants for egg laying, to the sex pheromone. This cocktail caught male and female moths and showed five-fold increased attraction in tests in the UK, Australia and New Zealand. IPS also developed a chemical lure for the garden chafer beetle, which can kill strawberries and young vegetables, using volatiles released by flowers.

Another option is to find volatiles that plants produce when attacked by insects to attract their predators. IPS is testing methyl salicylate, a minty odour produced by many plants, with commercial raspberry growers in the UK. 'We've shown that we can attract more hoverflies, more lacewings, more pirate bugs and more parasitic wasps onto the crop. It

is very effective,' says Jones. They need to show now that this approach attracts enough predators to control pests such as thrips and aphids.

Llama antibodies

While pheromones can work well against insects, other pests require different approaches. Biotals – a biotech start-up in Ghent, Belgium – is developing products based on the distinctively small antibodies of camelids. These peculiar 'nanobodies' were discovered at the Flemish Institute of Biotechnology in Belgium, and developed for pharmaceutical applications by spinout Ablynx (now part of Sanofi). The technology has now also been licensed to Biotals for agricultural uses.

Evoca, the company's lead product, is a bio-fungicide, initially developed for grapes and strawberries. 'It inhibits the growth of botrytis, especially when treated at flowering time,' says Carlo Boutton, chief scientific officer at Biotals, who also helped build the nanobody platform at Ablynx. It was developed by immunising a llama with a fungal protein, and capturing the nanobodies generated.

Getting a product registered in Europe involves a lot of hurdles. It is very difficult and takes a lot of time and money

'It is one-tenth the size of a [regular] antibody,' says Boutton. 'The small size means that it is very stable, which is so important for our applications, and also makes engineering it easier.' The company says hundreds of trials have proven that Evoca is effective, including independent studies at academic institutions in the US, and trials in Japan, Europe, Brazil and South Africa. 'We will gradually replace some of the chemical fungicides,' says Boutton.

Evoca won best biofungicide product at the World BioProtection Summit and Awards in Birmingham, UK, in May 2022. It has a completely new mode of action and the company expects it to also work against powdery mildew and other fungal diseases. The initial focus with Evoca will be in high value crops, since production of the nanobodies relies on a yeast fermentation and is currently expensive.

The company says it has boosted production yields five-fold this year, and it is investigating filamentous fungi instead of yeast to further reduce costs. 'We're working with Olon in Italy as a contract manufacturer,' says Toon Musschoot, head of communications. 'We



recently scaled production from 35,000 litres per batch to 120,000 litres per batch.'

Cost is also an issue with pheromone chemical synthesis, though there is a push to produce them using fermentation too, from companies such as BioPhero in Denmark. 'There's new technology around bio-fermentation processes that can bring the cost of pheromones down to the point where they could be used [beyond just] high-value crops,' says Huck.

Regulatory hurdles

Biotals expects to launch Evoca first in the US, either at the end of this year or early 2023. The company estimates European approval will take twice as long, with an EU launch in around 2025. Beyond that, the company has a pipeline to develop other fungicides, bactericides and bioinsecticides.

The slow European approvals process is a constant complaint from companies. 'In the US, you have a specific pathway for non-chemical protection products,' says Musschoot. In Europe, chemicals and biologicals travel along the same regulatory pathway, with some minor modifications, leading to a backlog of biological products.

'The US and Brazil are far ahead and getting further ahead of the EU, in terms of biologicals,' says Willem Ravensberg, senior regulatory affairs manager at Koppert Biological Systems in the Netherlands. He notes that the regulatory data requirements were set up for a single molecule, so if a company comes with a plant extract, it gets extremely complicated very quickly.

The problems are widely acknowledged, and the European commission has recommended changes to data requirements for microbial products. 'They hopefully will be accepted by the end of the year, and in theory a more appropriate set of questions, more based on biology, will allow the process to go faster,' says Ravensberg, but time will tell. 'The biocontrol industry is not optimistic,' he adds.

Quillaja saponaria in vitro baby trees

Botanical Solutions in Chile cultures soapbark trees to harvest a mixture of compounds with antifungal action

The commission then plans to adopt changes to requirements for pheromones and subsequently plant extracts. 'They are working on it, but this all takes time,' Ravensberg complains. 'Britain has a chance [with Brexit] to design a better system, maybe even one that

can be an example for the EU,' he adds. Meanwhile, the rest of the world is moving on.

Yair Nativ, head of sales at STK in Israel, agrees. STK developed a biofungicide (Timorex) based on Australian tea tree oil that is licensed in several countries, including the US, Canada, Australia and

across Latin America. The company also sells a hybrid fungicide (Regev), combining tea tree oil with traditional fungicide difenoconazole to control botrytis, powdery mildew and other fungal diseases in tomatoes, grapes and leafy vegetables. It has shown positive trial results against soybean rusts and brown spot on potatoes.

Timorex 'is mainly for crops that are intended for export because of the low residues left behind on the produce,' says Nativ. However, the company is yet to receive EU approval. 'Getting a product registered in Europe involves a lot of hurdles,' says Nativ. 'It is very difficult and takes a lot of time and money.'

Harnessing plants' defences

Assuming products can navigate the regulatory pathways, plant extracts are potentially a rich source of pest controls, given the variety of chemicals they produce to defend themselves against insects and pathogens. Botanical Solutions (BSI) – a start-up based in Santiago, Chile – has developed an antifungal using extracts from the Chilean soapbark tree (*Quillaja saponaria*). The product, Quilibrium, contains a mixture of phenolic compounds such as salicylic acid and a variety of saponins, including the fraction QS-21, which is the basis for new immune response-boosting adjuvants for vaccines.

BSI extracts its ingredients from laboratory cultures of *Quillaja*, rather than bark from established trees, says co-founder Gustavo Zuniga. 'This allows us to be self-sustaining, producing plants throughout the year, without environmental effects or damaging natural ecosystems.' The product inhibits the growth of fungus and especially crucial disease-causing enzymes such as laccase. It is sold throughout Chile, Peru and Mexico (in partnership with Syngenta) for tomatoes, grapes and fruits, with plans to move into the US market next year.

We are looking to see if we can prime crops against insect attacks [by releasing] plant-derived volatiles that encourage plants to develop defenses

IPS is also looking at the molecules plants exude after insect attacks, which induce neighbours to invest in defensive structures. This includes thicker waxy cuticles and defensive leaf hairs to deter pests such as aphids. 'We are looking to see if we can prime crops against insect attacks,' says Jones, 'and I'm interested in whether we can develop dispensers to release plant-derived volatiles that encourage plants to develop defences.'

Agrochemical industry consultant Jon Amdursky in Florida, US, says that 15 years ago, big agrochemical companies and smaller biocontrol companies were at loggerheads. 'Since then, there has been a marriage between chemistry and biology,' he says, with big companies acquiring, producing and distributing more biological products.

Syngenta's Huck is excited about the variety of startup companies developing biocontrols with entirely new modes of action, such as a peptide bioinsecticide from Vestaron. Syngenta has an internal programme developing RNA interference for pest control, and collaborates with several start-ups. One, GreenLight Biosciences, last year reported proof-of-concept tests for its yeast-based RNAi technology that turns off a gene in Colorado potato beetle larvae. This kills the bug and reduces plant damage. 'This is the first RNAi product, as we understand it, in the regulatory process in the US,' says Huck, adding that US approval is expected in 2023.

Growing importance

The market for biological products is around £4 billion, compared to the global crop protection market of around £60 billion. However, rapid adoption of biologicals means that market is expected to grow around 15–17% a year. Syngenta's biologicals are sold into traditional crops such as fruit and vegetables, but increasingly into row crops (such as potatoes and soybeans) as well.

Most of Syngenta's success has been in biofungicides, followed by bioinsecticides, Huck explains, 'but the really difficult area is bioherbicides'. There are few alternatives to conventional chemical weed killers. 'There is still a lot of science to be done in biocontrol portfolios,' he concludes.





6 megatrends shaping African food systems



This week the Alliance for a Green Revolution in Africa, or AGRA, launched its annual report on the state of agriculture on the continent. The report focused on the ways to accelerate food systems transformation on the continent and identified megatrends currently shaping the development of agrifood systems.

Ed Mabaya, a research professor at Cornell University and one of the authors of the report said the 2022 Africa Agriculture Status Report aims to capture broad categories causing these megatrends and how such trends should influence the way investments and policy and regulatory decisions are made.

Get the inside track on how agriculture, nutrition, sustainability, and more are intersecting to remake the global food system in this weekly newsletter.

