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Case IH combine harvesters tested for African conditions. p26

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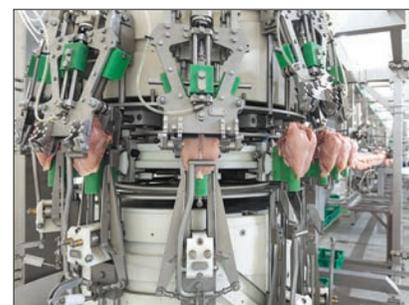
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davide bonaldo/Adobe Stock



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## African Farming

and Food Processing

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## Farming Calendar 2020

### SEPTEMBER

9-12 NAMPO Harvest Day VIRTUAL  
[www.grainsa.co.za](http://www.grainsa.co.za)

28 Sept -Biocontrol Africa VIRTUAL  
01 Oct [www.informaconnect.com/biocontrol-africa](http://www.informaconnect.com/biocontrol-africa)

### OCTOBER

28-30 Agritec Africa NAIROBI  
[www.agritecafrica.com](http://www.agritecafrica.com)

### NOVEMBER

11-15 EIMA DIGITAL PREVIEW

18-21 Agropack Iraq Erbil & plastprintpack Iraq ERBIL  
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*Readers should verify dates and location with sponsoring organisations, as this information is sometimes subject to change.*

## FAO is fighting the second generation of Desert Locusts

CYRIL FERRAND, FOOD and Agriculture Organisation's (FAO) Resilience Team Leader for East Africa, said that though significant progress has been made in a number of countries, especially in Kenya, FAO is fighting the second generation of Desert Locusts.

"We know we cannot defeat an upsurge of Desert Locusts globally in only a few months. Of course the locust situation in Yemen and Southwest Asia remains a concern – but I have to say when it comes to East Africa, we have made a lot of progress in the entire region, where expertise was very low at the beginning. Some of the affected countries had not seen Desert Locusts for decades - in the case of Kenya it was 70 years. Of course, there is still a need to build up monitoring and response capacity across the region, to be ready if a renewed upsurge occurs," he said.

## AfDB enhances food security in Niger

ACCORDING TO A report by the African Development Bank, The Water Mobilisation Project to Enhance Food Security in Maradi, Tahoua and Zinder regions, implemented between 2011 and 2018 in Niger, has sustainably increased agricultural production and productivity and increased food security for nearly nine million residents of this Sahelian country.

"The project's expected effects, as far as food security, increased production and jobs, were achieved overall," according to the PMERSA-MTZ final report. The team was led by Moustapha Cheick Abdallahi Cheibany, senior agricultural economist for the Bank.

## FAO launches COVID-19 Response Programme

FAO HAS UNVEILED its comprehensive COVID-19 Response and Recovery Programme, aimed at preventing a global food emergency during and after the COVID-19 pandemic while working on medium to long-term development response for food security and nutrition.

The agency is calling for US\$1.2bn in initial investment to support the needs of the new programme.

The programme was launched during a virtual dialogue with private and public sectors entitled 'Joint action on COVID-19: boosting our food and agricultural response'.

"We cannot employ a 'business as usual' approach anymore," highlighted FAO director-general QU Dongyu in his opening remarks. "We must work very hard to limit COVID-19's damaging effects on food security and nutrition and there is a need to be more country-driven, innovative and to work closely hand in hand."

According to the World Bank's estimates, the pandemic's economic impact could push about 100 million people into extreme poverty. Soaring unemployment rates, income losses and rising food costs are jeopardising food access in developed and developing countries alike and will have long-term effects on food security.

## Belarus agriculture deal set to boost Zimbabwe's food security

A US\$58MN DEAL between the two countries will revolutionise Zimbabwe's agriculture industry, stated Zimbabwe's Honorary Consul to Belarus, Alexander Zingman.

The first batch of modern farm machinery has been shipped to Harare, including 20 grain harvesters for grain and maize, 100 tractors and 52 seed drills, with the second batch expected by December.

"This deal brings Belarusian expertise in agriculture and engineering to Zimbabwe. Both countries have been expanding ties since 2015 and this deal is a win-win for both," said Alexander Zingman.

Zimbabwe's president Emmerson Mnangagwa had called for a comprehensive project to modernise and mechanise the entire agricultural sector. The country is reeling from the economic effects of coronavirus, a disastrous drought and Cyclone Idai last year, leaving more than five million people in need of food aid.

The agriculture deal was signed in 2018, with Belarus providing farming machinery and advanced technology to Zimbabwe, as



This project will enable Zimbabwean farmers to boost the productivity of their land and to reduce their losses through timely crops harvesting.

well as training for local farmers in cultivation, seeding, irrigation, and crop harvesting. It also provided the project with long-term financing for the acquisition of equipment.

Belarusian technical specialists have been sent to Zimbabwe for one year to provide training to farmers in modern farming techniques. Zimbabwean specialists will get two months training in Belarus.

"This project will enable Zimbabwean farmers to boost the productivity of their land and to reduce their losses through timely crops harvesting. The result will be that farmers can ensure the food security of Zimbabwe itself and, where possible, also raise their income levels by exporting their produce," said Zingman.

Image Credit: Adwo/Adobe Stock

**Nigeria sets up a 200,000 yam capacity facility**

THE NIGERIAN GOVERNMENT has set up a 200,000 yam capacity market in Zaki Biam, a local government area in Benue State, North Central Nigeria.

Inaugurating the market, Yemi Osibanjo, vice-president of Nigeria, explained the strategic nature of the market. Osibanjo said, "The Zaki Biam International Yam market is probably the biggest yam market in the world because Nigeria is the largest producer of yams in the world. It accounts for sales of possibly 70 per cent of yams that are cultivated in the country. More than 200 trucks loading close to two million tubers of yams go out of that market every week."

"However, the market has very little storage capacity and its infrastructural facilities are way behind its capacity and the size of commerce that goes on there every day. Apart from that, post-harvest losses have been a major problem of agricultural production in Nigeria. Nigeria produces 17mn tonnes of yams annually but loses up to 40 per cent on account of inadequate storage and processing facilities."

The Zaki Biam Market comprises of facilities shared by the yam sellers and framers in the market and entailed the construction of 660



Image Credit: Abbe Stock

Lack of infrastructural facilities is a major problem for agricultural production.

units of stalls/sheds; a police station; a market administrative building; solar; powered borehole; internal road with drainage; installation of solar street lights asides two units of warehouses with a combined capacity to the 200,000 tubers of yam.

"The shared facility is an opportunity to improve the working and trading environment for small and medium-sized businesses. This is because most individual businesses cannot, on their own, afford the equipment necessary for their businesses."



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## USAID announces support for new supply-chain management training centre in Africa

THE US AGENCY for International Development (USAID) announced US\$15mn, on 14 July 2020, to support a partnership between Arizona State University and the Kwame Nkrumah University of Science and Technology in Ghana.

The aim is to create an innovative research and training centre to improve African supply-chains.

The new centre for Applied Research and Innovation in Supply Chain-Africa (CARISCA) will train researchers and practitioners, produce new research, and translate and apply state-of-the-art research from around the world to improve local supply-chains, particularly in health care and agriculture. Understanding local needs and improving how local products and services, such as food

or critical medical supplies, move from producers to customers is critical to developing strong, self-reliant economies, and for reaching the poor and marginalised across Africa.

The partnership aims to establish Kwame Nkrumah University of Science and Technology as Africa's preeminent source of expertise on the sustainable management of supply-chains, become a resource for researchers in Ghana and across Africa to drive innovative research and training to improve African supply-chains, particularly for women and the most-disadvantaged customers and producers and leverage the private sector, governments, and civil-society partners to connect African businesses, researchers, and practitioners in supply-chain management to global resources.

## IOM launches Transhumance Monitoring Tool

THE INTERNATIONAL ORGANISATION for Migration has launched a Transhumance Monitoring Tool, which allows them to collect information about population movements across a large area, its direction and the challenges faced by the nomadic farmers who relocate to different regions in a year, for work and sustenance.

Every year, thousands of herders living in Africa's arid Sahelian region, cross over to Mauritania or Mali during the lean season, seeking greener pastures for their livestock.

"During this period, there is plenty of green grass on the Malian side. Mauritanian herders used to go there, but the closing of the borders has disrupted the flow. The Mauritanian government offers

feed to livestock farmers, but it is not enough," said Babiye Ould Balemine, who participated in the IOM survey.

"This year, due to the COVID-19 afflicted border closures, decreed by Western and Central African governments, herders and cattle are stranded in the border areas between Mauritania and Mali, without any resources to feed their livestock. Since they are no longer able to travel to Mali, they are stranded and deprived. A large concentration of herders and their herds have been reported in the commune of Adel Bagrou, on the border with Mali," revealed Aliou Hamadi Kane, coordinator of the Groupement National des Associations Pastorales (GNAP), a Mauritanian herders association.



Border closures have deeply impacted the livelihood of nomad farmers in Sahel, who keep shifting bases with seasons.

"The presence of thousands of herders along the small border areas has led to the mixing of livestock and creating tensions between them, especially at water points," he added. The impact of this situation on livelihoods and cattle health is considerable.

These tensions are compounded by health risks which COVID-19 poses. "Many Malian and Mauritanian herders do not distinguish the territories on which their cattle graze. These are roads people have travelled for years and years," Babiye explains.

The IOM and Groupement National des Associations Pastorales (GNAP), whose teams have been working on understanding the transhumance

corridors in Africa, since February 2019, conducted a flow monitoring survey, between May and June 2020, where 16 per cent of herders were unaware of any of the COVID-19's preventive measures. As a remedy, IOM launched an awareness campaign to combat the spread, and installed hand-washing facilities in the areas where the stranded herders are living. Their campaign reached more than 1,200 people in the region.

The IOM project was funded by the Government of Japan and the European Union, through the EU-IOM joint initiative, for Migrant Protection and Reintegration and Strengthening Border Management in Mauritania.



The Transhumance Monitoring Tool helps collect information about population movements across a large area, its direction and the challenges faced by the nomadic farmers.

Image Credit: IOM/C/Ly

Image Credit: OMC/Ly

## CNH Industrial signs agreement for agriculture networks in Southern Africa

CNH INDUSTRIAL HAS announced its plan to expand direct presence in Southern Africa’s agriculture and construction equipment sectors.

The company is moving to strengthen its local presence with the planned purchase of four divisions of Capital Equipment Group (CEG), previously owned by Invicta Holdings Limited. These include:

**Northmec:** South Africa’s most established agricultural equipment distributor and the sole distributor of Case IH equipment and implements.

**NHSA:** A spare parts distributor in Southern Africa mainly focused on agriculture.

**CSE:** A well-established equipment distributor operating for more than 50 years in the market and the sole distributor of CASE tractor loader backhoes and skid steer loaders.

**Landboupart:** A distributor of spare parts and implements.

By taking full operational management of its commercial distribution and aftermarket network, CNH Industrial aims to further develop its Case IH and CASE Construction Equipment brands’ presence together with aftermarket sales and services in South Africa and other Southern African markets, strengthening its position and ties with its customer base.

This model is already in place for the company’s agriculture equipment brand New Holland Agriculture as well as its commercial and specialty vehicles business via its IVECO, IVECO ASTRA and IVECO BUS brands.

## Afrika Umoja and Black Farmers Association of South Africa tackle COVID-19

AFRIKA UMOJA HAS announced a partnership with the Black Farmers Association of South Africa (BFASA) to set up and distribute disinfecting products throughout the country.

The partnership will enable BFASA to set up operational deep-cleaning and sanitising teams and build hand operated stations that spray mist onto surfaces and sites throughout the country, as well as supply the market with their product, Santab. It is produced in South Africa and sold as effervescent tabs that can be dissolved in five litres of water.

Afrika Umoja and BFASA will use their networks to distribute the Santabs and disinfecting products across South Africa, and also intend to educate people on how to sanitise, especially in rural areas.

BFASA is an association that has a membership of 50,000 farmers including farmers on small pieces of land, farmers with a small turnover and smallholder farmers in all nine provinces.



Image Credit: Riccardo Mayer/ Adobe Stock

Afrika Umoja and BFASA will distribute disinfecting products across South Africa, and educate people on how to sanitise.

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## AfDB project in Tanzania tripled incomes of rural producers and traders

AN AFRICAN DEVELOPMENT Bank project to enhance market infrastructure, value addition and rural finance (MIVARF) in Tanzania produced highly satisfactory results, according to a report released by the project team. The project, rolled out in the country between 2012 and 2017 increased the incomes of rural producers and traders threefold.

With US\$56.8mn in funding from the African Development Bank, the programme was undertaken in 32 districts with a population of 6.1 million in 1.2 million households.

"This increase is attributable to the sale of value-added products, improved access to markets, increased productivity, the use of improved techniques (including the System of Rice Intensification and the use of fertiliser and improved seed) and enhanced capacity to

negotiate better prices," explained project team lead Salum Ramadhan. "Despite challenges in terms of coverage, the programme has worked well thanks to the efficiency of communication with the district and regional liaison officers, and to the good relationships established with district and regional political and administrative structures," according to the project completion report.

Small producers and traders gained greater access to agricultural markets, which cut their post-harvest losses of staple crops. One beneficiary, the Meru Dairy Company, recorded a nearly 85 per cent spike in production: establishment of a cold room boosted the company's milk-production capacity from 400 to 2200 litres.

