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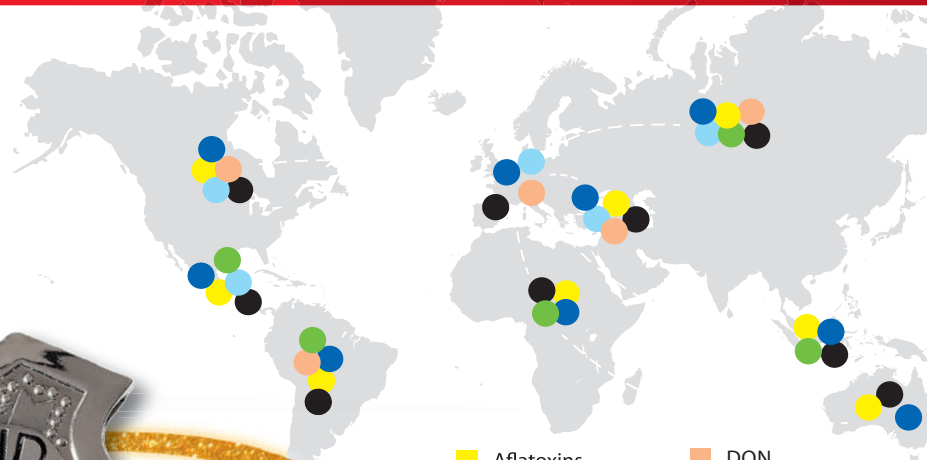
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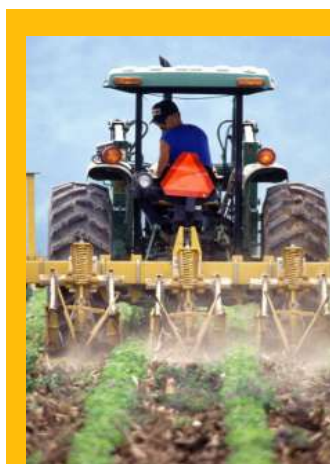
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Moving Parts Tractor Spares started in 2014 as a 1 person business, with already 10 years of experience with tractor spares, now 8 years later we are one of the biggest aftermarket tractor spares company in the capital city of Kwa-Zulu Natal. We sell ALL spares for ALL tractors, while we can't carry every part in stock, whatever we don't have we can order in overnight.

We are authorised distributors for Vapormatic one of the largest ranges of replacement tractor parts and accessories in the industry. Distributing parts throughout the UK



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October - December 2022

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From the Editor

The farmer. The farming season. Machinery. The Supplements. The Produce. From the beginning of the year, the African Agriculture Magazine has delivered on its promise of bringing news updates worthy of reading, technologies, trends and developments in the Agri-Sector.

Organics and genetics. Big agriculture. Small farms. Obesity and famine. Comfort food and people's rights. Food is everywhere. It pervades every aspect of our lives.

With this edition, African Agriculture Magazine is trying something new: We've shared the incredibly work of the young farmers, helping them overcome significant hurdles. And we've written about what it's like to start as a young farmer, including many first-person accounts by new and young farmers. We've explained what it means to be a farm apprentice, the difference between being an apprentice and an intern, and how to get the most out of your time on a farm, and published several stories featuring different farm experiences.

So in these pages, more than ever before, we are presenting a diversity of perspectives to help us all see agriculture in new

ways. And to make utterly clear how farming is in the fate of this planet we all love.

Farmers stand out in today's culture for their ability to make actual decisions, not just choices. Now the rewards for choosing which decisions to make are about to multiply.

Without continual growth and progress, such words as improvement, achievement, and success have no meaning.

Most farms have a work regimen that uses the winter to ensure their equipment, inputs and workforce are all perfectly prepared for peak performance the day they can hit the field in the spring.

Now there's a counterpoint in the business cycle too. It emphasizes using the summer to ensure the farm is primed to make maximum gains from its business management opportunities once the field-work slackens.

When farmers have a good year, allied industries benefit by spending the financial gains from the produce of the farming businesses.

Dig in.

Thank you,

Editor

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JackPack - PTO PowerPack for Planter Vacuum Fan Drive



HPG Jack-Pack

The Jack-Pack is a PTO Driven Hydraulic Power Pack with multifunctional uses for 540rpm (standard), and upon request for 1000rpm unit.

1. The 540 PTO Drive can run a 4 row – 8 row Vacuum Planter with a Single Vacuum Fan (suggest use with 12V 120 litre oil cooler).
2. The 1000 PTO Drive can run a 4 row – 15 row Vacuum Planter with a Single Vacuum Fan (suggest use with 12V 120 litre oil cooler).



3. OTHER APPLICATIONS / USES

- 3.1 Can be used as hydraulic motor drive for small augers and small conveyers for short periods of time – limited to use with oil cooler.
- 3.2 Double acting front end loaders requiring less than 20 litres hydraulic oil.

4. BENEFITS / ADVANTAGES

- 4.1 Oil volume 20 Litres.
 - 4.2 All parts available as replacements parts to maintain the Jack-Pack.
 - 4.3 Low maintenance.
 - 4.4 Quick fit by means of a torque arm fitted on the Jack-Pack including locking attachment on the Tractor PTO Shaft.
 - 4.5 Compact: Measurements 300 x 300 x 300mm.
5. Included in our standard product range is the 12V 120 litre oil cooler needed to support and protect the above systems functionality.



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Moving Parts: Your tractor spares partner

Moving Parts Tractor Spares started in 2014 as a 1 person business, with already 10 years of experience with tractor spares, now 8 years later we are one of the biggest aftermarket tractor spares company in the capital city of Kwa-Zulu Natal. We sell ALL spares for ALL tractors, while we can't carry every part in stock, whatever we don't have we can order in overnight.

We are authorised distributors for Vapormatic one of the largest ranges of replacement tractor parts and accessories in the industry. Distributing parts throughout the UK and exporting to over 90 countries around the world, Vapormatic is a B2B business that has been servicing customers in the agricultural industry for over seventy years. Founded in 1949 as an engineering business, today Vapormatic offers over 30,000 tractor and agricultural machinery parts for all makes. This portfolio is supported by industry leading quality control, warranty and unrivalled technical support. Customer focused, Vapormatic is



committed to delivering its company values of Quality, Availability, Service and Value.

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JOSKIN Polska is Expanding...



Since March of this year, the JOSKIN Polska site has undergone a major development with the construction of a new storage hall with a floor area of over 12,000 m² and a volume of almost 100,000 m³.

With this new building, the total area of the JOSKIN Polska site will be increased to 73,000 m². This site includes several welding lines, a galvanising plant, semi-automatic painting lines, assembly lines for some of our products (slurry tankers, muck spreaders, dropside tipping trailers, bale trailers and low loaders, spreading implements, silage trailers and livestock trailers) and a showroom. More than 350 people work there every day.

JOSKIN: looking ahead to the coming years...

As part of the JOSKIN Group's long-term development strategy, the 163 m long and 87 m wide building, which is scheduled for provisional acceptance in early 2023, will have



one storey, four aisles, 13 doors and several overhead cranes. The main goal of this building will be to increase the existing storage capacity, but also to allow changes to the current organisation of the site. In particular, the high-bay warehouse of the assembly workshop, which is currently located in the existing buildings, will be moved there.

Optimise space to increase productivity!

These moves will optimise internal transport, improve work organisation and centralise

semi-finished products in one area. In total, about 40 people will be employed there. The hall will be ideally located between the assembly areas and the JOSKIN galvanising plant, so it can be supplied quickly and efficiently.

Moor space for assembly...

With the expansion of the JOSKIN Polska site, there will be more space in the existing buildings. The assembly lines will be expanded to take in new operators in order to increase the Group's overall productivity.

Radar is a better ultrasonic: VEGA

Jürgen Skowaisa, product manager Radar at VEGA Grieshaber KG in Schiltach, Germany, speaks about their new series of sensors

What applications can the sensors be used for and what makes them different?

Jürgen Skowaisa: Radar sensors are designed for a wide pressure and temperature range, which is what makes them expensive. In a lot of applications, there are no high temperatures or pressures, but radar would still be the ideal technology. Those are the applications we are focusing on with the new radar devices. Our main focus is the water and wastewater industry, where ultrasonic is still the most commonly used technology. But there are many other applications in which radar has often proved to be the best choice, e.g. in power plants, small chemical tanks and in applications in the food & beverage industry that have lower demands on hygienic design. We also see great potential in the bulk solids industry, from building materials to various applications in pet food production.

For the new series, you designed a completely new radar microchip. How long did that take and what features did you focus on in the design process?

JS: Radar is being used more and more in the automotive industry. There are now radar modules for use in simple distance measuring systems. However, these modules are not suitable for radar level sensors that have to meet the high demands of industrial process automation. Their power consumption is too high and their frequency ranges don't fit. That's why we decided to design our own radar chip optimised for level measurement. Working with a microwave semiconductor design company and a semiconductor manufacturer with broad experience in high frequency technology, it took us three years to create the final version of our own radar chip – perfectly designed for a new generation of radar sensors. During its development, our main focus was on low power consumption, an optimised frequency range for level measurement as well as high accuracy.



What are the main advantages of these sensors from a technological point of view?

JS: There are many differences between sound waves and electromagnetic waves. Sound waves are strongly influenced by temperature, pressure and different gases. If an ultrasonic sensor is mounted outdoors, it needs a sun shield or an external temperature sensor to compensate for the heat generated by sunlight. In bulk solids applications, dust and filling noise cause huge problems for ultrasonic measurement because dust absorbs the sound waves and the intense noise makes it difficult to detect the echoes. Radar signals, on the other hand, are not influenced at all by such conditions. This makes radar sensors universal, highly reliable and extremely accurate.

What's the difference between the new sensors and the other radar sensors produced by VEGA up to now?

JS: Our typical radar sensors are always customised to meet the requirements of the particular application and industrial sector, for example when it comes to process fittings, and also to fulfill the special wishes of our customers. The sensors come with the certifications and approvals required by each individual industry. We offer standard plastic

housings as well as metal housings of aluminum or stainless steel. But no so-to-speak 'standard sensors' are kept in stock. The new radar devices are made for standard applications with standard process conditions.

In what environments can the new sensors be used and what are the interfaces you can provide?

JS: Even in simple applications, it is sometimes absolutely necessary to use an Ex- approved sensor. VEGA provides all essential approvals for use in hazardous areas, for gas and dust applications. The encapsulated sensor for gas ex applications in Zone 1 or 2 is completely new. With this version, it's not necessary to provide an intrinsically safe power supply. The sensor can be directly connected to a PLC without any barriers, which makes it very easy to use a radar sensor. A loop-powered analogue signal of 4 ... 20 mA is perfect for more than 90% of all applications. VEGA also provides Modbus and the SDI-12 standard protocol for the hydrological market.

Tractor manufacturer SDF takes over vineyard robot builder VitiBot

“Sustainable and digital agriculture is a key factor of our development. After a deep scouting, we realized that VitiBot is the best solution for vineyards that allows us to enrich our tractor offer with self-driving and zero-emission electric vehicles”, said Lodovico Bussolati, CEO of SDF. “Now the goal is to support the company development and the product industrialization, satisfying a market demand that we think will be continuously growing in the future.”



The European agricultural equipment manufacturer SDF is taking a majority stake in VitiBot, the French developer of vineyard robots. The two companies join forces to develop and offer the market a range of innovative and high-performance solutions for precision agriculture.

VitiBot is a French startup based in Reims. The company offers Bakus, a 100% electric and autonomous straddle tractor.

SDF is a manufacturer of tractors, harvesting machines and diesel engines. It distributes products through the Same, Deutz-Fahr, Lamborghini Trattori, Hürlimann and Grégoire brands.

Accelerate development of precision agtech

SDF's priority focus today are unmanned operation, precision agriculture, digital services, collection and management of agronomic data, and introduction of electrification technologies for farm equipment.

With VitiBot, the company aims to benefit from the contribution of highly qualified teams with specific know-how to achieve these goals quickly and effectively.

Self-driving and zero-emission electric vehicles

“Sustainable and digital agriculture is a key factor of our development. After a deep scouting, we realized that VitiBot is the best solution for vineyards that allows us to enrich our tractor offer with self-driving and zero-emission electric vehicles”, said Lodovico Bussolati, CEO of SDF. “Now the goal is to support the company development and the product industrialization, satisfying a market demand that we think will be continuously growing in the future.”

Currently, over 50 Bakus robots are in use in vineyards around the world. VitiBot says its order books are full and its network of dealers is growing.

