

# African Farming

and Food Processing

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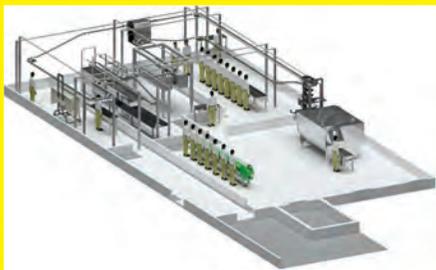
Improving livestock health in challenging times

## Floriculture innovations

In East Africa

## Precision mowing

Pöttinger enhances forage quality



Poultry processing solutions.p13

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and Food Processing

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## Farming Calendar 2020

### MAY

26-28 Commodity Trading Week Online ONLINE EVENT  
[www.commoditytradingweekonline.com](http://www.commoditytradingweekonline.com)

### AUGUST

11-14 NAMPO Harvest Day Nampo Park, South Africa  
[www.grainsa.co.za](http://www.grainsa.co.za)

31 Aug- VIV MEA ABU DHABI  
 2 Sep [www.vivmea.nl](http://www.vivmea.nl)

### SEPTEMBER

15-17 HortiFlor 2020 HARARE  
[www.hppexhibitions.com/hfz](http://www.hppexhibitions.com/hfz)

18-19 Horti Fair 2020 NAIVASHA  
[www.naivashahortifair.com](http://www.naivashahortifair.com)

### OCTOBER

1-3 agrofood & plastprintpack Ethiopia ADDIS ABABA  
[agrofood-ethiopia.com](http://agrofood-ethiopia.com)

4-7 iran agrofood TEHRAN  
[www.iran-agrofood.com/](http://www.iran-agrofood.com/)

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

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

## IFAD invests US\$9mn to help rural SMEs in developing nations

THE INTERNATIONAL FUND for Agricultural Development (IFAD) has announced an investment of US\$9mn into the Agri-Business Capital (ABC) Fund to help small-scale farmers and micro-small and medium size rural enterprises in developing countries. This was made possible due to the Swiss Agency for Development and Cooperation's contribution.

"The private sector's involvement in the eradication of hunger and poverty was crucial before the COVID-19 crisis. Now it has become even more important as we work to reduce some of the immediate impacts of the crisis and plan for a longer-term recovery when it is over," said Gilbert F Hounqbo, president of IFAD.

## Alwan Ali Hassan is acting managing director at Nigeria's Bank of Agriculture

ALWAN ALI HASSAN, a banker and businessman, has been appointed as the acting managing director of the Bank of Agriculture (BOA), the Nigerian government-owned bank that provides credit to large and small-scale farmers in the country.

Formed in 2000, BOA is Nigeria's apex agricultural and rural development finance institution, saddled with the responsibility of providing agricultural credit facilities in support of agricultural value chain activities. An outcome of a restructuring of government sponsored microcredit institutions, the bank was formed in 2000.

The Ministry of Agriculture and Rural Development hailed Ali Hassan's appointment as most apt. According to the Ministry, the appointment is set to expectedly turn the fortunes of the bank, considering his decades of experience in the banking sector.

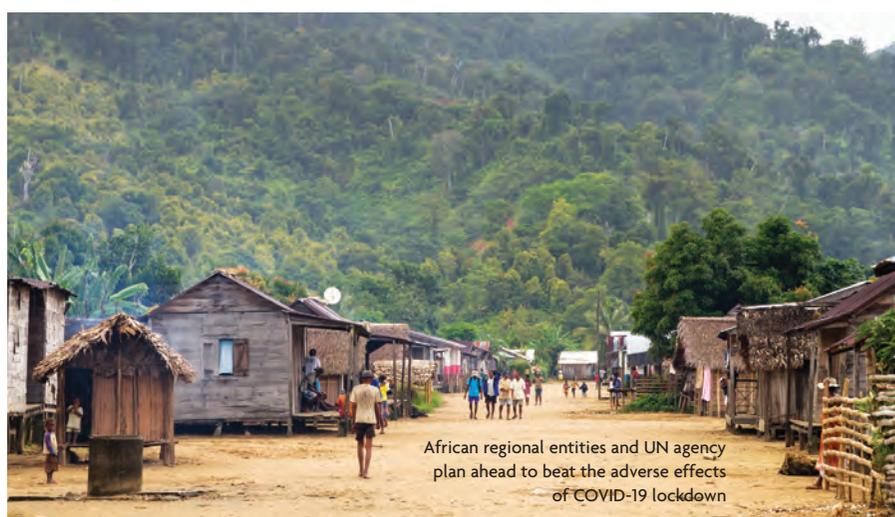
## FAO and AU join hands to ensure proper food supply during COVID-19

THE FOOD AND Agriculture Organisation of the United Nations (FAO), the African Union (AU) and their partners have agreed to support the food and agriculture system to operate during periods of lockdown, emergency, curfew and other containment measures.

The document was adopted at a virtual gathering held in April, with 55 AU member states and 45 ministers in attendance. Josefa Sacko, commissioner of the Department of Rural Economy and Agriculture, AU, moderated the event.

The pledge includes regular supply of food to the weaker sections of society, no disruptions in the movement and transport of eminent people and skeleton staff of organisation and the easy transport and marketing of goods and services during the COVID-19 pandemic. The state borders will remain open.

"We need strategic action to lessen the impact of the COVID-19 pandemic on food security in Africa. Closing down of borders restricts the trade and limits the availability of food in many countries, particularly those who depend on food imports," said director-general Qu Dongyu. He seemed welcoming about



measures which did not cause any disruption in food supply chains.

Angela Thoko Didiza, minister for agriculture, land reform and rural development, South Africa, joined Qu in opening the discussion and offered a word of caution against the impact of lockdowns on informal markets and international trade.

While FAO's chief economist Maximo Torero pointed to the growing evidence of strain on the food supply, Qu offered an alternative which would "shorten the chain," by producing food items locally.

Many of the ministers outlined the challenges posed by the pandemic, especially where one-fifth of the population is undernourished.

## FAO gains in fight against desert locusts in East Africa and Yemen

THE DIRECTOR-GENERAL OF the Food and Agriculture Organisation of the United Nations (FAO) QU Dongyu, said that significant gains had been made in the fight against the desert locust upsurge in East Africa and Yemen.

He stressed, however, that more needs to be done to prevent food security crisis, as the ongoing rainy season not only provides livelihoods for farmers and pastoralists but also favourable conditions for locusts to breed.

Releasing FAO's progress report on the locust control campaign in East Africa and Yemen, the director-general noted that the UN agency had continued its surveillance and control operations despite constraints resulting from COVID-19 and other challenges.

Preliminary estimates from the UN agency indicate that 720,000 tonnes of cereal, enough to feed five million people a year, have been saved in ten countries by preventing the spread of Desert Locusts and damage to many more hectares. An additional 350 000 pastoral households have been spared from distress.

"Our gains have been significant; but the battle is long and is not yet over," Qu said. "More people are at risk of losing their livelihoods and worsening food security in the coming months."

While swathes of treated land are now relatively free from the voracious pest, the first wave of swarms has reproduced and a second wave of locusts will transition from juveniles to the young adult stage in June, taking flight at a critical time when many farmers in East Africa prepare to harvest their crops.

The Desert Locust is considered the most destructive migratory pest in the world and a single swarm covering one square kilometre can contain up to 80 million locusts. FAO's Desert Locust appeal, launched in January, now covers ten countries - Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda, Tanzania and Yemen.

"We can and must protect vulnerable people from the impact of multiple crises: conflicts, climate extremes, desert locusts and COVID-19, which threaten to cause a further dramatic deterioration in their food security," Qu said. "To do this, we need to intensify our efforts further and focus not just on controls but on supporting the livelihoods of farmers and pastoralists so they can get through this," he added.

Since FAO launched its desert locust response in January, its appeal has been US\$130mn funded, the report said. However, funding has concentrated on locust control activities and much more backing for livelihoods support activities is needed.

## UNECA-GPSDD's Data for Now to revolutionise Africa's agriculture

AGRICULTURE IS AN industry which is already feeling the impact of COVID-19, including in Africa, which runs the risk of losing its per capita unit production in multiple markets, if an indefinite lockdown is implemented.

Strengthening agricultural systems, while employing innovative means to carry out regular practices, without compromising public health, has become increasingly important for protecting GDP at this time. Technological advancements play a major role in keeping a steady supply of food crop in the market, as well as creating sustenance for farmers, and this is where engaging young people is important, according to industry leaders who were involved in a data programme spearheaded by United Nations Economic Commission of Africa (UNECA) and the Global Partnership for Sustainable

Development Data (GPSDD).

"We should engage the younger generation in agricultural production, to prevent the farmers, who are mostly 60 or above, from getting infected," said Philip Thigo, technical advisor on data and innovation, at the office of the Deputy President, Kenya.

"Kenya experimented with a global partnership in the last five years. We have gone through motions in the last 4-5 years and wielding this capability towards fighting COVID-19," he added.

Oliver Chinganya, director, Africa Centre for Statistics, suggests some innovative ways through which technology can help agriculture. "An earth observation satellite can provide information on agriculture/food production via remote sensing technologies. It can determine the location and availability of a certain food crop in a particular location."

"Some of the global partners, such as GRID3, Digital Earth Africa and Esri would make such information available to governments, and other partners, including the UN, to help them source and make interventions. Information on rain patterns can also be made available as part of early warning system for locust attacks," he added.

Esri, for its part, offers visualisation and a free six months licence to users.

While the Kenyan government has kept the door open for international imports for food, the prices may spike up, causing domestic production to remain active. As recourse, farmers have started using social media platforms to sell their produce locally and engage in home delivery. This can help prevent the wastage of food crops for the lack of buyers.



Strengthening agricultural systems and using innovative means are important .

## Farm Radio Trust programme helping Malawi farmers amid COVID-19

FARM RADIO TRUST, a long-term partner of the World Food Programme (WFP) in Malawi, is using radio and other channels such as a dedicated hotline and texting, to share weather information and agricultural advisories with smallholder farmers.

Besides providing food assistance to more than a million, Farm Radio Trust also provides information to the rural sections of the society, such as, agricultural advisories, radio dramas and programmes related to school curriculum and health care providers.

Every day it reaches out to more than 700,000 listeners, and its programmes are picked up by Zodiak Broadcasting Station, which has a base of 2.9mn national listeners. As a response to the pandemic, Farm Radio Trust continues to share messages of awareness among the rural farmers.

Since the discovery of COVID-19, governments in African countries are taking stringent measures to contain the spread, which includes closely monitoring and preventing the movement of people from one part of the country to another.

But for people who live in the rural areas

or those who have no access to newspaper, television or social media, there is a lack of proper information and knowledge, which can soon lead to misinformation, fake news and an irrational panic and fear among the people.

John Mpakeni, a producer at Farm Radio Trust, said, "I source accurate information about the pandemic from Ministry of Health, to produce appropriate programmes for the farmers. I also engage with a lot with farmers when I am in the field, collecting radio programme content."

"When we see that more and more farmers have handwashing facilities at their homes, and at meeting points; it encourages us to work harder," he added.

"My role here is to collect market-price data from farmers. However, because our radio also speaks about the virus, some farmers ask about COVID-19 too. I have the official messages sent by the Ministry of Health, so it is easy to respond to the farmers' queries. One never knows who can be saved through this small gesture," revealed Takondwa Chindiwo, a call centre

intern at the Trust. Malawi with a population of about 18 mn, has registered an increase in the number of natural disasters, in the recent past; including floods, dry spells, strong winds, diseases and pest outbreaks.

People's livelihoods have been destroyed by these, caused hunger and poverty to increase. COVID-19 will be a threat to millions, already afflicted with malnutrition, climate change and natural hazards.