"Despite challenges in terms of coverage, the programme has worked well thanks to the efficiency of communication with the district and regional liaison officers, and to the good relationships established with district and regional political and administrative structures," according to the project completion report.

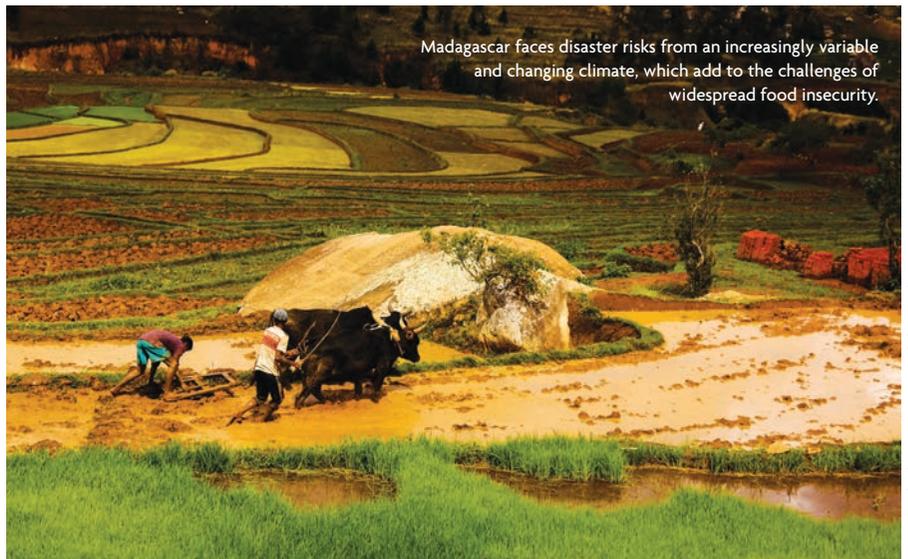
## Madagascar receives ARC Insurance payout for drought

THE GOVERNMENT OF Madagascar received a symbolic cheque on 7 July 2020 for US\$2.13mn from the African Risk Capacity Insurance Company Limited (ARC Ltd) to cover anticipated losses to livelihoods from crop failure in the just concluded farming season.

The ARC payout is the result of drought insurance taken by the country with the support of the African Development Bank, through the Africa Disaster Risk Financing (ADRFi) programme, which financed 100 per cent of the 2019-20 insurance premium for sovereign drought risk transfer for the Republic of Madagascar.

The Minister of Economy and Finance, Richard Randriamandrato, during the official handover ceremony stated, "The drought insurance of African Risk Capacity is one of the sustainable solutions to strengthen the efforts of the government and partners in the Southern region of Madagascar. It demonstrates the mutual assistance between friendly African countries to respond efficiently to natural disasters, particularly drought. Such a mechanism is beneficial for Madagascar as it will enable us to improve the conditions of farmers and the livelihoods of vulnerable populations in the 'Great South' that are victims of recurrent drought, as well as to preserve their production capital. Early interventions to be implemented with this fund will focus on unconditional cash transfer and Cash for Work (CFW) for 15,000 vulnerable households, nutritional support for 2,000 children under five years of age, and water supply for 84,000 households. Thus, this insurance mechanism supports the implementation of the National Disaster Risk Management Policy and Strategy, particularly the promotion of financial resilience to climatic hazards."

Madagascar faces disaster risks from an increasingly variable and changing climate, which add to the challenges of widespread food insecurity.



Madagascar faces disaster risks from an increasingly variable and changing climate, which add to the challenges of widespread food insecurity.

Image Credit: homocosmos/Adobe Stock

UN-ASG Mohamed Beavogui, the director-general of African Risk Capacity said, "The payout made by ARC to support the drought-affected population in the Great South region was made possible thanks to the leadership and commitment of the government of Madagascar to protect its people. We also thank the AfDB for their laudable support through the ADRFi programme. This is a vivid testimony that collaboration between African governments and development partners, both within and outside the region, using market approaches can go a long way in saving developmental gains on the continent.

"Our purpose in working with Member States to provide disaster risk insurance is targeted at promoting resilience and providing financial protection to the vulnerable population when perils occur", remarked Lesley Ndlovu, the CEO of ARC Insurance Limited.

"The insurance policy payout is timely, with Madagascar also facing the challenges of dealing with the current COVID-19

pandemic. It demonstrates that risk transfer programmes can help countries manage the risks of climate-related disaster and release pressure on public finances when multiple crises occur," said Dr Jennifer Blanke, vice president for Agriculture, Human and Social Development, AfDB.

"Madagascar's accession to the drought insurance mechanism as part of this ADRFi programme is a very encouraging initiative. The collaboration between the Malagasy Government, ARC and the AfDB is still as fruitful in terms of developing a financial protection mechanism in the face of disaster risks. The sustainability of this tripartite collaboration will allow us to open doors of extensions to other risk areas of the country or even for other types of climatic hazards such as cyclones, floods and epidemics," said General of Air Brigade Mamy Razakanaivo, Executive Secretary of the CPGU (Prevention and Support Unit for Emergency Management) within the Prime Minister's Office and Supervisor of the ARC programme in Madagascar.

Evonik carried out research to investigate the effect of the product Ecobiol on necrotic enteritis challenge caused by *Clostridium perfringens*.

# Ecobiol ameliorates impact of broilers' enteric pathogen

**N**ECROTIC ENTERITIS (NE) disease is estimated to cause a US\$6bn annual loss for the global poultry industry and, therefore, several studies have been conducted in order to develop an alternative treatment following the ban of antibiotic growth promoters.

The research on the effect of *B. amyloliquefaciens* CECT 5940 (Ecobiol) on necrotic enteritis was conducted by Dr Shubiao Wu at New England University in Australia.

Ecobiol may favour the proliferation of lactic acid bacteria. In addition, this bacterium may cross-feed other families of bacteria that can use lactate to produce butyrate such as Ruminococcaceae and Lachnospiraceae. Butyrate is known to have a positive effect on energy metabolism and gut health. Therefore, the reduction of CP in combination with the use of Ecobiol may have a synergic effect in the control of *C. perfringens*, avoiding major issues with NE.

## Trial design: The trial consisted of four treatments

- Non challenged
- Non challenged + 0.5g/kg Ecobiol 500 (1 x 10<sup>6</sup> CFU/g of *B. amyloliquefaciens* CECT 5940)
- Challenged
- Challenged + 0.5g/kg Ecobiol 500 (1 x 10<sup>6</sup> CFU/g of *B. amyloliquefaciens* CECT 5940)

Challenged birds received an inoculation of 1ml *Eimeria* (5,000 sporulated oocysts each of *E. maxima* and *E. acervulina* and 2,500 of *E. brunetti*) at day nine and 1ml of *C. perfringens* (108 CFU) at days 14 and 15. Feed and water were provided ad libitum during the experimental period. The diets were provided in pellet form.

## Results:

- The necrotic enteritis challenge significantly reduced performance of birds, as measured by lower feed intake, lower weight gain and higher FCR
- Overall, the addition of Ecobiol 500 significantly improved these parameters.



Inclusion of Ecobiol 500 in the research by Evonik helped to reduce the impact of necrotic enteritis.

Image Credit: Evonik

## The investigation showed that Ecobiol 500 inclusion was able to reduce the impact of the disease challenge, improving bird performance.

- Furthermore, Ecobiol 500 inclusion was able to reduce the impact of the disease challenge, improving bird performance.
- Measurements of enteric short chain fatty acids showed a significant increase in Butyric acid levels when Ecobiol 500 was included in the diet.
- Finally, amino acid digestibility was improved overall by about 1.5 per cent when Ecobiol 500 was used.

## Conclusion:

- Inclusion of Ecobiol 500 helped to reduce the impact of necrotic enteritis, and may, therefore, be a useful tool to mitigate the effects of this condition.

- Improved digestibility of amino acids not only leads to improved performance but may also reduce substrate upon which problematic microorganisms like *Clostridium perfringens* might thrive.
- Elevated levels of butyric acid are associated with better gut health overall and with improved performance.

## About Evonik

Evonik, one of the world leaders in specialty chemicals, goes beyond chemistry to create innovative, profitable and sustainable solutions for customers. The company is active in more than 100 countries around the world.

In this article, Evonik mentions the main findings of this research. For full details, please contact the Evonik representative in your region to get the Facts and Figures document (Facts and Figures Poultry No 15179). 

Viola Holik, Lohmann Breeders GmbH, speaks to *African Farming* about a combination of management practices including the right nutrition, water temperature and bird handling, that are important in reducing heat stress.

## Minimising heat stress

**T**HE BODY TEMPERATURE of a hen varies between 40 and 42°C, depending on time of the day. It changes before and after feeding, in the night time etc, and depends on feather cover in connection with moulting, brooding and environmental temperature— on which we will focus here.

24°C is the ideal environmental temperature for a hen. Up to a temperature of about 30°C the hen can still regulate the body temperature, but when the house temperature reaches 40°C the body temperature will increase dramatically.

Exposed to 30°C, the hen reacts with reduced feed intake resulting in smaller egg size and eventually lower egg production. When the temperature increases from 30 to 38°C, shell quality is likely to deteriorate as indicated by increasing percentage of cracked eggs. From 41°C the risk of death is high and emergency measures have to be taken. A temperature of 47°C is lethal.

### Good management practices include the following to minimise heat stress:

#### ● Stocking density

If stocking density is high, the radiant heat between the birds accumulates and the temperature increases. The birds therefore cannot lose body temperature.

#### Recommended stocking density with increasing house temperature:

Temp. (c°)	Litter (birds/m <sup>2</sup> )	Cages (cm <sup>2</sup> /bird)
25	5.5	450
30	4.5	550
35	3.5	650

#### ● Bird handling

During the hot period of the day any additional stress on the birds should be avoided. Vaccination, beak treatment, transfer or any other kind of handling should be done during the coolest period of the day, if necessary at night.

#### ● Water temperature

Leeson and Summers (2000) exposed layers to an environmental temperature of 33°C. Cool water of 2°C was given to half of the flock and the other group received water of 33°C. The birds with access to cool water consumed 12 g more feed per day than the group given warm water, resulting in 12 per cent higher production, with slightly reduced egg weight due to the higher rate of lay.

Birds can reduce body temperature by drinking cool water. Therefore, cool water of good quality should be supplied at all times.

### Feeding time

Feeding at the right time of the day is very important to support the birds in coping with heat stress. During late afternoon a significant rise in body temperature can be observed which can kill the birds in severe cases. This is not the hottest time of the day, but it is the peak time of digestion if the birds have been fed in the early-mid



Open house in Ethiopia with an automatic nest system.

Image Credit: Lohmann

morning period. A good strategy to take an unnecessary heat load off the birds is to withdraw feed 8 hrs prior to the anticipated time of peak temperature. One third of the daily feed ration should be given in the morning and two thirds in the late afternoon. An additional advantage is the availability of calcium in the digestive system during shell formation at night and in the early morning hours. It will improve shell quality and prevent the birds from depleting bone calcium.

So-called 'midnight snacks' are a good tool to give hens extra feeding time in the cooler parts of the night. This does not have to be exactly around midnight, but 3 hrs of darkness before and after the extra 1-2 hours of light is essential to avoid disturbing the lighting programme.

### Feed

Simple strategies to stimulate feed intake are:

- run the feeder chains more frequently, if necessary empty to avoid overflow.

Poor debeaking will cause insufficient eating, especially in hot climates.



Image Credit: Lohmann

- the feeders should be empty at least once a day to enhance the appetite and assure that the fine particles of the feed are consumed.
- the feed texture should not be too fine; use oil to avoid “dusty” feed.



Image Credit: Lohmann

Sunlight on layer hens in open houses increases heat stress.

### Nutrition

Above 27°C the energy requirement of a layer will start to increase since the bird needs additional energy for panting to reduce body heat. It is helpful to do the following

### Oil

Including oil in the diet has long proved to be beneficiary in hot climates and shows better effects than in moderate climates. For example the inclusion of oil increased feed intake by 17.2 per cent at 31°C compared to only 4.5 per cent at temperatures of 10-18°C (McNaughton and Reece, 1984).

Digestion of fat produces less heat than the digestion of carbohydrates and proteins. Oil binds the fine particles in the feed and stimulates feed intake and increases the energy level in the feed, which is very important to compensate the reduced energy intake due to less feed intake during heat periods. Fat has also been shown to slow down feed passage through the gastrointestinal tract and therefore increases nutrient utilisation. Up to 5% oil can be used.

An additional advantage of oil is the content of linoleic acid which improves the production and weight of the eggs. 4

The following table shows the contents of fatty acids in different oils.

### Protein

The key to good nutrition is to focus on daily intake of essential amino acids while reducing total digestible protein intake within the constraints of available raw materials.

### Vitamins

Vitamins are important components of a chicken's diet and unless a formulated ration is used, it is likely that deficiencies will occur. Vitamin C supports the birds in handling heat stress and improves egg weight, shell thickness and egg production. The optimal effect is shown by adding 250-400 mg ascorbic acid/kg. ⑤

The new optional module, the semi-automatic loading carousel, saves labour and leads to higher quality.

# Meyn's new deboning solution offers full flexibility

**L**ABOUR AND FLUCTUATING market demands have never been so challenging in poultry processing. The effects of COVID-19 forced various processors to take measures like implementing social distancing and partly shift to other output products. The pressure on poultry processors to be flexible with both their input and output has never been so apparent. Together with decreased dependency on labour and increased requirements on health and safety, processors are facing demanding times.