“Often people who work in that policy space are not changing the documents fast enough to keep up,” he said. “Most governments have 10-year frameworks, five-year frameworks, we really want these to be seen as live documents that have to be flexible and nimble enough to adjust to these things that are going on now.”

The report urged African governments and development partners to anticipate and proactively respond to six major demographic, economic, environmental, and social megatrends.

Rural population growth and rising land scarcity

The African population is growing rapidly. Between 2017 and 2050 sub-Saharan Africa’s rural population is expected to rise by 53%. In addition, the continent also has a growing class of middle- to high-income urban-based Africans who are interested in commercial farming. According to the report, these two factors will lead to an increased demand for agricultural land and land scarcity, which will in turn drive up land values. Pressure on agricultural land will also lead to a decline in the size of most

smallholder farms and an increase in continuous cultivation leading to land degradation.

Rising urban populations and increasing demand for food

As Africa’s urban population and their incomes grow, it will drive an “explosive growth in food demand.” If the continent fails to increase yields in accordance, it may be forced to convert its remaining forests and natural grasslands into farmland — with associated high costs to the continent’s environment — or become much more dependent on the imports for its food supplies.

Economic transformation

The report states that economic development, including rising incomes, will create both challenges and opportunities for African food systems. The growing middle class will lead to a rapid shift in the labor force from farming to “non-farm” jobs, which may encourage the move to labor-saving farm technologies and practices. Rising wages will also trigger changes in diets leading to increased demand for meat, fish, processed foods, cooking oil, and foods prepared away from home. This should fuel private investment and growth in the cereal and oilseed sectors as well as the processing industry and human nutrition in general.

Climate change and extreme weather events

According to the Intergovernmental Panel on Climate Change, the African continent will most likely experience more rapid rates of increases in surface temperature than other regions of the world. In addition, the continent will also likely experience a heightened frequency and intensity of extreme rainfall events including droughts, heavy rains, and floods.

According to the report, such events combined with chronically low public expenditure on agricultural research, development, and extension — or RD&E — systems are already slowing

the pace of farm technical innovation and agricultural productivity growth on the continent. This may drive agrarian expansion into natural areas resulting in the loss of habitat and ecosystem services. Climate change is also believed to be fueling conflicts for ever scarcer productive land, water, and pasture.

Global health crises, civil conflict, and economic disruptions

Rapid globalization, especially over the past four decades, has increased African countries’ vulnerability to regional as well as global shocks. The COVID-19 pandemic and the war in Ukraine have highlighted the risks associated with Africa’s reliance on global supply chains for agricultural commodities such as wheat, corn, and cooking oil to meet the population’s needs.

Accelerated pace of technical innovation in digital agriculture

While the pace of technical innovation across the agrifood value chain is lower in Africa compared to other regions, the report noted that the rapid adoption of mobile phones and internet connectivity has accelerated the deployment of agricultural services for farmers. But the continent can only achieve the full potential of a digital agricultural revolution through increased investment in communications infrastructure in rural areas, it notes.

Recommendations

Oxfam GB is hiring more staff and shifting its programs in the Horn, East and Central Africa region to respond to the food crisis and its consequences, including rising gender-based violence, says regional director Parvin Ngala.

The report recommended promoting education to enable rural youth to pursue non-agricultural careers and improving agricultural RD&E systems to improve productivity on existing agricultural land. It also called for increased funding for such systems to help smallholder farmers expand their productivity and use of innovative technology.

Policymakers were also implored to put the development of a more resilient and sustainable food system on the front burner “prioritizing investments in local wet markets and opening new trade corridors that are connected to major sources of raw materials.”

The report estimates that governments would need to invest between \$40 billion and \$77 billion a year, with up to \$180 billion in private sector funding, to trigger and sustain agrifood transformation on the continent.

Mabaya said though these numbers look big, the returns on these investments would be even greater and called for increased urgency to meet the continent’s goals.



Tanzania's Agriculture Ambitions Fueling Grain Exportation in East Africa

By Padili Mikomangwa

Agriculture in Tanzania is the backbone of the nation's economy. Government reports show that the sector employs over 65 per cent of Tanzanians and contributes 27 per cent to the Gross Domestic Product (GDP).

This is substantiated across borders as Tanzania anticipates constructing giant grain storage facilities and distribution centres across East Africa. This scenario signals that the sector's surplus which is gaining traction across markets serves to firm up Tanzania's ambition to expand its grain exportation.

Tanzania strategically realizes its wheat production plan, which sees to increase yield by million tonnes comes 2025

Kenya, Uganda and Burundi are some of the major Tanzania grain consumers across the East African Community.

Tanzania's rice has managed to expand heights of exportation and penetrated Belgium

Today Tanzania's farming aspirations have never been sharper. This year, the government has made a statement about the need to make agriculture a new economic horizon via the newly launched agriculture plan to transform the sector completely.

This commitment shows how serious Tanzania is in making an industry statement. The current government is making investment and industrialization a priority. The President, Samia Suluhu Hassan, has outlined her plan to transform the agriculture sector.

Tanzania farmlands are known best for producing both cash and food crops consumed locally and for the export market. Tanzanian farmers grow maize, sorghum, rice, cotton, cashew nuts, tobacco, tea and sisal, to mention a few.

Regarding comprehending the trend of producing demanded grains, Tanzania is at a very competitive stance which stands to garner billions in revenue. Tanzania is the biggest rice producer in East Africa. This situation has prompted Tanzania to ramp up its ambition for exporting rice across local markets (ITA).

To understand Tanzania's ambition to expand its agro-products exportation across the region, the current plans and strategies instituted by the government play an important role.

Renewed thrust in agriculture

In April, Tanzania made a bold statement to the world when President Samia led the nation to witness the launch of the "Ajenda 10/30", an agro-commercial strategy that aims to attain an impressive 10 per cent annual growth rate for the sector - that is the livelihood for some 65 per cent of Tanzanians (The Citizen).

Further, the government has taken another step toward realizing its agro-commercial ambition by domesticating its Agriculture Sector Development Programme II.

Over the past years, Tanzania has made deliberate efforts to improve crops, livestock and fisheries development in terms of productivity, commercialization and boost income generation for farmers.

Over the past decades, the ministry of agriculture has been determined to promote better agricultural practices that spark more yields.

Earlier this year, the President urged financial institutions to promote agro-lending by cutting down double-digit lending rates. Hence, as a positive response to the call, one of Tanzania's leading banks, CRDB, is already changing the interest rate to nine per cent.

The Ministry of Agriculture is establishing a revolving fund for agricultural input and agricultural development. "At a time when prices for agricultural inputs shoot due to external shocks, the revolving fund will be coming in to cushion farmers," President Samia said, suggesting that the fund will bear the price burden (The Citizen).

Further, on the agriculture development agenda, President Samia directed the Ministry of Agriculture and President's Office (Public Service Management) to review the Irrigation Commission structure to have offices in each district (The Citizen).

For any nation to become better in any sector, productivity is critical. In that spirit, Tanzania strives to ensure that its farmers have at least most of the essential tools to master effective production outcomes.

The government is now arming farmers with the best services any ambitious nation can buy. The budget allocated by the government for various crucial agro-services has improved in the financial year 2022/2023.

READ: Harnessing mobile technologies growth to drive smart agriculture in Africa

The research and development budget has shot up from \$3.3 million to around \$5 million. Irrigation has got a shot from \$7.6 million to \$22.2 million. Seed development has risen from \$2.4 million to more than \$4 million.

Nothing beats boots in the ground, especially for improving farming practices. Tanzania knows this best. Hence the Ministry of Agriculture has dispatched extension officers and furnished them with the necessary tools.

According to the ministry, around 7,000 motorbikes have been provided to extension officers. In contrast, thousands of soil scanners, tablets and extension kits have been supplied to extension officers spread

across fertile farmed lands in Tanzania.

Tanzania's National Food Reserve Agency highlights food supply and trading in Tanzania. The agency's recent numbers pointed out in the Central Bank of Tanzania (BoT) monthly economic review showcase maize and paddy to be highly procured by traders and millers.

From a policy standpoint, the ministry of agriculture gave a proposal to local farmers to increase domestic wheat production via a market mechanism. Since January 2021, the ministry requested wheat millers, traders and processors to procure at least 60 per cent of their wheat demands from local farmers and only import 40 per cent of the total wheat demand (International Trade Administration - ITA).