The VitiBot Bakus is a viticultural straddle robot that integrates a wide range of modular tools. After careful consideration, French wine grower Yannick Robiglio decided to buy one. He has been working with it for a year now. What are his experiences? *Future Farming* visited Yannick Robiglio in order to find out.

John Deere 5E Utility Tractors: Built for Africa

Golden opportunities were opened for farmers when, in June 2021, Tata Zambia and John Deere partnered and expanded their footprint within the Zambian community to support a fast growing agricultural and construction market.

"We are committed to providing our services in Africa and the Middle East, allowing customers continued access to agricultural solutions, as well as new construction solutions from John Deere," says Cobus du Toit, Business Head for agricultural and construction equipment at Tata Zambia.

Cobus adds: "The past year we have seen exceptional growth and we are excited for what the future holds for us at John Deere while we plan to expand our footprint even wider in Zambia as well as the rest of Africa."

John Deere's exceptional service

"We understand what our communities need and only supply equipment created and designed for African conditions. We always put our farmers first. It is important for us to build a trusted relationship with the farmers. We know the importance of time on a farm; therefore, we want to limit downtime to the minimum by ensuring that we always have enough parts available and reassuring the farmers that we are only a phone call away," says Cobus.

"Our wide network of platforms also ensures that farmers can easily get access to our branches and technicians. We have an exceptional team of technicians ready to assist farmers with their specific needs. We currently have four branches based in Lusaka, Kitwe, Mpongwe and Mkushi," Cobus says.

The John Deere Zambia team.

Best seller

In Zambia you will find John Deere's 5E Series Tractors from the north to the south. Once you have seen it on your neighbour's farm, faithfully working year after year, you will decide to get one on your farm.

Cobus explains his opinion on the reason why John Deere 5E Series Tractors are so popular: "John Deere's utility tractors are built to give you the best performance



while saving you money on fuel and maintenance. These tractors are designed to perform in the harshest conditions; John Deere tractors always show up ready to handle any task you give them.

"The 5E tractors are built to work longer and smarter, they are designed to provide a low cost of ownership through reduced fuel consumption and less maintenance costs compared to others in their class.

"We ensure that there is at least one or two 5E Series tractors available at each branch. Once you have seen it, you will not be able to say no. Every farmer needs a 5E workhorse tractor on his farm," Cobus concludes.

Wide range offering

"Not only are the 5E tractors a hit in Zambia, we have recently introduced the 5D series tractors to the market. They are also doing exceptionally well, especially amongst the new-era farmers. Our 6B, 6M and 8R tractors are also becoming very popular.

John Deere's 5E tractors: Your ultimate workhorse.

"Not only do we provide top class agricultural equipment, but also construction equipment for all segments of the industry, from TLBs to bulldozers, from small excavators to large ADTs, our machines work hard to help you succeed," states Cobus.

Financing options

Customers wishing to finance either agricultural or construction equipment can reach out to John Deere Financial for tailor-made financial solutions for purchasing John Deere products. John Deere's goal is to provide superior customer care and quality products. They are always ready to handle any task. John Deere's utility tractors, machinery and equipment are just what you need for a job well done.

For more information, visit their Facebook page (www.facebook.com/TataZambiaEquipment), or LinkedIn profile (www.linkedin.com/company/tata-john-deere-zambia), or send an e-mail to jd.zambia@tatainternational.com. Contact them on (+26)076-217-2412, or visit them at Plot 26593, Kafue Road.

Pöttinger presents new grassland products

Grassland specialist Pöttinger has once again launched a new range of innovations for the new season, with something new for every link in the harvesting chain – from mowing, tedding and raking to loading

NOVACAT V 10000: The new standard in mowing

The new mower combination combines high output with the best possible ground tracking and the greatest reliability thanks to intelligent technology. The NOVACAT V 10000 is available with a headstock for 3.0 or 3.5 metre wide front mowers. This makes working widths of up to 9.62 and 10.02 metres possible.

New HIT V 11100 – Powerful and compact

With its 1.42 metre rotors and 10.70 metre working width (DIN), the HIT V 11100 combines excellent tedding quality with maximum output. While the HIT is inconspicuously small during transport, it unfolds to reveal stunning dimensions in the field. It also boasts an impressive array of technical refinements.

TOP 882 C: The new large centre-swath rake

Pöttinger has added the new TOP 882 C to their range of popular centre-swath rakes. The TOP 882 C demonstrates its full capabilities at a working width of 7.70 to 8.80 metres. The longer boom allows very flexible swath width adjustment between 1.30 and 2.60 metres. Flexibility that offers the advantage of wider swaths for forage harvesters and narrower swath widths for small loader wagons. Despite the impressive rotor diameter of 3.70 metres, the transport height without removing the tine arms is still below 4.00 metres.

New belt-type rake MERGENTO VT 9220

The new MERGENTO VT 9220 belt-type rake (with working widths of up to 9.20 metres for a central swath and 8.70 metres for a side swath) is designed for alfalfa, clover, and a wide variety of crops from permanent grassland to straw. MERGENTO collects the forage using the pick-up. Without



further contact with the ground, cross conveyor belts transport the forage to the swath.

The new JUMBO 8000 chops much shorter

With the new short chop system, the world market leader in loader wagons has taken another step further. The new JUMBO 8000 chops the forage almost 30% shorter: This means even higher forage quality without compromising on loading performance. Protected to a torque of 3,500 Nm, the loader wagon can now deliver higher throughput rates than a self-propelled forage harvester.

Contactless steered axles on the JUMBO

Agricultural machinery manufacturer Pöttinger underlines its world market leadership in loader wagons with innovative developments to its flagship, the JUMBO: Convenience and safety have a very high priority. The new contactless, electronic steered axles on the JUMBO loader wagon significantly improve operating and

driving comfort as well as the reliability of the steering system.

Developed together with ME MOBIL ELEKTRONIK GMBH, the system was launched on the JUMBO loader wagon first.

BOSS 3000 MASTER, the new benchmark

The BOSS 3000 MASTER complements the product range of loader wagons for smaller scale farm businesses and farms in the foothills of the Alps. The engineers have succeeded in reducing maintenance requirements to a minimum with a loading unit developed from the ground up, while at the same time significantly increasing throughput capacity. In addition, new smart options, previously only available on the larger wagons, are now also available for the BOSS. It is available in four sizes from 18.7 to 26.5 m³ (DIN). Two of them also with beater rotors. The BOSS 3000 MASTER series is available from 01 August 2022.

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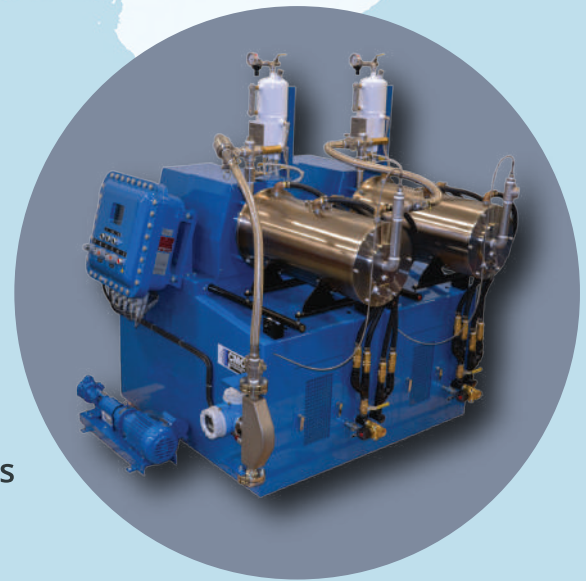


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How much offshore is enough?

While investing is certainly rewarding it can be complex. You will have questions along the way and Old Mutual Wealth is here to help you find the answers. As we partner with you on your investment journey, we've asked ourselves some hard questions. So that you don't have to.

The recent change in regulations on retirement funds allowing up to 45% direct global exposure, from 30% previously, raises the question: **should you take more offshore and if so, how much?**

Even before this regulatory change, our modelling suggested that, on a long-term view, a balanced fund should have around 40% global exposure. This change will therefore allow investors to get closer to an optimal allocation. However, the optimal allocation really depends on the individual's goals, risk appetite and total portfolio and where the valuation opportunities are.

WHAT ARE THE KEY REASONS FOR INVESTING OFFSHORE?

Diversification

Although offshore investing is a key financial planning requirement for all investors seeking to protect and grow their wealth, it is estimated that between 65% and 80% of South African investors' total wealth is exposed directly to the local economy. This means that the majority of South African investors are not sufficiently diversified. They are overexposed to the domestic market, largely because it is what they know best.

Opportunity

A typical South African investor will have a pension fund with their employer, probably own a property and their primary source of income will most likely be derived from the local economy. From a pure diversification point of view, it therefore makes sense to have decent offshore exposure, especially in discretionary portfolios where there are no regulatory limits.

Offshore markets offer more depth relative to local markets, which allows investors to better diversify risk and access more



investment opportunities for growth. There is also substantial global exposure on the JSE, with more than half of revenues of JSE-listed companies generated outside South Africa.

IS THERE AN OPTIMAL TIME TO INVEST OFFSHORE?

Our currency also plays a big role. Investors who draw an income from their portfolio are potentially most exposed to currency volatility. South African interest rates are consistently higher than in the US or Europe. Even when currency movements are considered, it makes sense to rely on local income-producing assets while getting global exposure in the long-term growth portion of a portfolio.

Finally, it doesn't make much sense to sell cheap domestic investments to buy relatively expensive offshore assets, or vice versa. Currently, the former is the case with local bonds, equities, and property cheaper than counterparts in developed countries. Therefore, current market conditions do not necessarily call for moving to the full 45% direct offshore exposure.

We believe that offshore investing is a key financial planning requirement for all investors seeking to protect and grow their wealth. Our locally-based offshore specialists can provide you with access to a wide range of international assets and investment funds from some of the biggest and most reputable portfolio managers in the world.

For answers to more hard questions, [click here](#).

Old Mutual Wealth is an advice-led wealth management business, aimed at providing financial planners and their clients with a full suite of industry-leading strategies and services. For more information, please visit our website: oldmutual.co.za/wealth



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ROLAND GRABE – HEAD OF OLD MUTUAL
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HARD QUESTIONS

We ask ourselves about managing your investments, so you don't have to.

While investing is certainly rewarding, it can be complex. You will have questions along the way and we're here to help you find the answers. Our answers are based on an in-depth understanding of the local and global economy, financial markets, and the driving forces that will shape tomorrow.

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Water 2000 Irrigation Equipment and Consultants for Africa



WATER 2000 A TOP IRRIGATION COMPANY

INTRODUCTION

WATER 2000 started business in 1994 with the focus to supply the agricultural community with quality irrigation engineering expertise and products. Over the years WATER 2000 has grown significantly and today we believe we are one of the top irrigation design companies in Africa.

Water 2000 currently has three large retail irrigation outlets in the Limpopo Province, South Africa, where we offer our clients products from the best irrigation equipment manufacturers around the globe.

CORE BUSINESS

Our core business is as follows:

- Fully stocked irrigation shops with qualified consultants
- Topographical survey
- Dripline, sprinkler and pivot irrigation systems
- Automation, fertigation and precision irrigation systems
- Solar pumping systems
- Large water transfer systems
- Drafting, project management, construction and installation

OUR TEAM

We have a strong and experienced Management, Operational, Sales and Engineering team. Our irrigation designs are done by qualified and experienced inhouse civil and mechanical engineers with ECSA Professional Engineer accreditation and "SABI Approved Designer" status. Our people continue to stay conscious of new technology, methods and developments in irrigation and agriculture.

WHAT WE STAND FOR

We at Water 2000 have our roots in agriculture, hence we understand farmers' needs, dreams and hope for growth and prosperity. It is therefore important to us to do what we do, the right way. The products and advice that we offer are from outstanding value and the solutions are calculated and efficient.

We do not offer quick fixes for short term results but is rather focused on long term profitability. Every farmer's unique requirement is analysed to make the most of the farm's resources.

Our emphasis is not only the development of large new projects, but also assisting new farmers and maintaining and improving projects we have been part of for the past nearly 30 years.



Our Mission

Water 2000 strive to offer effective agricultural and irrigation solutions with the emphasis on long term profitability. By combining products and services of the highest standard with expert advice we want to equip farmers for success.

Our Vision

To be farmers preferred agricultural partner with solutions for every

growth stage of their farming endeavours.

Our Values:

Service: We strive to give excellent service to each one of our clients. We walk the extra mile.