Meyn, specialist in poultry processing solutions, answers these challenges with the release of the Rapid Plus Deboner M4.2, featuring the new semi-automatic loading carousel. This upgraded modular, configurable deboning solution takes the next step to meet the need for flexibility and for saving labour.

## Better health and safety, reduced skilled labour

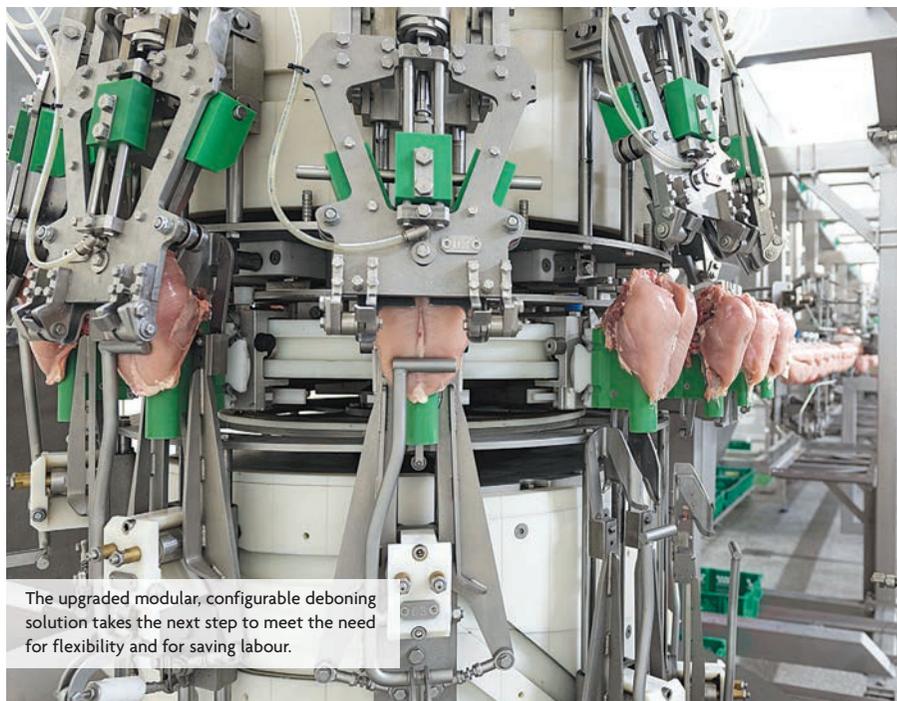
The Meyn Rapid Plus M4.2 with improved ergonomics enables processors to save up to 34 fte (full-time equivalent) per shift. As the loading performance is less dependent on the experience and skills of operators, it leads to a more consistent input resulting in a higher quality output.

**"The secret of the Meyn Rapid Plus is the heart and passion of the dozens of experts that worked on making this deboning solution the icon it is today."**

**Marcel Verhagen, field support engineer.**

Throughout the Rapid Plus solution, all required operators are standing on separate platforms, that can be adjusted in height individually to ensure an ergonomic work position.

"The secret of the Meyn Rapid Plus is the heart and passion of the dozens of experts that worked on making this deboning solution the icon it is today. From engineers to manufacturing, service technicians, sales,



The upgraded modular, configurable deboning solution takes the next step to meet the need for flexibility and for saving labour.

Image Credit: Meyn

everybody within Meyn has gone above and beyond into perfecting the entire Rapid Plus. You can really see that craftsmanship when working with the Rapid. From the SAL, till the gear belt to the tiniest screw," Marcel Verhagen, field support engineer said.

## Better flexibility

Meyn's well-known Rapid series offers full flexibility. As the only solution that can harvest all fillet and tender products automatically from both breast caps and front halves at a high speed of 7,000 bph.

Both input and output can be adapted to changes in market demands. Three preset touch-buttons enable to adjust critical settings during production when product weight ranges change.

Additionally, the modular design of the Rapid Plus M4.2 provides poultry processors great flexibility to customise to the available floor space, with individual processing sections each having their own drive and gear belt to move the product carriers. The product carrier can be rotated in the best position for each individual processing step. Further, the speed of the

product carriers is varied across the system, slower at the place of manual operation and fast in automatic operation.

"Quality products produced at high speeds was our requirement. The Rapid Plus M4.2 perfectly caters to our needs," Varun Reddy, CEO Sneha Farms, commented.

## Training

Meyn offers default training to achieve the best result with processing solutions. The Meyn Rapid Plus M4.2 training programme ensures that technicians understand the relation between input product characteristics, adjustments and the required end product quality, for both production and maintenance.

The Rapid breast deboning concept has been globally praised by processors and their customers and proven to be successful. All customers truly see the benefits of Meyn's unrivaled deboning solution. Its flexibility, significant reduction of labour costs and a minimised dependency on labour skills and input variety make it a true deboning gamechanger. **B**

## Ensuring a comfortable environment for hens

ROXELL, MANUFACTURER OF automated feeding, drinking, nesting and heating systems, is launching a new version of the Koozii group nest, with emphasis on the comfort and welfare of the hens and very careful handling of eggs.

The nest has the largest nesting areas for broiler breeders or commercial layers. For a poultry farmer, the nest volume is an important factor, because more space means more oxygen and a more pleasant climate. The perforated AstroTurf mat with small holes has the additional advantage that dirt is carried away from the nest. This means the nest stays clean. At the nest entrance, Koozii also has a step and curtains. For the hen, it's an entrance to a safe space with lots of shade, mimicking the conditions they prefer in nature. Lots of space, oxygen, a clean nest floor and safety create a very high nest acceptance. Koozii creates

a very natural environment for a hen to lay eggs. Further, the AstroTurf helps the eggs stay clean

For the hatchery, eggs need to be clean and undamaged with no hairline cracks. The Koozii nest helps poultry farmers to achieve this result.

"By launching the new generation of Koozii nest, we are also responding to our customers' requests for a wider range of group nests," said Frank Hartmann, marketing manager at Roxell. "It is safe to say that we have a Koozii nest for broiler breeders and commercial layers to suit every poultry farmer. Special requests for the integration or hatchery are no problem. We have the flexibility to build a nest according to the legislation and standards for stocking density in each region. House dimensions and layouts no longer limit the options when choosing a Roxell nest."

The nest makes daily tasks easier. For example, the curtains on the nest entrance can be lifted up in one go, which facilitates quick inspections.

The animal friendly expulsion system prevents hens from getting injured, which results in lower mortality rates. The fact that the hens cannot stay in the Koozii group nest at night is good for hygiene.

ROXELL has its head office in Maldegem, Belgium and has diverse product innovations.

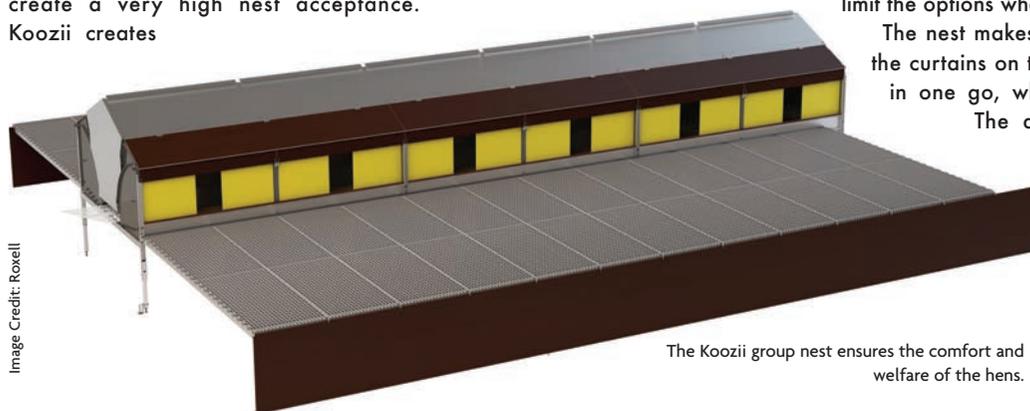


Image Credit: Roxell

The Koozii group nest ensures the comfort and welfare of the hens.

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TRANSFORMING  
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From improved nutrition to technology innovations, there are reasons to be upbeat about Africa's poultry industry in the long-term. *Martin Clark* reports.

## Powering up Africa's poultry sector



Image Credit: serhir/Adobe Stock

Experts in the field see the poultry sector bouncing back after the shocks experienced during the first half of 2020.

**N**EW FREE TRADE agreements, a rising population and an uptick in demand cast a positive backdrop to the long-term health of Africa's poultry sector, despite the rather gloomy start to 2020.

The coronavirus pandemic – and more specifically the subsequent lockdown that followed – has wreaked havoc on businesses and industries the world over.

Parts of Africa have simultaneously had to contend with devastating locust swarms in recent months.

Together, this has prompted more food assistance from donors both in Africa and other parts of the world.

However, the total economic damage may not be as bad as first feared.

In July, the African Development Bank (AfDB) said in an update to its African Economic Outlook 2020 that the continent's growth stands to rebound to three per cent in 2021 – a major reverse from -3.4 per cent in the worst-case scenario for 2020.

That's still down on pre-coronavirus estimates: the bank's original growth forecasts in January were 3.9 per cent for 2020 and 4.1 per cent in 2021.

**According to Rabobank's research team, global poultry demand will be more bullish in the latter half of the year, as Covid-19 containment measurements are eased.**

It paints a picture that recovery is entirely possible across a continent that has plenty of other things going for it right now, including the anticipated launch next year of the African Continental Free Trade Area (AfCFTA), which is expected to boost intra-regional trade; the launch was delayed because of the pandemic.

It has the potential to drive cross-border trade across all sectors, including agriculture and poultry.

"An estimated 15 per cent of the global growth in poultry demand over the next two decades is expected to occur in Africa due to increasing population, urbanisation and gains in purchasing power," said Ramy Taieb, regional director for the Middle East and Africa at the US Grains Council (USGC).

"These changing consumer patterns have resulted in the emergence of large grocery retailers and fast-food chains. These new demand drivers have surged the demand for animal protein, creating significant opportunities for the local poultry production value chain to modernise and meet this growing market demand."

### **Bouncing back**

From a global demand perspective, poultry is generally the least-impacted protein in an economic slowdown due to its price competitiveness.

Certainly, experts in the field see the poultry sector bouncing back after the shocks experienced during the first half of 2020.

According to Rabobank's research team, global poultry demand

will be more bullish in the latter half of the year, as COVID-19 containment measurements are eased.

“Volatility could be exacerbated by ongoing challenges to balance supply and demand and by exchange rate instability. On the other hand, the relatively bearish feed price outlook will provide producers some relief on the cost side of their businesses,” says Nan-Dirk Mulder, senior analyst, animal protein, at Rabobank’s RaboResearch unit.

Prices will see some recovery after historic lows in the first half of 2020, the bank’s July report states.

Although demand will recover, supply-demand imbalances, exchange volatility, and access issues could distort trade flows, the bank report notes, while a trend of buying local may also have an impact. While the positive effects of AfCFTA bode well for Africa long-term, trade agreements and restrictions elsewhere have the potential to keep shaking up global trade flows – notably a thorny US-China trade relationship, Brexit and a move in the Middle East to further improve food security.

These are seen as the main factors that could disrupt global poultry trade and have a knock-on effect on African farmers. However, long-term, there is every reason to be bullish.

Africa’s chicken meat market is expected to reach 11 million tonnes by 2030, according to a research report by Indexbox. It expects production to grow on average, 2.4 per cent a year through to 2030, while consumption will rise 3.1 per cent annually.

#### South Africa market

In the continent’s biggest economy, South Africa – by far the continent’s largest producer and consumer of chicken meat – there



Image Credit: kokotewan/Adobe Stock

Health promotion through nutrition and welfare, rather than a pure reliance on pharmaceuticals, is an important trend.

are significant moves afoot to improve overall performance in the sector, which will better position it whatever the future holds.

It is currently in the process of implementing a new poultry master plan, one that nurtures a stronger local industry that can better support the South African economy.

The new master plan includes a combination of both local expansion and import restrictions – including tariffs on major exporters to South Africa.

Officials announced in March a long-awaited tariff adjustment on imported chicken from a number of countries, including Brazil.

The new tariffs will apply to more than 30 per cent of all imported chicken, though imports from the European Union (EU) will not be affected.

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It is seen locally as a relief measure to the industry, which has suffered under a landscape that saw large-scale dumping of poultry into South Africa.

Local producers currently supply about 70 per cent of the country's consumption, with the rest from imports.

"The new tariff is a step to ensuring the long-term sustainability of the local poultry industry, which is the largest contributor to agricultural GDP in South Africa," said Izaak Breitenbach, of the South African Poultry Association's (SAPA) Broiler Organisation.

He said the poultry industry is the largest contributor to agricultural GDP in South Africa.

The country is seeing other changes too, not least those linked to the COVID-19 crisis, which resulted in the cancellation of June's bi-annual AVI Africa conference, the biggest poultry event in Africa.

As elsewhere, the crisis has brought with it new safety practices for workers at poultry farms and other businesses to limit the spread of the disease, which has had a knock-on effect on production chains.

Other developments include the creation of the Afasa Poultry Producers National Poultry Task Team (APP-NPTT) – a new representative body created by poultry farmer members of the African Farmers Association of South Africa (Afasa).