WFP is working all over the world to maintain assistance programmes, despite the global outbreak, and developed a plan to reorganise food distributions, in such a way that the staff, as well as the food assistance programme volunteers, remain safe, while providing to the vulnerable.

Gladys Phiri who works for the radio trust in Lilongwe, Malawi's capital, on the other hand, mentioned that she practises all the preventive measures, as recommended by the Ministry of Health. "Even at home and wherever I go, I practise personal hygiene and regularly wash my hands with soap. I keep a distance while interacting and limit my movement outdoors," she added.



Farm Radio Trust provides information to the rural sections of the society.

Image Credit: Riccardo Niels Mayer/Adobe Stock

## Agritask and Royal Exchange set to digitise Nigeria's agri-insurance

AGRITASK, GLOBAL DEVELOPER of a holistic agronomic operations platform, in collaboration with Royal Exchange, Nigeria's premier insurance group, has launched a joint initiative digitising crop and livestock insurance with a social KPI to underwrite one million small holder farmers by 2025. The initiative involves a variety of stakeholders in the agricultural sector and beyond, including banks, cooperatives, ag-consultants, input distributors, ag-buyers etc.

The agricultural insurance penetration levels remain very modest in developing countries. In particular, uninsured smallholder farmers can be severely impacted by variable forces of nature, with little financial means to manage such risks. This protection gap may potentially amplify poverty, hunger, enhance various forms of

inequalities within societies and ultimately introduce a burden on the economy and challenge the stability of the country.

Sustainable risk mitigation mechanisms and advanced technologies are required to tackle the preceding obstacles. Towards the accomplishment of such an objective, Royal Exchange and Agritask embarked on a project to create a solid foundation for digital crop-insurance framework in Nigeria by utilising Agritask's well-structured and accurate data infrastructure facility.

The infrastructure is capable of combining diverse sources of data on one platform in an unprecedented resolution, including the mapping of farmers, their field locations, crop types, weather, soil and topography, among others.

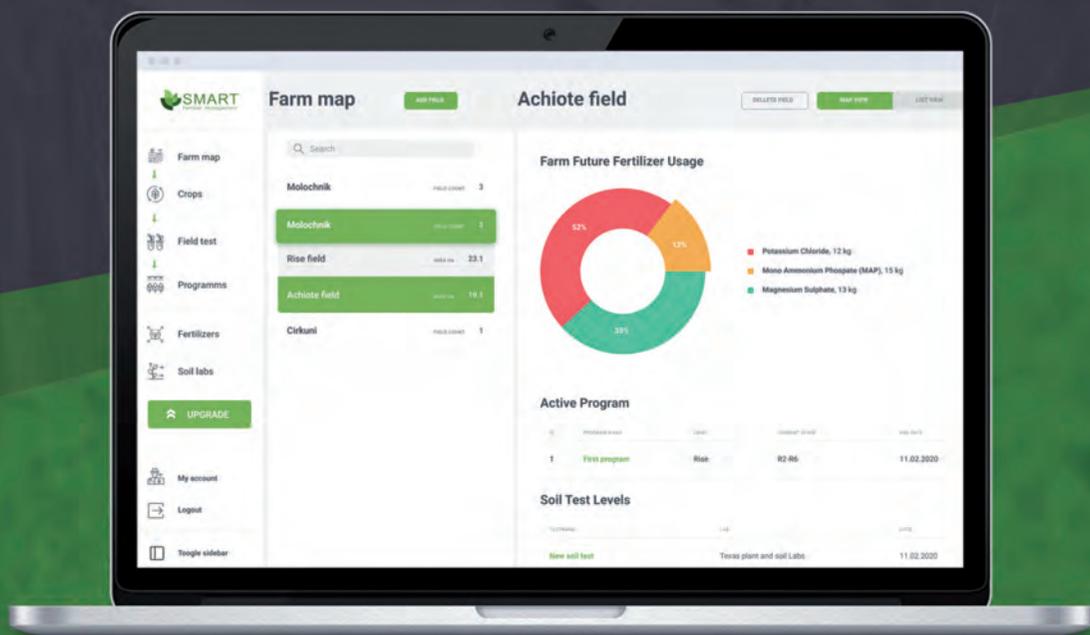


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## WCDA and DFDC-SA donate food to the poor amid COVID-19 crisis

WESTERN CAPE DEPARTMENT of Agriculture and the Deciduous Fruit Development Chamber of South Africa (DFDC-SA) has handed over 10,000 fruit parcels to the NGO Gift of the Givers, to be distributed among the vulnerable communities living in the Western Cape.

Gift of the Givers is supporting more than 20,000 people per day, and the fruit packs will be added to the food parcels, that they deliver to the relief centres.

Dr Thembi Xaba, CEO of DFDC-SA said, "Deciduous fruit producers and partners are aware of the challenges faced by our

communities as a result of COVID-19. While this gesture alone may not be enough to tackle the magnitude of socio-economic problems that our country is faced with, at present; it serves as the beginning of many more future engagements with like-minded partners."

## Russia donates US\$10mn to fight Desert Locusts in East Africa

FAO DIRECTOR-GENERAL QU Dongyu has thanked the Russian Federation for boosting the fight against the Desert Locust outbreak in East Africa by making a US\$10mn contribution to support FAO operations in Ethiopia, Kenya, South Sudan and Uganda.

Russia's contribution will be used in buying pesticides, fuel, vehicles and sprayers, as well as for the employment and training of personnel for the pest's elimination.

"We are grateful to the Russian Federation for its contribution to help fight the alarming impact of the Desert Locust upsurge. It will help efforts to stop the spread of the locusts and to safeguard the livelihoods of farmers and their families who are at risk from this scourge," Qu said.

East Africa is experiencing its largest invasion of desert locusts in decades. This is the most destructive migratory pest in the world and can form dense and highly mobile swarms capable of covering a distance of up to 150km in a single day.

Desert Locusts pose a major threat to food security and rural livelihoods

The situation remains alarming. In the six East African countries worst affected or at risk of locusts - Ethiopia, Kenya, Somalia, South Sudan, Uganda and Tanzania - around 20 million people are already experiencing acute food insecurity, and a further 15 million in Yemen, which is also being affected by the pest.



FAO considers its fight against the rapid spread of Desert Locusts in East Africa one of its top priorities.

Image Credit: Antonin/Acobe Stock

FAO considers its fight against the rapid spread of Desert Locusts in East Africa one of its top priorities. The UN agency has issued an emergency humanitarian appeal totalling US\$153.2mn for surveillance and control operations and to support farmers' livelihoods.

The assistance package includes surveil-

lance and control operations, pesticides and their means of delivery (agricultural leases, mobile and portable sprayers), as well as food, fodder and seeds for farmers and pastoralists.

So far, the FAO has received US\$117.3mn in donations from national governments, foundations and other organisations but there is a shortfall of US\$35.9mn.

## Task Force on COVID-19 impacts on Africa's food security begins work

ENSURING PEOPLE HAVE access to food by keeping borders open for trade is critical during COVID-19, FAO director-general QU Dongyu said during the first meeting of the Task Force on the impact of COVID-19 on food security and nutrition in Africa.

The meeting, co-convened by Qu and Angela Thoko Didiza, minister for Agriculture, land reform and rural development of South Africa and chair of the African Union Specialised Technical Committee on Agriculture, Rural Development, Water and Environment was moderated by Josefa Sacko, commissioner for rural economy and

agriculture, of the African Union Commission.

Task Force members included the European Union, the African Development Bank (AfDB), the World Bank, the International Fund for Agricultural Development (IFAD), the World Food Programme (WFP) and the African Union Development Agency (AUDA-NEPAD).

The main role of the Task Force is to help coordinate the actions set out in the joint political declaration made in April by Africa's Ministers for Agriculture, with support from FAO and the African Union, on protecting food security and nutrition during

the COVID-19 pandemic.

The Task Force will provide coordinated support to any new food security "hot spots" resulting from COVID-19, with particular focus on countries facing multiple threats such as the Desert Locust infestation in Eastern Africa.

The FAO director-general underscored the need to support the most vulnerable in Africa, including Small Island Developing States (SIDS) and the need to do this through innovation throughout the food supply chain, including the adoption of digital agriculture technologies.

## Edo State to focus on agriculture post COVID-19

AFTER THE CORONAVIRUS outbreak is brought under control, the Edo State government will focus on developing human capital in agriculture, agribusiness, agro-processing and allied fields to groom and harness knowledge and skillsets of its teeming youth population for an agriculture-based economy. This was announced by Godwin Obaseki, governor of Edo State, in the Niger Delta region of Nigeria.

"If the state must move on after the COVID-19 pandemic, we must improve capacity, knowledge and skills of our people. Our focus is on creating an agriculture-based post COVID-19 economy. After the COVID-19 pandemic, we would not have the money to rely on import but rather grow what we need to consume and process our produce for export."

The governor said this during the inspection of ongoing construction work at the state owned Edo State College of Agriculture Government which he promised to transform into a world-class School of Agriculture. This is expected to specialise in extension services, run short and intensive courses and train young men and women to support farmers in various communities.

The Nigerian government has further extended the closure of local and international airports to lighten the spread of COVID-19 infection by another four weeks.

Boss Mustapha, secretary to the Nigerian Government who chairs the Presidential Task Force on COVID-19, said that the decision was reached based on advice from experts.

"We have assessed the situation in the aviation industry and have come to the conclusion that given the facts available to us and based on the advice of experts, the ban on all flights will be extended for an additional four weeks," he said.

## Nutreco announces finalists for Feed&Food Tech Challenge

FIFTEEN FINALISTS HAVE been announced for the Nutreco Feed&Food Tech Challenge (NFTC)

More than 110 start-ups from across the globe applied by submitting their innovations to address critical challenges in the feed and food value chain.

Some of the finalists include Cultured Decadence, Bond Pets, Fumi Ingredients, Flying SpArk, Back of the Yards algae sciences, Fishency Innovation, eniferBio, Nanomik, Pando Nutrition, Poultryx, AgUnity and more.

The next phase of the competition would involve the finalists joining a three-day final event in The Netherlands, originally planned from 11-13 May 2020. Due to the COVID-19 concern, this final event will be rescheduled to a new date in autumn 2020.

The final event in the Netherlands in autumn 2020 will offer a dynamic 'greenhouse and pressure cooker' environment with a pitching competition and plenty of interaction with industry experts, fellow start-ups and an international jury. The new dates for the final event will be communicated in May.



Image Credit: Nolan/Adobe Stock

The competition acknowledges the best breakthrough innovations in food and feed value chain

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## Priva and Aranet partner to intensify wireless technology in horticulture

A COLLABORATION BETWEEN Priva and Aranet is set to enhance integrated wireless technology in greenhouses. The growing interest in data and with that, the growing demand for more and new sensors to generate data is the main driver of the exclusive partnership between Aranet and Priva, expected to help bridge the gap between wireless sensors platforms and other data sources in greenhouses.

The integration of Aranet sensors with Priva systems enables growers to analyse all their greenhouse processes and to create new insights based on that data. "I am really happy to announce this partnership. Now we can help growers from all over the world take

advantage of all the opportunities that wireless technology can offer today. In the current way of working, growers spend too much time organizing data and too little time analysing data. With this cooperation, we can solve this issue. That means a grower can really start to benefit from wireless technology and focus on new insights to optimize the daily operation," said Patrick Dankers, product manager at Priva.

### Complementary know-how from the parties

This cooperation makes it possible to offer industry-leading wireless monitoring systems for the horticultural market. "We at Aranet are

very excited about the partnership with Priva because of the tremendous synergy potential made possible by complementary know-how from the parties. We are confident that extensive wireless competence of Aranet in combination with Priva's in-depth knowledge of horticultural customer needs will ultimately result in a best-in-class wireless sensor offering towards the horticultural market, now and in the future," said Gints Antoms, sales director of Aranet IoT Solutions at SAF Tehnika JSC.