Knowledge: We stay on top of new developments and is committed to be experts on all aspects of irrigation.

Future focused: Water 2000's designs and products are built to last. We are aware of the increasing pressure on our water and energy

resources and therefore provide solutions accordingly.

Respect: Respect for each other, our clients and the environment are important to us.

Honesty: Honesty and transparency is not negotiable.

Please contact us should you have an irrigation project you would like to talk about.

water2000

IRRIGATION EQUIPMENT AND CONSULTANTS



PROVIDING EFFECTIVE AGRICULTURAL IRRIGATION SOLUTIONS SINCE 1994.

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- * DRIPLINE, SPRINKLER AND PIVOT SYSTEMS
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98 Unika Street, Louis Trichardt
Limpopo, South Africa

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Cheaper irrigation methods for profitable farming



Profitable farming requires a reliable and affordable water supply for irrigation as water plays a crucial role in determining loss or profitable harvest. The irrigation must be cost-effective and sustainable for profits to be realized.

Solutions

Electric, petrol or diesel-powered pumps are the most used by farmers to pump water from sources such as rivers and boreholes into a tank or onto the farm directly.

Most of the time, the cost of pumping water goes up due to the fluctuating price of electricity and petrol or diesel.

Farmers spend a lot of money to pump water using electric machine yet there are cheaper options of pumping water for irrigation, which include solar and windmills. Several farmers have however embraced solar pumps to pump irrigation water.

Solar pumps

Solar pumps are economical because they can directly use a technology known as PV array (without a battery) to pump water into the tanks, which is then distributed to the farm by gravity.



The solar system operates on the principle of photovoltaic (PV) technology, which converts sunlight to electricity for the machine to pump water. The cost of setting up a solar system depends on the size of the gadget.

For instance, a 120-watt solar panel can pump 10,000 litres of water at five metres depth and 3,500 litres at 10 metres depth, which is adequate to irrigate half an acre.

Installation of electricity definitely costs higher depending on the distance from the transformer.

Reduces the tough task

A solar pump thus offers the farmer long-term relief as one does not incur monthly bills. Submersible solar pumps can be installed below dams which col-

lect rain water. The pump pushes the water to a maximum height of 20 metres. Surface pumps are placed above the ground and are primarily used to move water through the pipelines.

Eco friendly

Besides being low maintenance, solar water pumps are eco-friendly as they do not release any gases into the atmosphere. There are smaller solar water pumps for the small-scale farmer in the market, thus farmers have no excuse not to irrigate their farms affordably.

Having a water pump reduces the tough task of carrying water physically from the source to irrigate your crops.

2
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2
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Water solutions



Temperate climates or tropical zones, small farms or large farms, all farmers are looking for efficient and reliable equipment for their water supply.



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Soundproofed, this equipment is suitable for all environments, even the most difficult ones.

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Pumping System Master Class for Irrigation & Water Supply

The Pumping System Master Class (PSMC) ONLINE course is a bespoke Workshop which follows the case study of a farmer (fictitious) from Tenterfield NSW, Australia, who is designing a pumping and pipeline system, including pump station, for his irrigation system.

Pre-requisite for the course would include either 4 yrs irrigation design or pump experience, or completion of a basic pump training course.

See modules: <http://www.talle.biz/psmc.php>

The Pumping System Master Class highlights advanced design techniques for pump and pipeline selection which explores the unique relationship between Hazen and Williams friction coefficients (C) and bore roughness (K), hydraulic optimisation and pumping energy efficiency. The course covers electric, diesel and solar powered pumps. Numerous free issued software APPs assist participants to calculate and fine tune pump and pipeline require-

ments and empowers them to adapt the course material to their work projects.

With emphasis on Life Cycle Costing (LCC), the course material is invaluable for comparing your designs with others for LCC analysis.

Once the farmer's pump and pipeline are selected, attention is given to pump station design, including internal pipework, valves, filters (energy efficiency), flowmeters, corrosion prevention, ladders. Work, Health and Safety is themed throughout the course.

The material is 100% Rob Welke's from his 52 years' experience in designing, building, commissioning and energy auditing pump stations for water supply and irrigation. Presented by Rob Welke, Tallemenco Pty Ltd Rob has 52 years' experience in pumping & hydraulics and has never sold a pump in his life! His whole career has been one of energy efficiency performance monitoring

of pumping and irrigation systems, pressure gauge in one hand, flow meter in the other. His auditing anecdotes will blow you away!

Course Status Level 3 to Level 6 in the Australian Qualifications Framework (AQF). Participants are issued with an Attendance Certificate. Endorsed by Irrigation Australia for 2 PDs. **COST: AUD \$750 – go to www.talle.biz click "Buy Now" to register Payable before attendance**

Contact: Rob Welke 0414 492 256, or **Email:** r.welke@talle.biz

SunCulture receives boost for solar irrigation expansion in Africa

SunCulture, a solar irrigation company headquartered in Nairobi, Kenya, has received the first disbursement from a new US \$11m syndicated debt facility to expand its operations in sub-Saharan Africa.

The new loan is groundbreaking for the productive use solar sector due to its size and its innovative combination of working capital and end-user financing.

Arranged by SunFunder, the co-investors in the facility are Nordic Development Fund; Triodos Investment Management, through its Hivos-Triodos Fund; SunFunder through its Solar Energy Transformation Fund; AlphaMundi through both its SocialAlpha and AlphaJiri Investment Funds; and the AfDB's FEI OGEF managed by Lions Head.

This will enable SunCulture to scale up renewable energy installations at smallholder farms and households that will mitigate over 20,000 tons of CO₂ annually as farmers replace diesel pumps with solar ones whilst facilitating income growth and job opportunities in rural communities.

SunCulture has pioneered a Pay-As-You-Grow business model to make solar-powered irrigation affordable for smallholder farmers in sub-Saharan Africa, combining end-user finance, value-added services, modern climate technology, and access to improve productivity. A recent report developed by Dalberg Research shows that irrigation systems and solar-powered water pumps can increase farmers' production between 2 and 4 times, and their income between 2 and 6 times.

Samir Ibrahim, Chief Executive Officer at SunCulture, said: "The past year was devastating for the millions of smallholder farmers in Kenya; 87% are in a worse financial position due to the pandemic. 81% of SunCulture farmers, however, were able to increase their revenue from farming in 2020. Solar irrigation helps create food security and sovereignty, and it also helps lift people out of poverty. This facility further enables our efforts to support farmers by providing them



with more of our solar solutions, and faster."

Jemimah Kwakye-Fosu, Investment Officer, who led the transaction for SunFunder, said: "We are delighted to have led this syndicate of proactive lenders who worked well together for a common goal: to help SunCulture reach more farmers. It shows how working capital can be combined with end user financing, which is essential for making productive use technologies affordable."

Surabhi Mathur Visser, Head of Investments at SunFunder, said: "This is a pioneering transaction that demonstrates how productive use technologies like solar irrigation can be scaled up. SunFunder arranged this facility with a similar-minded group of lenders to support an innovative product and business model. We look forward to seeing SunCulture grow in Kenya and new markets."

Karin Isaksson, Managing Director at NDF, said: "This loan to SunCulture is the second extended to a company graduating from the EEP Trust Fund managed by NDsF. It is a clear demonstration that we can deliver on the new NDF Strategy and its commitment to provide flexible and scalable financing as well as catalytic impact. It has all the ingredients that define NDFs added value in the climate financing landscape. It demonstrates our capability to convene and mobilise additional financing, as well as our unique mix of financing instruments to match the needs of our partners, public or private. We are proud

to be standing with our partners and supporting the emergence of a greener economy, precisely at this time of COVID-19."

Since our first investment in 2019, SunCulture has made huge strides to unlock the potential of smallholder agriculture through innovative products and consumer credit. FEI-OGEF is happy to be able to refinance our inventor loan into this new working capital facility and continue that growth alongside a committed and constructive group of lenders, noted Harr Guinness from Lions Head.

Judith Santbergen, Senior Investment Manager at AlphaMundi, said: "Since 2018, AlphaMundi has successively provided support to SunCulture through a combination of technical assistance and debt investment. We are excited to continue and increase our investment in the company via this new, innovative working capital facility."

Sjoerd Melsert, Senior Investment Manager at Triodos Investment Management, said: "SunCulture is a great example of an innovative company that is active on the nexus of renewable energy and agriculture, using solar energy to increase farmers' incomes. Our facility supports the further growth of SunCulture's pay-as-you-go solar portfolio, leading to a more sustainable and higher production for smallholder farmers, which is fully aligned with the mission, ambition and activities of Hivos-Triodos Fund."

RainFine Introduces Just-Fine Pipe

Corrosive water, caused by a number of factors ranging from high or low pH to variable mineral content to waste water applications, can weaken and deteriorate standard galvanized pipe, leading to premature failure.

RainFine Just-Fine irrigation uPVC lined pipes protect your irrigation pipelines from any corrosive components in your water, ensuring a long life for your machine.

"Farmers drive everything we do at RainFine – and water quality issues continue to be an increasingly prevalent challenge for growers around the world. While several different options to handle corrosive water have existed in the market for years, farmers told us there was a real need to have a better solution," said Wang Zhi, director of global sales at RainFine. "We looked at this issue with a new approach and redesigned an entirely different solution about which we are extremely proud and, even more importantly, that our farmer clients are telling us is an absolute gamechanger for them."

Other poly pipe type offerings in the market rely on polyethylene pipes and flanges for structural integrity, but the poly flanges create a gap between the steel flanges at the joint and can compress and crack over time, resulting in leaks.

The new Just-Fine pipe features a manufactured insert uv-stabilised plastic flange that allows for positive flange contact and eliminates the potential for a gap between flanges at joints, resulting in improved strength and span consistency.

It is the same span joint design used for existing RainFine galvanized pipe, but with the

added protection of the Just-Fine PVC liner through the span pipe to provide an unmatched level of quality and rigidity.

To address the pipe expansion and contraction challenges that cause the liner to move within the pipe, potentially leading to cracks and leaks, RainFine introduced two additional new design innovations.

1. Rigid uPVC provides the solid base for the pipe, and does not expand or contract like the poly pipes do and will not crack after time at any deviation like at flanges or pipe ends;
2. Stainless steel fittings (304) are used at the pipe ends for rigidity and keeping with the corrosion free goals. The Riser Pipes and Elbows are also supplied with 304 stainless steel;
3. The pipe uses an insert type flange with double rubber seals which allow for any expansion and contraction in the pipes, it provides a perfect fit and seal, eliminating any leakage; and
4. The pipe sprinkler outlet uses a ¾" 304 stainless steel outlets fitting with ideal unrestricted flow characteristics; with a strong nut that will not break off over time as poly ones are inclined to do.

Re-piping your older Lindsay or Irrifrance pivots with Just-Fine pipes and fittings can extend their life significantly, providing a longer-term solution to the conservative farm operator.

Benefits

- Just-Fine pipe is a comprehensive protection against corrosion made from an inert PVC material, making it ideal for chemigation, fertigation and resisting corrosive water.
- No leaking – wide self-seating pipe flange, stainless steel

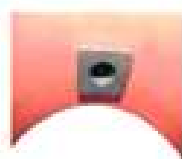
self-locking sprinkler outlet couplers ensure a water-tight seal.

- Long lasting – the first machine with Just-Fine, installed in Australia is still operating with no leaks.
- All structural components – from pivot pipe to last pipe – are lined and uPVC protected.
- The joints are made of stainless steel maintaining structural integrity, while Overhangs are short and of minimum 6-5/8".
- Pipes available are 8" and 6-5/8".
- Not affected by abrasion from sand or sediment in irrigation water.
- Highly resistant to sunlight and humidity as the pipe is completely away from any UV.
- No substantial extra machine weight.

Features

- **Warranty:** A 20 years pipeline corrosion warranty includes unconditional replacement due to corrosion for 20 years. This is the longest and most substantial warranty in the industry.
- **Robust design:** Designed for agricultural, industrial and municipal water applications
- **Greater profit and productivity:** Allows you to take advantage of corrosive water, and allows chemigation and fertigation with aggressive chemicals.
- **Minimizes pressure loss:** Sprinkler outlets: Full size ¾" stainless steel self-locking couplings for minimal pressure loss and no leaks offering optimal flow characteristics.

For more information about protecting your pipes with Just-Fine pipes, contact your local RainFine dealer today.



Is it possible to pay less money for a corrosion protected pivot?