It is a move to give a voice to numerous black smallholder farmers now supporting the nation's poultry industry.

### New technology

All the while, there are moves to improve industry productivity and efficiency, driving the demand for new technology in the area.

This includes a broad array of measures, from the adoption of solar lighting for greater energy efficiency to smart technology and the use of data for precision farming.

The take up of more digital solutions is set to grow in Africa, as it catches up with more developed markets elsewhere.

Nowadays, it's not unusual to see robots and drones monitoring health and welfare of the flock.

These innovations can navigate the poultry house floor using image sensors and relay vital data back to farmers.

As well as robotics and many other innovations, there is also trend to artificial intelligence (AI) and even virtual reality in maintaining livestock and boosting yields.

Netherlands-headquartered Moba unveiled this year innovations in its crack detection tools using AI – a move in which its existing Crack Detector and Shell Strength Detector will become standard features in Moba's Shell Inspector.

The company says the monitoring and efficient handling of different shell qualities can result in positive benefits for businesses.

AI and deep-learning technology have been applied for years in Moba's egg inspection tools, notes Paul de Schouwer, commercial director of Moba.

"Artificial Intelligence evolves at an enormous pace, so we are sure that it will be found more and more in our egg graders."

What all of these, and other smart devices, share in common is the production of large amounts of data, allowing farmers to monitor poultry autonomously and round the clock.

The processing and interpretation of this big data to inform better decisions is another important area that is set to grow in less developed markets, as farmers and owners seek greater efficiencies and profits.

### Health management

In one of Africa's other big poultry farming nations, Morocco, the USGC is supporting training initiatives at the Moroccan Federation of Poultry Associations (FISA) in Casablanca, Morocco, to unlock some of this growth potential across select countries in West Africa.



Image Credit: chayakorn/Adobe Stock

Digital solutions are set to grow in Africa, as it catches up with more developed markets.

"While East and West Africa are home to relatively small poultry operations today, these operations are rapidly growing," said Katy Wyatt, USGC's manager of global strategies.

"While demand is increasing, inefficient production techniques and insufficiently addressed issues like zoonotic diseases continue to hinder industry growth."

It highlights another major trend in health promotion through nutrition and welfare, rather than a pure reliance on pharmaceuticals.

The Council has partnered with FISA since 2017 to support the growth and development of the West Africa poultry industry, training more than 250 poultry producers, lab technicians and veterinarians from six countries under several programmes.

"The development of sound poultry production and management skills – including improved methods of slaughtering and processing – will increase both the safety and efficiency of poultry production in West Africa," said Wyatt.

### Nutrition

Other factors are shaping the industry too, including the call to reduce the use of antibiotics across the production chain and improve nutrition for poultry.

"We are seeing a growing demand in the southern African markets for alternatives to antibiotic growth promoters which increase human resistance to antibiotic medication," said Cuthbert Mamabolo, regional business director for Evonik Animal Nutrition in sub-Saharan Africa.

Evonik recently signed an agreement with Swedish manufacturer Perstorp to become the exclusive distributor of ProPhorce SR 130 across southern Africa.

Mamabolo says that Evonik, especially with the new collaboration, offers a range of solutions that promote healthy animal growth without the use of antibiotics.

"The partnership between Evonik and Perstorp started with the announcement of our R&D collaboration last year. This additional distribution agreement is part of our ongoing endeavours to offer our customers holistic solutions for gut health issues in animal nutrition."

ProPhorce SR 130 is a butyric acid product that is a safe and cost-efficient solution for in-feed application in livestock management.

Butyric acid is a major ingredient for optimal digestion as it favours gut wall integrity, which is important for performance. It has also been shown to improve pathogen control, provide energy for cells lining the gut wall, enhance secretion of enzymes and improve intestinal cell proliferation, differentiation, and maturation. **E**

## Zagro's Ultraxide proven effective against African Swine Fever

AFRICAN SWINE FEVER has been causing a large number of infections in pigs across many parts of the globe, with devastating effect to the farms as well as the economy.

Zagro Asia Limited, a global provider of agrisolutions, has conducted testing of its major disinfectant, Ultraxide, against African swine fever (ASF). The company believes that at this point in time, only a sound biosecurity measure is feasible against ASF, with no vaccine nor other medical treatment currently available.

Zagro Asia Limited had commissioned for independent evaluation of Ultraxide against the ASF virus in Spain, in accordance with the EN 14675 test method, which was modified to enable testing against the ASF virus. The testing was done in a European Union reference laboratory for ASF. According to Zagro Asia Limited, the disinfectant Ultraxide possesses virucidal activity for the referenced strain of African swine fever virus (Ba71V) at 1:300 (one part of test product plus 300 parts of diluents), 1:200 (one part of test product plus 300 parts of diluents) and 1:100 dilution (one part of test product plus 100 parts of diluents).



Image Credit: Kacmy/Adobe Stock

Zagro Asia Limited had commissioned for independent evaluation of Ultraxide against the ASF virus in Spain.

The result shows that it reduces  $>4 \log_{10}$  of ASFV cytopathic effect, as required by the standard EN14675.

The test method employed included the presence of organic matter and hard water in order to assess Ultraxide's performance and

suitability for use in various farm set ups across the globe.

The results provided confirmation of the efficacy of Ultraxide in deactivating the ASF virus rapidly, in a laboratory set up as well as in real life farm settings.

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PAN TRADE

BALDAN

Kenya is among African nations that are placing increasing emphasis on camel milk production. *Mwangi Mumero* explores the market trends.

## Camel milk churns out higher incomes for Kenya

**T**HE KENYAN MARKET is witnessing increased commercial production and distribution of packaged camel milk, that are helping to boost incomes especially in arid and semi-arid parts of the country as well as in other countries of the region.

Nuug Camel Milk Products Limited, for instance, a milk processing company in Nairobi, is already producing camel products in vanilla, strawberry and mango flavours.

"We intend to compete with cow milk in the market. On the exports side, we want to become a foreign exchange earner for the country," observed Bashir Warsame, the company chief executive officer.

The company plans to package camel meat products for local and international markets.

The factory targets the pastoral communities in the northern Kenya counties of Marsabit, Samburu and Laikipia. It wants to establish another packaging plant in Garissa region expected to handle 2,000 to 3,000 litres a day.

With more than three million camels, Kenya is among the African nations that have in recent years, been seeking to exploit the potential of this livestock animal.

The global camel milk products market size was valued at US\$10.2bn in 2019. An estimated 3 million tonnes of camel milk are officially sold and consumed around the world.

While Africa and Middle East are considered regions where camel milk is consumed in large



The Kenya Camel Association notes that the yearly turnover of camel milk sales under the association has surpassed US\$10mn sourced from about 3.3 million camels.

Image Credit: kertur/Adobe Stock

quantities, China and North America are emerging as new markets.

Somalia, Ethiopia and Sudan are other African nations that produce camel milk. Saudi Arabia is the largest market and consumer at 33 litres per capita.

"Currently, scientific knowledge is lacking, with few people qualified to carry out research on camels in the continent. Governments have few strategies in genetic improvement through selection and breeding," observed Prof Mohammed Bengoumi, a Tunisia-based FAO camel expert.

Other companies selling camel milk in Kenya include Bond Investment Limited and Mwango Trading Limited.

Globally, the product range of Ashkaal General Trading (UAE), Anit Grup Mak Ltd (Turkey) and India's Krishnam

Biotech include camel milk.

According to Jamar Warsame, a Kenyan camel farmer, powdered camel milk is the preferred product in the export market.

However, he laments that there is need for the government to create a policy framework and quality control measure that will enhance sale of camel milk and result in immediate benefits to the mainly pastoralist communities that market milk.

The Kenya Camel Association (KCA) notes that the yearly turnover of camel milk sales under the association has surpassed US\$10mn sourced from about 3.3 million camels being grazed in various parts of the country.

Reforms initiated by the government will boost sales and earnings from camel products, according to KCA.

"Tax breaks will allow farmers and processors to enter the camel products market and boost the subsector. Sale of live animals to Egypt and Saudi Arabia will also be boosted," asserted Khalif Abey, the chairperson of the association.

Abey further underscored the huge post-milking loss of milk which averages 70-85 per cent due to milk evaporation, spoilage due to high temperatures due to poor storage.

"Development of cooling plants in camel milk producing regions is critical to reduce losses".

The association is collaborating with the University of Nairobi and Kenya Medical Research Institute (KEMRI) to develop a policy paper which will be passed on to Parliament to be enacted as law to regulate rearing, product processing and marketing. <sup>1</sup>

Rothamsted Research scientists have demonstrated that as carbon is lost, it leads to altering the structure of the soil's microscopic habitat and the genetics of microbes living within it.

## Study shows common farming practices drain the soil of carbon



Image Credit: Budimir Jevtic/Adobe Stock

In carbon-rich soil there is an extensive network of pores which allow for greater circulation of air, nutrients and retention of water.

**A** STUDY BY ROTHAMSTED Research, sheds light on why adding organic material like manure improves flood and drought resilience, climate control and crop yields.

Founded on more than 50 years' worth of data from a unique field experiment, the researchers considered almost 9,000 genes and used X-ray imaging to look at soil pores smaller than the width of a human hair, and in concert with previous work, have started forming what they envisage will be a universal 'Theory of Soil.'

In healthy soils, relatively low nitrogen levels limit microbes' ability to utilise carbon compounds, so they excrete them as polymers which act as a kind of 'glue' – creating a porous, interconnected structure in the soil which allows water, air and nutrients to circulate.

Writing in the journal *Scientific Reports*, the researchers reveal that the Victorian-era switch from manure to ammonia and phosphorous based fertilisers has caused

microbes to metabolise more carbon, excrete less polymers and fundamentally alter the properties of farmland soils when compared to their original grassland state.

Lead researcher Professor Andrew Neal said, "We noticed that as carbon is lost from soil, the pores within it become smaller and less connected. This results in fundamental changes in the flow of water, nutrients and oxygen through soil and forces several significant changes to microbial behaviour and metabolism. Low carbon, poorly connected soils are much less efficient at supporting growth and recycling nutrients."

A lack of oxygen in soil results in microbes having to turn to nitrogen and sulphur compounds for their energy – inefficient processes, he said, which result in increased emissions of the greenhouse gas nitrous oxide among other issues.

The closed soil structure also means microbes need to expend more energy on activities such as searching out and degrading less easily accessible organic

matter for nutrients.

Conversely, in carbon-rich soil there is an extensive network of pores which allow for greater circulation of air, nutrients and retention of water.

While soil carbon was already known to drive climate and water cycles the world over, it took a chance discussion between experts working at very different scales to discover the reason why.

The idea to look at this link between the living and non-living components of soil came about through a discussion between an expert in microbial genetics Professor Andrew Neal, and Professor John Crawford – now at the University of Glasgow – who studies the way complex systems behave.

"Despite carbon's critical role, the mechanisms underlying carbon dynamics and the link to soil water were poorly understood," said Neal. "Society struggles with the concept of what soil is and how it can be managed effectively because, it is such a complex combination of biological, chemical and physical processes." <sup>1</sup>

Programmes to improve food security as well as incomes are proving pivotal in building resilience among the rural poor.

# IFAD invests in Niger for food and nutrition security



Image Credit: mariesacha/Adobe Stock

The project will create jobs for young rural people while contributing to Sustainable Development Goals.

**T**HE INTERNATIONAL FUND for Agricultural Development of the United Nations (IFAD) has announced a project to support around 210,000 poor rural households in Niger that are vulnerable to climate shocks and food insecurity.

This US\$194.66mn project will particularly target young people and women who are especially vulnerable to climate and other shocks. It aims to help them to access promising rural employment, increase their incomes and build their resilience. The project will have crosscutting impact on the Sustainable Development Goals, starting with SDGs 1 and 2 (no poverty, no hunger), then continuing to gender equality and women's empowerment and clean water and sanitation (SDGs 5 and 6).

In Niger, 85 per cent of the

active population depends on small-scale family farming and livestock production, which accounts for 43.4 per cent of GDP. Improving small-scale agricultural production and productivity is vital to reducing poverty and improving food and nutrition security in rural areas in Niger.

"PRECIS comes at the right time," said Jakob Tuborgh, country director for Niger. Tuborgh added, "The COVID-19 pandemic is posing a threat to the government's ambitious poverty reduction targets; this new project will address the major issues of food and nutrition insecurity in Niger, and

will create jobs for young rural people while also contributing to several Sustainable Development Goals."

PRECIS will promote food crops like maize, millet, rice and sorghum and develop market gardening, poultry and small livestock husbandry. To mitigate the effects of desertification and climate change, the project will also promote technologies for sustainable water and land resource management. It will rehabilitate and construct market infrastructure to increase access so that producers can sell their products.

PRECIS will build the capacity of small-scale farmers and their

organisations in production, storing and processing of perishable products, and feeding, good nutrition and hygiene practices. It is hoped that these measure will ensure food availability during the "hungry season".

The project will promote vocational training and rural entrepreneurship skills for young people and help create jobs for people in the agropastoral sector. It will aim to reach transhumant pastoralists – Tuareg nomads - and involve persons with disabilities, within its programmes.

Particular attention will be placed on literacy activities and interactive training on gender issues and women's leadership. Further, the project will encourage rural financial institutions to develop products that meet the needs of the small-scale farmers. **B**

**PRECIS will build the capacity of small-scale farmers and their organisations in production, storing and processing of perishable products, and feeding, good nutrition and hygiene practices.**

Francis Wamae, manager of Kagwe Tea Factory plucking and holding tea leaves at Kagwe Rainforest Alliance Kenya supporting World Environment Day.