With this partnership, Priva plans to offer complete solutions for the market: integrated controls and a one-stop-shop, and both companies believe they can make environmental monitoring wireless, together.

## Macfrut 2020 goes digital

ITALY'S INTERNATIONAL SHOWCASE for the fresh produce industry, will provide business opportunities through a digital platform from 8-10 September 2020 to bring together buyers from all over the world, opening up new international markets for the sector.

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 technology, which provides a unique opportunity 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.

All visitors, from all across Italy and from all over the world, will be able to access and



Renzo Piraccini is the president of Macfrut.

participate in this three-day virtual trade fair by using a personal device (PC, tablet or smartphone).

More than 500 buyers, invited by the organisers, will be selected in collaboration

with the ICE-Agency (Italian Trade Agency), with which Macfrut has been working together with excellent results for many years through its well-established network of foreign sales agents.

In addition to covering the business side, Macfrut Digital will host technical forums. 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.

As part of this long-standing commitment, during these three days Macfrut Digital will host a series of live-streamed conferences, which can be viewed on the Natlive platform, after registering free of charge. 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.

Macfrut is an international trade fair for professionals operating in the fruit and vegetable sectors.

## Spotlight on biopesticides industry in Brussels conference

THE FIFTH BIOPESTICIDES Europe Conference will be taking place from 7-8 October 2020 in Brussels, Belgium, discussing the growing opportunities in European biopesticides market.

This two day event will bring together major industry stakeholders, researchers and representatives from regulatory bodies to discuss current challenges and future opportunities within the industry.

Some topics that will be discussed during the conference include Public-Private Collaborations as an R&D services platform focused on Plant Biotechnology, Exploring Global Commercialisation Challenges and Business Strategies for Biopesticides Companies, Bridging the gap between Regulations, Commercial Needs, Current Research and Practical Applications, Exploring Global Commercialisation Challenges

and Business Strategies, Innovations in Formulation and packaging in Order to Maximise the Production Supply Chain and New Biological Active Components in Development: Benefits, Practices and Assessment

Daniel Traon, managing partner, Arcadia International, will provide insight on Views on current regulations: Examination and registration processes of biopesticides, and their effect upon the production pipeline, Bridging the gap between regulations, the market's needs, research and practical applications of biopesticides, Practical solutions to overcome challenges posed by current biopesticides regulations in Europe

Kevin Bosc, EMEA lead, Corteva Agriscience, ECPA will be sharing insights.

## Roxell collaborates with Serupa in West Africa

THE COLLABORATION WITH Roxell will enable Serupa to provide complete solutions, from the building to the house systems. SERUPA DESIGNS, PRODUCES and installs poultry houses and industrial buildings.

This offers many advantages including the saving of time. In particular, for new poultry projects there is a lot to consider, in terms of finding suppliers, requesting quotations, comparing, and negotiating. Roxell and Serupa have a shared contact person for West Africa, to advice on the best comprehensive solution, suitable to the needs of the business. As the client needs to negotiate with one contact person and purchase a fully operational poultry house, the quotation process will be quicker.

**Superior quality at right price**  
During the construction of the



Image credit: Adobe Stock

West Africa has significant demand for comprehensive poultry solutions.

houses, one contact person is in charge of arranging everything, who will coordinate, supervise and provide advice during the entire project. The systems are perfectly attuned to one another. This results in an end product with guaranteed quality for the right price.

Serupa is known for high-quality house construction and Roxell has earned recognition for innovative house equipment. Both companies belong to the CTB Inc group. Serupa and Roxell's products complement each other — certainly in the West African market, where Serupa has been active for several years. For Roxell, it is a fairly new market. The demand for comprehensive solutions – turnkey – is significant in this region. Together, the two companies can provide a complete solution to local poultry farmers.



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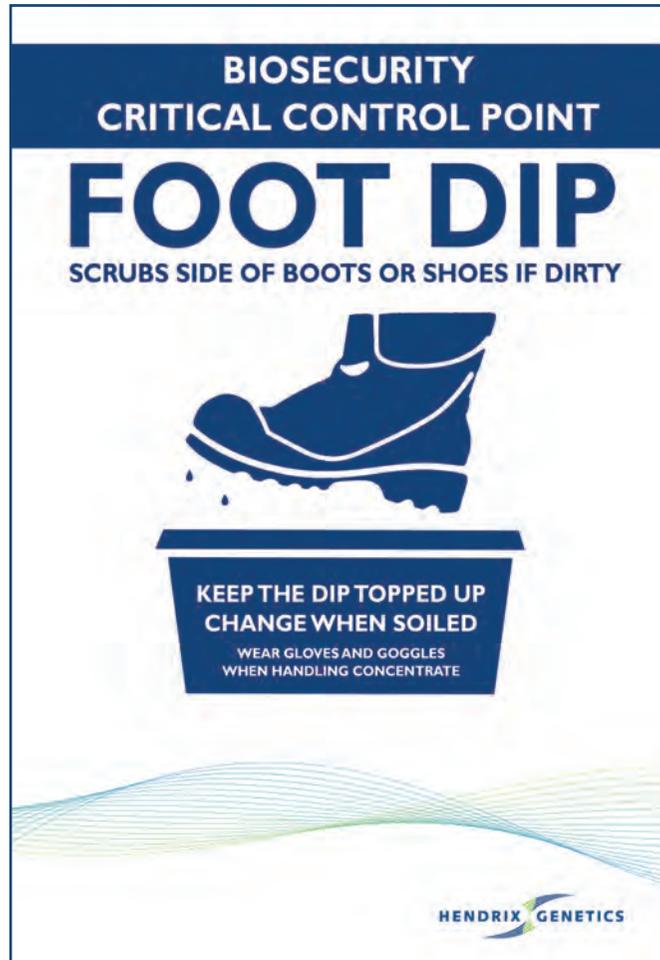
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Peter Arts, area manager Africa, Hendrix Genetics Layers, highlights how the biosecurity on a poultry farm can be the first line of defence against disease.

# Biosecurity has never been so important as now

**A**S THE WORLD is fighting against an invisible enemy (COVID-19), we realise even better that the poultry sector is doing this all the time. Now we are so focused on COVID-19, we should not forget the biosecurity on our farms. Poultry diseases are not on hold because of the current global pandemic. Egg producers go to battle every day against invisible enemies that threaten our industry and livelihoods. From Newcastle disease virus (NDV) to Fowlpox, the impact of these diseases has proven to be devastating to the poultry business. Now is the time to bring biosecurity to the next level in farms and operations.

It is challenging to prevent the entry of something we are not able to smell, see, hear, taste or have the tools to measure that shows its presence. It becomes visible only when it is already too late, for example, clinical signs and increased mortality. In order to prevent diseases reaching the birds, a biosecurity plan should be in place. In this article we offer a few practical biosecurity measures that have proven to be effective. Biosecurity, by simple definition, is a means to prevent the spread of pathogens from one place to another. Always keep in mind, in order to implement biosecurity measures successfully they need to be clear, simple and understandable for both staff and visitors. And don't forget that biosecurity is a mindset, only together we can bring biosecurity to the next level. Make sure to take the time to explain to employees



Protecting the flock against the invisible enemy.

and visitors why biosecurity measures are in place. It is the desire and determination to do the right thing to protect the birds and operation/investment, and thereby the income of staff.

Below we have listed a few extremely effective and affordable measures that will help to protect the flock.

- Create and respect a clear clean/dirty line: make sure you demarcate the area around your operations so it clearly conveys what is the "inside" of the farm (clean area), versus the "outside" of the farm (dirty area).
- Wash and disinfect your hands: often overlooked, but this is probably the cheapest

**In order to implement biosecurity measures successfully they need to be clear, simple and understandable for both staff and visitors.**

measure you should introduce to lower the risk of contamination. Whether you are coming from the outside or the inside, wash your hands thoroughly with soap and water before entering the premises, moving to another poultry house or facility of the farm. The golden rule: wash your hands for a minimum of 20 seconds. Dry your hands properly and disinfect them afterwards.

- Designate boots and clothes for the inside and the outside: if you enter the poultry house, always change your boots and clothes. Dirty shoes and clothes are the transmitters of disease. Ensure there are enough boots and clothes for your farm workers and visitors for each poultry house.
- Install footbaths: to maintain the quality and the effectiveness of your footbaths, remove any organic material from the boots prior to dipping them in the footbaths with a firm brush. Respect the proper dilution and use the proper products. Ensure that your visitors are using these footbaths. When renewing the disinfectant, take the time to clean the footbaths properly.
- Limit the number of visitors on your operations: only allow the necessary people on the farm and operations. When allowing visitors, make sure they respect the biosecurity measures installed on the farm.

Implementing biosecurity rules as described above is not that difficult. Maintaining them is more difficult and even more important! **B**

Image Credit: Hendrix

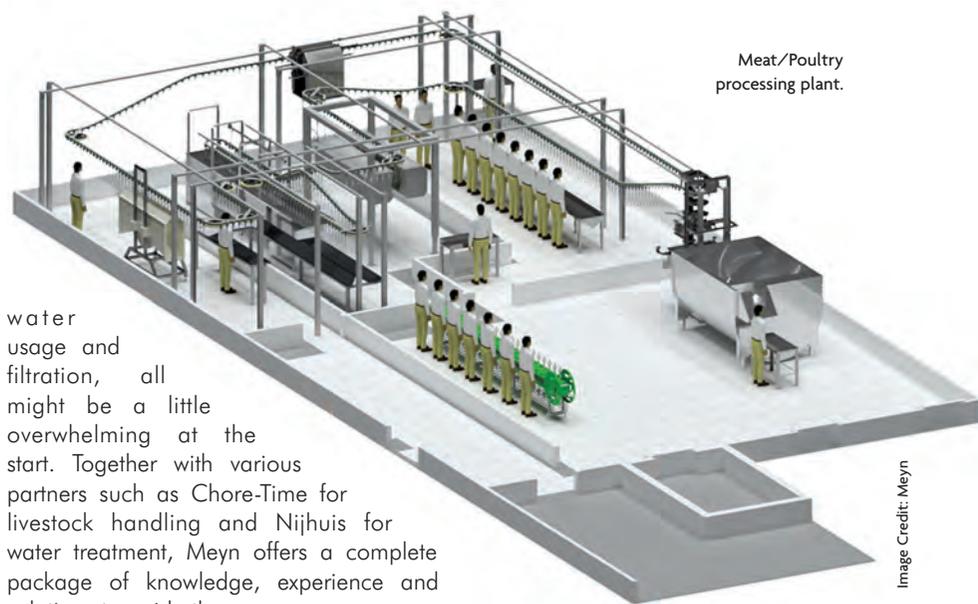
## Meyn supports poultry processing in Africa

POULTRY PROCESSING SPECIALIST Meyn has launched the LEAP concept - Low investment, expandable, semi automatic processing that allows poultry processors and farmers in Africa to professionalise their business for achieving higher levels of hygiene, efficiency and profit. The concept has proven successful in Asia.

"At Meyn we think beyond the steel. We stand side by side with processors to identify their potentials and help them develop their plant accordingly. Our support does not stop once a concept is realised. We will continue supporting a processor by providing necessary spare parts, service, training of staff and providing valuable business advice. We see ourselves more as consultants, and advisors. Only then we can help poultry processors reach their highest potential," said Milan van de Beek, area sales manager at Meyn.

LEAP allows both independent professionals as well as small businesses to step into the untapped market of semi-automated processing.

Meyn wants to simplify the necessary steps towards automation. Aspects involved in automation such as logistics, electricity,



Meat/Poultry processing plant.

Image Credit: Meyn

water usage and filtration, all might be a little overwhelming at the start. Together with various partners such as Chore-Time for livestock handling and Nijhuis for water treatment, Meyn offers a complete package of knowledge, experience and solutions to guide the way.