- ◆ Just-Fine PVC-lined pipes, stainless steel pivot joints and control panel come with a 20-year warranty, the best in the business.
- ◆ Just-Fine PVC-lined pipe is the perfect solution for corrosive, acid and saline water.
- ◆ Special PVC 2.5mm wall thickness PVC-pipe liner is stable in hot or cold climates.
- ◆ Sprinkler outlet is made of stainless steel with curvature on inner pipe wall.



video



website



Partners set to scale access to solar-powered irrigation solutions in Senegal

Following a successful pilot project, InfraCo Africa, part of the Private Infrastructure Development Group (PIDG), has signed a Shareholders' Agreement and a Loan Agreement with Bonergie Irrigation SAS (Bonergie Irrigation) to continue supporting the scale up of the project.

Under the new agreements, InfraCo Africa will hold a large minority shareholding in Bonergie Irrigation, committing an additional US\$2.4 million to substantially scale up farmers' access to high quality irrigation solutions in Senegal.

It has long been recognised that reliance upon rain-fed agriculture exposes Senegal's farmers to the effects of climate change on temperature and rainfall patterns.ⁱ In 2019, InfraCo Africa joined with solar equipment specialist Bonergie Senegal to establish Bonergie Irrigation, a local Special Purpose Vehicle, to pilot

the implementation of over 100 high quality Solar Powered Irrigation Systems (SPIS).

InfraCo Africa's CEO, Gilles Vaes, said of today's announcement: "We are excited to continue working with our partners at Bonergie Irrigation to substantially scale up our offering to farmers in Senegal. Access to solar-powered irrigation solutions will replace existing diesel pumps, providing farmers with a more sustainable solution to addressing the linked challenges of climate change and food security."

The agreements signed today will see the commissioning, sale, installation and maintenance of at least 2,000 further pumps over the next three years. In response to feedback from the pilot, the project will also roll out over 500 drip irrigation systems (DIS) which

are designed to optimise efficiency of irrigation whilst also protecting groundwater sources from over-abstraction. The systems come in a range of sizes to suit each farmer's needs with hire purchase financing available to spread the cost, making the systems more affordable.

"Bonergie Irrigation SAS is very proud that InfraCo Africa has decided to develop a close partnership with us as a shareholder", says Gabriele Schwarz, CEO of Bonergie Irrigation SAS. "Their tremendous experience will help us to supply a minimum of 2000 pumps and 500 drip irrigation systems to rural farmers in a sustainable way. The nexus of Water-Energy-Food is one of the main topics for the coming years and Bonergie Irrigation SAS and InfraCo Africa are in a perfect position to develop this market in Senegal."

Sudan invites tenders for consultants for solar PV irrigation project

The government of Sudan has launched tender seeking consultants to assist in the implementation of an irrigation project in the states of North Kordofan and West Kordofan.

The project involves installation of 1,170 solar irrigation pumps in the country. Successful consultants will provide engineering and supervision services, design of solar water pumping systems, according to the requirements of each farm.

The firms will also provide assistance to the irrigation project implementation unit, supervision and contract administration of works related to the installation and commissioning of the solar pumps. The firms will also support the project implementation unit through technical and financial supervision to ensure that all works are carried out according to the contract specifications. The consultants will also participate in the construction activities and in the implementation of the project's environmental and social management plan.

Erratic rainfall

The solar pumps will be installed in North Kordofan and West Kordofan states where erratic rainfall is mostly experienced due to the arid climate and climate change, with a negative impact on agricultural yields, according to the Food and Agriculture Organisation (FAO).

The new equipment will be used to pump groundwater. In addition to food security, the project aims to reduce farmers' dependence on fossil fuels, which are harmful to human health and the environment. Interested companies have until September 14th, 2021 to apply.

The irrigation project is 75% financed by a \$21.7 million loan from the African Development Bank (AfDB). The remaining 25% will be paid in installments over three years. The pan-African institution indicates that the installation of the solar pumps will be completed by December 31st, 2025.





Irrigation Pumps Designed For Water Lifting or Jet Sprinkling

One type of pump that is indispensable for providing consistent water flow and pressure during the summer months is the irrigation pump, primarily used for groundwater pumping, field or garden irrigation.

Defined as 'water-lift' technology, an irrigation pump is designed to pump water from a lower to a higher level, known as surface irrigation, or to raise water pressure for the purpose of spraying or sprinkling (micro-irrigation). Irrigation pumps can also be installed in water butts for rain-water harvesting, and to draw water from wells and boreholes.

The critical importance of irrigation pumps in UK agriculture was made starkly clear in May 2019 when the Environment Agency downgraded the season due to lower than average rainfall. In response, the Agriculture and Horticulture Development Board (AHDB) strongly advised that irrigation strategies should be reassessed, water distributed as efficiently as possible, and pipes and equipment checked to ensure water is not leaked and lost.

The frequent effects of climate change means a constant rising demand for efficient, controlled water delivery systems. The need for irrigation pump technology continues to grow apace, whether within the agriculture and food-growing industry, large scale market gardens, allotments or a domestic garden setting.

An irrigation pump used as a jet sprinkler will require the correct sprinkler pump size.

The majority of irrigation pumps are known as 'centrifugal' pumps, which operate by using an "impeller" to spin the water rapidly through the pump casing, directed to the pump outlet. They possess a "wet inlet", i.e. water in both the intake (inlet) pipe and the casing when the pump is started.

Centrifugal irrigation pumps may have more than one impeller and casing – known as 'multi-staging' – where the water is passed from one impeller to another with an increase in pressure occurring each time. Each impeller/casing combination is referred to as a "stage". A system which uses an irrigation pump as a jet sprinkler will require the correct sprinkler pump size based upon the number of sprinkler heads in operation, GPM (gallons-per-minute) and PSI (pounds-per-square-inch).

Centrifugal pumps are widely used in agriculture but where a very low flow is required with discharges of less than 2 litres per second, Positive Displacement pumps can be used under certain conditions, such as nurseries, vegetable growing (using drip irrigation), and in domestic irrigation.

Displacement pumps are more commonly known as piston pumps, diaphragm pumps or ro-

tary pumps, and tend to be used for moving very thick liquids by very precise flow volumes or very high pressures. Other applications include fertiliser injectors, spray pumps, air compressors, and hydraulic systems for machinery.

The right type of irrigation pump for uniform surface irrigation or micro irrigation

Selecting the right type of irrigation pump is all-important for optimal, uniform water distribution, whether for surface irrigation or micro-irrigation.

Surface Irrigation – used for thousands of years, involves moving water across the surface of agricultural land, typically subdivided into furrow or border strips.

Micro Irrigation – primarily installed into green houses, poly-tunnels or suspended from above where crops are also under cover. Smaller, precise quantities of water (typically between 0.2 to 4.0 gallons per hour) are delivered via micro sprinklers or button drippers.

Drip Irrigation – operating under low pressure and designed for perfect uniform flow, provides the most efficient delivery system where individual water droplets are targeted exactly at the required location.

Impact Sprinkler Irrigation – typically an impact or gun sprinkler, commonly used in domestic settings, such as a garden lawn or flowerbeds.

5 Factors to consider when choosing irrigation pump

Irrigation pumps are usually used to pump water from a lower to a higher level from which the water then flows through channels to the fields requiring irrigation or to raise it to the required pressure head in order to spray the fields via piping systems (sprinkling). The heads involved range from approx. 1 m for normal lift operation to 40 m for sprinkling. Occasionally, heads more than 100 m may be required.

At times, irrigation pumps are usually not equipped with variable speed drives. The flow rate can therefore be controlled by either switching the pumps on and off, or by using a throttling valve in the discharge pipe, pre-swirl control (e. g. cooling water pumps), rotational speed or impeller blade pitch adjustment. Both horizontal and vertical pumps (e. g. tubular casing pump) are used as irrigation pumps.

For more than 2,000 years farmers have used irrigation to grow food for the world. However, this does not mean that all irrigation methods are equally useful. Knowing what will work best in your situation requires knowledge about the options available, including the advantages and disadvantages of each. With that in mind, here is a look at five things to consider in getting water to your crops:

1. Soil type. The type of soil in an area can affect not only the type of irrigation method used but also the irrigation run times. Sandy soils typically require frequent applications of water at a high rate to keep moisture in the root zone. Clay soils has a characteristic of holding moisture longer than sandy soils, even so, this may require frequent applications at a lower rate to prevent runoff.

2. Land topography. When it comes to land considerations, hilly or sloping land can be a challenge. Drip irrigation works well if the laterals can be run along topographic lines. Often system run times may need to be adjusted to prevent runoff. Travelers and center pivot systems are usually out of the question on hilly and severely sloping land.



3. Local weather patterns. In this case, sprinklers are less desirable in areas where high winds are common and in arid areas with a low humidity since water losses due to evaporation can be extremely high. Drip irrigation works well for both of the above mentioned situations.

4. Type of crops grown. Sprinkler and drip systems can require high levels of investment. Therefore, it's better to reserve their use for high-value crops like vegetables, small fruits and orchard crops rather than applying them to commodity crops like wheat and soybeans.

5. Water quality. All drip irrigation systems require some type of filtration. Overhead systems such as sprinklers seldom require filtration. Irrigation water should be tested for water borne pathogens. Depending on the crop grown and irrigation method used chlorine injection may be required. Other water quality issues that could be of concern include levels of soluble iron and other dissolved minerals.



Monitoring Mycotoxins In The Real World: The Simplification of Testing Technologies

Technology Improvements Continue to Drive Upstream Testing, While Supporting Finished Feed Quality Assurance and Control

Mycotoxins are the chemical byproducts, or metabolites, of naturally occurring soil-borne molds. Ubiquitous in nature and resilient to most environmental conditions, molds deposit their mycotoxins across a range of field, orchard and vine grown crops. Insect damage, severe weather and cultivation practices impact mycotoxin levels and their occurrence in global crops, which eventually move into our processing and finished products if left undetected and unmanaged. Mycotoxins of importance include aflatoxins B1, B2, G1 and G2, fumonisins B1, B2 and B3, vomitoxin (DON), zearalenone, T-2/HT-2 and ochratoxin A. Toxicity may include reproductive dysfunction, reduced feed intake, lowered growth rates and even acute illness and mortality.

Mycotoxins tend to occur in a nonuniform way throughout crop fields and in storage, creating challenges for quality managers. Ongoing vigilance helps to minimize the impact of mycotoxins, while safeguarding raw materials and finished product quality. The need for accurate field testing capabilities lies at the heart of our ability to prevent mycotoxins from entering the animal feed and human food supply chains.

Rapid testing technologies, such as lateral flow strip tests, enable food and agricultural operations to quickly identify and segregate lower quality ingredients in order to prevent their entry into the storage or processing stream. If allowed into storage or processing, cross-contamination may occur, resulting in lower market value and higher risk for the end user or consumer.

Dr. Diego Montemayor, VICAM's Latin America Sales Manager, shares the importance of starting with a comprehensive approach, "While it is of basic importance to monitor mycotoxins contamination in raw materials to ensure the production of safe formulated finished feeds, posterior testing of complete feed formulations becomes of importance after the feeds are transported or stored in bulk in farm bins or in bags in warehouses facilities and retailers points, to make sure that the feeds were not affected by mycotoxins contamination due to transportation or storage environment. Testing at this point becomes even more important when farm animals are suspected to have been impacted by mycotoxins contamination."

Dr. Montemayor further states the impact for livestock producers, which can be extensive and

costly: "Susceptibility of livestock to mycotoxins effects depends on several factors related to the animal species, age, production stage or function, etc., and the type and concentration of each of the mycotoxins in the feed. But, in general, monogastric (swine, poultry, and horses) seem to be more readily affected by the presence of single or combined mycotoxins contamination, being the young animals the ones that suffer the most severe effects."

While a variety of technologies exist to support mycotoxin detection at the point of raw materials intake, as well as in the laboratory, the most advanced options enable safe, accessible data without unnecessary complexity and cost. VICAM's lateral flow strip tests offer USDA-FGIS certified methods for aflatoxin, fumonisin, and vomitoxin (DON), and a single water-based extraction procedure for all six major mycotoxins, including aflatoxin, fumonisin, DON, zearalenone, T-2/HT-2 and ochratoxin A – with results in just a few minutes. To learn more, visit us on the web: www.vicam.com or call +1.508.482.4935.



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vicam.com/mycotoxins



Experts task farmer on data-driven practice to boost poultry farming



In order to maximize the effective practice of poultry business, farmers across the nation have been urged to embrace the use of data to transform the poultry industry to manage and measure their farm production trends.

This admonition was given recently during the launch of Afarmacco, a web-based app that can help keep data on poultry farming.