Image Credit: Rainforest Alliance

## Renewable energy transformation for Kenyan tea farmers

**T**HE RAINFOREST ALLIANCE has set up a project to develop safe and accessible renewable energy sources to conserve Kenyan forests and ensure healthier smoke-free homes.

The solution was the local manufacture of carbonised briquettes made from farm waste materials, for example, sawdust and corn husks, sugarcane bagasse, macadamia shells and coffee husks, supplied to homes and tea processors. The project has already enabled thousands of Kenyan households to switch to cleaner, safer and more affordable cooking.

By partnering with Kenya Tea Development Association (KTDA), the project has established tree nurseries in 12 factories aiming to have over 1,000,000 trees within a year. The project targets to grow more than 1,000,000 trees in the tea landscape over a period of one year. Since the programme started over 13,000 households who have switched to briquettes, solar energy and use of efficient cook stoves.

“As we countdown to World Rainforest Day on 22 June, a recent report from Global Forest Watch confirms that an area

the size of football pitch of tropical rainforest is lost every six seconds based on 2019 satellite data. Kakamega Forest in Kenya is its only tropical rainforest and is said to be the last remnant of the ancient Guineo-Congolian rainforest that once spanned the continent. For decades, the forest has been shrinking due primarily to poverty-driven logging, harvesting of medicinal resources, and agricultural expansion,” stated Rainforest Alliance.

**The project has already enabled thousands of Kenyan households to switch to cleaner, safer and more affordable cooking.**

The tea industry, Kenya's biggest employer, is a heavy consumer of firewood - estimated at 29,000 cu/m per year. However, Kenya currently only has enough wood to meet only 70 per cent of this demand through sustainable domestic supply. This shortage is putting terrible pressure on Kenya's forests and has led to a national deforestation crisis

which has also contributed to massive water shortages across the country. In fact, this situation has also been happening in many other countries globally where this sort of solution could be introduced.

The Rainforest Alliance's recognised the issues facing Kenya a number of years ago and established a ground presence in Kenya's tea sector. One of the aims of this project has also been to reduce the use of firewood in tea factories. As a result it was uniquely positioned to help realise a shift from firewood to smoke-free briquettes made from farm waste such as sawdust and corn husks, sugarcane bagasse, macadamia shells and coffee husks.

This Kenyan Renewable Energy Project could be replicated in other tea growing landscapes globally to provide the essential infrastructure that supports life on Earth and human development. The project hopes it can continue to catalyse a renewable energy transformation in Kenyan tea-producing regions to stop deforestation, create sustainable, long-term employment for energy entrepreneurs, and improve health outcomes as well as jobs in tea farming communities. **E**

The cooperative model is boosting sustainable cashew supply chains in rural Africa.

# Cooperatives crucial for driving innovation in cashew farming

**M**ALLIKARJUNA KUMARASWAMY VICE-PRESIDENT for Olam's cashew business, explained ways the cooperative model is helping reimagine sustainable cashew supply chains

"We source much of our cashew from 100 partner co-ops across rural Africa and Asia, representing over 50,000 smallholder farmers who rely on it as a source of income and food security. They afford the farmers access to information, inputs, credit and markets, allowing them to produce more and better quality through the power of the collective."

In Africa, they sell their raw cashew to a complex network of local traders, resulting in individual farmers receiving low prices and very little investment. But the communication channels and collaboration between members that exist under a well-managed co-op, allow access to training, inputs, markets and a collective voice. And the support provided by our teams on the ground can be more ambitious due to the benefit of only having to deal with a single counterpart in terms of payment, legal processes and support infrastructure.

"In Côte d'Ivoire, where we partnered with the Dutch Sustainable Trade Initiative (IDH) and Fair Match to establish a traceable cashew supply chain, it took a degree of convincing farmers to cut long-established ties with the middle-men and join farmer organisations to sell directly to us. But enthusiasm grew as farmers saw Olam's local processing operations in Bouaké and constant presence of field staff, even outside of procurement season, as a sign we could be a reliable and trusted partner. Today, the partnership works to assess cooperatives' leadership skills and give targeted training and coaching."

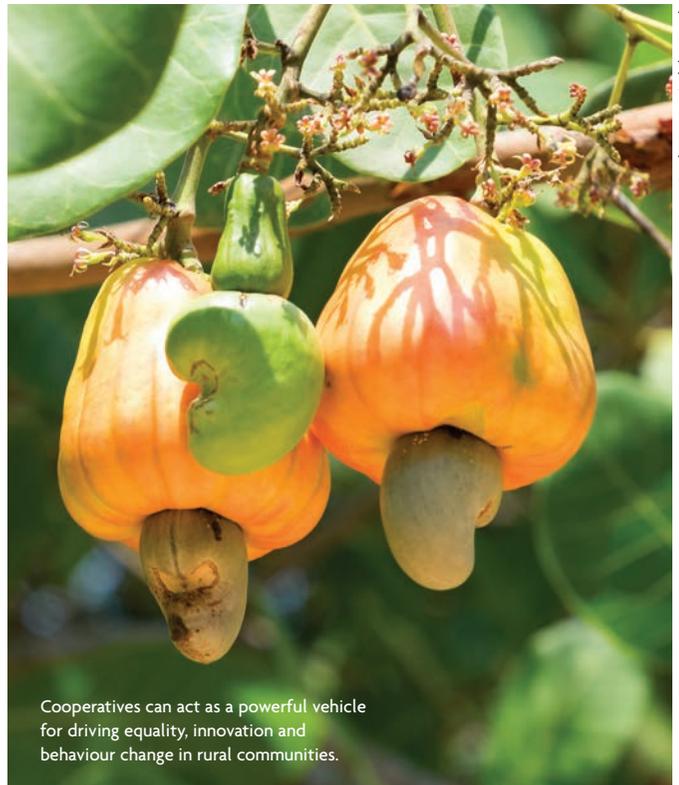
**"For many small-scale cashew farmers, learning about proper pruning, organic composting, post-harvest processing and storage, will be the first kind of formal education they have had access to," Mallikarjuna Kumaraswamy vice-president for Olam's cashew business.**

## Empowering farmers to produce more and better

Co-ops serve as a hub for us to invest in training and resources – finance, seeds and other inputs – equipping farmers with the knowledge and tools they need to increase yields and income. For many small-scale cashew farmers, learning about proper pruning, organic composting, post-harvest processing and storage, will be the first kind of formal education they have had access to.

Take the often dreaded practice of pruning. Understandably, without prior knowledge of the added 'flower power' that correct pruning can bring, a cash-crop farmer will look at every branch or bud as money literally growing on their trees.

"In cooperatives in the Bono East and Savanna regions of Ghana



Cooperatives can act as a powerful vehicle for driving equality, innovation and behaviour change in rural communities.

Image Credit: Hunta/Adobe Stock

for example, we've introduced beekeeping in partnership with German development agency GIZ. Farmers are trained and provided with hives and harvesting equipment, allowing them to earn an additional income from the sale of

## Building thriving cashew communities

"Cooperatives can act as a powerful vehicle for driving equality, innovation and behaviour change in rural communities. They facilitate important conversations, for instance around inclusion of women and child labour and we help them train members on acceptable labour practices and develop gender action plans."

"So in Côte d'Ivoire, we partnered with the local cashew cooperative in Korodougou to build the village's first primary school that's now attended by 180 children. Meanwhile in the cashew community of la Grai in Vietnam, Olam has installed three km of street lighting under the guidance of the District Commune Authority – a member of the la Grai coop. Since the installation last year, members have reported a reduction in the accident rates, making the streets a safer place for the ~800 resident families."

Olam's AtSource platform focuses on connecting customers – via multiple economic, social and environmental metrics – to the work cooperatives and their partners are doing to build a more sustainable cashew supply chain. AtSource offers a truly unique view of the entire journey of cashew. **B**

## Macfrut 2020 goes digital

MACFRUT DIGITAL, THE first digital trade fair for the fruit and vegetable sector, will be held from 8-10 September 2020. The trade fair is organised by Cesena Fiera, in collaboration with Ice-Agenzia, Cassa Depositi e Prestiti, Crédit Agricole, Ismea, Natlive and Regione Emilia-Romagna.

The trade fair preview is online from 1st July, making the event content available on the platform within the Natlive network. By going to the website [macfrutdigital.com](http://macfrutdigital.com) and registering, visitors will be able to preview the various sections of the first virtual trade fair for the fruit and vegetable sector.

Macfrut Digital will not replace the physical one, but given the current situation it is intended to give all professionals involved the opportunity to do business in the global market. Due to this interactive platform, exhibitors will be able to interact with the buyers and sector professionals who will 'participate' in this three-day virtual event. Macfrut Digital will consist of two areas: the Exhibition and the Forum.

The international trade fair for the fruit and vegetable sector has always been an event rich in content and technical insights on key topics in the industry.

Macfrut Digital offers great business opportunities through a virtual platform that will allow participants to meet with professionals coming from all over the world and reach new international markets.

Each visitor from all over the world will be able to access the platform during the three days of virtual trade fair and participate in the event by using any device.

The uncertainty surrounding the current health emergency has made it difficult to organise the traditional trade fair, now in its 37th edition, in the usual way. Italy is striving to reaffirm its leading position in the sector, and this approach is in line with the current possibilities offered by state-of-the-art



Renzo Piraccini is the president of Macfrut.

Image Credit: Macfrut

technology, which provides a unique opportunity for the fruit and vegetable sector.

Hence the launch of Macfrut Digital, a professional, simple and effective virtual trade fair for the fruit and vegetable sector, which will be fully online.

According to the organisers, this system is effective, since it allows participants to reach out to a large number of customers and markets directly from their workstation, is simple and inexpensive.

The topics covered will include innovations in horticulture, innovations in the greenhouse sector, Acquacampus and innovations in irrigation, and the Biostimulant Forum. The platform will also be available to exhibitors for dedicated events.

## VIV WORLDWIDE GETS A FRESH LOOK

IN THE MIDST of these dynamic and challenging times, the VIV organisation takes the opportunity to give its branding and design a new look.

In the recent years, the VIV portfolio and organisation have witnessed many changes: events grew in size, market shares shifted among world regions, new territories were explored, more initiatives were launched and new partnerships have been established.

"During the pandemic peak period, we took the time to consolidate our existing brand architecture," said Heiko M. Stutzinger, director of VIV worldwide. "The VIV worldwide mission is strongly intertwined with our client's business development. Introducing this new look, our goal is to provide a clear picture of where we are and where we are heading to. We want to offer to all our stakeholders a straightforward message of

what VIV worldwide exactly represents. At the same time, we make sure we keep consistent with the well-known VIV identity," explains Stutzinger.

The re-branding aims to provide each platform with unique and characteristic visual features that make each show easily recognisable. The VIV network consists of hub events and international events. In a very complex business environment, VIV aims at providing a clear and attractive design.

The VIV Online platform maintains its role as a year-long connection between the show dates and regions. All visuals share a common and unique feature of the VIV "diamond" frame-shape, highlighting the ties that each show and platform constitute within a complete and interconnected VIV portfolio and Feed to Food network.

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## AI transforming agricultural productivity

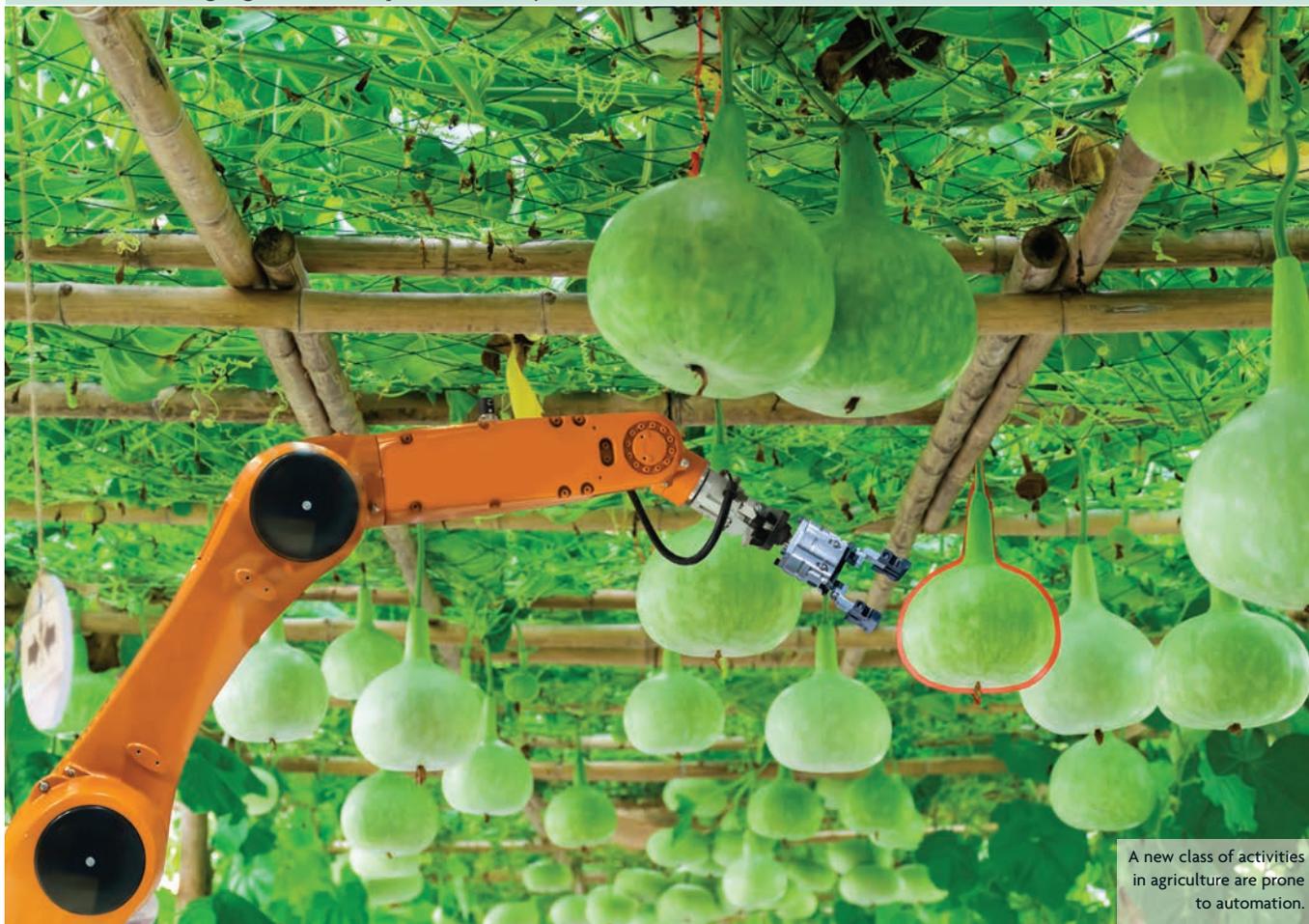


Image Credit: sompong\_tomr/adobe Stock

A new class of activities in agriculture are prone to automation.