There is now increased pressure by global health organisations on local authorities around the world for improved ratios of health and safety and manageability of the poultry, meat and fish trade.

"Our strength is treating each ambition

individually, look for customised solutions, match opportunities in the local market with business potentials and continuously develop concepts and solutions to help and improve this industry," van de Beek added.

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The battle against the COVID-19 pandemic could spur technologies and investment to aid farmers grappling with livestock disease management. Martin Clark explores the opportunities.

## Digital disruption: Future of animal health

**T**HESE ARE DIFFICULT times for all, but the impact is being felt among Africa's farmers and along the food production chain, including in the livestock sector.

As the COVID-19 outbreak engulfed large parts of the globe, veterinary activities were designated as essential by the World Health Organisation (WHO), providing a lifeline for farmers in Africa and beyond.

For livestock farmers it has been an especially worrying time, coping not only with the fall-out from the Coronavirus pandemic, but also controlling diseases, pests and other typical issues facing their animals.

Indeed, the scope of the pandemic alone, in how it has blighted the world and its economy, is daunting enough — but there is hope, reckon experts.

In one regard, the COVID-19 crisis has prompted calls for a more unified approach to human and animal health, an idea popular among the veterinary community for years.

The World Organisation for Animal Health notes that even if the virus causing COVID-19 (SARS-CoV-2) emerged from an animal source, the pandemic is being driven by human-to-human contact.

In a 24 April statement, the Paris-based group called for more multi-sectoral collaboration and the sharing of expertise under a 'One Health' approach — a collaboration that might take many forms.

Veterinary services have already contributed towards building a response to the pandemic, supporting the work of

**Dubbed the 'Fitbit for cows', wearable biosensors are being trialled by two Scottish companies, Biotangents and IceRobotics, to help monitor the health of livestock, particularly dairy cows, with the aim of identifying the disease brucellosis at an earlier stage.**



The COVID-19 crisis has prompted calls for a more unified approach to human and animal health.

Image Credit: Halfpoint/Adobe Stock

human health authorities.

Further, vets continue to support other critical needs, including food security and safety intrinsically linked to sound animal production systems.

### Technology overlap

There are overlaps in some of the technologies being put forward to counter the Coronavirus pandemic in humans that could yield benefits to African farmers, both those nurturing crops and livestock.

With the prevalence of cell phones worldwide, that now includes the use of innovative mobile technologies, something that could yield immense benefit especially among remote, rural farmers.

Cranfield University in the UK, for instance, is working in Madagascar to evaluate how effective a mobile phone app is in helping smallholder farmers better fertilise their land.

"Fertiliser use is key in this subsistence system, but there's little data available to help farmers take measures to improve their current practices and management," said project lead, Dr Ruben Sakrabani, senior lecturer in soil chemistry. "This simple tool could make a huge difference to their farming yields, saving cost and improving their livelihoods."

The system uses a paper strip to analyse soil nutrients. The strip changes colour when

inserted into soil extracts, and its colour intensity is measured by the app, which then recommends levels of fertiliser to use.

Similar advances are being made in the area of livestock management, such as the development of wearable health sensors, a trend in monitoring fitness activity in humans.

Dubbed the 'Fitbit for cows', these new wearable biosensors are being trialled by two Scottish companies, Biotangents and IceRobotics, to help monitor the health of livestock, particularly dairy cows, with the aim of identifying the disease brucellosis at an earlier stage.

Brucellosis is a highly contagious bacterial infection that primarily affects livestock and can also be passed onto humans.

The portable test is being developed to allow rapid confirmatory diagnosis of suspected cases.

IceRobotics' wearable sensors are non-invasively placed on livestock monitoring daily activities 24/7.

Advanced processing of this information can help vets to monitor any changes in behaviour which might be early indicators for illness and allow them to shortlist livestock at an early stage, noted Dr Vivi Thorup, lead animal scientist at IceRobotics.

Biotangents is also developing a diagnostic test which will be portable and

able to be used in the field by vets to evaluate samples from shortlisted animals and confirm if the disease is present.

"IceRobotics is committed to delivering science-based information to clients via our sensor solution," said Dr Thorup. "This project allows us to advance our sensor capabilities, to be at the forefront of disease detection and animal well-being."

### Data and diagnostics

The idea that portable technology, accessible to farmers in Africa, which allows vets to identify sickness and threats in animals within a day, has huge ramifications.

Typically, lab-based testing for diseases could take up to a week, where and if available.

This type of technology can essentially give farmers an early warning system if they need to isolate infected animals or respond in other ways.

It mirrors part of a wider shift towards diagnostics and data geared toward livestock farming.

One of the world's leading animal health players, Zoetis, recently acquired Performance Livestock Analytics, to boost its work in this area.

The newly-acquired company was the first to offer cloud-based data management to beef producers, to simplify data and analytics for the livestock industry.

In essence, precision livestock farming can help improve producers' decision-making, right down to the level of each individual animal, to maximise health and well-being, performance, and efficiency across livestock operations.

Digital platforms and technology can help integrate information that a producer has available from multiple sources and turn that data into useful insights that inform health and management decisions.

On-farm data also may be meaningful if

shared throughout the supply chain in response to consumers' growing interest in how food-producing animals are raised.

"Our digital platform changes how livestock producers manage their business," said Dane Kuper, co-founder and chief executive of Performance Livestock Analytics.

"Real-time, accurate data allows producers to make better management decisions to help boost efficiency and profitability."

### Health is wealth

Last year, an article by Reuters highlighted the growing use of technology among the livestock industry, reporting that investors can even buy into South Africa's huge beef industry via a new app.

Johannesburg-based Livestock Wealth connects investors from all over the world with small-scale farmers via its 'MyFarmbook' app, where they can buy their own cow and receive interest depending on where they put their money.

Launched in 2015 with just 26 cows, the project now includes more than 2,000 cows and has taken in 100 million rand, with about 10 percent of investors coming from outside South Africa.

The story highlights not only how technology can have a positive impact on the livestock sector, but shows how animal health rises further up the agenda where business people, not only farmers, share an interest.

The trend prompted global commodities trader Cargill Inc. to launch a new division called Cargill Health Technologies last year, which is supporting a plethora of clever tech-based solutions to promote animal health.

This includes facial recognition technology, commonplace in the consumer marketplace, but now being deployed to help farmers better manage dairy herds.

**The idea that portable technology, accessible to farmers in Africa, which allows vets to identify sickness and threats in animals within a day, has huge ramifications.**

Cargill has a partnership with Cainthus to help producers recognise changes in a cow's appearance to detect illnesses, such as mastitis, at the onset, which can impact overall health, reproduction management and milk production.

In a society where animal health is inextricably linked to human wealth and health — a point no better highlighted than in the wake of COVID-19 — it seems likely that such innovations will become more widespread.

It may still sound like the stuff of science fiction in some of the more remote corners of Africa, but facial recognition, mobile apps, bar codes and wearable sensors, could ultimately transform livestock disease management in the coming decades.

### Medicinal boost

Sometimes, it is just a matter of giving farmers access to simple veterinary knowledge and medicines that can make all the difference. Elanco Animal Health reported positive results in February from its East Africa Growth Accelerator initiative, launched in 2017, stating that it had recorded a social return on investment of almost 250 percent among the region's dairy and poultry smallholder farmers.

The goal was to provide sustainable development solutions to address potential food shortage in the region due to livestock disease and mortality, by providing farmers with access to high-quality veterinary medicines and knowledge to support healthier food animals.

**"I have reduced deaths of my chickens and can produce more eggs," said one poultry smallholder farmer who has been involved in the initiative. "My income has increased."**

"We believe that healthier animals are the x-factor for solving some of society's greatest problems," said Maria Zampaglione, senior advisor, corporate social responsibility at Elanco.

The initiative has enabled the registration, manufacturing and distribution of affordable, high-quality veterinary products to prevent and treat livestock disease, along with intensive training for dairy and poultry smallholder farmers in Tanzania, Kenya and Uganda. **E**



Giving farmers access to simple veterinary knowledge and medicines can make a lot of difference.

Image Credit: Budimir Jevtic/Adobe Stock

Israel's Aleph Farms has announced a sustainability strategy to eliminate emissions associated with its meat production by 2025 and across its entire supply chain by 2030.

## Building resilient food systems

**A**LEPH FARMS CULTIVATES steak without harming animals or the environment. The company is aiming to cope with local and global supply chain disruptions that put food securities at risk and promote natural ecosystem preservation and reduce friction points with wild animals. It prepares for active pilot-plant (BioFarm) operations next year to achieve sustainable development goals.

Aleph Farms was the first to produce meat on the International Space Station without dependency on local natural resources and without slaughtering animals, with 3D bioprinting solutions. Its innovation has been selected by Netexplo Forum, in partnership with UNESCO, as one of the 'ten most promising innovations of the year' in terms of its positive impact and sustainable development.

"At a time when the occurrence of regional and global crisis is increasing - African Swine Fever, Australia fires, COVID-19 - food system resilience is at the core of Aleph Farms' vision and the key to building a better future for generations that follow," said Didier Toubia, co-founder and CEO of Aleph Farms.

"The way food systems across the world utilise the world's finite resources yields a major influence on the direction in which climate change, food security, and socio-economic consequences will follow," adds Lee Recht, head of sustainability at Aleph Farms. "We see the situation and the challenges through an 'innovation lens' that helps us understand the responsibility we



share and the impact we have on the state of our world and our people."

It is calculated that food production is responsible for more than a quarter of global greenhouse gas emissions.

### High-quality, safe and affordable nutrition

Aleph Farms is engaging in a dialogue with livestock farmers to integrate cultivated meat as part of a solution set to fundamental challenges that the agriculture industry is facing, such as eroding revenues and increased retirement rate in developed countries.

The company outlined a series of efforts and achievements it will leverage to reach its goals:

**Sustainability Advisory Board:** The company gathered top-level thought leaders from around the world to solicit views, reach objectives and implement its

holistic approach to sustainability across the ecosystem's entire value chain.

**Z-Board:** In February, the company announced the establishment of its 'Z-Board' - a dialogue platform that engages Generation Z leaders in the vision development for future generations.

**Sustainable Production and Process Design:** Aleph Farms is collaborating with Black & Veatch, a global engineering and construction company, to build a resilient, compliant, and sustainable infrastructure for large-scale production with foundational principles of circular economy and renewable energy.

Aleph's innovation has been selected by Netexplo Forum, in partnership with UNESCO, as one of the 'ten most promising innovations of the year' in terms of its positive impact and sustainable development.

### Study on containing African Swine Fever

A TEAM OF scientists in Scotland and Spain has identified that culling and fast removal of animal carcasses are critical for the eradication of African Swine Fever.

Professor Andy White and his Heriot-Watt University mathematics research team worked with the SaBio group of the Spanish Game Resources Institute (IREC), UCLM and CSIC (Ciudad Real, Spain) to develop the new mathematical model for the two effective solutions.

African Swine Fever is a highly infectious virus that causes severe, usually fatal disease in domestic pigs and wild boar. There is no treatment or vaccine. Though it is not a threat to humans the virus can have a profound socioeconomic impact on areas with outbreaks.

"Our mathematical model was used to understand the different

ways that the virus could be transmitted. It also considered biosecurity measures that can help mitigate the spread of an outbreak," said Professor White.

"A combination of culling and the removal of infected carcasses is the most effective way to eradicate the virus without also eradicating the host population. It is important to act quickly: early implementation of these measures will reduce infection levels while maintaining a higher host population density. In some cases, this could prevent the virus from establishing in a wild boar population."

"Higher temperatures lead to faster degradation of infected carcasses, which also reduces the severity of an outbreak," he added.

The scientists reported the findings of their new model in Scientific Reports (<https://rdcu.be/b3nRW>).