Chief Executive Officer (CEO) of Afarmacco, Ebetaleye Godfrey, lamented lack of tools among poultry farmers, saying this has hindered them from making waves in the industry.

"The farmer producing eggs is still selling egg at the rate he sold when prices were on a lower level. So, at the end of the day, they end up incurring losses," he added.

Godfrey explained that the app carries an action planner that helps farmers keep track of what and when medication should be given to their fowls.

"We are building the ultimate trade exchange for poultry farmers in Nigeria because from what we are structuring, farmers are able to mingle with off-takers online, by so doing, the off takers would be able to see who is producing what or what they have in stocks," he said.

He noted that the app, which can be accessed for free, also enables farmers to market their produce even before maturity.

In his address, Public Relations Officer of Poultry Association of Nigeria (PAN), Olusola Olatunbosun, said with this, poultry farmers would have the capability of keeping and translating their operations into figures for better management of their farms.

He observed that for farmers to embrace the data-intensive approaches, the government must ensure the provision of internet access for farmers, especially those who operate in rural areas.

Olatunbosun urged government to include in the curriculum, skills

necessary for graduate seeking employment in the farm.

Also, in his goodwill message, PAN Chairman in Ogun State, Idowu Asenuga, commended the efforts of the maker behind the novel initiative, adding that, "the arrival of Afarmacco into the poultry industry is timely and has the potential to change the narrative within the sector."

A veterinary doctor, Rasheed Macaulay, who represented the Lagos State Commissioner for Agriculture, Abisola Olusanya, called for concerted efforts among farmers and government to help rejig the farming system in the country in order to attract more investors.

Noting that the administration of Governor Babajide Sanwo-Olu was trying its best to prioritise agriculture, Macaulay however, called for more necessary support to boost the sector.



Grain Storage



Lemanco Bulk Bin Systems



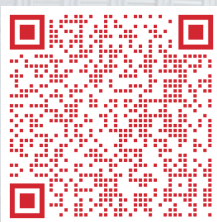
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Fast-growing chickens may experience higher rates of mortality: Study

According to a recent report, more than a million meat chickens in the UK pass away every week before they are ready for slaughter. About 64 million chickens in the UK die before their turn to get slaughtered each year, according to a study of official data by the animal protection organisation Open Cages. The dead birds can be burned or processed into products like protein meals that can be used.

Better welfare standards, according to activists for animal rights, might considerably lower the mortality rates. In order to phase out fast-growing breeds and lower stocking density, they are pushing merchants to endorse the Better Chicken Commitment. The modern chicken is genetically developed to grow so swiftly that it can strain its body and increase the danger of cardiac arrest, according to welfare experts.



Fast-growing chickens that reach their kill weight in just 35 days may experience higher rates of mortality, lameness, and muscle disease than slower-growing varieties, according to research. Heart failure or sudden death syndrome is one of the most frequent causes of mortality in flocks.

The Better Chicken Commitment has been endorsed by all of the major retailers in France, al-

though the largest supermarkets in Britain have not yet done so. Up to this point, it has received support from Marks & Spencer, Waitrose, Pret, KFC, and the Compass Group, a provider of culinary services. Sainsbury's stated in April that by March 2023, its fresh chicken would have been bred with 20% greater space than the UK standard.



Reducing pathogenic bacteria during slaughtering and processing

Reducing rates of foodborne outbreaks in humans caused by salmonella and campylobacter continues to be a major task across the globe.

Figures from 2016 showed there were more than 356,000 cases of human zoonoses reported across the European Union with Campylobacteriosis (246,307) and Salmonellosis (94,530) by far the most predominant.

Earlier this month, Ireland reported its highest annual level of campylobacteriosis with 3,030 cases – an increase of 8.7% compared with 2,786 patients in 2017. The highest rates of notification was in the 0-4 year age group.

Similarly, in Holland the incidence of campylobacteriosis increased from 33 cases per 1,000 inhabitants in 2017 to 35 last year, with the country reporting 71,000 cases in 2018.

But now Norwegian firm DECON SFS believes it has manufactured a decontamination unit that can remove more than 99% of pathogenic bacteria during poultry

meat slaughtering and processing.

And the results have been so successful that the company has garnered backing from the European Commission's Horizon 2020 fund through grant support totalling €50,000.

DECON, led by former Nutreco NV communications and crisis management director Vidar Julien, was created to develop and commercialise food contamination technologies, eliminating bacteria from poultry meat.

Eight years after trials started, the company has produced the Deconizer (TRL6-7), a decontamination unit based on hydro thermal bacteriolysis (HTB) technology.

This uses superheated steam in combination with a large electromagnetic field which charges the steam particles, directing them towards the meat surface, eliminating 99% of bacteria.

The product has been tested and validated at the Norwegian Food Research Institute, Nofima, and in market conditions with the Spanish companies Group Sada and Pujante, where decontamination rates of over 99% were confirmed.

The product's uniqueness relies in the reduction of carcasses contamination, while having no impact on visual appearance, taste, smell or colour and extending the products' shelf life.

Meat remains fresh compared to some preventative decontamination methods which rely on freezing and hot water.

The EU support will enable the company, which believes the product could be used for other types of meat such as pork, beef and sheep, to sell at least 56 Deconizer units across poultry abattoirs and processing plants over the next three years.

Innova for start-up poultry processors

"Software is not a big monster"

Entrepreneurs in emerging markets who start processing poultry at capacities from 500 to 4,000 bph shouldn't be afraid of including software in their plant design. Software is not the 'big monster' that swallows all processes and takes over the control of the entire plant. On the contrary, implementing a first small Innova Food Processing Software module is relatively easy and causes no hassle at all. The most common, simple starting point for such processors is live bird weighing. After that, the software component in the factory can be expanded little by little.

The thought of having to deal with software in a start-up processing plant often scares people. It feels like a mountain to be overcome, although this anxiety lacks factual foundation. Processing software is nothing more than a natural part of the process, only there to support and ease the life of the processor. There's nothing secret or mysterious about it. Innova doesn't influence the process whatsoever, all that it does is registering the production, providing accurate and reliable facts and figures and replacing pen and paper.

Step 1 - Live bird weighing

The simple starting point for software integration in a start-up processing plant is to weigh live birds at reception, supported by the Innova Packing module. You can put the flock in crates on the floor scale and after that weigh the empty crates. Now it becomes clear what is the total weight of the incoming flock. This live bird weight may be interesting to compare with the data of the supplying farmers. In this way, it may play a role in the payment of the suppliers.

Step 2 - In - out weighing

This is a relatively simple expansion of step 1. In addition to weighing the live birds coming in, you're weighing the finished products - whole birds - going out, on packing scales. By keeping the flock together during the process, you know which flock has been weighed before and which one you'll have to weigh at the end. It's kind of a simplified flock con-



trol. Innova gives you a "total weight-in" for the flock and a "total weight-out".

Now, with everything that happened in between, you're able to compare the flock weights from the start to those from the very end of the process. Instead of taking down all weights on paper and comparing them manually, the Innova Packing module automatically connects the two weighing moments. By comparing what you've got in and what you've had out, Innova calculates your yield. It's just about whole birds so it's quite a simple process.

Step 3 - Adding a grader

When a grader comes into the processing line after whole bird dressing, it can be connected to Innova Packing & Labeling. This grading process now gives you the outgoing weight instead of the packing scales. And then you've got an accurate weight of what you've sent out.

The Innova Packing & Labeling module also allows you to manage other operations on the packing scales such as labeling. In this way, the appropriate labels are on your products for traceability purposes.

Step 4 - Innova PDS for bird counting

After having weighed the flock at reception, you may want to count individual birds in the line. If

so, Innova PDS has the right counters to do such accurate counting. Bird counting is a sort of common metric that everyone likes to see on the computer screen. It shows the throughput, how many birds per hour you're doing. This is a number everybody understands, obviously a different metric than a live bird flock weight.

Step 5 - Inventory and dispatch

If you want to move on to the next step, then you need Innova Inventory and Final Goods Manager, that cover you for inventory and dispatch. If you put your finished products into Inventory, you can dispatch them to the customers. Instead of manual paperwork, Innova takes over the customer dispatch. You enter the customer orders in the program and then, guided by Innova, you pick the products to that customer order, palletize them, load them on the truck and then dispatch them.

If any further software upgrades are required beyond these steps, Marel can support you with well-balanced expansions. The Innova portfolio holds an elaborate program of modules to intensify control and management functions. Innova PDS, for example, offers many more possibilities than just bird counting.

Automated broiler processing solutions

For poultry processors who are looking for ways to add value to their operations, Marel can assist in finding customized solutions.

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Vaccination failure due to mycotoxins?

Author: Dr. Marlene Luttmann,
MIAVIT GmbH

Bacterial resistance to antibiotics has increased so strongly that measures to combat the phenomenon have become urgently necessary. One effective option is to use vaccines for our farm animals. But why do breakthrough cases occur again and again in this context?

If typical disease symptoms occur in a livestock population despite vaccination, everyone initially thinks of a vaccination failure. It is possible that the virus has mutated so much that the vaccine previously used is no longer effective. It is also conceivable that the vaccine was stored in too warm conditions, too low a dose was administered or the chosen vaccination intervals were too long. However, very few suspect that mycotoxins in the feed could be the reason for the problems. Yet these can permanently damage the function of the immune system, which has a strong influence on the formation of antibodies.

Agricultural production today involves high-performance animals that are required to grow and produce as quickly and as much as possible. The partially sterile environment delays the development of their immune system. Furthermore, young animals are more sensitive to changes in their environment. Even low mycotoxin concentrations can lead to changes in the intestinal flora. Mycotoxins such as deoxynivalenol (DON) particularly affect the health of the gastro-intestinal tract. Even a low concentration quickly leads to an inflammatory reaction in the mucosa. This inflammation increases leaky gut syndrome, thus facilitating the penetration of pathogens and their toxins, e.g. endotoxins, into the bloodstream. The preceding damage to the intestinal barrier caused by the mycotoxins then makes it easier for the

endotoxins to infiltrate into the blood circulation. The result is fever, pain, increased heart rate, blood clots in the capillaries and weakening of the immune system.

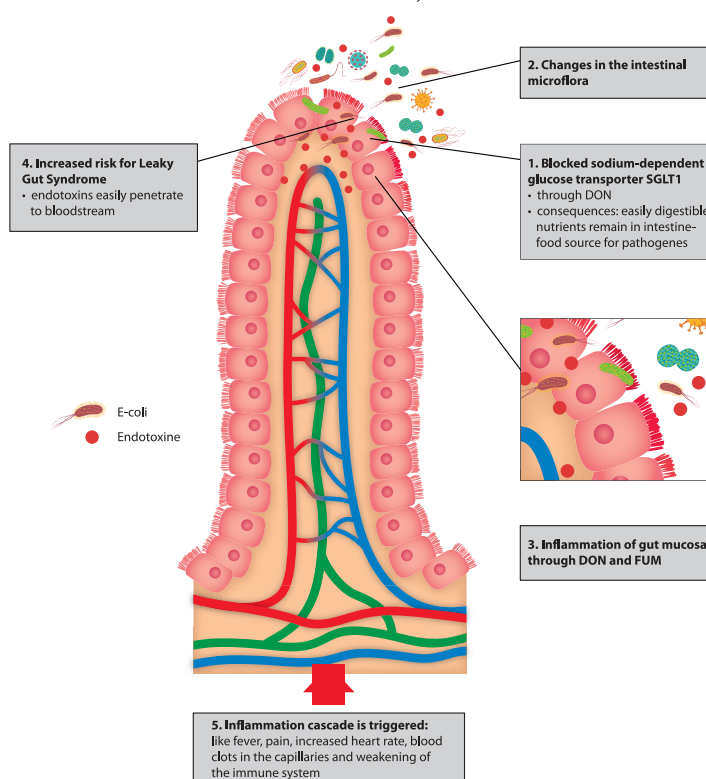
In addition, the mycotoxin DON reduces the intestinal absorption of nutrients. Blocking important nutrient transporter causes easily digestible nutrients to remain in the intestine. This can lead to an imbalance in the microflora composition which, in turn, weakens the immune system and intestinal health.

Put simply, the immune system is permanently damaged and overloaded by exposure to mycotoxins (especially DON), reducing the desired antibody formation after a vaccination. The vaccination protection is incomplete and breakthrough cases occur.