In a competitive marketing society, Tanzania's strategy to protect its wheat production brings healthy incentives to inspire farmers and stakeholders to invest heavily in wheat crop, giving Tanzania an upper hand in seizing markets across the region.

Further, as the biggest rice producer in the region, the East African nation is not resting; instead, it is arming itself for much more.

Tanzania is building irrigation schemes for rice production and encourages efficient use of fertilizers via its 10-year National Rice Development Strategy Phase II (NRDS-II). "The NRDS-II purpose is to double the area under rice cultivation from 1.1 to 2.2 million hectares from 2018 to 2030, double on-farm rice productivity from two t/ha to four t/ha by 2030, and reduce post-harvest loss from 30 per cent to 10 per cent by 2030," according to ITA.

Exportation of agro-products

The exportation of goods is a numbers game. Numbers give a unique perspective on the trend of agro-product exportation across potential and competitive markets in the region and abroad.

ITA shows that the exportation of corn has faced setbacks in the financial year 2021/2022 as forecasted to decrease by 20 per cent, equivalent to 80 million metric tonnes, due to the COVID-19 pandemic disrupting supply chains. The decrease is attributed to reports of truck drivers' screenings, lockdowns and curfews in neighbouring countries.

"This is believed to have increased border delays and the cost of cross-border trade with Tanzania's largest export markets for corn. Neighbouring markets include Zambia, Malawi, Rwanda, Burundi, Kenya, and the Democratic Republic of Congo," according to the ITA.

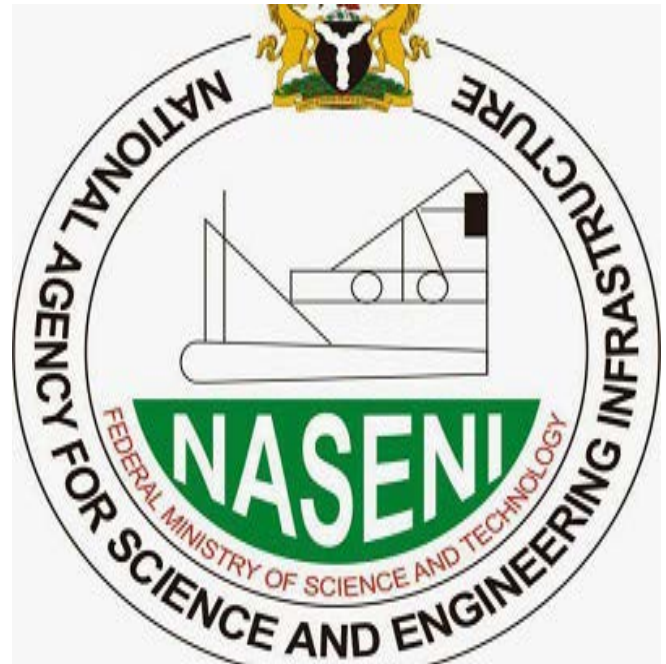
Tanzania's rice has not garnered only East African markets such as Kenya and Uganda, but it also has managed to secure European markets, particularly in Belgium.

Conversely, Tanzania is now securing profitable markets for avocados in Kenya, South Africa and India. Regarding building a better and sustainable grain exportation network, Tanzania stands as a chain to capitalize on rice as numbers pivot towards excellence.

Thus, it was recently noted that Tanzania's rice export increased from 184,521 tonnes in 2020 to 441,908 tonnes in 2021, attracting an upsurge in revenue from \$75 million to more than \$203 million. According to government statistics, last year, Tanzania produced 2,629,519 tonnes of rice in 2020/21 against the demand of 1,091,778 tonnes, which means the surplus stood at 1,537,741 tonnes (The Citizen).

Silos are a great start to developing sustainable inter-region supply chains as Tanzania becomes a food security powerhouse. As Tanzanian farmers become more competent in satisfying domestic food demands and building a healthy surplus for exportation, it is a matter of time before Tanzania becomes the most robust grain exporter across East Africa.

Nigeria Partners Czech Republic On Agricultural Development, Technology



To revolutionize farming and food processing through adoption of modern technology, the National Agency for Science and Engineering Infrastructure (NASENI) has said it will partner the Republic of Czech to develop Nigeria's agricultural sector.

The Executive Vice Chairman of NASENI, Prof. Mohammed Haruna, disclosed this during a ceremony of the Agricultural Machinery and Development Institute (AMEDI) in Lafia,

Nasarawa State.

Haruna explained that the establishment of AMEDI in the state was part of the directives of President Muhammadu Buhari to revolutionize agriculture in the country, adding that his agency had succeeded in the development of some relevant equipment and machines in the food value chain – from cultivation to planting, weeding, harvesting, post-harvesting and food preservation.

His words: "This institute is mandated to build on this success and serve as a pilot site for the implementation of the agreement between Nigeria and Czech Republic on agriculture, as approved by President Buhari for the Presidential Implementation Committee. Working with the Technology Agency of Czech Republic, NASENI and AMEDI Lafia will research, develop the equipment and train ordinary Nigerians and professionals in agriculture, food production, harvest and post-harvest, processing technologies, food preservation and packaging. It will also process agricultural waste into renewable energy among others."

On his part, the Nasarawa State Governor, Abdullahi Sule, lauded the Federal Government for establishing AMEDI in Lafia, saying the project was aimed at creating wealth and alleviating poverty in the country.

He said, "This project is geared towards transforming the agricultural sector into an industrial hub, through value addition for job creation, youth empowerment, and skills acquisition. It is pertinent to state that the intervention of the Federal Government in the conception and siting of this project is predicated on the belief that 80 per cent of the world economy is advanced manufacturing technology-driven. I am happy to inform you that NASENI has also set up the North Central Skill Development Centre in Keffi Local Government Area of the state. These endeavors would be critical in the transformation of our dear state into a business hub and will no doubt deepen the availability of skilled manpower to match the influx of companies and organizations that have indicated interest to do business in the state," the governor noted.



Zambia Seeks Dangote's Support to Develop Country's Agricultural Sector

Peter Uzoho

The Zambian government has approached Africa's richest man and President of Dangote Group, Alhaji Aliko Dangote pleading for support for the development of the country's agricultural sector through the establishment of fertiliser plant in the country.

Minister of Commerce and Industry, Zambia, Mr. Chipoka Mulenga, made the request at the weekend, when he led the country's delegation on a tour of the three million metric tonnes per annum Dangote Fertiliser plant in Lagos, calling for a collaboration between Dangote Group and the Zambian Government on the establishment of fertiliser plant in the southern African country.

According to a statement issued yesterday by the Dangote Group, Mulenga expressed belief that any investment in fertiliser production would not only help the country to be self-sufficient in food production, but would also help to grow the Zambian economy as well as that of the neighbouring countries.

Noting that the country's fertiliser consumption had increased tremendously in the last few years and had continued to increase, the minister expressed happiness that Zambia no longer has to go outside of Africa to seek investors.

Mulenga maintained that Dangote had been able to change the narratives through his investment in cement production across Africa, stating that Africans are now investing in the continent.

Pointing out that Dangote had already established the biggest cement plant in Zambia, the minister noted that Dangote Cement Zambia had a remarkable portfolio and was bringing positive change to the cement industry, not only in the Southern African country but to other neighbouring countries.

He said the Zambian Government had created an enabling environment and introduced incentives capable of attracting local and foreign investments in all sectors of the economy.

Mulenga said, "The Zambian government in

the last budget made some pronouncements which focus on value addition, industrialisation, skill enhancement and development. We have a huge youthful population who are ready to work if given the opportunity to be productive.

"Rather than continue to import fertiliser from anywhere, we want Aliko Dangote to come and establish plant in Zambia. The country's fertiliser consumption has increased tremendously in the last few years and has continued to increase.

"I am happy that we no longer have to go outside of Africa to seek investors. Dangote has been able to change the narratives through his investment in cement production across Africa. We now have Africans investing in the Africa continent.

"Dangote has already established the biggest cement plant in Zambia. Dangote Cement Zambia has a remarkable portfolio and is bringing positive change to the cement industry, not only in Zambia, but also to other neighbouring countries."

He described Zambia as Africa's new investment destination because of its stable political system, stable macroeconomic environment and investment protection guarantees, adding that Zambia was strong in agriculture and even seeking to become stronger through having its own fertiliser plant.

Mulenga, however, commended Dangote for investing massively in fertiliser production in Nigeria, saying, "This could only happen because the company put the right people, right leadership, right technical skills and the right management in place to have such a remarkable result.

"This fertiliser plant is not only serving the needs of Nigeria, but also attracting foreign exchange into the continent.