The Autonomous Greenhouse Challenge, organised by Wageningen University and Research (WUR) in the Netherlands, aims to remotely grow large quantities of cherry tomatoes of good quality with minimum use of resources.

## Growing better with plant feedback



**W**AGENINGEN UNIVERSITY'S AUTONOMOUS Greenhouse Challenge aims to maximise the yield and quality of the crop while minimising the use of resources, to save costs.

The challenge is progressing well for team AuTomatoes, consisting of consultants, data scientists, engineers, researchers, and students from TU Delft, Van der Hoeven Horticultural Projects, KeyGene and Hoogendoorn Growth Management. They harvested their first tomatoes, and the results still look promising.

The team started with the growth plan they developed in the preparation phase. Based on the incoming data and their collective knowledge, the team is constantly adjusting their growth strategy to

maximise the results. The data is used to adjust algorithms and develop different and new techniques, in order to create more optimal greenhouse controls, and thus more optimal growth conditions and greenhouse climate.

According to Hoogendoorn data analyst

**According to Hoogendoorn data analyst and AuTomatoes team member Evripidis Papadopoulos, "We started with a robust strategy and became flexible based on the plants' feedback, making our strategy agile."**

and AuTomatoes team member Evripidis Papadopoulos, this is working very well. "We started with a robust strategy and became flexible based on the plants' feedback, making our strategy agile. We constantly work to empower the plants and maintain the plant balances in order to maximise quality, quantity, taste and resource use efficiency."

KeyGene translates plant behavior into valuable data by means of, amongst others, cameras. This data is used by Hoogendoorn to improve the algorithms used to control the growth factors, in order to optimise the greenhouse climate according to the plants' needs. Combined with the applied and fundamental knowledge of Van der Hoeven and TU Delft, the team possesses the multidisciplinary knowledge needed to succeed in the Autonomous Greenhouse Challenge. **E**

### Nutreco adopting Science Based Targets

To help the world produce nutritious and high-quality food in a sustainable way, Nutreco has committed to adopt Science Based Targets.

The aim is to provide high-quality food to a growing population in a sustainable way.

The initiative is in line with the company's drive to achieve its mission of Feeding the Future.

Nutreco has joined the global ranks of 850 other leading companies by signing a letter of commitment with the Science Based Targets Initiative (SBTI) indicating that the company will work to set a science-based emission reduction target. A global collaboration between CDP, the World Resources Institute, World Wide Fund for Nature and the United

Nations Global Compact, the SBTi champions science-based target setting to boost companies' competitive advantage in the transition to a low-carbon economy.

The SBTi is helping companies to align their carbon reduction strategies with the objectives of the 2015 Paris Agreement, and we're pleased to join the initiative, together with other companies that are leading the way," said Nutreco CEO Rob Koremans.

According to the SBTi process, companies first publicly commit to setting Science Based Targets (SBT). After that, they have two years to set reduction targets for Scope one, two and three CO<sub>2</sub> emissions: Scope one relates to

energy generated on-site, Scope two relates to energy purchased and Scope three covers energy use that takes in the supply chain. Finally, participating companies pledge to report on their progress annually.

Nutreco sustainability director José Villalón said, "If grocery retailers commit to SBT, this means their meat suppliers must submit their CO<sub>2</sub> reductions each year, and on down the value chain to feed and finally premix suppliers. So, eventually, companies across the chain will need to get on the SBT bandwagon to maintain their relationships with customers, helping to drive change throughout our industry."

The flower farms in Kenya and neighbouring areas are introducing innovative solutions ranging from bio-stimulants to drone technology. *Mwangi Mumero* reports.

## Boosting East Africa's flower power

**W**HILE THE FLORICULTURE industry in East Africa is going through the devastating effects of the COVID-19 pandemic that has affected its global markets, experts expect a quick recovery, once a vaccine is found.

More than 65 per cent of the exported Kenyan flowers pass through the Dutch auctions before finding their way into European supermarkets and homes.

"Kenya controls 38-40 per cent share of the European market. Currently, we grow 110 varieties of flowers – with roses being the most popular with customers at 85.6 per cent, carnations at 2.5 per cent and alstroemeria at 0.73 per cent," observed Clement Tulezi, the Kenya Flower Council (KFC) chief executive.

And with regular flights connecting Nairobi with Chinese cities and other Far Eastern countries, some flower exports are destined there. Others are sold through Dubai in the United Arab Emirates (UAE).

The sector employs more than 500,000 people in Kenya- becoming a critical component of the local economy.

In 2019, the flower sector earned the country US\$1bn and is one of the major foreign exchange earners. It is a good revenue earner for the government through taxes and levies.

**"We utilise fish wastes such as guts, fins and the head to manufacture biological fertilisers that enhance soil aeration, ameliorates soil conditions and moderates soil pH," said Mia Metcalf, director of the Eco-Group East Africa.**

### Setting trends

In the last couple of years, new technologies and innovations have been rolled out to boost flower production, reduce costs and improve efficiency in the sector.

These include soil nutrients and related



New technologies and innovations have been rolled out to boost flower production, reduce costs and improve efficiency in the sector.

materials, drone technology, mobile apps and energy saving solutions among others.

For instance, global agribusiness firm Syngenta has introduced a new bio-stimulant that increases the quality and viability of flowers in Kenya. Known as 'Hicure', the product has been tested in greenhouses of the main floricultural

regions of Naivasha, located in Kenya's Rift Valley and in Thika, Central Kenya.

"Use of this product for flower plants increased the quality and quantity of plant tissues in terms of increase in length of the stem, bigger buds, less flush periods and improved shelf life," observed Victor Ouma, Syngenta business manager for East Africa,

Image Credit: Mwangi Mumero

during the product launch in Nairobi, at the end of 2019.

According to Ouma, this product will help farmers boost their supplies and project higher profits and increased flower sales.

Another player that has been introducing innovations into the flower sector in Kenya is Eco-Group East Africa, a Kenyan company which has sourced its technology from the USA.

"We utilise fish wastes such as guts, fins and the head to manufacture biological fertilisers that enhance soil aeration, ameliorates soil conditions and moderates soil pH. It revitalises exhausted soil, reducing its sodium content in the process," observed Mia Metcalf, the director of the Eco-Group East Africa, at an interview with African Farming during a flower fair held earlier in Naivasha.

These products – named Soil Oxygen Supplement (SOS) and Liquid Plant Nutrient (LPN) can be used to boost existing soil fertility correcting deficiencies as well as improving soil structure. This will, in turn, allow deeper water penetration and increased use of stored water.

According to Metcalf, their products target roses and vegetables in commercial units and for smallholders. Their products- in liquid formulations- can be applied through drip irrigation systems or in foliar forms.

Jack Van Batenburg of the Dutch company Shakti Cocos – previously with Mega Substrates, has also introduced new growth media to prospective flower growers in one of the horticulture expos held in Kenya to showcase industry trends. Growth media is a material used to plant crop as a substitute for soil.

With water being the biggest problem for growers in sub-Saharan Africa, Batenburg observed that substrates provide the best solution for growers in hotter regions.

The firm uses coconut husks to produce substrates known as 'cocos' – which is a growing media.

"Substrates have a high water retention capacity, a high nutrient retention ability and are able to hold huge amounts of air. They are best suited for area with weak soils in these aspects", noted Batenburg, the coco specialist at the company.

He noted that substrate usage depends on the crop to be grown, the soils and climatic conditions of the area.

With its huge dependence on coconuts in making of substrates, the Dutch company has two factories in Kerala, India and in Sri Lanka- two areas reputed for their large coconut plantations.

Meanwhile, an Israeli firm Cargolite, has

also introduced into the market, a technology that improves transportation of flowers by removing the load from carton walls, reducing the carton weights as well as increasing the packing rate, while improving stackability.

"With the new technology more stems can be packed with the weight considerably reduced. It also improved stackability – allowing the flowers to arrive at their destination without damage," said Guy Symondson, Cargolite's East Africa representative during a recent flower fair in Nairobi.

With flower production processes becoming even more sophisticated, new management systems were also on show. These solutions are expected to help growers and exporters to manage their activities.

"This software helps growers to manage their activities online. Finance, crop history, auditing, harvesting, costing, quality control and compliance can be captured and managed through this software, availing needed information in real time. It can be customised to the grower's needs and will track every aspect in all operations in real time," said Kelvin Gachari, a project manager with Muddy Boots Software, a Kenyan company.

The software costs US\$1300 which includes set up, user training and one-year support.

### Water solutions

Specifically, clean energy solutions expected to help reduce the monthly bills attract an enthusiastic crowd during flower fairs. Among them is the solar water

pumping system.

"This solar pumping system fulfils the concept of low carbon, energy conservation and environmental protection. It can be effectively utilised in irrigation systems and can be remotely controlled," said Eugene Reeksting, of the Laser Engineering Solutions, the company which produces the solar irrigation system.

The unit consists of solar panels, solar pumping inverter, three phase AC pump and a water storage device. It uses solar energy to pump water from a borehole, dam or river directly to an irrigation system or a storage tank.

Water availability and sources for agriculture proved an important area for developers of smart farming solutions.

"Our solutions are able to collect information on underground water sources available to farmers. They can also advice farmers on soils and synchronise data in relation to water and climate information," observed Andrew Denu, products manager with Sun Culture, an organisation that develops irrigation solutions.

The company's 'Rainmaker 2' is a solar powered irrigation solution which uses artificial intelligence to collect information on water sources for farmers. The solution can also provide water both for domestic and irrigation purposes.

The firm has developed the 'Agoptimised farmer Sensor' app which is available on smartphones.

"The app helps farmers to build weather models, helps in crop yield monitoring, data on pests and diseases as well as map out water sources data," noted Denu during



Clean energy solutions attract an enthusiastic crowd during flower fairs.

Image Credit: Mwangi Mumbo

the presentations.

It provides real time data on possible drought conditions, and is valuable for government and development organisations, especially those with activities in arid and semi-arid regions.

### Drones for floriculture

Experts say that a drone has more than 10 times accuracy in detecting pests and diseases than the human eye. They are capable of collecting high resolution images, as well, which are useful in mapping and surveying farms.

Already, a pilot project initiated by the Netherlands Development Agency (SNV) in partnership with Kenya's Jomo Kenyatta University of Agriculture and Technology (JKUAT) and Third Eye Company, a solution provider is helping farmers in Meru county to conduct disease surveillance on their farms.

"Drones are able to detect crops and diseases 10 days earlier than extension officers could do. They diagnose stress levels in plants early, helping planning and reduce the amount of pesticide use in crops," said Dr Bancy Mati, a researcher at JKUAT offering technical knowledge for the project.

Third Eye Company officials say that the

sensors in the drones can take up to 20 samples per day.

The drone technology is particularly useful for flower varieties grown in the open fields – outside of greenhouses.

With the lucrative nature of flower farming, cutting costs through early detection of water stress, diseases and pest would be critical, according to experts.

"Use of drones can cut the use of pesticides by between 20 and 25 per cent given it only addresses the area of concern. This helps to conserve the environment", observed George Madjitey, a Ghanaian drone expert.

## Shakti Cocos uses coconut husks to produce substrates known as 'cocos' – which is a growing media.

Ghana and South Africa are among the African nations that have taken up the drone technology in their farming activities.

Drones technology that has increasingly been accepted in many fields across Africa is proving vital in reducing costs of productions

among farmers. From imaging, pest and disease surveillance, crop spraying to scattering birds in rice field, drones are now part of food production across the continent.

### East African flower industry

While Kenya is the chief source of cut flowers from East Africa for the international markets, regional nations of Rwanda, Burundi and Ethiopia are coming up as viable competition.

The Rwanda flower markets doubled in worth in the 2017-2018 fiscal year to US\$2.8mn compared to the US\$1.2 mn in the 2016-2017 period, according to the National Agricultural Export Development Board (NAEB).