To lower production costs, the gastrointestinal tract and immune system should be considered holistically during each stage of the animal's life,

and supported prophylactically in a variety of ways. Therefore, feed should be analysed for mycotoxin content, and preventive protective products should be used accordingly. But the fact has to be taken into account that additives are not medicines; accordingly, they should be considered as preventative support and not as a substance for treating sick animals.. It should be noted at this juncture that, according to scientific studies, clay mineral and yeast cell wall binders have not been positively proven effective in animals against trichothecenes such as DON. However, in the case of mycotoxin binders, attention should be paid to their quality and independently scientifically proven effectiveness. Generally, the routine use of EU-authorised mycotoxin-deactivating products such as MiaBond 360 is recommended to avoid vaccination breakthrough, prevent subclinical stress, support full nutrient uptake, and prevent an imbalance in the composition of the microbiota.

Vaccination failure due to Deoxynivalenol (DON)





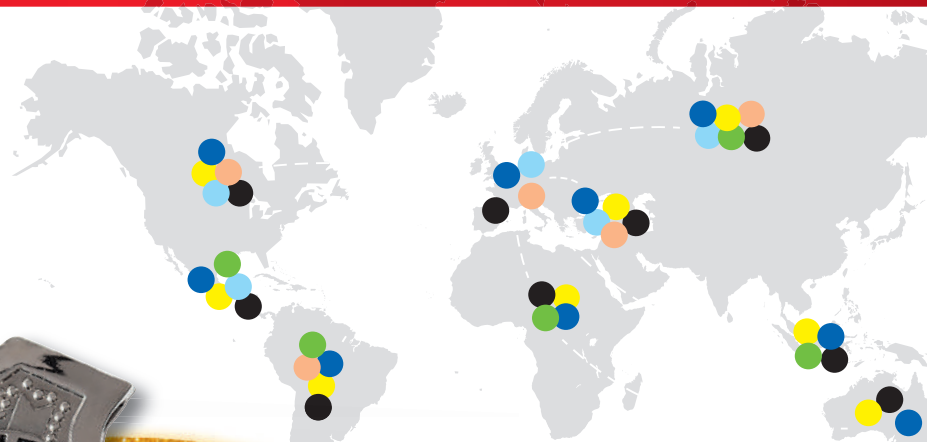
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Part 1: Key performance indicators for poultry processing

The meat market is an environment of intense competition and the commercialisation requirements increases the need to preserve and guarantee the credibility of the way the animals are slaughtered, and the carcasses processed in slaughterhouses, ensuring food safety, and at the same time presenting a good economic result of operational viability.

The performance of industrial operations in slaughterhouses results from:

1. The interaction of variables that depend on the characteristics of the raw material received (especially related to the carcass yield), considering the health of the flocks.
 2. The proper use of the carcasses during the operational procedures.
 3. Considerations of the costumer's expectations and the markets requirements.
- Interaction of variables

To obtain good results in the industrial performance, even before processing, we consider that the performance of the animals in a flock depends on the variables related to genetics and nu-

trition, being influenced by the uniformity of the flocks, as well as by the farming facilities. Therefore, the interaction of the variables such as animals, management, nutrition, facilities and ultimately sanitation status will determine how the performance will be during the industrial processing. It is characterised by the raw material received, considering the live weight received and the flock uniformity, and even the total number of animals effectively available for the slaughter and the processing conditions (carcass integrity and slaughter line speed).

The integrity of the carcasses takes into account the sanitary conditions of the animals received, determined by the indicator of sanitary sentences criteria, expressed in condemned kg, in condemned animal units total or partially. Consider still the need to distinguish between causes, considering whether the causes of condemnation.

The time variable influences, in a decisive way, the operations depending on the of the number of animals slaughtered, or the number in kg processed per hour of processing.

This variable depends on:

- the size or weight of the animals slaughtered
- need for reprocessing of carcasses due to sanitary and non-sanitary condemnations of the slaughter equipment's conditions
- of the dimensions of the environment, the number of personnel available for the operations, as well as the degree of mechanisation of the processes

In this way, the variable attributed to the number of employees associated with processing, and the variable kg of meat obtained, depending on the time, indicates productivity by kg-processed/man/hour.

Impact of diseases on processing parameters

Several diseases can impact in the processing parameters as carcass yield and kg-processed/man/hour.

IB (Infectious Bronchitis):

- IBV infections can cause clinical signs in the poultry respiratory system which the im-

pact will be well observed in the field and processing performance results.

Important to be noted that subclinical infections will cause impact in parameters as condemnations, and mortality during transport from the farm to slaughterhouse.

IBD (Gumboro Disease):

- Gumboro Disease protection is one of the bases for the immunity system for a broiler. This way, it will contribute for the broiler health.

It was already observed in several poultry operations, that the disease can cause impact specially on the broiler flock uniformity and its operational performance in the speed during slaughterhouse. The carcass and breast yield and the lower contamination of final product was appointed during field research (PSA 2021).

These parameters as condemnations and flock uniformity will influence as well as on the productivity of the processing plant, as well as the slaughter line speed, and impact directly in the profitability of the operation.

Analysis of indicators

In the method of calculation and the interpretation of the main performance indicators and their implications for the operational result in the poultry processing, it is necessary that these data be obtained in a cartesian and systematic way.

That is, based on methodology and instrumental appropriate to the conditions in which the processes are carried out (procedure standardised operating and instrumental calibration); taking care of the necessary frequency with which these data are obtained; and that allows the repetition of the method, the correct transcription and feeding of a reliable database and agile enough to carry out a subsequent analysis of the data, helping to increase the industry performance, and helping to evaluate the quality attributes of the products.

The training of personnel for data collection and monitoring of processes deserves special attention, just as it is essential to carry out the regular monitoring of how the data is obtained, if the fre-



quency is adequate, if the instruments are adjusted as prescribed, and if the procedures to minimise possible adjustments that may occur during monitoring or data collection. These deviations or adaptations can distort the analysis and interpretation of key indicators, impacting decision making, operational and product cost.

It is necessary to ensure that the data is available, adding benchmarking, in a way to contribute to the decisions by the managers, considering the best performance of operations.

The key is to keep in mind that the transformation process in the

plant can be optimised continuously, as long as there is regularity in these processes of collection and analysis of data, in the discussion and interpretation of performance indicators, as well as establishing feasible goals of be targeted. To maintain the link between flocks information and client requirements contributes to improve the operational performance in slaughterhouse.

The costs of slaughter play a special role in the operational performance and in the industries competitiveness.

End of chicken tariffs a major win for South African consumers



In a recently published press release, the South African Meat Importers and Exporters Association (AMIE) welcomed the suspension of anti-dumping duties on chicken imported from Brazil, Spain, Poland, Ireland and Denmark for twelve months, saying this decision is a major win for millions of cash-strapped South African consumers.

"In making its decision, the Minister (Ebrahim Patel) considered the current rapid rise in food prices in the SACU market and globally and the significant impact this has, especially on the poor, as well as the impact that the imposition of the anti-dumping duties may have on the price of chicken as one of the more affordable protein sources," said the announcement, published in the Government Gazette. "The Minister, therefore, decided to suspend the imposition of the anti-dumping duties for a period of 12 months."

"This is an exceptional outcome for South African consumers, because they are under such significant financial pressure," said Paul Matthew, CEO of AMIE. "Chicken is the most affordable, and therefore vital source of protein for South African consumers, espe-

cially those living below the poverty line. This shows that our government, and specifically Minister Patel, are alive to the plight of consumers, and ready to take bold actions to help mitigate the impact of rampant inflation, which is encouraging."

In April this year, AMIE asked government to consider a moratorium on tariffs on imported chicken to help curb inflation. It also asked for existing tariffs to be reconsidered, and for all chicken cuts to be exempted from VAT.

The Minister of Finance, following a recommendation from ITAC, and at the request of the Minister of Trade, Industry and Competition, is the final decisionmaker when it comes to the imposition of duties and tariffs. Consequently, in June 2022, AMIE wrote to the Minister of Finance, urging him to conduct a public interest inquiry for the imposition of anti-dumping duties, as required by the Constitution, the Public Service Act, South Africa's international trade obligations.

"The suspension of additional tariffs on chicken imported from these five countries is a first step in the right direction, and we hope to see more of this sort of action

from Government in future," said Matthew.

"Governments around the world have been slashing import tariffs as a way to help their citizens survive. Mexico, the Philippines and South Korea have removed tariffs on imported goods, including chicken, to curb and mitigate the impact of rising inflation on their people," he continued. "The US is currently considering scrapping its tariffs on various goods for exactly the same reason."

"The liberalisation of trade policies can help consumers," said Matthew. "The opposite is true of localisation and protectionist policies because they restrict competition, which lead to an increase in the price of local goods. We welcome that government has recognised that the timing and extent of these policies need careful consideration, and has suspended the implementation of tariffs for 12 months. It shows that government is putting its citizens first, which is exactly how it should be."

"We do not know the detail of the suspended tariffs yet, or how they were determined, and will consider these in due course," he concluded.

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Heifer International awards three innovators in the agritech sector

Heifer International Kenya awarded three Logitech startups Sh2million during the AYuTe Africa Challenge Kenya finals in a bid to drive innovations in the agriculture sector.

John Waweru, Founder and CEO of Optimerce Consulting Ltd, a business that Digitizes the process of produce collection at farm-gate through mobile apps emerged the winner.

Joshua Gitonga, the founder and CEO RafikiPay, a company that deals with the processing of sunflower, groundnuts, soya, and canola oil from the hybrid seeds was the first runner up while Grace Kyarimpa, Agrodiverse Ltd Kenya MD, a business that converts insects, earthworms into sources of protein in animal feed and high-quality organic fertilizers, emerged as the second runner up.

The winner, first runner up, and second runner up and were awarded cash grants of Sh1 million, Sh750,000, and Sh250,000, respectively.

Besides the top three innovations, other finalists included Azma Foods Ltd, Digital Farmer, Ento (insects) Solutions Ltd, Farm Mall, Farmerline Technologies, Limachain, Nalima Digital, Shambaline Ltd, Soluvax, Stofresh Africa, Toothpick Company Ltd, Vermi-Farms Initiative Ltd.

The 15 finalists will benefit from a 3-month accelerator and mentorship program.

The Champions of the inaugural Heifer International AYuTe Africa Challenge Kenya were chosen from an impressive field of young agritech innovators from across the country.

The competition design targeted companies that have developed a tech solution to address small-holder farmer challenges with strong potential to scale.

"Having worked with farmers for very many years we see the AYuTe challenge as an opportunity to identify exciting young innovators who have wonderful



ideas to be able to walk with them through the journey of fine-tuning those ideas as well as providing linkage to the opportunities to scale up those ideas" said Esta Kamau, Country Director, Heifer International Kenya

In June 2022, Heifer International Kenya launched the AYuTe Africa Challenge Kenya to promote and reward agriculture technology innovation across different agricultural value chains in Kenya.

The applications for the challenge run from June 14 to July 14, while the proposal evaluation pitching and judging were concluded by August 31.

A 2021 study by Heifer International pointed to the need for

more investments to embrace agriculture as a desirable career.

Funding, training, and access to agricultural technology were identified as the three key areas to encourage youth involvement in agriculture.

The survey key areas the three key barriers to youth engagement in agriculture in Africa.

"The AYuTe Africa Challenge Kenya competition has affirmed our understanding that many young tech companies require a combination of significant investment and expert guidance, I am confident that we have filled that need, not just for the top three winners but also for those who made into the top 80," said Esta.

Tanzania seeks to be key rice producer in Africa

Tanzania is racing against time to become Africa's rice hub.

To begin with, the country wants to meet East Africa's total rice demand, a senior government officer has said.

Tanzania – which is the 4th largest producer of rice in Africa and the second-largest in Eastern and Southern Africa – has put in place plans and measures to increase rice production annually in an effort to reach a tipping point in 2030 and thus be able to feed the region and beyond, according to the director of the Mechanisation Division in the Ministry of Agriculture, Ms Anna Mwangamilo.



"We have adopted a transformative technology-dependent agricultural system model for rice, which includes mass adoption of improved seeds usage and other tools, including modern irrigation," Ms Mwangamilo told journalists in Dar es Salaam yesterday.

She noted the provision of substantial market opportunities for smallholder farmers in the last three years, has led to assured national self-sufficiency and a sizeable surplus for export, making rice one of the most significant cash crops in Tanzania.





Agency to train 100 Kebbi youths on modern farming techniques

The National Agency for Science and Engineering Infrastructure (NASENI) says it will train 100 Kebbi youths on modern farming techniques through improved farming implements in the state.