"This is a good demonstration that we can have this kind of investment in any part of Africa, which can grow and be beneficial to other countries."

He, therefore, enjoined Nigerians to guard Dangote's investments and other local invest-

ments in Nigeria, pleading with all Nigerians to support the investment to grow from strength to strength.

"This is amazing and we will like to have a similar investment in Zambia," he added.

Speaking at the end of the tour, Chief Executive Officer of Dangote Fertiliser Limited, Mr. Vishwajit Sinha, said the demand for Urea fertiliser in the Nigerian market and beyond remained robust and was expected to continue to grow.

He said the \$2.5 billion fertiliser complex would make Nigeria self-sufficient in fertiliser production with excess capacity exported to other African countries and the rest of the world.

"The key focus of Dangote Fertiliser has always been to cater to the growing fertiliser demand of the domestic market in Nigeria and also to work towards bringing a green revolution in the country so as to contribute towards food security for Nigeria. The surplus production after supplying the domestic market is exported," he added.

Sinha stated that Dangote Fertiliser was positioned to take advantage of the federal government's policy, which focuses on agriculture as one of the keys to unlock the diversification of the Nigerian economy.

"As population is increasing, food consumption is changing. Many countries' economic progress is linked to agricultural development, which is the best form of inclusive development.

"For all the countries that I have been to, I can see the potential of agriculture in the entire value chain from the farm to the kitchen in Nigeria.

"Dangote Fertiliser has the potential to transform the entire African region. Definitely it will have a huge value on the country," he added.

Sinha described Dangote Fertiliser plant as a company that would not only increase food-sufficiency in Nigeria, but also drastically reduce the level of unemployment and youth restiveness in the country through the generation of direct and indirect employment.



Agricultural hydraulic & fluid technology with HYDAC

HYDAC International Group, founded in 1963, established a direct presence in South Africa in 2009. HYDAC South Africa has significantly expanded its footprint through its branches across the country and sales support into SADC countries.

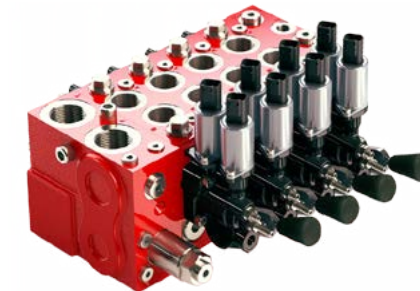
HYDAC supplies proven products as well as customized fluid power solutions to OEM's and end users in the mobile equipment industry.

Focusing on the Agricultural Market, HYDAC offers hydraulic solutions for tractors, self-propelled harvesting machinery, tillage and sowing, fertilization technology, crop protection and forage harvesting machinery. We have developed products for these applications:

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- Headland control
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- Electro-hydraulic Steering
- Fan controls



HYDAC LS Pump



HYDAC LS Valve

To improve the efficiency and productivity of Agricultural equipment, HYDAC has a complete range of components and systems for control technology, system intelligence, sensors and displays. Connecting HYDAC's components with tractors and implements over ISOBUS, allows for a single terminal and control in the driver's cab with remote monitoring of the systems.



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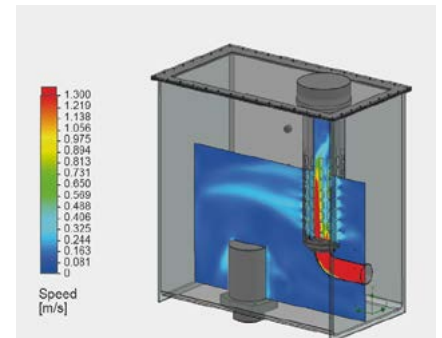
HYDAC's Hydraulic product range, manufactured in Germany, offers the latest in pump, valve, filter, and cooling technology.

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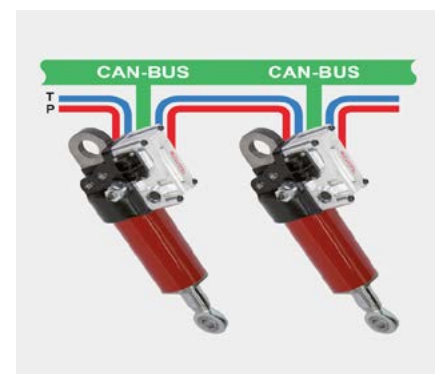


Air in the hydraulic oil causes noise, heat, unstable control, and damage to equipment. Maximum air separation in a hydraulic system can only be achieved with a combination of an optimized filter and tank. Accordingly, our Return Line Filters for optimized air separation provide the best possible foundation for protecting the hydraulic system from excess air in the oil, including the problems this causes.



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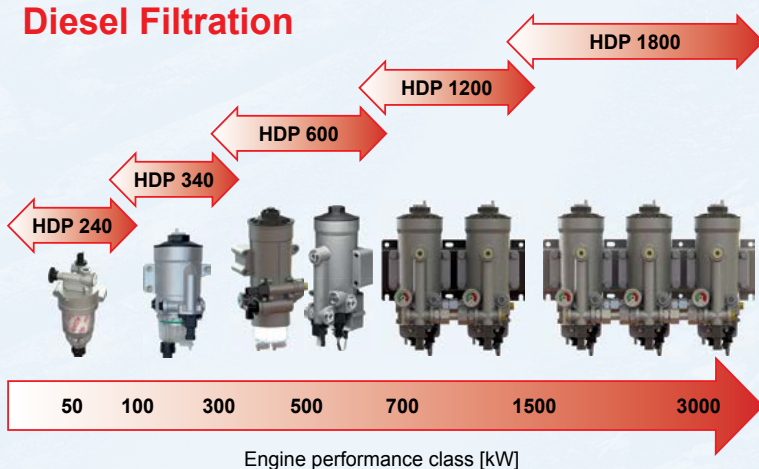


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- ISOBus control technology with remote monitoring.



Land restitution of protected lands can enhance the livelihoods of communities



Land Reform – Successful land reform can contribute towards boosting tourism in South Africa, argues the Vumelana Advisory Fund – non-profit organisation that works with land reform beneficiaries to make their land productive by facilitating partnerships between communities and investors. The Khomani San Communal Property Association (CPA) is among one of the land reform beneficiary communities that Vumelana has supported. The Khomani San community are located in the Kgalagadi Transfrontier Park and surrounds. The community has evolved and grown to become an enterprise with the potential to become a renowned Heritage Site. The community own 25 000 ha of land within the Kgalagadi Transfrontier Park and six farms south of the park totaling about 370 000 ha.

The land restitution struggle for the Khomani San community with respect to their rights inside as well as outside the Kgalagadi Transfrontier National Park started when the Kalahari Gemsbok Park was proclaimed in the 1930s thus dispossessing the community of their land. The eight Khomani San clans were scattered. Some settled in Namibia and Botswana, while others moved to nearby farms, and farms further afield in the Northern Cape Province of South Africa.

According to Dirk Pienaar, the Tourism and Conservation Officer of the Khomani San CPA, in 1995 the community lodged a land claim for the restitution of 45 000 ha in the Kalahari Gemsbok Park.

Pienaar says, “After years of negotiation and verification, the claim was finally settled on Human Rights Day: 21 March 1999. The settlement agreement paved the way for the transferring of the title deeds of six Kalahari farms (approximately 36 0000 ha) to the Khomani San CPA.”

The six farms allocated and managed by the

CPA committee include Miershoopan, Uitkoms, Andriesvale, Scotty's Fort, Witdraai and Erin. The restitution process impacted primarily people of the San origin, according to Pienaar. “The CPA membership is now at 1090 San descendants. Of them, about 600 live on the land while other members live elsewhere within the region as well as further afield in the Northern Cape Province”.

Today, the community has been able to derive several benefits from the restitution process, including gaining access to their land and job creation through tourism and hunting operations. On the tourism front, successful ventures include the Erin Game Farm operation. The main source of income is derived from sustainable consumption and eco-tourism projects taking place on the property.

The community has been able to leverage other tourism opportunities on their land, including the creation of jobs through tracking/spoorsny, guided walks and drives; hunting guides, skimmers and meat processors, storytelling, craft making and sales as well as accommodation in the Erin Tented Camp.

Three female entrepreneurs also operate successful tourism businesses: Vinkie's Kalahari Tours; Koera's Farm Kitchen and Boesmanrust. Furthermore, the community has launched skills enhancement programmes for community members and these have helped enhance the livelihoods of community members.