Ethiopia's flower income was worth US\$212mn, according to the Flower Bouquet Export ratings.

Over the last two decades, there has been heavy investment in the flower sector by the government and private investors. Flower growers in Rwanda and Burundi have been instrumental in the development of new flower varieties. The flower, Heliconia, that has been grown in Burundi by private growers has now been taken up by Kenyan and Ethiopian flower farmers. 

## Equinom transforming global sesame sector

GLOBAL SEED BREEDING specialist Equinom has developed cultivation methods that are set to boost the production and trading of sesame, thus ensuring profitability and increased market stability across the globe.

As part of its broad sesame development plans, Equinom has signed contracts with major grain handlers and international food companies to grow and commercialise its smarter sesame varieties in Africa, South America, Europe and the rest of the world. Results so far include the introduction of a fresh influx of land now dedicated to the cultivation of sesame totalling 100,000 acres worldwide to meet burgeoning demands. New growers in the US and Australia are adopting cultivation of sesame locally.

Under the plan, traditional growers benefitted from Equinom's non-GMO seed varieties to scale up production and broaden existing locations for growth.

### Driving accurate production and profit forecasting

"The world sesame market is currently worth almost US\$10bn," said Gil Shalev, CEO and co-founder at Equinom. Equinom's varieties aim to enable farmers to generate more accurate and pre-defined yields. This leads to more precise profit forecasting and assessments that greatly facilitate the execution of prospective contracts, providing all partners



– grain handlers and farmers – with a safety net, by keeping supplies and prices stable.

### Food security and stability during COVID-19

"The sesame industry is, by nature, prone to fluctuations and that makes it difficult for key parties in the supply chain to meet pledged output quotas," explained Shalev. "Our solution removes a lot of the risks associated with yield inconsistencies and grants stakeholders a new sense of assurance. Even in times of crisis – such as with the current COVID-19 pandemic – food companies can rely on a secured supply of sesame. Right

now, amid the outbreak, it is 'business as usual' for Equinom. We are currently drafting new work plans to propel the industry despite the challenging border closures and transportation hurdles."

Equinom has developed sesame with high-yield capabilities and superior nutritional profiles. It can be tailored to a variety of innovative and commercial products, including baking, confectionary, tahini, oil and flour, encompassing parameters of oil concentration, protein load, flavour and sensory qualities contributing to more uniform products.

A study on weed genetics provides insights for sustainable management strategies.

Weeds have major agronomic and environmental impacts, which affect food security.

## Breakthrough in the war on weeds

Image Credit: Dusan Kostic/Adobe Stock

**S**CIENTISTS AT ROTHAMSTED Research in England have successfully adapted genetic techniques developed for crop improvement to be used in weeds, offering possibilities to directly study the genetics responsible for herbicide resistance.

The group report in the journal *Plant Physiology*, shows they have used plant viruses to switch weed genes off, or, alternatively ramp up the production of specific proteins by weeds in the laboratory.

This means that these researchers can now directly show that a specific gene is required for herbicide resistance, or else is sufficient to confer it.

Lead researcher Dr Dana MacGregor described the research as a 'game-changer' for weed genetics.

Her latest study focuses on blackgrass, a major weed of cereals and a previous joint study involving Rothamsted, showed that herbicide resistant black-grass could cost £1 billion every year in the UK alone.

While researchers have previously identified genes that are over-represented in black-grass populations with herbicide resistance, they have been unable to show that the genes they have identified are even involved - or understand how they provide resistance in the plant.

"Weeds are arguably one of the most

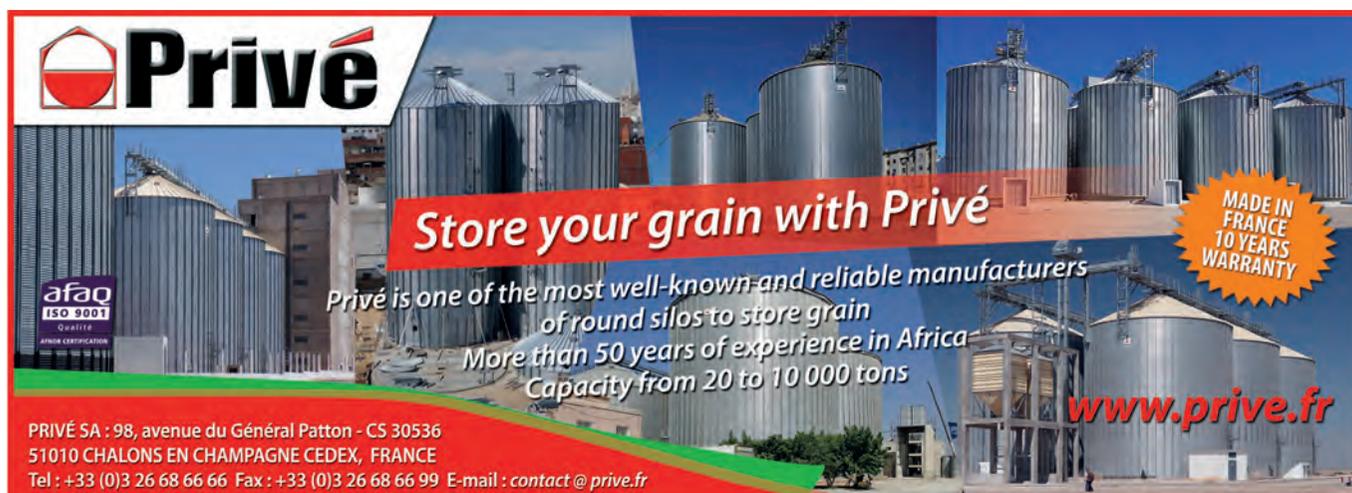
economically important groups of plant species. They have major agronomic and environmental impacts and affect food security. To be able to design and deploy weed management strategies that are both effective and sustainable, we must first understand what genes allow black-grass to avoid the current control practices.

"These virus-mediated techniques allow us to bring black-grass into the lab and ask questions about how specific genes work like we have never been able to before," said Dr MacGregor.

The team used two methods, the Virus - induced gene silencing (VIGS) and Virus - mediated overexpression (VOX) that were developed for studying crop plants, with both taking advantage of the pathways plants and their viruses use to fight one another.

This work was supported by the Smart Crop Protection Industrial Strategy Challenge Fund and the Biotechnology and Biological Sciences Research Council, part of UKRI. 

**"To be able to design and deploy weed management strategies that are both effective and sustainable, we must first understand what genes allow black-grass to avoid the current control practices," observed Dr Dana MacGregor, lead researcher.**



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Dr Benoy Berry, chairman, Contec Global speaks to *African Farming*, about the company's role in transforming agricultural practices through biotechnologies.

# Organic farming driving change in sub-Saharan Africa



Image credit: moiz/Adobe Stock

Organic farming has already considerably changed the face of rural employment and job security across Africa.

**O**VER THE NEXT 30 years, half of the world's population growth will take place in Africa. The implications for African countries range from the need to rapidly develop essential infrastructure, to the provision of jobs for millions entering the workforce. One of the greatest challenges presented by this trend relates to food production, as governments are having to consider how to effectively oversee the provision of food for rapidly increasing populations.

According to the African Youth Survey 2020, there is a trend of optimism among young people in Africa, with 82 per cent of respondents confident their standard of living will improve in the next two years and

81 per cent predicting technology will be the main driver of their changing fortunes. Technology – and specifically biotechnology – is central to finding a solution to the food supply question. Technologies can help a growing population better afford improved land and resource management, while providing more sustainable livelihoods.

Ecosystems are under growing threat across the planet, and especially in Africa,

**“Tissue culture facilities enable the regeneration of rare plants, trees and medicines in a clean, rapid and sustainable manner.”**

where crops continue to be jeopardised by extreme weather, desertification and soil erosion. As a result of industrial farming practices and poor land management, the degradation of the earth's soil is ubiquitous and too easily overlooked. However, the sustainable management of natural resources remains in our hands.

Contec Global, a company that focuses on the sustainable advancement of technology in multiple sectors, has witnessed the dramatic economic and sustainable benefits in Africa generated by organic farming deploying biotechnologies. The work of Contec Global encompasses several areas such as biometric technology, agriculture, transportation, mobile and financial technology, telecommunication, and green energy.

Biotechnologies have the potential to address the challenges of diminished natural resources, while diversifying and optimising economic growth in communities that were once obstructed from adopting a sustainable framework.

Contec Agro has developed organic farming products such as bio-seeds, bio-fertilisers and bio-planting to preserve the land and ensure food security. Its products are used at all stages of farming, including seed treatment, root dipping, soil application, and dip irrigation. As the realities of climate change manifest themselves, the company's tissue culture facility in Abuja – where tissues or cells are artificially grown (bananas, potatoes) – is equipped to address such realities, notably severe droughts.

Tissue culture facilities enable the regeneration of rare plants, trees and medicines in a clean, rapid and sustainable manner while providing the employees of Contec Agro with unique expertise in crop production and diversification.

Technologies driving organic farming are essential if we are to address issues such as low crop production while meeting growing food security challenges across the continent. Modern sustainable practices provide eco-friendly food crops, while encouraging soil rehabilitation and the

**“Organic farming will not only attract a modern and young workforce but increase the productivity and competitiveness of African agriculture as a collective.”**



Dr Benoy Berry,  
chairman, Contec Global.

Image Credit: contec Global

long-term productivity of existing crops and pastureland.

Meaningful progress in agricultural production starts with the empowerment of farmers and producers, achieved through providing them with the means and solutions necessary to make the move towards productive organic agricultural practices. The expanded operations of Contec Global in this sector have afforded many farmers a solid source of income as well as transferable expertise, notably in areas that once solely relied on mining as a major source of employment.

That is why the creation of training centres is essential in this process, the benefits of which are clear through the company's organic agro facility in Abuja, Nigeria, providing skill development of workers.

Organic farming will not only attract a modern and young workforce but increase the productivity and competitiveness of African agriculture as a collective. While the private sector will play an integral role in driving the required changes, government support is also vital.

The structural transformation of the

agricultural sector with government backing is well underway in Nigeria. The Federal Government's Ministry of Agriculture and Rural Development recently promised to gradually eliminate all chemical fertilisers in agriculture, with the aim of phasing out the presence of dangerous chemical traces in food.

Moreover, Uganda is home to the most organic producers in Africa. An estimated 231,157ha of land are managed organically across Uganda, as agriculture is the East African nation's most important sector in terms of economic return. This explains why it is usually given the utmost importance in government planning.

Organic farming has already considerably changed the face of rural employment and job security across Africa and will continue to do so in the years to come. It is now time for organic agricultural efforts to be promoted on a global basis as populations continue to grow. By the same token, agribusinesses ought to consider the impact of harsh chemicals on the livelihood of their ecosystems, encouraging the adoption, and access to, sustainable practices. **E**

## Study helping diversify farming of the future

'DIVERFARMING, A PROJECT of The University of Exeter Business School aims to develop and test different cropping systems to increase land productivity and crop quality, while reducing machinery, fertilisers, pesticides, energy and water use.

The most recent research from this project to feature Exeter has shown that two-levels of contracts should be put in place to support crop rotation and sustainable farming, the first level for farmers and the second, between stakeholders within a partnership.

“Our work has shown that understanding the support we need to give to farmers and stakeholders to support sustainable farming keep fields healthy and people fed. Having two levels makes each contract less complicated and easier to follow for all parties

involved. With this type of multi-stakeholder partnership, the implementation of crop rotation and other sustainable management practices could be effective, achieving a more sustainable and regenerative agricultural system throughout Europe,” said Stefano Pascucci, Professor in Sustainability and Circular Economy.

The study worked with researchers from Wageningen University in the Netherlands; Tuscia University in Italy, and the Barilla Sustainable Farming Group, which promotes a partnership between supply chain partners to adopt and diffuse sustainable practices.