Dr Muhammad Muhammad, the Director of Procurement of the agency in the state, announced this during a courtesy visit to an NGO, the Khadimiyya for Justice and Development Initiative, in Birnin Kebbi on Saturday.

He said, "We are going to organise a five- day training for 100 youths, who have been drawn from the 21 local government areas on modern farming methods, using improved farming implements.

"The agency has concluded all the arrangements for establishment of the training institute in the state."

He thanked the founder of Khadimiyya, the Attorney- General of the Federation and Minister of Justice, Abubakar Malami, for establishing the NGO to assist his community.

Muhammad also described Malami as a " philanthropist whose heart was always after helping the needy", and urged other wealthy individuals to emulate him in that direction.

He commended Khadimiyya for donating 20 hectares of land in Bagudu for the construction of a skills acquisition centre in Bagudu Local Government Area of the state.

"The centre is a relief to the community and people of the state. It will be used to engage and empower the teeming youths in the local government, state and Nigeria at large," he said.

Muhammad also commended the NGO for being good partners and in applying due diligence in the nomination of prospective trainees across the state.

The Head of NGO's Secretariat and National Publicity Secretary, Alhaji Ibrahim Abubakar-Jombali, thanked the agency for his renewed commitments to advancing modern mechanised farming in the state.

He commended the Khadimiyya's commitment, full support and cooperation to the agency for it to deliver on its mandate.

"The partnership between the NGO and Agency will bring the desired goals of advancing agriculture drive in the state.

"The Khadimiyya is an NGO founded by Malami, with sole aim of alleviating poverty and access to Justice for indigent citizens.

"It has so far, constructed over 300 boreholes across the state, facilitated employment opportunities for over 700 unemployed youths, shared relief funds to cushion the effects of COVID-19 and distributed over 5,000 JAMB forms to less -privileged students.

"It has also donated vehicles for Kebbi Contributory Health Care Management Agency (KECHEMA), Abdulahi Fodio Islamic Centre, Kebbi Cultural troops, and other organisations as well as donated cash grant to widows and orphans in all the 225 political wards of the state," he said.

Abubakar- Jombali added the NGO's philanthropic activities went beyond the state through its presentation of cash donation of N5 million to the victims of fire disasters in Katsina and Gusau Central markets, Katsina and Zamfara States, respectively.

"We donated medical equipment to Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Kaduna State and Federal Medical Centre Jalingo, Taraba State, among others," he said.

Tanzania launches fertiliser subsidy programme

The government of Tanzania has launched a fertiliser subsidy programme. The ceremony was marked by the country's President Samia Suluhu Hassan who said farmers are set to enjoy massive subsidy over fertiliser during the 2022/23 season.

According to Agriculture minister Hussein Bashe, under the subsidy arrangement, the government will pay for a Sh52,000 subsidy. A bag of DAP that was sold for Sh131,675 will now cost Sh70,000 only, while that of Urea, which used to fetch Sh124,714, will cost Sh70,000 only. A bag of CAN, which used to fetch Sh108,156 will now sell at Sh60,000 while that of NPKs, which cost Sh122,695 will now cost Sh70,000.

The program is part of President Hassan's Agenda 10/30 that was launched in April. The 'Ajenda 10/30' details the Agriculture ministry's efforts to rally both public and private sectors to turn around the fortunes of millions of Tanzanians earning a living in the agriculture value-chain. With 'Kilimo ni Biashara' as its clarion call, the agenda aims to attain an impressive 10 percent annual growth rate for the sector that is the livelihood source for some 65 percent of Tanzanians.

Growth rate

The target is set to be met by 2030. The current growth rate is a measly two per cent while the government's five year development plan projects the

growth at 5.7% by 2025.

According to Agricultural Council of Tanzania chairperson Jacqueline Mkindi, the private sector was convinced that the government was going in the right direction as far as revolutionizing the agricultural sector was concerned. The fertilizer subsidy programme comes within just weeks after the government raised the budget for agriculture from Sh251 billion in the 2021/22 financial year to a staggering Sh951 billion.

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Some Companies Get your Fish Farm Project Going – But Who Defines its Profitability?

After decades of global deployment, pond fish farming has prevailed, and yet, today, countless projects and multiple locations are at a standstill, resulting in slower than anticipated Return on Investment. To meet the surge in demand for fish, and fast-growing populations in need of proteins, these projects must deliver shorter ROI.

The need to intensify grow-out, and enhance the use of existing land resources and water supplies, have resulted in the critical need to integrate Recirculating Aquaculture Systems (RAS) as a preliminary stage when introducing fish into the ponds. During this initial stage, fish can grow out in a fully-controlled environment, yielding the introduction of stronger, healthier fish to the ponds, intensification of fish in the ponds, and a total greater annual harvest.

The future is *intensification* – producing more fish per unit of area and water, supported by sustain-



able, cost-effective technologies. With the limited availability of land and water, intensification is the only viable solution. This is the pioneering technology behind BioFishency's single-pass water biofiltering system.

A True, End-to-End RAS Solution: From growth, to harvest, to market – and beyond

Today's aquaculture customers have a unique opportunity to benefit from RAS, to intensify growth density, increase survival rate, deliver healthier fish – and

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Researchers Warn About Climate Change Effects On Fisheries And Agriculture In Tropical Coastal Communities



A new study recently published in the journal *Nature Communications* has warned of the effects of climate change on fishing and agriculture in tropical coastal communities, which are highly dependent on these economic activities to sustain their economies.

According to the study, in which the Institut de Ciències del Mar (ICM-CSIC) and a large group of experts from centres around the world have participated, these communities could face major food losses due to climate change. Until now, large-scale predictions had brought the problem to the table, although the data provided were not very informative at the local level, where the socio-economic impacts occur.

"This work proves the suitability of using predictive models at smaller scales to improve the management of local communities," explains in this regard Marta Coll, researcher at the ICM-CSIC and one of the authors of the study.

This is the first work assessing the impact of climate change on coastal communities in the tropics, which face more economic difficulties than their counterparts in temperate zones. Specifically, the research focuses on 72 communities in five countries within the Indo-Pacific region: Indonesia, Madagascar, Papua New Guinea, the Philippines and Tanzania.

To carry out the study, responses from more than 3,000 face-to-face household surveys in the regions studied were analysed. The results were cross-checked with modelled projections of crop yield losses and fish catches under both a high (SSP5-8.5) and a low (SSP1-2.6) emissions scenario.

As a result, the team realised that while not all communities are equally vulnerable, both within and between countries, those with lower socio-economic status are particularly exposed to the most negative impacts on natural resources as a result of climate change.

Fisheries, the most affected sector

According to the paper published now, the potential losses are greater for the fisheries sector than for the agricultural sector. Nevertheless, many of the communities surveyed would face substantial losses of both agricultural and fisheries products under a high emissions scenario.

In contrast, in a low-emissions scenario, fewer communities would experience losses in both the agriculture and fisheries sectors, which highlights some of the many benefits of climate change mitigation.

The global average temperature is currently 1.1 degrees Celsius higher than pre-industrial times and, if things continue as they are now, a temperature increase of about 3 degrees Celsius is projected by the end of the century. This will lead to a higher frequency and intensity of droughts or marine heat waves, among other extreme weather events that could have a strong impact on primary sector activities.

Norway commits US\$5mn to help small-scale aquaculture farmers in East Africa



The Norwegian Agency for Development Cooperation (NORAD) will provide US\$5mn to increase the incomes and build resilience of small aquaculture farmers in Kenya, Mozambique and Tanzania.

The contribution from NORAD will finance the **Advancing Resilient and Nutrition-sensitive Smallholder Aquaculture (ARNSA)** Project implemented by the **International Fund for Agricultural Development (IFAD)** and its government partners.

With the aim to support approximately 3,000 smallholders and make increased quantity and quality fish products available to at least 100,000 people, the project will guide and scale-up **climate resilient and nutrition-focused** aquaculture technologies and approaches.

It will, specifically, improve access to quality and affordable farm inputs such as seeds and feed, as well as market opportunities, especially for women and youth through innovation and value creation. It will also strengthen farmers' technical skills and extension services and address post-harvest losses.

While speaking to *Food Business Africa*, Gilbert F Houngbo, president of IFAD said, "This contribution from Norway emphasises its credentials as a global leader in sustainable fisheries management. Sustainable development of the aquaculture sector holds significant potential to address **malnutrition and poverty** worldwide. Norway's support will help thousands of small aquaculture farmers build better lives for their families and produce the healthy foods their communities need."

The project will focus mainly on inland aquaculture, except in **Tanzania**, where **seaweed value chains** will be given attention to.

The support from NORAD contributes to IFAD's increasing importance to aquaculture in sub-Saharan Africa, which now includes related investments in Tanzania, Kenya, Mozambique, Angola, Eritrea, Ethiopia, Nigeria and Ghana.

Today, small-scale aquaculture farmers provide more than 80% of the global aquaculture production. With a growing demand for fish products, in particular from Africa and Asia, the sector holds a strong potential for growth, better incomes for the producers and employment opportunities, especially for women.



Cage fish farming up in Lagos

Aquaculture in marine cages programme is helping the fishing sector in Afowo Community Owode, Apa Kingdom in Badagry Local Government Area

This was initiated by the **Lagos State** and aims to empower 200 youths and women. The cage fish culture system will drive youth and women towards positive changes.

While speaking to *The Nation* at the symbolic stocking of the cages in Badagry, the commissioner for agriculture, Abisola Olu-sanya, said each of the cages would be stocked with **1,000 juveniles of tilapia and catfish**.

She added that each beneficiary would also be given **20 bags of fish feeds**, medication, and a **monthly stipend of US\$36.63** for four months, before the fish is harvested in continuance of the resolution to help them succeed in the business. Comrade

Aladeotan David, a coordinator at the National Youth Council of Nigeria, Badagry West Local Branch, is one of the beneficiaries. His message to other hopeful entrepreneurs was that **tilapia aquaculture** is promising. "We have been taught to understand the value chain, as well as how to operate at minimum cost," he said, while thanking the Ministry of Agriculture for motivating him to start cage culture farming this year.

Another beneficiary, Elizabeth Ogupe, said her participation in the cage aquaculture has opened up opportunity for her to make a living and she sees it as a way for engaging youth and women in the community. "The efforts of the state government has helped to increase their understanding of managing, particularly the well-being of fish in cages," she added.

Permanent secretary of Ministry of Agriculture, Hakeem Oduyinka

Adeniji, said fisheries sector was one of the main components towards guaranteeing continuous food supply in the state. He said the state government is working to reposition the **aquaculture sector** for success and that they are planning to increase fish culture produce.

The goal is to spread out the production of **sustainable, marine cage culture** while creating employment opportunities. The objective is to empower youths and women. We have about 200 beneficiaries who were selected from the community. They were then trained by our technical team."

Adeniji said the government was determined to promote sustainable utilisation of the rivers for food security and poverty alleviation.

Donors Commit To Fisheries Sector Development



Monrovia-International Fisheries Donors, including the European Union, China and World Bank have reaffirmed their commitments to further assist in the development of the Liberian Fisheries sector through technical and financial support.

Speaking Thursday June 2, during a technical meeting that brought together Donors within the Liberian Fisheries sector at NaFAA's corporate headquarters, Chinese Ambassador Ren Yisheng affirmed China's commitment to providing what he termed as "technical support in the development of agriculture in Liberia".

The Chinese Ambassador mentioned that China remains committed to "cooperating with Liberia in the development of the Aquaculture sector as he described agriculture as a sustainable development".

Ambassador Yisheng further disclosed that a Chinese entity is closely considering investing in the production of fiber glass vessels in Liberia, "as this was one of the concerns raised by Director General Glassco during a recent meeting at my Embassy in Liberia".

Ambassador Yisheng disclosed that he was highly impressed of being in the gathering of donor partners to Liberia's fisheries sector as such meeting enable Liberians through their government to be informed about the donors support to the sector.

For his part a proxy for the European Union Delegation to Liberia, Ambassador Laurent Delahousse, revealed that they have encouraged EU member's states to increase support to Liberia.

Mr. Theo kaspers, head of Cooperation stated that they are working along with NaFAA's priority areas in developing the Liberian fisheries sector.

At the same time, speaking on behalf of FAO Country Representative Madam Mariztou Njie, Madam Mehna Ajmal said FAO was pleased with the existing coordination it has with the National Fisheries and Aquaculture Authority, NaFAA.