Working in collaboration with various stakeholders, donors and Government departments a number of programmes have been implemented, Pienaar said.

According to Peter Setou, Chief Executive of the Vumelana Advisory Fund, “Over the past 10

years working with land reform communities, we have observed that communities can thrive where they have access to their land, and the requisite support from stakeholders, including government and the private sector. Access to land alone is not enough, skills transfer, access to finance, access to markets and good governance are all important elements to enable the success of land reform.” To achieve this, partnerships with the private sector is crucial since they have access to capital, the skills and access to markets. These partnerships however do not happen naturally. Independent facilitation is required in order to ensure that the interests of the communities are safeguarded and the partnerships are sustainable. Vumelana has been supporting communities in facilitating these partnerships and we believe that if more communities can be supported to mobilise private investments and secure partnerships, more restored land could be productive thus contribute to employment opportunities for the beneficiaries. We are actively engaging with private sector players and other stakeholders who are willing to support our work to ensure sustainable land reform, commented Setou.

Setou argues that, where heritage land is involved in land restitution claims, it's crucial that communities are adequately supported on finalisation of their land claims, provided with post settlement support, as well as ensuring that existing jobs are saved and new ones are created – so that they too can benefit from the tourism proceeds from their land.

“About 60% of the Khomani San people are semi-skilled. Communities have also engaged in acquiring basic filming, photography, skinning, game ranch assistant skills, guiding, tracking, and conflict management in order to take advantage of the opportunities that arise from the park activities.”

With their land claim having been finalised, the community now have free access to the Kgalagadi Transfrontier Park. They are allowed to practice traditional hunting and gathering in the park, by arrangement between the community and the Park offices.

The park is pegged as a World Heritage Site (WHS).

Commenting on this, Pienaar says, “The community understands that this land is protected on a global level and that is very important for our future. We also understand that more benefits will accrue to the community, including job creation opportunities that will be derived from the WHS status, although that is still in process”.

The majority of the community understand that there can be limited use of the restored land inside the park due to it being a heritage site, Pienaar said. They accept that this protects their ancestral land for future generations, especially the sacred sites like the graves and heritage trees.

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From the land to the lab, tested maize products become a livelihood for rural women



BLOEMFONTEIN: “Maize is widely regarded as one of the most crucial agricultural products globally, serving as a staple food in many countries. It is estimated that by 2050, the demand for maize in developing countries would have doubled and that by 2025, it will become the crop with the highest global production,” says Dr Alba du Toit, Senior Lecturer in the Department of Sustainable Food Systems and Development.

She believes the efficient use of grains such as maize could reduce food insecurity and malnutrition in South Africa.

In 2021, the department – with its expertise and state-of-the-art facilities for food product development and sensory analysis – joined forces with Grain SA in a project to develop innovative food products for low-income communities in South Africa.

In this project, which will address two of South Africa’s major challenges, namely household food security and job creation, the group of scientists looked at a process called nixtamalization.

The nixtamalization process

Dr Du Toit explains the nixtamalization process. “In this exercise, the dried maize kernels are cooked and soaked overnight in an alkaline solution (lime water), washed, and hulled. The cooking and soaking process causes the outer covering of the maize to soften, resulting in it being easily separated and washed from the maize kernels. This product is now called nixtamal.”

“After washing, the nixtamal could be ground

to form a soft maize dough called masa. The nixtamal could also be ground coarsely to make wet masa crumbs that are dried in the oven. Once the masa crumbs are dry, they are ground even more finely to make a more refined flour that could be used in the same way as regular maize meal,” she adds.

Although most people prefer white maize, yellow maize or any colour of dried maize kernels is safe for human food use and can make tasty and nutritious masa.

Benefits of nixtamalization

Nixtamalization provides several benefits over unprocessed grains and can address some of the nutritional issues facing South Africans.

One of the benefits of nixtamalization is that it removes 100% of aflatoxins, the toxic compounds produced by moulds during the storage of dried maize kernels, which can cause liver damage and cancer. The nixtamalization process can also increase the nutritional value of maize, preventing malnourishment, especially the disease known as pellagra. The starch granules that are easier to digest; the maize that is easier to ground and processed, and the flavour of the maize that is improved, are some of the other benefits of this process.

Dr Du Toit says that any dish made with regular maize flour can be made using nixtamalised maize flour, with the benefit that it contains more nutrients.

Addressing socio-economic challenges

Besides its ability to contribute to food security, the project also has the likelihood of empowering women to start their own businesses.

Dr Du Toit says that through community training and product development, as well as business model development, many socio-economic challenges and food insecurity in low-income communities can be addressed in South Africa.

PhD and master’s students in the department have worked to develop recipes and products that could be easily produced, packaged, and marketed by women from low-income communities. In August 2021, a recipe booklet containing twenty developed recipes was produced and supplied to Grain SA.

The products that were developed, only used equipment that is available to the women. “A coffee mug serves as a measuring cup, a bottle as a rolling pin, and an upside-down jar as a cookie-cutter for the corn chips,” describes Dr Du Toit.

UFS Sensory Lab tests

According to her, they initially tested several products in the university’s state-of-the-art Sensory Lab. However, the two products that have been selected and are currently being developed, are dried putu pap (to be reconstituted in a flash) by Sisipho Rebe, and crispy corn chips by Taylon Colbert, both master’s students.

Testing consumers’ interest and reaction, the product was subjected to a range of tests. Under the guidance of Dr Carina Bothma, expert adviser in the Sensory Lab and Senior Lecturer in the Department of Sustainable Food Systems and Development, they used the jar test as well as the consumers’ overall liking test.

“A jar score means that 75% of the participants in the sensory tests give the just-about-right score to attributes such as taste, mouthfeel (texture), appearance, and aroma. Only then can the product be approved as being good enough. Using hedonic scaling in the consumer test, they determined the acceptability of the products’ appearance, aroma, taste, mouthfeel, and overall acceptability,” explains Dr Du Toit.

Identifying potential entrepreneurs

She says in the final step of the project, they will identify potential entrepreneurs who will receive guidance and training in business start-up, roll-out, and application. Pilot businesses will be set up and monitored; based on research, it will be decided whether these businesses will be upscaled to fully commercial and economically viable units.



Rice farmers doing A fantastic job in Nigeria

"But in the past few years, Nigeria has done a fantastic job in the production of rice locally, moving towards self-sufficiency."

The United Nations through its Food and Agriculture Organisation has described rice production by smallholder farmers in Nigeria as "a fantastic job".

It stated that though there were still a lot that should be done in the agriculture sector in Nigeria, the country had made considerable progress in rice production.

The Food and Agriculture Organisation of the United Nations Assistant Director-General and Regional Representative for Africa, Abebe Haile-Gabriel, disclosed this at a press briefing in Abuja on Wednesday.

Haile-Gabriel and the FAO Deputy Director of the Office of Emergencies and Resilience, Shukri Ahmed, are in Nigeria on a high-level mission to strengthen solidarity and amplify

the voice of humanitarian actors in advocating support to stem food insecurity across the country.

Commenting on the progress in the agriculture sector in Nigeria, the FAO regional representative said, "Nigeria used to be dependent on imported rice.

"But in the past few years, Nigeria has done a fantastic job in the production of rice locally, moving towards self-sufficiency.

"So Nigeria has done a lot, it may not be enough but that is why there is a need for partnership to support the efforts of the government."

The FAO, in a advisory on the visit of its officials to Nigeria, stated that delegation would also

reiterate FAO's commitment, at the highest level, to building resilience of agriculture-based livelihoods to multiple shocks.

It added that the team would speak on FAO's corporate strategic direction in agrifood systems transformation globally and specifically in Africa.

"The delegation will meet with selected senior government officials in the Federal Ministry of Agriculture and Rural Development and the Federal Ministry of Humanitarian Affairs, UN Heads of Mission and development partners in Abuja," the organisation stated.

This came as the Senior Special Assistant to the President on Agriculture in the Office of the Vice President, Andrew Kwesari, told journalists on the sidelines.



Tanzanian young farmer inspires youth

George Reuben Sanga checks the vegetables in his greenhouse in Dar es Salaam, Tanzania.

Agriculture is wealth. If one wants to make money, one should invest in agriculture because every human being needs food, which is unlike running a clothing shop where your customers are limited, says a young Tanzanian farmer.

George Reuben Sanga felt a thrill of pleasure as he walked around his 120-square-meter greenhouse at Makongo Juu in Dar es Salaam, Tanzania's commercial capital.