The research team recommended a two level approach to implement the crop rotation system that cycles wheat crops, sugar beet, rapeseed, and sunflower.

The first level is a contract to involve farmers with the benefits of crop diversification, including rotation practices such as price, quantity, quality, amount of land, number of years, and locations. The second refers to the collaboration between the stakeholders in the partnership seeking to integrate their supply chains, and the develop the contracts that can be offered to farmers.

Diverfarming is a project financed by the Horizon 2020 Programme of the European Commission, led by the Polytechnic University of Cartagena featuring 40 institutes across eight different countries and worth nearly 10 million euros. It focuses on the challenges of food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy.

Achieving high standards in cocoa production starts with understanding what affects bean quality and continues to the study of consumer trends. *Pierre Broun*, head of plant sciences for Olam Coffee and Cocoa, speaks to *Fyna Ashwath*.

The majority of the world's cocoa is sourced from smallholder farmers in West Africa.

Image Credit: Pierre Yves Babelon/Adobe Stock

# Crafting cocoa quality and productivity

## Please tell our readers about the drivers of bean quality.

The main drivers of cocoa bean quality are flavour, colour and fat content. These can be influenced by a number of things, from the type of bean as different varieties naturally have different attributes, to terroir as flavour is affected by the soil and landscape in which the beans are grown. How the beans are fermented and dried after harvesting will also have an effect.

Sustainability and traceability are becoming synonymous with quality. When customers buy a high-quality bean, they increasingly expect to be able to trace the origin of that bean to the source and to know it has been grown and harvested in a way that is ethical and kind to the environment. This is one reason why single origin cocoa is popular in the premium market.

In plant science, our job is to identify the

different biological factors that impact bean quality and develop solutions that will improve both quality and productivity in a sustainable way. We take a scientific approach to leverage the natural diversity of cocoa beans for consistency and novelty, and test how we can adapt farm practices to improve things like colour and flavour.

**“Using the Olam and Farmers Information System (OFIS), we can record the agricultural practices of individual farms and create tailored Farm Development Plans for each farmer to help them make the most of their land.”**

## What innovations are helping improve bean flavours and colours as well as increasing farm yields?

We are doing a lot of work with farming communities to improve cocoa productivity and quality. The majority of the world's cocoa is sourced from smallholder farmers in West Africa, many of whom have small plots with older or low-yielding cocoa trees. Often yields could be improved through simple farming techniques, but farmers may not always have the skills or resources.

That is why we have trained farmers across Côte d'Ivoire, Ghana, and our other origins in Good Agricultural Practices so they can improve quality productivity on their farms, funded and equipped youth teams to support farmers with tree planting and pruning, and distributed over 1.7 million improved cocoa seedlings to farmers in the last year, all grown in our

own nurseries.

We are also harnessing the power of technology to help farmers. Using the Olam and Farmers Information System (OFIS), we can record the agricultural practices of individual farms and create tailored Farm Development Plans for each farmer to help them make the most of their land. This comes with personalised advice and recommendations to improve quality and yield.

As a foundation, we are training farmers to preserve quality by only fermenting ripe and healthy cocoa beans. Any injury to the beans or contamination of the fermentation mass can lead to flavour defects or butter spoilage. To obtain specific flavour profiles, fermentation time, aeration and temperature may need to be adjusted; we then work with farmers to adapt post-harvest practices accordingly.

**To obtain specific flavour profiles, fermentation time, aeration and temperature may need to be adjusted.**

Since we are present in all producing regions of main origin countries, we have developed a strong knowledge of local cocoa, which we use to select beans, tailor post-harvest and adjust processing steps, so that we can offer the wide range of flavours, powder colours and butter qualities that our customers expect.

#### **Please tell us more about the 100 per cent Ghana cocoa powder.**

Our single origin cocoa powder, deZaan D11MG, is crafted with the bold, distinctive flavour of 100 per cent Ghana cocoa beans and can be offered as a fully traceable ingredient. Using our sustainable sourcing platform, AtSource, we are able to leverage detailed environmental and social data to provide unprecedented levels of transparency for our customers at each stage of the supply chain journey.

Sustainability and traceability are becoming synonymous with quality.



Image Credit: kaiskynet/Adobe Stock

#### **What sustainability initiatives has Olam cocoa put in place in the African continent?**

Last year we launched Cocoa Compass, Olam Cocoa's sustainability ambition for the future of the cocoa sector. It commits to improving farmer livelihoods, ensuring all children of cocoa farmers have access to education, increasing tree carbon stock across our direct supply chain.

We are also a dedicated partner of the Cocoa & Forests Initiative in Ghana and Côte d'Ivoire.

We are working with our customers to promote agroforestry in all our managed programmes. Farmers are planting forest and fruit trees alongside cocoa, restoring lost tree cover as well as improving cocoa productivity for farmers and providing them with an additional source of income. Over

a million new trees were planted in just Ghana and Côte d'Ivoire last year.

In Côte d'Ivoire specifically, we are working with the Ivorian government to protect and restore 460,000 hectares in two classified forests bordering Taï National Park. We have also partnered with Rainforest Alliance to teach school children from farming communities about the adverse impact of deforestation, encouraging them to share that knowledge with their families.

We are rolling out child labour monitoring and remediation systems across all our cocoa origins. We partnered with the Fair Labor Association to introduce the very first professionalised child labour monitoring and remediation to Cameroon, where we worked with local cooperatives to digitally register nearly 7,000 farmer suppliers and their households. 

### **FAO seeds distribution drive continues in South Sudan**

THE UN FOOD and Agriculture Organisation (FAO) has distributed seeds and essential farming tools to 500 households as part of its Emergency Livelihood Response Programme (ELRP) in South Sudan. It is funded by the Governments of the United Kingdom of Great Britain and Northern Ireland (through the Department for International Development (DFID), the United States Agency for International Development (USAID), the Netherlands, Norway, the United Nations Central Emergency Fund (CERF) and the South Sudan Humanitarian Fund.

With restrictions imposed on the movement of personnel and equipment due to the global COVID-19 pandemic, FAO is supporting and working with the government to find new ways to distribute

seeds to farmers during the ongoing planting season. Without these seeds, the most vulnerable people could be brought to the brink of famine in the coming months.

This programme was hugely beneficial to people like Jacqueline Tuon, living in northern Bari Payam in Central Equatoria State. A single mother of three, she suffered due to flood during the rainy season, pest infestations and other factors that limited the harvest of people like her. Besides, the desert locusts continue to spell danger for farmers and can lead to an unprecedented threat to food security, for millions across the country. Despite the ongoing Coronavirus restrictions, FAO is committed to reaching 4.8mn vulnerable people in South Sudan, with livelihood support.

## AgriTech Expo Zambia rescheduled

THE ORGANISERS OF the 7th edition of the AgriTech Expo Zambia, the Zambian National Farmers Union (ZNFU) and the Zambian subsidiary of the German Agriculture Society (DLG Agriculture Limited) were required to postpone the trade fair at the request of the Ministry of Health, Republic of Zambia due to the Coronavirus outbreak.

AgriTech Expo Zambia has now been scheduled for 15-17 April 2021. "With careful consideration and in consultation with our partners, exhibitors and sponsors we have decided to reschedule the event for April 2021," said Bernd Koch managing director of DLG Agriculture Ltd. said

"During these unprecedented times it is critical to prioritise first and foremost the health and wellbeing of all our stakeholders. Secondly choosing April 2021 was based on the voice of our customers as well as our experience as trade fair organisers to deliver the best possible event experience and create an effective and efficient business networking platform" he added.

The organisers believe that the longer run up to the trade fair in 2021 will give them time to assess the impacts of the Coronavirus pandemic on the industry and carry out the essential operational tasks such as field preparation which is a

critical component for the successful delivery of the event.

With uncertainty still surrounding the COVID-19 pandemic and its effect on the measures put in place by countries all over the world to reduce the spread of the virus, such as travel bans, closing of international borders, social distancing and the ban on large gatherings, the organisers believe that the new dates of the show in April 2021 will give them to ability to offer attendees a superior event experience.

"Growing Knowledge for Future Farmers, the motto of AgriTech Expo is apt as we realise that the future of Zambia's agriculture, and indeed that of the region and beyond lies in the hands of the youth," said the president of the Zambian National Farmers' Union (ZNFU) Jervis Zimba.

"We have deliberately brought the AgriTech Expo to the farmers' doorsteps so that apart from learning through sharing of experiences, they practically experience the latest innovation and technology and best practices first hand.

I welcome you all to be part of the 2021 AgriTech Expo as we all strive to bring real growth to agriculture. The growth and success of our agriculture, our future, is in our hands," he added.

In the lead up to AgriTech Expo Zambia

in April 2021 the organisers continue their commitment to contribute to the society through their outreach program. The venue of the AgriTech Expo, the GART Research Center is home also to the Golden Valley Primary School in Chisamba. This year, energy zone exhibitor at AgriTech, EcoGas Zambia will donate a Biogas unit that they were scheduled to exhibit at the event, to the school. The unit will enable the school to cook meals for their 700 students using renewable energy sources. This will not only provide the pupils with a warm meal but also introduce to them to a new technology that can save their natural environment and reduce deforestation.

Chris Lewis, director at EcoGas Zambia said, "We are proud to announce the donation of a brand-new biogas unit, to be installed at the Golden Valley Primary School that hosts AgriTech Expo Zambia. This new and innovative design will allow the teachers to provide much needed hot meals for the children attending the school. To run an engine, you need to add fuel first and we trust that this new edition to the school will be the brain fuel required to power this next generation of farmers to new heights."

AgriTech Expo services the needs of the entire agri-value chain in Zambia and its neighboring countries.

## EIMA to organise digital event

DUE TO THE health emergency, Eima International will create "EIMA Digital Preview", the world's first agricultural machinery event entirely hosted using a digital platform and technologies on the same days as the original event.

The international event for agricultural machines and equipment with almost 2,000 exhibiting companies and a total of 320,000 visitors in the last edition - will now take place from 3-7 February 2021, at the Bologna exhibition complex. The EIMA of February 2021 will be based on its traditional formula, offering live to business-people, technicians and farms the widest choice of technologies for every type of processing.

On the other hand, the digital edition promises to be a fascinating preview, a unique experiment in the industry, a new experience that will project exhibitors and visitors into a new dimension.

"The decision to postpone the traditional EIMA until the beginning of next year stems from a careful logistical and economic assessment, since it is extremely likely that exhibitions may still be affected in autumn by specific government ordinances, and the transport and services system may still be slowed down due to the precautionary measures that will still be in place both in Italy and abroad", explains Alessandro Malavolti, president of FederUnacoma, the federation of Italian manufacturers that is the direct organiser of the event.

"After all, the agricultural and applied mechanics supply chain

urgently needs to resume business - explains Malavolti - because there is great interest in technological innovations and great need, especially after the acute phase of the virus emergency, to restore energy and competitiveness to the primary economy".

"That is why we planned the November preview - concludes the president of FederUnacoma - which will bridge the gap to the February 2021 edition, an event that represents an exception in the history of EIMA International, which will return to its traditional placement from November 2022".

"The enrolments for the 44th EIMA have already filled the Bologna exhibition complex, and this organisational structure will be transposed to February - explains the general manager of FederUnacoma Simona Rapastella - while we are already working on the digital platform that will allow exhibitors to preview in November their company profiles and the range of products and news". "We are working in synergy with institutions, professional organisations and publishing houses - adds Rapastella - to create a programme of seminars, conferences and media-based events, to focus attention on the main issues and encourage the meeting between supply and demand regarding technologies for agriculture, green area care and land maintenance". "The 'business-to-business' meetings with foreign operators will feature prominently on the new platform - concludes Rapastella - since they represent a strategic target and a great strength for our exhibition".

Trends such as vertical farming and the use of data are gaining significance to enable food systems to cope with increasing challenges.