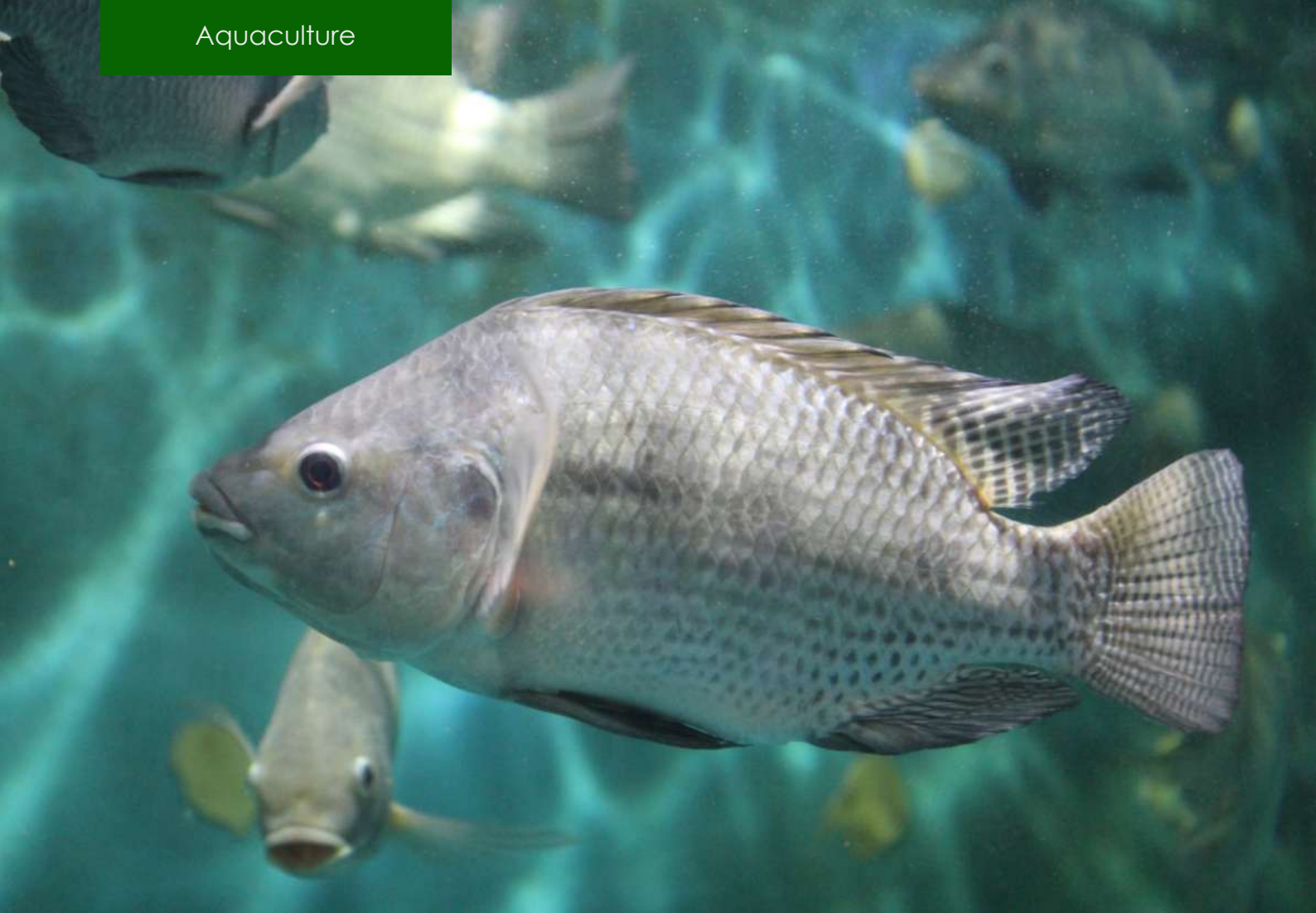
Madam, Ajmal recounted that FAO has over the years worked with the Management of the National Fisheries and Aquaculture

Authority in strengthening the fisheries sector through several instruments including and not limited to, the Port State Measurement Agreement (PSMA), which includes Illegal, Unreported and Unregulated fishing. She also mentioned FAO's role in the development of the Agriculture sector.

Also speaking, on behalf of the World Bank's Country Manager Mr. Khiwina Nthara, Fisseha Tessema disclosed that the Bank has a fisheries project of US\$40 Million with what he termed as a possibility of additional US\$20 Million from another partner.

Meanwhile, the acting Director General of NaFAA, Augustine M. Manoballah said the Donors coordination meeting was essential as it was intended to provide updates on the various fisheries projects being financed by the EU, World Bank, China among others.

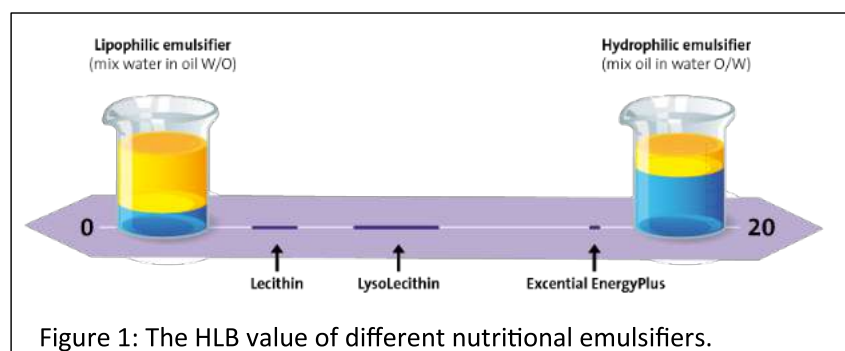
Mr. Manoballah recounted that the support from the various donors have contributed immensely toward the development taking place in the Liberian fisheries sector.



The power of a nutritional emulsifier in Nile Tilapia farming

by **Matthijs de Jong**, *Central Technical Manager Aqua, Orffa Additives BV*

The intensity and production of Nile tilapia farming have been increasing over the past decades, and further expansion of the sector is expected. However, the tilapia farming business has been experiencing many challenges such as the demand for increased efficiency fueled by the increasing feed prices and sustainability issues. In order to cope with these challenges, the industry's focus is on optimizing expensive components in the fish diet such as fat and protein. One viable strategy to increase efficiency is the use of a nutritional emulsifier, like Excential Energy Plus from Orffa Additives BV. This emulsifier is known to have the optimal Hydrophilic-Lipophilic Balance (HLB) (Figure 1). The intestine is an



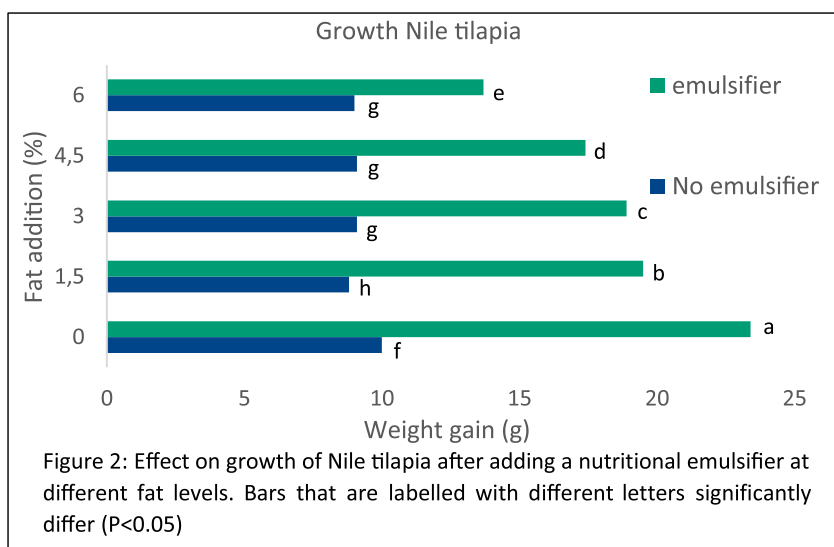
aqueous environment, which explains why a nutritional emulsifier with a high HLB value is more optimal.

To test the efficacy of Excential Energy Plus, two experiments were performed in Thailand. The first one, performed at the Mahasarakham University by Dr. Eakapol Wangkahart (2022),

tested the effect of adding Excential Energy Plus at 350 g/MT on different fat levels. The experiment showed that addition of the nutritional emulsifier increased the growth significantly, regardless of the fat level (Figure 2; $p < 0.05$). Besides growth, also feed intake, FCR and Protein Efficiency Ratio were significantly improved ($p < 0.05$).

Looking at the blood parameters it could be observed that the addition of Excential Energy Plus improved non-specific immune response and the anti-oxidative capacity of the fish. Additionally, it was also observed that fillet yield and enzyme activity were elevated after adding the nutritional emulsifier.

The second experiment was an on-farm evaluation to test the efficacy of Excential Energy Plus in ponds. Over a period of 92 days, Nile tilapia were fed either a commercial control diet or the same control diet with Excential Energy Plus at 350 g/MT on top. The trial was done on a farm, in regular ponds to come as close as possible to a normal production situation. During and after the feeding trial, the survival, growth performance and feed efficiency were measured and calculated. Survival, fish health and feed intake were unaffected by the addition of the nutritional emulsifier. However, when looking at growth after 92 days, it was observed that fish fed the nutritional emulsifier had a significantly higher growth (499.7 g) compared to fish not fed the emulsifier (435.5 g) ($p < 0.05$; Figure



3). Additionally, the FCR showed a trend towards significance ($p < 0.1$), as the FCR improved when fish were fed the nutritional emulsifier.

(1.44) compared to fish fed the same diet without the nutritional emulsifier (1.70).

With the rising feed prices and the demand for increased efficiency, the use of nutritional emulsifiers is a suitable strategy. Excential Energy Plus, an emulsifier with a high, optimal HLB

value for the intestinal environment, is already widely used in livestock and aquaculture and known to improve growth performance and feed efficiency. Especially the positive effect on fat, protein and energy digestibility is a very powerful tool in the optimization of nutrients. Next to that, the use of Excential Energy Plus is linked to an increased health status, enzyme activity and fillet yield in Nile tilapia.

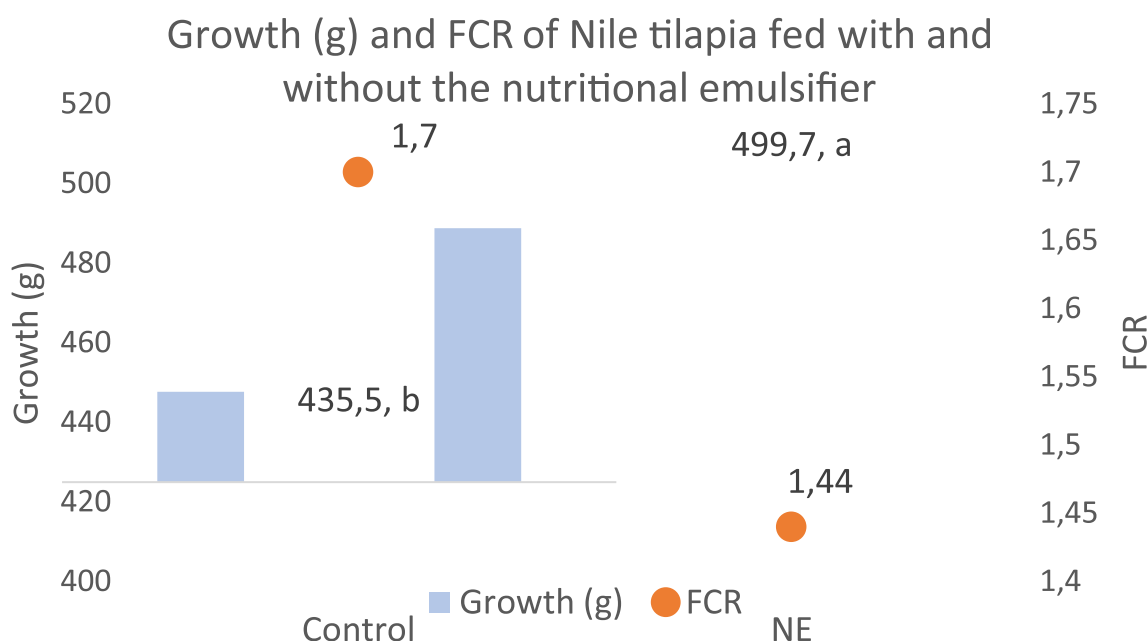


Figure 3: Growth and feed conversion ratio (FCR) of Nile Tilapia fed diets with and without a nutritional emulsifier. Bars that are labelled with different letters significantly differ ($P < 0.05$)

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