ROBOTICS AND ARTIFICIAL intelligence (AI) will drive a deep and transformative change in the agricultural world during the coming decades, according to IDTechEx Research.

As such, a new class of activities in agriculture are prone to automation, just as advances in power and motion technologies mechanised many agricultural tasks, or just as advances in seed and agrochemical technology removed the human from many activities.

IDTechEx Research provides an overview of the major product categories and discusses underlying technologies which are driving this change. IDTechEx Research has been examining the technologies, applications, products, and players active in agricultural robotics and AI for the past five years.

### Agricultural robots: A cost-effective precision revolution

Machine vision technology is often a core competency of these robots, enabling the robots to see, identify, localise, and to take some intelligent site-specific action on individual plants. The machine vision increasingly uses deep learning algorithms often trained on expert-annotated image datasets, allowing the technology to far exceed the performance of

conventional algorithms and to match or even exceed even that of expert agronomists.

The rise of autonomous robots, provided they require little remote supervision, can alter the economics of machine design, enabling the rise of smaller and slower machines. Indeed, this elimination of the driver overhead per vehicle is the basis of the swarm concept. There is clearly a large productivity gap today between current large and high-power vehicles and those composed of fleets of slow small robots. This productivity gap however can narrow as the latter has substantial room for improvement.

These robots are evolving. Many robots have already grown in size and capability, offering faster speeds, higher frame-per-second, more ruggedised designs, higher on-board energy for longer operation time and a heavier load, and so on. This evolution will inevitably continue, just as it did with all other agricultural tools and vehicles. We are still at the beginning. The deployed fleet sizes worldwide are small, but this is about to change.

### Autonomous tractors and high-power vehicles

Level-5 or fully autonomous tractors have also been demonstrated for some years. The

technical barrier here is low. The required hardware is available and the autonomous driving software challenges are relatively mild given the nature of the operational environment. As with all cases, the legislative environment is a hinderance today, but will not hold back the industry for long. The determining factors here are farmer perception and added value. In terms of the latter, the additional cost incurred in going from level-4 to level-5 does not justify the additional benefits, at least not yet. This is because level-5 does not currently enable many new possibilities. This will remain the case until more tasks, and not just movement, become automated.

### Robotic Fresh Fruit Picking

Machine vision technology can identify and localise different visible fruits against complex and varying backgrounds with a high success rate.

The rise of deep learning-based image recognition technologies improves algorithm precision, lowering the false positives which waste time.

The IDTechEx assessment is that the transformation will not be overnight, but nonetheless, robotics and AI are an inevitability in the evolution of agricultural tools and practices.

A large scale commercial harvest of blueberries in Namibia was possible through careful water and resource management.

## Smart irrigation pivotal in Namibia's blueberry production



Smart irrigation management and design can help African growers.

Image Credit: likee68/AdobeStock

**O**N A 20 hectares development located close to the Okavango River in northern Namibia, the commencement of Namibia's first-ever commercial harvest of blueberries took place in July 2020 on Mashare Berries Farming (Pty) Ltd.

The fruit is sold and marketed by the name Namib Blue in Namibian as well as international markets, with exports set to commence in August to markets across Europe and Asia and the Indian Ocean islands, including Mauritius, the Maldives and the Seychelles.

According to Willem Mostert, Namibian manager of Cherry Irrigation, whose team designed and implemented the fully automated drip irrigation and fertigation management system for the project,

"A few years ago, no one would have dreamed that you could grow high-quality blueberries in a country as dry as this. "We're proving what is possible with the right planning, infrastructure and management in place."

Mashare project director Albert Basson says the 2020 harvest is set to continue into late October. "We're projecting a yield of up to 150 tonnes, as different varieties reach maturity. Currently, three varieties imported from the US-based grower Fall

Creek have been planted on the property: AtlasBlue, JupiterBlue and

### **BiancaBlue."**

"Ultimately, within the next five years we would like to expand blueberry cultivation across 200 ha to 300 ha of land in the region," Basson adds.

Cherry Irrigation's executive director, Charles Cherry, believes the success of the pilot project attests to the enormous untapped potential of arid or semi-arid regions. "These areas can effectively produce a range of crop types through careful water and resource management.

"We're seeing first-hand from this development and others we're involved with across Namibia that customised irrigation design is the way forward. Simply put, it

**"We're seeing first-hand from this development and others we're involved with across Namibia that customised irrigation design is the way forward," said Charles Cherry, Cherry Irrigation's executive director.**

ensures both environmental sustainability and commercial profitability over the long term," he adds.

"The outlay of quality equipment, custom designs, smart technologies and AI (artificial intelligence) monitoring solutions may cost more initially. But for crops like blueberries that are (highly) sensitive to climatic conditions and soil and water quality, we believe this approach is crucial to success," Cherry explains.

"With the right teams, investors and companies on board, Namibia has the potential to be a world-class production hub for fresh goods," he added.

Mashare Berries is a subsidiary of Mashare Irrigation, which produces a variety of grains and vegetables, including wheat, maize, sorghum potatoes, onions and cauliflowers in Kavango East, for the local Namibian market.

The Netafim NetaJet is a modular CE-compliant automated dosing system installed by Cherry Irrigation at Mashare. The device, which is installed in the pumphouse, is responsible for measuring Ph levels and EC levels of plants, backflushing the filter and mixing fertiliser with water (dosing) for fertigation of blueberry bushes. **E**

The advanced features of Axial-Flow 4088 provide increased adaptability and exceptional grain quality.

## Case IH combine harvester tested for African conditions

**T**HE AXIAL-FLOW 4088 combine harvester was put through field trials in Kenya. Using a Case IH 20-foot rigid header, the combine was tested using wheat, barley, canola, and sorghum, as well as maize, using a six-row maize header.

The Axial-Flow 4088 was tested for 150 hours in each crop, showcasing exceptional performance and delivering good grain quality across the board. Of particular note was the maize sample, with less than one per cent cracked grain recorded.

Excessive rain in Kenya made conditions extremely difficult for the wheat harvest, however, the wet crop was no problem for the Axial-Flow 4088.

The results of all tests confirmed this model of combine is well-suited to tough African conditions.

The five different customers who tested the Axial-Flow 4088 particularly liked that it was simple and easy to operate.

Compared with conventional straw walker combines, maintenance in the Axial-Flow, with its rotary threshing system, was

quick and easy. Daily maintenance was conducted in considerably less time than it would take for a conventional harvester, so the Axial-Flow 4088 was in the field and ready to go earlier each day.

**“The simple design of the Axial-Flow 4000 series allows them to be adapted quickly to suit changing harvesting requirements, field conditions and crops, making them the perfect choice for contractors and farmers with multiple crops,” said Massimiliano Sala, product manager for combine harvesters in Asia, Middle East and Africa.**

One customer who tested the Axial-Flow 4088 was a large-scale farmer who currently uses three of Case IH’s larger Axial-Flow 140 series combines. He was impressed by the capacity of the Axial-Flow 4088 model and would highly recommend it for the emerging farmer sector.

The other four customers involved in the field tests were emerging farmers, who agreed that the Axial-Flow 4088 is a

simple, robust combine giving exceptional grain quality.

Designed in the USA and built in Case IH’s state-of-the-art manufacturing facility in Harbin, China, Axial-Flow 4000 Series combines incorpo-

which has become the benchmark for harvesting quality and performance since the first Axial-Flow combines were launched in the USA in 1977.

“The simple design of the Axial-Flow 4000 Series combines allows them to be adapted quickly to suit changing harvesting requirements, field conditions and crops, making them the perfect choice for contractors and farmers with multiple crops,” said Massimiliano Sala, product manager for combine harvesters in Asia, Middle East and Africa.

“Owners can move from corn, to wheat, to sorghum in hours, compared with almost two days for conventional or hybrid combines, so more time is spent harvesting and seasonal output is increased.

“Axial-Flow 4000 series combines are easy to use, so even operators who are new to the Axial-Flow concept

can quickly learn how to harness their full potential,” Sala added. 

rate a high level of American-made components for maximum reliability.

Compact dimensions, operator comfort and advanced features are combined with high harvesting capacity, thorough crop threshing, low grain losses, gentle grain handling and unsurpassed sample quality. These benefits are characteristic of Case IH Axial-Flow single-rotor technology,



Axial Flow 4000.

Image Credit: Case IH

## Collaboration crucial for greater agri-tech adoption

CROSS-INDUSTRY COLLABORATION IS essential to the adoption of precision technology in agriculture, said the project co-ordinator of a recently completed Knowledge Transfer Innovation Fund (KTIF) project.

The 12-month Tuberzone initiative, based in the East of Scotland, trialled new precision agriculture tools to predict tuber size of seed and salad potatoes and accurate burn down time for growers to maximise yield and profit margin.

SAC Consulting, part of Scotland's Rural College (SRUC), partnered with precision farming company SoilEssentials and farmer-owned cooperative Grampian Growers to support the uptake of the innovative Tuberzone potato technology among growers from Angus to Aberdeenshire to the Black Isle.

Project facilitator Zach Reilly of SAC Consulting said that the value of projects like these is working collaboratively with all parties with a vested interest - the growers, the tech providers, the marketing co-op - to develop precision technology that is compelling for growers to adopt long-term.

"The flow of new technology into agriculture is exciting but we need to assure farmers that it will meet their needs. When there are many variables and cost implications it's important to select tools that are going to help your decision-making and your business' bottom line. Part of SAC Consulting's role has been to gauge more



Image Credit: mjaud/Adobe Stock

Part of SAC Consulting's role has been to gauge more broadly how much support is required among farmers in taking on digital tools.

broadly how much support is required among farmers in taking on digital tools. We have gained a lot from this experience and it will help us in future projects as we guide farmers through the adoption of new technologies across all agricultural sectors."

Using a combination of satellite imagery,

Unmanned Aerial Vehicles (UAVs) and GPS to monitor growth from crop emergence through the growing season to burn down, Tuberzone successfully predicted the graded-out size of Gemson, a salad potato variety owned by Grampian Growers, within 90 per cent accuracy, for the majority of growers.

## Mobile app enhancing aquaponics

AQUAPONICS AI, A social-impact aquaponic technology company, has released their mobile app to compliment its data management and visualisation solution. Designed to improve the

way aquaponics growers grow, Aquaponics AI's new mobile app brings real-time access to system data, insights, and farm management into our hands.

"We started Aquaponics AI to cultivate the relationship between regenerative agriculture, next-gen farmers, and technology. Each data point that gets collected contributes to the global community of growers and their understanding of earth's awesome biosphere." Jonathan Reyes, CEO of Aquaponics AI said.

Aquaponics AI is a streamlined mobile toolkit for efficiently updating and managing aquaponic farm data. The application optimises and brings the important items needed when in a grow space, without being digitally complicated and providing confusing features. This simplicity in recording metrics, maintenance schedules, libraries, and calculators on hand, minimises the effort and amount of time it takes to manage your grow space.

### About the company

Aquaponics AI is the leading provider of cloud based aquaponics software. A data and intelligence-driven approach to growing with Aquaponics enables small and large farms to simplify data, understand your system and become a better grower. With Aquaponics AI, growers can leverage key data insights to increase overall success and impact.