Sanga's farming area covering half a hectare is greenish throughout the year as he engages in the demonstration for irrigation farming, fisheries and poultry.

"Agriculture is wealth. If one wants to make money, one should invest in agriculture because every human being needs food. Unlike running a clothing shop where your customers are limited," 35-year-old Sanga told Xinhua in a recent interview.

Sanga said he was trained as a civil engineer at the technician level and got employment in a construction company. But he quit and in 2015 started his farming project called Waloma Investment with a slogan: Agriculture and Livestock Keeping Towards an Industrialized Nation.

George Reuben Sanga checks the vegetables in his greenhouse in Dar es Salaam, Tanzania, Sept. 16, 2022. (Photo by Herman Emmanuel/Xinhua)

"I decided to practice farming after I had undergone training on irrigation farming and fish farming in Dodoma region when I realized that agriculture is indeed the right answer to unemployment facing most youth in the country," he said.

The young farmer, who also grows chili on his four-hectare demonstration farm and another four-hectare pawpaw farm in Mkuranga district in the coast region with one of his trainee farmers, said he shares his farming knowledge with the youth who visit his farm from different parts of the country.

"I train them on how to plant various crops. I train them on the use of high-quality seeds. I train them on good seasons for planting various crops, including tomatoes," said Sanga. "Apart from training the youth, people who have retired from employment in private and public companies and people who have an interest in agriculture visit my place to learn the ABC of farming, fish farming and poultry."

He said among the beneficiaries of his project are students from the Sokoine University of Agriculture in the Morogoro region and students from a number of other agricultural colleges in the country.

George Reuben Sanga checks the vegetables in his greenhouse in Dar es Salaam, Tanzania, Sept. 16, 2022. (Photo by Herman Emmanuel/Xinhua)

"They come here with little knowledge about agriculture, but at the end of the day they go back home or to the colleges fully equipped with skills in farming activities," said Sanga, a father of two children.

Seven years of his project have seen him training more than 20 young farmers who right now have their own farms.

"I have also employed 10 youth farmers in my project and I have been visited by over 2,000 guests, mostly those who are keen to learn about farming, fisheries and livestock keeping," he said.

The farmer said he sells his produce to his community and to some schools and supermarkets in the business capital.

But like any other business, Sanga said he faced a number of challenges, including rising prices of farm inputs and climate change that is hugely impacting agriculture.

That aside, Sanga has one message to his fellow youth: "Since I started engaging in agriculture, my welfare has improved tremendously. And if one wants to succeed in life as a youth, one will get it on the farm."



Energy Valves sets a new benchmark in pneumatic actuators



that delivers several advantages. The compact dual piston rack and pinion design ensures a symmetric mounting position, a high life cycle and fast operation. Reverse rotation can be conveniently and rapidly accomplished in the field by simply inverting the pistons. Furthermore, the mounting of solenoids, limit switches and other accessories is easy. The actuators boast an extruded aluminium (ASTM6005) body with internal as well as external corrosion protection. The honed cylinder delivers longer life and low coefficient of friction. The CE approved V-ACT is ISO5211 and Namur compliant and manufactured under ISO9001:2000 certification. The rugged reliability of these actuators reduces the chance of failure, thus maximising uptime and productivity for end users.

"We understand the importance of uptime for business sustainability which is underpinned not only by quality products but also by excellent after-market service," notes Pillay. "To support our customers in the service space, we have employed a full-time qualified actuator technician and we carry stock of a full range of the fast-moving spares for the whole range of V-ACT actuators to ensure fast supply."

Pillay further unpacks EMVAfrica's commitment to assist customers in solving business challenges. "In line with our 3-S factor - Stock, Service and Solutions - we source and supply superior quality products from reputable global manufacturers, provide support and industry experience and implement a 360° approach to problem-solving."

The extensive valve offering from ISO 9001 certified EMVAfrica serves diverse applications within Southern Africa's mining, mineral processing, water treatment, petrochemical, power generation, food & beverage, and general industrial sectors.

The V-ACT is currently available in a pneumatic quarter turn option and Pillay reveals that Energyvalves will soon be expanding their offering to include a linear pneumatic actuator as well as an electric version.

EMVAfrica, a trusted and renowned BBBE-E level 4 single-source supplier of world-class industrial stainless steels and valves to Southern Africa's mining and industry, proudly introduces the new V-ACT. This superior quality pneumatic-operated rack and pinion actuator is suitable for the automation of new and existing quarter turn valves. V-ACT is the best choice for butterfly and ball valves and offers a proven solution for automated centralised control.

"The growing global trend by industry to move towards automation is driving a demand for actuated valves, with South Africa being no

exception," says Preshan Pillay, Valves Product Manager at EMVAfrica. "After identifying a great opportunity in the local market for high quality, reliable actuators, we searched for a suitable manufacturer whose product would match our valve portfolio in terms of quality and reliability. The V-ACT ticked all the boxes. The actuator extends and complements our current comprehensive valve holding and is ideal for any industry that uses valves." Pillay adds that the unit is particularly suitable for the manufacturing sector where automation is required to control different processes.

The V-ACT features a simple yet smart design



The business model of Ghana's TROTRO Tractor

When Emmanuel Ansah-Amprofi discovered the high price of imported onions at a local market in Cape Coast, Ghana, he decided to enter the agriculture sector. The entrepreneur says he was shocked that vegetables such as onions and carrots were imported from Europe to meet demand.

Emmanuel Ansah-Amprofi, CEO and co-founder of TROTRO Tractor.

"If you visit markets in Ghana, you will still find onions from the Netherlands and carrots from Belgium. This angered me, so I started the Farmers' Apprentice in 2014; a multi-media campaign and behaviour change project designed to change the face of farming and encourage more young people into the sector," he says.

In 2016, while searching for sponsorship for the

Farmers' Apprentice, he received an invitation from oil and gas company Kosmos Energy to join its CSR programme, Agritech Challenge. He won a competition at the event, which came with a prize of US\$60,000 and a one-year incubation with Meltwater Entrepreneurial School of Technology (Mest Africa), a seed funding organisation based in Accra, Ghana.

Ansah-Amprofi realised many farmers cannot afford the average price of \$30,000 for a tractor, so he started TROTRO Tractor with two agriculture enthusiasts he met at the event.

"TROTRO Tractor is the Uber for tractors. We digitally connect people in the agriculture sector to farm implements and machines. For example, you can log a request via our web-based or mobile app and have a tractor at your farm within 72 hours. This can include ploughing, harrowing and planting services or anything along the farming value chain," he

explains.

TROTRO Tractor has its headquarters in Accra, Ghana, and an administrative office in Abuja, Nigeria. It also operates in Togo, Benin, Zambia and Zimbabwe and there are currently 65,000 farmers and 3,200 tractors on its platform.

The business model

To access TROTRO Tractor services, farmers pay about \$25 per acre of land for ploughing, harrowing, ridging, or planting in countries where it operates. A farmer can request a tractor and get it within 72 hours or book in advance for a specific date.

The company aggregates demand so a tractor can work on eight to 10 acres daily. Tractor owners, on the other hand, pay between \$85 and \$125 to be on the platform, depending on the type of equipment they operate.



"The tractor owners make 90% of all the transactions that come to the platform while we take the remaining 10%. The GPS on the tractor helps us to calculate the amount of work done and we pay only once the farmer is satisfied," adds Ansah-Amprofi.

Growing the company

In the beginning, Ansah-Amprofi set up a team with his co-founders and visited farms. "We came across a farmer who had close to five hectares of land that needed to be ploughed. Later, we came by a red tractor during an inspection and spoke to the owner. He accepted the assignment of ploughing the farmer's land as there weren't any other available jobs. He was our first tractor client and went on to handle other projects in his region. Subsequently, we signed up a second and third supplier. We gave them all GPS devices for their tractors to make it easier to track and assign jobs."

The company began advertising on social media and radio as well as participating in agricultural exhibitions. It also expanded its network of tractor owners and farmers through outreach programmes; people were assigned to communities to speak about modern farming implements and techniques.

"We thought most tractor owners knew how to plough farms, but we soon realised many didn't understand sustainable practices," Ansah-Amprofi explains. The company therefore adapted the platform to allow it to train tractor owners during the onboarding process.

They collaborated with GIZ, a German development agency; Ghana's Ministry of Food and Agriculture; and the Alliance for a Green Revolution in Africa (AGRA) to train tractor operators. In addition, they received \$250,000 from AGRA to onboard 50,000 Ghanaian farmers in a project called Financial Inclusion for Smallholder Agriculture Productivity, in partnership with an agricultural equipment services company Agro Africa Ghana.