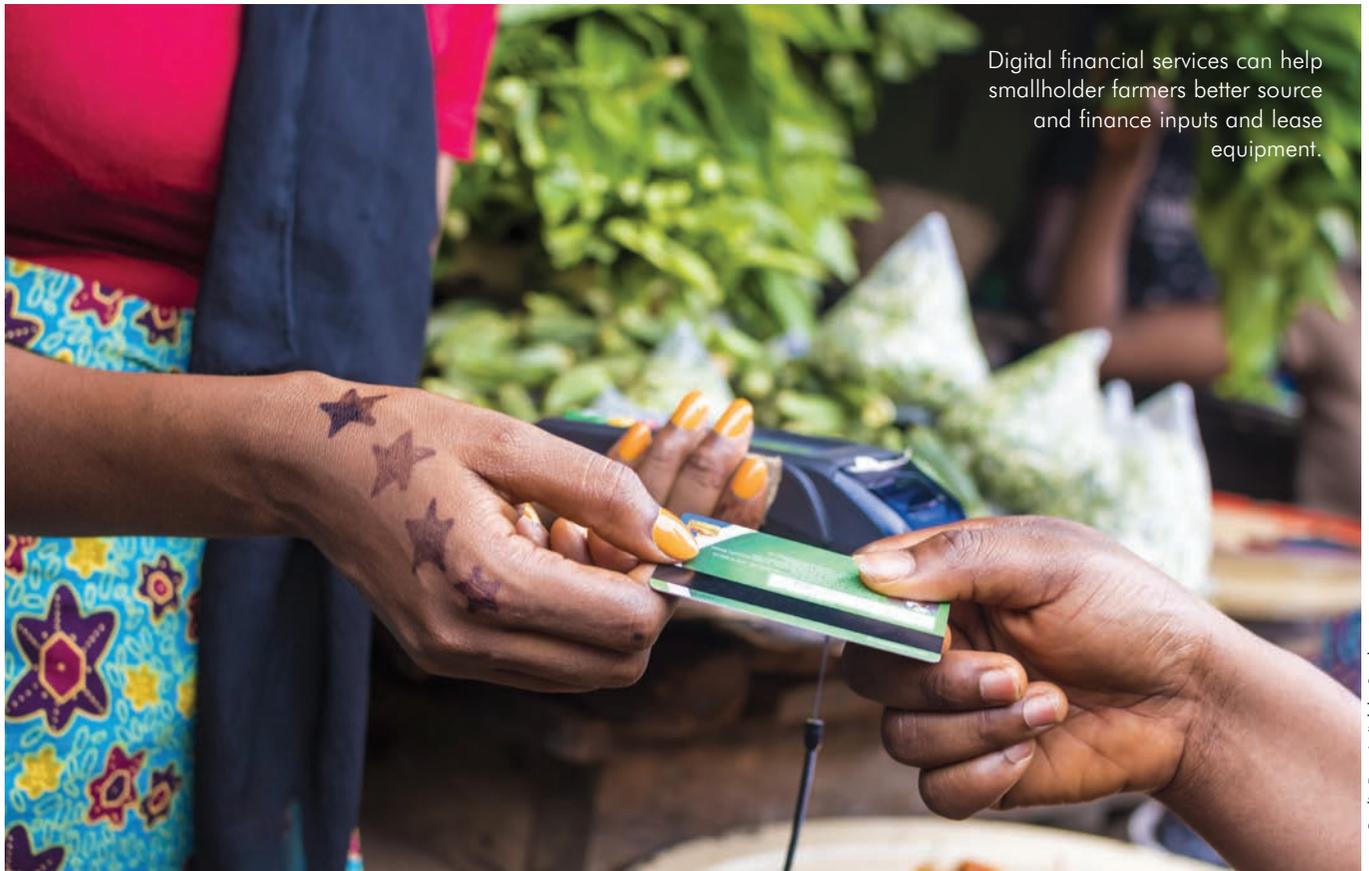


Image Credit: boonsom/Adobe Stock

Aquaponics AI's new mobile app brings real-time access to system data, insights, and farm management.

A number of efforts for better financial access injected into the continent's agricultural sector will definitely go a long way in impacting millions of people. *Nawa Mutumweno* finds out more.

## Financial solutions charting Africa's agricultural growth



Digital financial services can help smallholder farmers better source and finance inputs and lease equipment.

Image Credit: Dennis/Adobe Stock

**A**CCCESS TO APPROPRIATE financial services is vital to realising the continent's agricultural potential. There are a number of initiatives in various parts of Africa that are being introduced to invigorate the sector:

### In Zambia

With a view to stir up Zambia's agricultural 'muscle', the government has embarked on an ambitious Farm Block Development Programme (FBDP), touted to transform the sector, providing abundant hope for the country's economic growth.

Farm blocks are seen as a robust vehicle through which smallholder farmers can engage in commercial agriculture and agribusiness with assured benefits of access to financial services, a ready market, new technology, secured inputs, prices and increased cash incomes.

The government is developing and commercialising farm blocks by availing land for large-scale agribusiness investment into the private sector, with a target to develop one in each of the country's 10

**Through the Farm Block Development Programme (FBDP), Farmers who may not be able to access financing on an individual basis, now have the advantage to do so through the formation of cooperatives or associations, which give them more bargaining power with financial institutions.**

provinces. The model is anchored on a core venture, agro-processing facilities and outgrower schemes for smallholder farmers and emergent farmers who will benefit from technological transfer and have access to reach markets for their produce.

Apart from growing of the staple crop, maize, promotion of high value crops – legumes, horticultural crops, citrus fruits; livestock and livestock industry – large and small ruminants; poultry rearing and processing and aquaculture will be encouraged.

"These areas are categorised as brown fields and require little work to make them functional and immediately contribute to the national dream of diversification as well as turning the country into the food basket of the region," said Zambia National Farmers' Union (ZNFU) president Jervis Zimba.

Farmers who may not be able to access financing on an individual basis, now have

the advantage to do so through the formation of cooperatives or associations, which give them more bargaining power with financial institutions.

“They create better economies of scale and minimise transaction costs of bringing products to formal, commercial local and export markets; and assist small-scale farmers meet international standards in production,” the Zambia Development Agency (ZDA) says.

Another initiative is that of Zambia Breweries working with over 5,000 small-scale cassava farmers who supply to its Eagle beer production at its Ndola-based facility. The company is also supporting barley and sorghum farmers. It bought 10 500 metric tonnes of barley in 2017, supporting up to 4 000 farming households from Mkushi in central Zambia to Kalomo in the south. It further plans to double its sorghum demand from 2, 000 to 4,000 metric tonnes.

“Zambia Breweries is not merely interested in procuring raw materials, but would like to further empower our local farmers by helping them increase productivity in an efficient and environmentally sustainable manner,” said the company’s agriculture manager Chris Nicolle.

### Ghana

A USAID Feed the Future (FtF) project in Ghana helped improve the livelihoods of 113, 000 smallholder farmers by boosting the productivity of rice, maize and soya bean cultivation, through a US\$3.5 bn guarantee scheme focusing on addressing global food insecurity.

The agency is making investments to increase smallholder agricultural productivity, promote diversification and improve access to markets as well as improve nutrition.

### Other programmes

In Nigeria, the World Bank-funded National Fadama Development Project has been supporting farmers by helping to empower

**The Mastercard Farmer Network is a mobile platform that improves market access, increases price transparency and digitises payments to connect small farmers in Kenya, Uganda and Tanzania with potential buyers, integrating their businesses with payment systems.**



A number of initiatives are helping farmers across Africa to gain access to financial services.

Image Credit: Confidence/ Adobe Stock

communities and strengthen agricultural development in states throughout the country. New generations of business-oriented agropreneurs have emerged, giving farmers a new way to feed their families and earn an income. The value chains being supported are cassava, rice, sorghum and horticulture.

The Improving Market Access for the Poor (IMA4P) programme has over the past few years supported thousands of Nigerian farmers to upgrade their smallholdings into fully-fledged businesses, giving them the skills and knowledge to compete in the global economy.

John Deere participated in a project in Tanzania where it helped smallholder barley farmers boost their output from 0.5t/ha to 3t/ha using mechanisation and better-quality seed and fertiliser.

Further, the company has adopted the S.M.A.R.T programme solutions for small farmers: Mechanising for yield, Access to finance, Reliability for lower costs, and Technology and education.

### Digital interventions

Digital financial services (DFS) can help smallholder farmers better source and finance seeds and other inputs, as well as lease equipment such as tractors. Satellite and other data sources can help provide relevant weather and soil data for better production practices.

One top-notch initiative on the digital horizon is the Mastercard Farmer Network (MFN), launched in 2015, which has connected over 250 000 farmers across East Africa. It is a mobile platform that improves market access, increases price transparency and digitises payments to connect small farmers in Kenya, Uganda and Tanzania with potential buyers, integrating their businesses with payment systems.

“Financial inclusion remains key to unlocking the potential of sub-Saharan

Africa, and will become crucial as we support governments’ economic recovery. Digital transactions are both safe and efficient and giving access to these for as many people as possible, is the most important part of supporting the most vulnerable parts of the population through the current situation. Our focus right now – beyond philanthropy – is to steadfastly continue collaborating with governments and private sector partners on solutions that are safe, viable, and most importantly, socially impactful for communities across the region,” said Raghav Prasad, Mastercard’s Division President for Sub-Saharan Africa.

Mastercard is indeed a trusted network that builds ecosystems through partnerships, which facilitate the connection of people to, and help them to benefit from the digital economy.

The emergence of the cellphone as a major communication gadget, in addition to internet-based solutions, could considerably enhance access to financing agricultural inputs across the value chain.

In recent times, 250, 000 smallholder farmers in Kenya have benefited from the ‘Sauti ya Mkulima’ initiative, a project supplying agricultural information to mobile phones, enabling them to exchange information with other farmers.

According to John Deere Financial’s estimates, Africans operate 122 million electronic banking accounts, and these are hosted mainly by cellphone operators or home-grown payment and transfer solutions such as Kenya’s M-Pesa.

Now more than ever before, it has become lucidly clear that small-scale farming systems must be prioritised, along with smallholder farmers’ ability to access local and international markets. Governments, NGOs, and the private sector should work in the same direction, on the path to making Africa a net exporter of food in the foreseeable future. **DE**

A new African Centre of Excellence for sustainable cooling and cold chain based in Rwanda will help get farmers' produce to market quickly and efficiently – reducing food waste, boosting profits and creating jobs.

## Driving change for Rwandan farmers

**B**ASED IN KIGALI and inspired by the University of Rwanda's existing Africa Centre of Excellence of Energy for Sustainable Development, the new centre – which is operational and already conducting feasibility studies – aims to link the country's farmers, logistics providers and agri-food businesses with a range of experts and investors. In future phases, the scope will be expanded to cover interested partners in Africa.

Rwanda's Cooling Initiative (RCOOL), supported by the UN Environment Programme (UNEP) through its United for Efficiency (U4E) programme, provides the foundation for the new centre, which is part of the country's National Cooling Strategy, launched in 2019.

"The African Centre of Excellence in Energy for Sustainable Development is delighted to be part of this important work on sustainable cold chain for food and medicines – energy-efficient, climate-friendly, and affordable cooling and cold chains can improve agricultural efficiency and boost farmers' incomes, driving real environmental and economic change," said Professor Etienne Ntagwirumugara, director of the Centre for The African Centre of Excellence in Energy for Sustainable Development.

"Sustainable cooling can improve our food security, reduce food waste, protect vital vaccines, and reduce emissions of climate-damaging refrigerant gases. It underpins our mission to promote sustainable development around the world. The UK is a pioneer of innovative, climate friendly cooling solutions and we look forward to working with others to advance this important work," said Lord Goldsmith, UK minister of state for Pacific and the environment.

Farmers are often lacking effective ways to manage the distribution of produce after harvest and get it to market. Ineffective delivery systems limit farmers' ability to sell goods beyond a local area. For example, tomatoes are widely produced and consumed in Rwanda, but because of their high perishability and short shelf life, 25 per cent of the production is lost post-harvest.



Farmers are often lacking effective ways to manage the distribution of produce after harvest and get it to market.

This is due to lack of temperature management, as tomatoes are stored on the ground covered by canvas instead than modern cooled stores, and transported in poor quality containers.

### Maintaining the safety, quality and quantity of food

Project co-developer and technical lead Toby Peters, Professor of Cold Economy at the University of Birmingham, said: "Cold chain itself is about ensuring an integrated, optimised and managed network of temperature-controlled pack houses, pre-cooling operations, vehicles, cold stores, and distribution hubs which seamlessly maintains the safety, quality and quantity of

**"Efficient, affordable cooling is an important element in efforts to curb climate change. Without action to address energy efficiency, energy demand for space cooling is projected to more than triple by 2050," said Inger Andersen, executive director of UNEP.**

food, delivering it swiftly from farms to consumption centres across geographies.

"Farmers need robust means of getting perishable produce to urban markets. But we must ensure that cold chain logistics are sustainable. We need local and global "field-to-fork" connectivity to nutritiously feed 10bn people from hundreds of millions of small-scale farmers, all without using fossil fuels."

The project supports Rwanda's National Agricultural Export Development Board's (NAEB) five-year strategy to double agricultural exports by 2024-25 and significantly increase exports of aquaculture, beef and other temperature sensitive products.

"Efficient, affordable cooling is an important element in efforts to curb climate change. Without action to address energy efficiency, energy demand for space cooling is projected to more than triple by 2050," said Inger Andersen, executive director of UNEP.

"The new Centre of Excellence in Rwanda will be a boon for sustainable cold chains that are essential to respond to the COVID-19 global pandemic. As we seek to build back better, sustainable cooling can help deliver vaccines, ensure food supply, and reboot the economy by generating employment and investment opportunities," he added. **E**

## Celli presents soil cultivation solutions in Africa

CELLI, ITALIAN LEADER in design, construction and distribution of professional machines for soil preparation, has presented new multi-purpose solutions for soil cultivation in Africa.

Celli's machinery helped in cereal and horticultural crops of the Maghreb (Tunisia, Algeria, Morocco). At the same time, they have achieved positive results in recent years on the South African market, a country which is popular for the diversity of its crops, from corn to forage, horticulture and viticulture.

Bedformers effectively treat stony and particularly hard soils, preparing an adequate seedbed to the most varied types of cultivation, even considering the presence of crop residues. Bedformers represent the ideal solutions for crops that require pre-formed seedbeds; they are also available on request in the multi-bed versions, capable of creating different beds of various widths, thanks to the multiple adjustments of the shape of the bedformers.

Among the various models in the range, the fixed stone buriers - bedformers ARES and LOTHAR stand out. The first is an extremely innovative and versatile solution that



MINIGO vigna

Image Credit: Celli

can be combined with a seeder thus obtaining a double functionality of cultivation. This combined solution boasts a maximum power of 110 HP (81 KW) and can work the soil up to a depth of 22 cm; it is thus able to prepare an adequate

seedbed even in the presence of crop residues, guaranteeing drainage and permeability to the soil.

The LOTHAR stone burrier, on the other side, can refine the hardest and stony soils up to 25 cm. depth.

Having a maximum power of 190 HP, it is also available in a folding version (LOTHAR P) of 280 HP, in various working widths and also matched with a bedformer (LOTHAR P / BF). The range is then completed with the SUPER LOTHAR/ P, which can be connected to high-power tractors (up to 450 HP), ensuring a high versatility of the offer also in terms of performance.

Talking about flexible solutions, MINIGO and GO fixed rotary harrows need a mention. Both can be equipped with an electrically operated mechanical seed drill: a single machine to work the soil in depth, preparing the seedbed and finalising the seeding.

In addition to power harrows, rotary tillers have always been a very important part of the Celli range: a wide and complete program, ranging from smaller machines (such as the "bestsellers" B, DE and E) to more professional products such as ERGON and PIONEER.

In addition to PTO-run soil tillage machines, Celli has also added in recent years a line of subsoilers, useful for carrying out the first tillage operation before proceeding with further steps to refine the soil.



SUPER LOTHAR/P

Image Credit: Celli

A new report by Lux Research says that preservation and shelf life extension technologies can effectively drive supply chain resilience and reduce food loss and waste.

## 'Preservation technologies help reduce food loss and waste'



Image Credit: Alaksandr/Adobe Stock

**F**OOD LOSS AND waste (FLW) causes an estimated US\$1 trillion in economic losses globally each year, constituting major humanitarian and economic crisis, leading the United Nations to set a goal of reducing global FLW by 50 per cent by 2030.

Lux Research's report, "Preserving the Food Chain," outlines important protection and preservation technologies to help companies achieve significant reductions in both pre-consumer food loss and post-consumer food waste.

"Preservation and shelf life extension technologies are significant across the agrifood and health ecosystems, something the pharmaceutical and pesticide industries have long understood," stated Harini Venkataraman, lead author of the report and research analyst at Lux. "The penetration and adoption of biological and digital tools will play an important role in shaping the future of preservation tech," added Venkataraman.

The report documents best-in-class

protection and preservation technologies across six segments of the agrifood value chain and highlights emerging technologies companies need to invest in now to take full advantage of the benefits of preservation tech, including novel natural preservatives, edible coatings and active packaging technologies. "The penetration and adoption of biological and digital tools will play an important role in shaping the future of preservation tech," added Venkataraman.

**"The penetration and adoption of biological and digital tools will play an important role in shaping the future of preservation tech," states Harini Venkataraman, lead author of the report and research analyst at Lux.**

Looking forward, Lux Research predicts developments in all six segments of the value chain in the coming three years. On farms, integrated crop protection will become industry-standard, while post-harvest wax coatings will lose dominance to a mix of bio-based coating solutions. Within food production, biopreservation methods will achieve performance parity with conventional preservatives. Distributors will adopt digital tools more liberally to manage supply chains, and within homes, expect point-of-use sensors to flourish, driven by consumers' concerns about the safety and reliability of purchased products.

The COVID-19 pandemic has enhanced the need for supply chain resilience, which will continue to drive innovation in a persistent fashion long after the peak of the global crisis passes. Emerging from this crisis will require effective preservation technologies from farm to fork to mitigate demand shocks, improve margins and reduce overall food loss and waste. **E**

## Genome editing technology for growers

TROPIC BIOSCIENCES AND BASF have joined hands to utilise Tropic's 'Gene Editing induced Gene Silencing' (GEiGS) technology to develop traits to address growers' most critical challenges in protecting crops.

"Our R&D teams must continue to innovate to address the most pressing challenges in agriculture, so we welcome this new tool to accelerate the delivery of sustainable trait solutions to farmers," said Brian Vande Berg, vice president of Trait Research in BASF's Agricultural Solutions division.

The collaboration applies the Tropic Bioscience GEiGS platform within BASF's strategic crop varieties and utilises BASF's expertise in the development of agricultural traits.

Tropic Biosciences developed GEiGS to support its own product development, for example to produce lines of banana that are resistant to Panama disease, a devastating fungal disease that is threatening production globally.

"Our aim is to help farmers increase productivity and improve sustainable environmental practices for tropical crops by applying cutting-edge gene editing technologies," said Gilad Gershon, CEO of Tropic Biosciences.

Brian Vande Berg, vice-president of Trait Research in BASF's Agricultural Solutions division, said that under the agreement, Tropic Biosciences will generate GEiGS candidates that have the possibility to enter the BASF discovery pipeline for development of disease and pest control traits.



GEiGS technology utilises established genome editing tools to make precise and specific changes to only a few nucleotides within non-coding genomic locations of a host organism.

Image Credit: Adobe Stock

GEiGS technology utilises established genome editing tools to make precise and specific changes to only a few nucleotides within non-coding genomic locations of a host organism. These changes redirect RNA interference (RNAi, also Gene Silencing) activity of non-coding genes towards target genes, including those belonging to pathogens and pests. The approach does not depend on the introduction of foreign genes into the host genome.

### About Tropic Biosciences

Tropic Biosciences is a UK-based biotechnology company focused on utilising advanced plant breeding and gene editing technologies to develop high-performing commercial tropical crops, namely coffee and bananas.

BASF's Agricultural Solutions division helps to develop and maintain sustainable agriculture and healthy environments.

## Water project boosts yields in Mozambique

THE AFRICAN DEVELOPMENT Bank (AfDB)-funded water project in Mozambique has provided irrigation kits, constructed boreholes, small dams and water troughs that increased access to water for people and cattle and helped boost farmers' yields, benefitting around 60,000 people.

The project covered five districts in the country's drought-prone Gaza province.

Felicidade Machava, a farmer in Guija district in Mozambique and a member of Green Revolution, a farmers' association that participated in the Sustainable Land and Water Resources Management Project (SLWRMP), recounted the story about how she filled a small truck with maize from her harvest in one year.

The 20 members of Green Revolution farmers' association in Guija, 12 of whom are women, rotated 12 irrigation kits among themselves so that each day three farmers had the use of them on small plots.

The project also provided a pumping system for the collective's farmers to use. It was expensive to run – fuel costs run as high as US\$15 a day – but members' fees

contributed to covering it. With advisory support from a government official in their district, the farmers generated a financial surplus by selling green beans, maize, pumpkin, kale, onion and green pepper in the local market.

According to Machava, "In 2017, I was able to focus strongly on the production of green beans, which allowed me to buy an additional plot of land for approximately \$83 and start to build a new home – which I hope to complete with the earnings of the next agricultural season."

For farmer Rute Bila, the project has allowed her to access a reliable source of water from a river near her farmland. Bila has increased production from her fields and is now able to pay school fees for her nephews.

She's not the only one. "My goal is to someday supply to the big manufacturing companies in the area," said Guezanes Maluleque, a 53-year-old farmer in the village of Mapai Rio. He heads up two households but finds it advantageous to pay four laborers to work some of his 30 hectares, freeing up members of his family to cultivate

their own plots of land.

Under SLWRMP, Maluleque received 150 cashew and 60 mango trees and in his first crop produced 50 kilos that he was able to sell to a travelling salesman for US\$1 a kilo.

The project distributed a total of 56 irrigation kits across the five participating districts, which directly benefitted 3,600 people, more than 80 per cent of them women. The target beneficiaries of the irrigation kits were trained in how to use them properly.

According to analysis by the World Bank Development Impact Evaluation Research Group of the seven-year project, irrigation kits increased farmers' productivity threefold. And the knock-on benefits extend beyond livelihoods.

Lessons learned from the project mean it can be replicated and scaled up in other districts. Best practice from its implementation has already been incorporated into the Bank's Drought Recovery and Agriculture Resilience Project. In addition, Mozambique government staffers have been trained in how to roll out and manage climate adaptation strategies.

## ITFC and Afreximbank sign agreement for Africa's agricultural sector

THE INTERNATIONAL ISLAMIC Trade Finance Corporation (ITFC), member of the Islamic Development Bank (IsDB) Group, signed a US\$200mn syndicated Murabaha financing agreement with the African Export-Import Bank (Afreximbank) for the agricultural sector in sub-Saharan Africa.

The facility seeks to help African countries address some of the economic impacts of the COVID-19 pandemic. This syndication is supported by a number of partners and financial institutions who allocated resources to the agriculture sector in Africa.

The agreement, which is indicative of ITFC's ongoing commitment to and trust in Africa, will finance the export of soft commodities, such as raw cashew nuts, cocoa, sesame seeds and maize. The financing will provide critical support for the agriculture sector (the continent's largest employer and a main driver of SME development) of 11 countries in sub-Saharan Africa.

Commenting on the Murabaha financing agreement, Hani Salem Sonbol, CEO at ITFC, said, "The financing of agricultural exports during these extremely challenging economic conditions will provide a lifeline to exporters affected by



Image Credit: ITFC

This partnership with Afreximbank aims to support businesses and ordinary people during the coronavirus pandemic.

the impact that COVID-19 has had on the price of commodities."

"Hundreds of millions of people in Africa rely on agriculture for employment and many countries' food security rests on the smooth and affordable import and export of foodstuffs. We thank our financial

partners for joining ITFC in this syndication, particularly for their unabated support in this turbulent time, to allocate resources for Africa. This new partnership with Afreximbank will go some way to supporting businesses and ordinary people as we navigate the coronavirus pandemic."

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## 'Free trade can prevent hunger caused by future shifts in climate patterns'

INTERNATIONAL TRADE CAN compensate for regional reductions in agricultural production and reduce hunger when protectionist measures and other barriers to trade are eliminated, according to a study published in Nature Climate Change.

Climate change has consequences for agriculture worldwide, with clear differences between regions. Expectations are that sufficient food will remain available in the Northern hemisphere, but in regions such as sub-Saharan Africa or South Asia, falling crop yields may lead to higher food prices and a sharp rise in hunger.

According to the authors, further liberalisation of world trade can relieve these regional differences. Food deficiencies can, for instance, be reduced if regions like Europe and Latin America, where wheat and corn thrive, increase their production and export food to regions under heavy pressure from global warming. In other words, international trade could allow us to make the most of regional differences in climate change impacts.

The researchers' recommendations outlined in the paper are based on 60 scenarios that took into account different forms of trade policy, along with climate change varying from a 2°C to a 4°C warming of the Earth, with 2050 set as the horizon for each scenario.

"Our study shows that a seemingly negligible decrease in global average per capita food availability - by minus three per cent - would lead to a huge increase - 45 per cent - in the population at risk of hunger. This is because of the inequalities in access to food within individual countries. Ignoring these inequalities would lead to a severe underestimation of climate change impacts," explained study coauthor and acting IASA ecosystems services and management programme director, Petr Havlik.

### Import tariffs

The results further show that import tariffs present a major barrier to international trade in food as they increase the cost of importing basic food crops like wheat, corn or rice. Around a fifth of the worldwide production of these grains is traded internationally. That makes good trade agreements very important in the battle against hunger. The early 21st century saw a major liberalisation of the international market, which caused the average import tariffs on agricultural products in Europe, sub-Saharan Africa and South Asia to drop by a third.

There are also other barriers such as the logistical aspect in some countries. Roads are sometimes poor or ports are not equipped for loading and unloading large container ships, while countless complicated trade procedures can drive up the effective cost of trade. The authors argue that a global food strategy must go hand in hand with improvements to trade infrastructure.

The study highlights that where barriers to trade are eliminated, around 20 million people will still endure undernourishment due to climate change. While this number is high, it is a vast improvement on the 73 million people that would potentially be exposed to hunger without the suggested measures. In the more mild climate scenarios, an intensive liberalization of trade may prevent even more people from enduring hunger owing to climate change. Yet, a liberalisation of international trade may also involve potential dangers. The researchers warn that a well thought-out liberalisation is needed to avoid such collateral effects.

"Sadly enough, we see that in times of crisis, countries are inclined to adopt a protectionist stance. Since the start of the current corona crisis, around ten countries have closed their borders for the export of important food crops," said study lead author Charlotte Janssens, a guest researcher in the IASA ecosystems services and management programme and a researcher at KU Leuven. "In the context of climate change, it is highly important that they avoid such protectionist behaviour and instead continue to maintain and utilise the international trade framework."

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