"These collaborations gave us a lot of mileage in terms of learning. It was our first time working with developmental partners and it helped us to streamline our activities such as auditing, monitoring, evaluation and best practices that became part of the bedrock of our business success," he adds.

Connectivity challenges

TROTRO Tractor did not have funding issues like many other businesses at the outset. However, its major challenge was a lack of internet connectivity in rural areas. To address the problem, the company met with telecom service providers and developed a USSD code that works on all phones and is not dependent

on internet connectivity.

"The USSD is toll-free and each country where we operate has a unique code. When somebody places a request, it appears on our dashboard, where we process and capture the data for subsequent uses. This is how we register the farmers on our platform."

Expansion plans


TROTRO Tractor has plans to partner with African governments to improve food production through mechanised farming. The company will focus on East Africa and Francophone countries in West Africa in the next few years.

"Africa needs to get it right. Nigeria alone has about 35 million hectares of arable land but

needs close to 190,000 tractors to be able to meet the mechanisation needs of its farmers. Ghana needs 17,000. This is the reason we still have low harvests despite our vast land and good weather.

"Through digitalisation, we stand a chance to solve the problem of food sufficiency in Africa. We need to do more in terms of post-harvest losses. I believe if we have improved farm power, better farming methods and access to patient finance, we will see more young people enter the agriculture value chain. The image of farming with hoes and cutlasses is no longer appealing," Ansah-Amprofi notes.

TROTRO Tractor CEO Emmanuel Ansah-Amprofi's contact information.






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Sh100 Million Pilot Program To Boost Fish Farming Launched

Fish farmers from Nyanza and Eastern regions of Kenya are set to benefit from a Sh100 million pilot program aimed at boosting yields and profits.

The program rolled out by Lattice Aquaculture with funding from Sustainable Trade Initiative (IDH) aims at increasing profitability through a data-driven integrated ecosystem approach.

The approach which is the first of its kind in the country brings together all the stakeholders involved in fish farming.

Lattice Aquaculture East Africa Regional Head Julie Muyela said the initiative brings together farmers, feed manufacturers, fingerlings producers, suppliers, aquaculture institutions, buyers and Micro-finance institutions.

Fifty smallholder farmers from the two regions, she said, have been identified and will be trained on best aquaculture practices to enable them appreciate both the technical and business angles of fish farming.

They will then be linked to input suppliers who will deliver high quality feeds and fingerlings in addition to doing farm follow ups to ensure their farms are efficient.

"We realized that fish farmers in Kenya struggle to make their businesses profitable. This is due to lack of access to finance and markets, poor inputs and insufficient technical skills. This

program tackles all these challenges," she said.

In an interview with KNA, Muyela said the program has brought on board financial institutions and an off taker to guarantee farmers access to credit and ready market.

Two financial institutions, she disclosed have been included in the ecosystem to cater to the farmers' aquaculture financial needs.

The institutions, she added, have been trained on aquaculture business scenarios to enable them develop tailor made products for fish farmers.

"This project adopts the take aquaculture to the banks strategy. We are also going to train the farmers on requirements of the financial institutions to make them credit-ready," she said.

On markets, the off taker, she disclosed, will buy at least 80% of the fish produced by each farmer at a competitive price.

Muyela added that the off taker has developed a mobile phone application to keep track of farmer locations, production, sales and prices in the targeted regions.

Lattice Aquaculture Technical Project Manager John Erick said the initiative will rely heavily on data from all the stakeholders involved to ensure successful commercialization of the fish farms.

"Data will provide farmers with insights into efficiency and profitability, such as feed costs throughout the cycle, feed usage, feed conversion ratios, cost price, revenue, good business practices among other things," he said.

The financial institutions in the program, he added, will also use the data to build a business case for aquaculture financing in Kenya.

According to the Food and Agriculture Organization (FAO), Kenya has a huge aquaculture potential.

The country has over 1.14-million-hectare potential area suitable for fish farming with capacity to produce over 11 million metric tonnes of fish worth Sh750 billion.

However annual fish production in the country stands at 150,000 metric tonnes against a demand of 900,000 metric tonnes.

IDH Aquaculture Program Manager Beth Wagude said the pilot project targets to increase production by 15,000 metric tonnes.

The findings of the pilot, she added, would inform policy to pave the way for a national rollout of the program to help bridge the huge gap in production.

By Chris Mahandara



Kenya's Valuable Livestock Dwindles As Drought Rages On



"It's not the (countries) ironically that are contributing more to that global emission that are paying the heaviest price,"

While climate change has created drought conditions across the world — from India to California and Argentina to France — Kenya, Ethiopia, and Somalia, as well as many other parts of the African continent, have faced the extreme hand of nature for the last four rainy seasons, severely impacting agriculture, including livestock herds.

Alton Brown's Take On Will Smith's Oscars Drama Has Fans Divided

According to OCHA's ReliefWeb, Kenya has two rainy seasons annually: March-May and October-December. But the rain has been slow to come or quick to end for the past several seasons, so rainfall amounts have dwindled. The European Commission called Kenya's most recent rainy season one of the worst droughts the country had seen in 70 years. They forecast that this troubling trend will continue through the October-December season as well.

notes that 98% of Kenya's agriculture sector is reliant on rain, not irrigation, from water crops to pastures and livestock. According to Reuters, the recent lack of rain forced 1.5 million people



to flee their homes in search of food and water, and it has devastated crops and decimated livestock.

Drought impacts Kenya's livestock

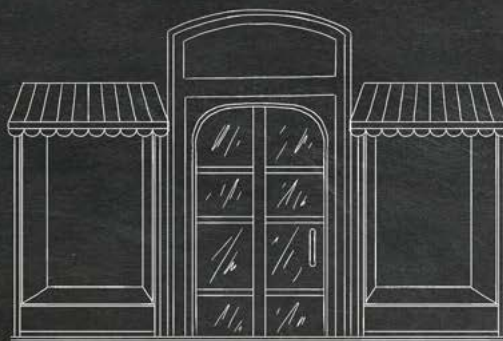
Maria T Hoffman/Shutterstock

Under normal conditions, Kenya's livestock farming sector is robust, with 10 million farmers earning their living from pasturage; the sector is responsible for 12% of Kenya's domestic gross product (via Gatsby Africa). However, Reuters reports the parched pastures of the past four seasons are leaving cattle and other livestock with nothing to graze. Herder Ali Hacho Ali tells the outlet only five cows of

his herd of 70 remain alive. According to the European Commission, the current four-season drought is the most significant and prolonged crisis in the country since 1981.

Mohamed Malick Fall, UNICEF's regional director for eastern and southern Africa, tells Reuters that Kenya is facing severe effects of climate change even though the country has low carbon emissions. "It's not the (countries) ironically that are contributing more to that global emission that are paying the heaviest price," he says to the wire service. "And here comes the notion of equity and justice: Why should I pay such a heavy price for something for which I have not contributed so greatly?"

Business DIRECTORY



Listings

Agricultural Consultancies

- ICS France
- Valtra Inc. - Africa

Agricultural Equipment - General

- Alvan Blanch Development Ltd.
- Baldan/Pan Trade Services Ltd.
- Bentall Rowlands Storage Systems Ltd.
- Briggs & Stratton AG
- Case IH
- Deutz-Fahr
- Eurodrip SA
- Fairtrade GmbH & Co. KG
- ICS France
- Micron Group
- New Holland Agriculture
- Nogueira/Pan Trade Services Ltd.
- SAME
- Valtra Inc. - Africa

Agricultural Projects

- Bentall Rowlands Storage Systems Ltd.
- Eurodrip SA
- ICS France
- Symaga SA

Animal Health Products

- BioPoint
- Socorex Isba SA

Applicators for Granular Insecticides, Herbicides

- Guarany Ind. Com. Ltd.

Automatic Chain Feeders

- Big Dutchman International GmbH

Bagging plant

- Bentall Rowlands Storage Systems Ltd.

Bale Handling Equipment

- Nogueira/Pan Trade Services Ltd.

Biofuel/Biodiesel

- Bentall Rowlands Storage Systems Ltd.

Briquetting Plants

- Alvan Blanch Development Ltd.

Bulk Storage Equipment

- Alvan Blanch Development Ltd.
- Bentall Rowlands Storage Systems Ltd.
- Chief Industries UK Ltd.

- KEPLER WEBER

- Symaga SA

- The GSI Group South Africa (Pty) Ltd.

Cages & Batteries

- Big Dutchman International GmbH

Cassava Processing Equipment

- Alvan Blanch Development Ltd.

Centre Pivot Equipment

- Valmont Irrigation

Cocoa Production

- Alvan Blanch Development Ltd.

Coffee Processing, Handling & Storage

- Swingtec GmbH

Computers & IT Equipment

- Big Dutchman International GmbH

Conveyors and Elevators

- Awila Anlagenbau GmbH
- Big Dutchman International GmbH
- KEPLER WEBER
- Lubing Maschinenfabrik
- GmbH & Co. KG

Coolers - Environmental

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Coolers - Evaporative

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- GmbH & Co. KG

Cotton Handling & Storage

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Crop Drying and Ventilation

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Crop Handling & Storage

- Alvan Blanch Development Ltd.
- Bentall Rowlands Storage Systems Ltd.
- Chief Industries UK Ltd.
- Griffith Elder & Co. Ltd.
- Swingtec GmbH

Crop Protection Equipment

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- Jacto/Pan Trade Services Ltd.
- Swingtec GmbH

Cultivators

- Baldan/Pan Trade Services Ltd.
- LEMKEN GmbH & Co. KG
- Poettinger

Cultivators - Tined

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- Briggs & Stratton AG
- Maschio Gaspardo S.p.A

Disinfectants

- Intraco Ltd. n.v

Drills

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Drinking Systems

- Big Dutchman International GmbH
- Fairtrade GmbH & Co. KG
- Lubing Maschinenfabrik
- GmbH & Co. KG

Dryers

- Alvan Blanch Development Ltd.

Egg Collection

- Big Dutchman International GmbH

Egg Layer Breeding Stocks

- Lohmann Tierzucht GmbH

Egg Layer Parent Breeders - Brown

- Lohmann Tierzucht GmbH

Egg Layer Parent Breeders - White

- Lohmann Tierzucht GmbH

Egg Layers

- Lohmann Tierzucht GmbH

Exhibitions and Conferences

- Fairtrade GmbH & Co. KG

Extruders for Food, Feed

- Alvan Blanch Development Ltd.

Feed Additives

- BioPoint

- Coprex
- Evonik Industries AG
- Intraco Ltd. n.v
- OLMIX
- Varied Industries Corporation (Vi-COR®)

Feed Concentrates

- Intraco Ltd. n.v

Feed Growth Promotant Probes

- Varied Industries Corporation (Vi-COR®)

Feed Ingredients

- Coprex
- Intraco Ltd. n.v

Feed Premixes

- Coprex
- Intraco Ltd. n.v

Feed Processing Plants

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- Bentall Rowlands Storage Systems Ltd.

Feed Supplements

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- Varied Industries Corporation (Vi-COR®)

Feeding Systems

- Big Dutchman International GmbH

Fertiliser Spreaders

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- Guarany Ind. Com. Ltd.
- Maschio Gaspardo S.p.A
- PICHON

Fertilisers

- Hebei Monband Water Soluble
- Fertilizer Co. Ltd.
- Omex Agrifluids Ltd.

Fish Farming

- Socorex Isba SA

Fish Feeds - General

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Fogging Machines

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- Swingtec GmbH

Foliar Fertilisers

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- Fertilizer Co. Ltd.
- Omex Agrifluids Ltd.

Food Processing Equipment

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Forage Harvesters

- Case IH
- New Holland Agriculture
- Nogueira/Pan Trade Services Ltd.
- Poettinger

Forestry Equipment

- Bomford
- Guarany Ind. Com. Ltd.
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Fruit Processing

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Generating Sets

- Briggs & Stratton AG

Genetic Research

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Grain - Drying & Ventilation

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Grain - Handling, Cleaning & Processing

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- Bentall Rowlands Storage Systems Ltd.
- Chief Industries UK Ltd.
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Grains, Grain Projects & Edible Oils

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- Poettinger

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- John Deere (Pty) Ltd.

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- Bentall Rowlands Storage Systems Ltd.
- Deutz-Fahr
- John Deere (Pty) Ltd.
- New Holland Agriculture
- Nogueira/Pan Trade Services Ltd.
- Bomford

Horticultural Equipment & Machinery

- Guarany Ind. Com. Ltd.
- ICS France
- Micron Group
- Swingtec GmbH

Horticultural Fertilisers

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- Fertilizer Co. Ltd.

Integrated Pest Management

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- Swingtec GmbH

Irrigation & Drainage Systems

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Irrigation Equipment

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- ICS France
- Valmont Irrigation

Listings



Maize Shellers

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- Bomford
- Nogueira/Pan Trade Services Ltd.

Manure Composters & Dryers

- PICHON

Material Handling

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- PICHON

Material Handling - Bulk

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Micronutrients

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- Big Dutchman International GmbH

Mills

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- Big Dutchman International GmbH
- Privé SA

Mills - Grain

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- F.H. Schule Muehlenbau GmbH
- Nogueira/Pan Trade Services Ltd.
- Privé SA
- Silos Cordoba S.L.

Mills - Hammer

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- Nogueira/Pan Trade Services Ltd.

Monitoring Equipment

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Oil Extraction Equipment

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Packaging Machinery

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Palletizers

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Pelleting

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- Awila Anlagenbau GmbH

Pig Equipment

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- Gmbh & Co. KG
- Symaga SA

Pig Feeding/Drinking Equipment

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Pig Flooring

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Pig Health Products

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- Socorex Isba SA

Pig Housing

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Plant Protection Chemicals

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Planters

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- Poettinger

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- Vellag Ltd.

Ploughs - Mouldboard

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- LEMKEN GmbH & Co. KG
- Poettinger

Poultry Consultancy Services

- BioPoint

Poultry Equipment - Drinking

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- Lubing Maschinenfabrik GmbH & Co. KG
- Silos Cordoba S.L.
- The GSI Group South Africa (Pty) Ltd.

Poultry Equipment/Handling

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Poultry Feeding

- Bentall Rowlands Storage Systems Ltd.
- Big Dutchman International GmbH

Poultry Health Products

- BioPoint
- OLMIX

Poultry Housing

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- Silos Cordoba S.L.
- Symaga SA

Public Health

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- Swingtec GmbH

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- Briggs & Stratton AG

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- Bentall Rowlands Storage Systems Ltd.
- F.H. Schule Muehlenbau GmbH

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Seed Cleaning Equipment

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Seed Planting Equipment

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- LEMKEN GmbH & Co. KG

Silos

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- Awila Anlagenbau GmbH
- Bentall Rowlands Storage Systems Ltd.
- Big Dutchman International GmbH
- Chief Industries UK Ltd.
- KEPLER WEBER
- Privé SA
- Silos Cordoba S.L.
- Symaga SA
- The GSI Group South Africa (Pty) Ltd.

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- Omex Agrifluids Ltd.

Spare Parts for Fork Lift Trucks

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- Jacto/Pan Trade Services Ltd.
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- GOIZPER GROUP
- Guarany Ind. Com. Ltd.
- Jacto/Pan Trade Services Ltd.
- Micron Group

Spraying Nozzles & Components

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- Guarany Ind. Com. Ltd.
- Jacto/Pan Trade Services Ltd.
- Micron Group

Stored Products Protection

- Swingtec GmbH

Sugar Cane Equipment

- Case IH

Sugar Cubing Machinery

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Threshing Machines

- Nogueira/Pan Trade Services Ltd.

Tillage

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- Maschio Gaspardo S.p.A

Trace Elements

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- Fertilizer Co. Ltd.
- OLMIX
- Omex Agrifluids Ltd.

Tractors

- Case IH
- Deutz-Fahr
- John Deere (Pty) Ltd.
- New Holland Agriculture
- SAME
- Valtra Inc. - Africa
- Vellag Ltd.

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- Case IH
- Deutz-Fahr
- New Holland Agriculture
- SAME
- Vellag Ltd.

Trade Shows

- Fairtrade GmbH & Co. KG

Traders in Agricultural Equipment, General

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Turnkey Operations

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- Valmont Irrigation

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- Swingtec GmbH

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- PICHON

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Weighers - Animal

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- Griffith Elder & Co. Ltd.

Weighers - Grain

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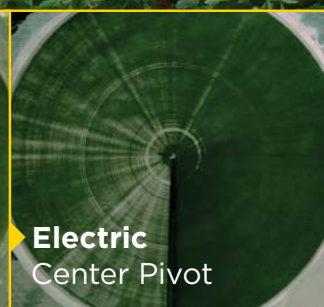
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