Adopting modern methods will be important to ensure an efficient food supply chain.

## Novel methods revitalising agriculture

Image Credit: mustbeyou/Adobe Stock

**T**HE GLOBAL PANDEMIC has highlighted the need for proactive measures to strengthen food systems.

Andre Laperriere, the executive director of Global Open Data for Agriculture and Nutrition (GODAN) highlights the fragility of the supply chain and the need to implement vertical farming to create self-dependant cities.

"In the current climate, adopting modern methods in agriculture will be key to ensuring an efficient food supply chain. With the challenges we are faced with, the need to develop more resilient food economies which make cities, regions and communities more sustainable and self-sufficient is crucial.

Adopting to vertical farming methods would be one of the best answers to creating sustainable and resilient local food systems, especially if used in cities or areas where land access is limited. This will also help lift the strain on other allied supply chains and benefit the environment though minimal carbon footprints.

It is perhaps one of the most efficient and innovative methods, as it allows for more crops to be grown with soil-less farming

techniques. These systems can be carried out in shipping containers, buildings and even tunnels, makes it easier to distribute food and develop greater self-sufficiency

Cities and towns can really benefit from this innovation for creating a local supply chain, leaving large farms to tackle critical intensive agricultural processes.

Finally, to scale up the process to feed cities the size of London or Berlin, we would need to ensure data transparency and knowledge sharing of best practices. Vertical farming techniques already rely on an extensive array of data (to better calibrate inputs within the vertical farming among other things), and we must ensure this information is accessible for innovators

**“Adopting to vertical farming methods would be one of the best answers to creating sustainable and resilient local food systems,” Andre Laperriere, executive director, GODAN.**

across the world to replicate, collaborate and finetune this innovation in an open source platform. Unless we ensure open data in this field, we would deny the world a better chance at solving one of the most deep rooted problems - hunger and sustainability," said Laperriere.

GODAN - Global Open Data for Agriculture and Nutrition, a UN and UK & US government supported initiative to propagate open data polices in agriculture and nutrition across the world.

### Technology and data

The pandemic has shown us the significance of technology to stay connected. Technological advancements play a major role in keeping a steady supply of food crop in the market, as well as in improving the livelihoods for farmers.

A data programme spearheaded by UN's Economic Commission of Africa (UNECA) and the Global Partnership for Sustainable Development Data (GPSDD) aims to transform Africa's agriculture.. The Africa Centre for Statistics is exploring innovative methods such as an earth observation satellite to provide information on agriculture. 

Precision mowing and ground tracking enable the MASTER and PRO models to provide optimum results.

# Pöttinger's mower technology enhances forage quality

**P**ÖTTINGER, THE GRASSLAND specialist's ALPHA MOTION technology for front mounted mowers on the NOVACAT and EUROCAT has been popular all over the world. The new MASTER and PRO models have given a new dimension to best forage and precision mowing.

The new MASTER and PRO models are attached to the tractor using a three-point mount, eliminating the need for mounting via the Weiste A-frame and they can be easily mounted to any tractor.

The MASTER models have the proven linkage system from the ALPHA MOTION mowers as well as a sturdy cutter bar with TRI DRIVE for better power transmission and an extended service life.

The cutter bars of Pöttinger disc mowers have gained recognition for cutting quality, low drag resistance and strength.

## Advanced linkage geometry of the carrier frame

With the ALPHA MOTION headstock the entire carrier frame adapts to the ground contours. The carrier frame slants downwards on downhill gradients and upwards when ascending. Even at high speed and on wet ground, due to perfect guidance over every contour, it offers sward protection. The MASTER provides ground tracking of  $\pm 16^\circ$  crossways and  $\pm 13^\circ / -7^\circ$  in the direction of travel while the PRO users benefit from  $\pm 16^\circ$  crossways and  $\pm 12^\circ / -9^\circ$  in the direction of travel.

The mechanical components are subjected to much less stress due to the harmonious flow of the mower and, as a result, wear is reduced and the service life of the mower extended considerably.

## The fine difference

ALPHA MOTION MASTER front mowers are 34 cm closer to the tractor due to their short headstock. The centre of gravity is also nearer to the tractor. At the same time, the distribution of weight between the front and rear axles has been improved. With a weight saving of more than 40 kgs, fuel consumption is minimised. The ground clearance in the transport position is 30 cm



NOVACAT 301 ALPHA  
MOTION PRO.

Image Credit: Pöttinger

on all models. Due to the limited mounting space, however, it is not possible to fit ALPHA MOTION MASTER models with ED or RCB conditioners. The new models feature an attractive front mower design with a light gray carrier frame.

The new NOVACAT ALPHA MOTION PRO front mowers include many details such as display of the correct lifting height in working position from the cab and folding front guard. This makes the cutter bar very easily accessible. Cleaning and

blade replacement is easier. Another advantage is the convenient adjustment of the suspension springs. The cover can be easily removed for this purpose. The central greasing points on the headstock make servicing even easier. The optimised drive train does not require a safety chain for the PTO shafts.

The disc mowers can be used without conditioner with swath doors or in combination with an ED tine conditioner or RCB roller conditioner. The unique front mower received the "Machine of the Year 2020" award at Agritechnica 2019.

Pöttinger mowers offer maximum convenience with the best ground tracking and cutting quality, low disintegration losses and high precision work without time-consuming adjustments. The NOVACAT and EUROCAT ALPHA MOTION MASTER and PRO mower offer these advantages, providing the basis for optimum forage quality and as a consequence the best forage. **B**

**The new NOVACAT ALPHA MOTION PRO front mowers include many details such as display of the correct lifting height in working position from the cab and folding front guard.**

The Malabo Montpellier Panel in conjunction with Power For All is providing valuable insights into the synergies between renewable energy - based mini-grids and Africa's agricultural growth.

# Powering the transformation of African agriculture

**T**HE MALABO MONTPPELLIAR Panel (MMP) has been working extensively to identify and prepare reports on strategic areas as defined by the Malabo Declaration requiring government intervention, and bringing the findings to engage a wider audience. Power for All is focused on ending energy poverty.

In a webinar organised by MMP in March 2020, Professor Nuhu Hatibu, Regional Head - East Africa for AGRA, explained the correlation between connecting rural areas and energy by drawing upon his experience in Tanzania, Uganda and Rwanda. The Alliance for a Green Revolution in Africa (AGRA) is working to drive transformation in agriculture and food systems in sub-Saharan Africa. It aims for an integrated approach between energy and the food sector.

The presentation highlighted the role of decentralised renewable energy in improving food security, increasing productivity and employment, in areas ranging from cold storage to solar pumps.

"Solar panels and building mini-grids is gaining importance across Africa," said Professor Hatibu, adding that one of the reasons these minigrids are gaining popularity in rural regions across the continent, is that they deal with a small

defined area. He added that solar powered irrigation is a game-changer, but the benefits of mini-grids go beyond irrigation, in areas including agro-processing, cold storage and transportation.

## Lessons from success stories

Professor Hatibu quoted the examples of companies that have been successful in utilising renewable energy for benefits across the agricultural value chain.

The use of hydraulic oil presses present a great opportunity for reduction in operation costs and help use energy more efficiently than expellers. At the milling stage of agriculture, moving from diesel to mini-grid driven electricity, produces greater efficiency and lesser food losses.

In Tanzania, demand for Tilapia is higher than supply and spoilage is a challenge. Cold storage company Jumeme collaborates with Tanzanian local communities to collect and rear Tilapia using mini-grid electricity, to freeze the fish and supply it fresh to consumers in Dar-e-Salaam all the way from Lake Victoria sites.

Another example is of Equatorial Power that has been transforming lives in the port village Bugarula in Idjwi island, for cold chain intervention in the preservation of meat, fish and milk, increasing potential incomes.

These examples show the possibility and sustainability of decentralised renewable energy solutions in the agri-food sector. However, Professor Hatibu went on to list the conditions that will determine the success of decentralised renewable energy solutions in transforming food systems.

He pointed out the need for effective policies and regulations, capacity building and vocational as well as technical training, providing market access, business models to run the mini-grids efficiently together with the data and analytics required and the importance of raising awareness about the benefits of renewable energy mini-grids.

**Professor Nuhu Hatibu, Regional Head - East Africa for AGRA said that solar powered irrigation is a game-changer, but the benefits of mini-grids go beyond irrigation, in areas including agro-processing, cold storage and transportation.**

## COVID-19 and re-localisation

Roberto Ridolfi, Assistant Director General at the UN's Food and Agriculture Organisation (FAO), spoke about the role of decentralised energy as a driver of the sustainability of food systems and reducing food loss.

He drew attention to the impact of the COVID-19 situation on food systems, enhancing the need for localised and regional food systems (such as in the case of the Mediterranean diet), through efforts to get consumers and producers closer.

"Coordinated action towards high impact and risk-prone sectors is needed to produce a sustainable development impact by lowering costs, increasing efficiency and catalysing private capital," he said.

For addressing the financial gap that will emerge stronger due to the pandemic, Ridolfi stresses the need for more synergic partnerships between the government, finance and the private sector, as well as SDG-compliant investments. 

There is need for an integrated approach between energy and the food sector.



Image Credit: kriss75/Adobe Stock

An on-farm experiment at the Zambian-German Agricultural Knowledge and Training Centre in Chisamba revealed the potential of mechanised conservation agriculture to increase productivity.

# Improving mechanised agriculture in Zambia



Image Credit: Marcin/Adobe Stock

Conservation agriculture in Zambia has been adopted mainly by small-scale farmers.

**E**VERYBODY IN ZAMBIA concurs with the reality of climate change since the impacts are visible across the entire nation. Small and medium-scale farmers who entirely rely on rainfed agriculture for both crops and animal production are the most affected by the impacts of climate change across Zambia.

The climate-adapted farming methods project (CAFEM), an initiative of the Zambian-German Agricultural Knowledge and Training Centre (AKTC), started in 2019, is aimed at minimising climate-related yield losses and securing income among small-scale and emergent farmers through the practice of mechanised conservation agriculture (MCA). AKTC is a bilateral cooperation between the German Federal Ministry of Food and Agriculture and the Zambian Ministry of Agriculture. It is located at the Golden Valley Agricultural Research Trust (GART) in Chisamba.

Conservation agriculture in Zambia has been adopted mainly by small-scale farmers though they are facing drudgery

and mechanisation challenges. The farmers use hand hoes and animal-drawn implements for making planting basins. The manual digging of holes is too labour intensive and time-consuming. This has made the practice unappealing to emergent and large-scale farmers who operate on large pieces of land.

The benefits of conservation agriculture among small-scale farmers compared with conventional counterparts under the same climatic conditions cannot be overemphasised. They include improved soil structure, water infiltration, soil microbial activity, time and labour reduction and yield. The greatest barrier to conservation agriculture adoption and upscaling in Zambia is the lack of appropriate mechanisation for land preparation, planting and weed control.

The CAFEM on-farm experiment on 27 ha of rainfed farming, was conducted to ascertain the performance of MCA versus conventional farming with maize and soybean crops, and to analyse whether they are economically viable.

## The experiment

To effectively access the effects of MCA and conventional farming on maize and soybean performance, three tillage practices were employed: discing (conventional), ripping and direct planting (conservation). The residues on the conventional plots were first burnt before discing; following the common practice of burning of residues every season among conventional farmers. With the 60 hp tractor, land preparation (disc harrowing and ripping), planting (including no-till), fertiliser application and weed control were done in time.

Being the first trial, the maize-soybean rotation will be done in the subsequent 2020-2021 season.

With constrained rainfall this season, interesting observations were made throughout the crop's development under the various tillage types.

In general, good plant population was observed on the three tillage types. However, uneven germination was noted on disced plots, effects of which translated

to the growth of crops throughout the season. Seeds planted on the disced plots were deprived of moisture due to the excessive evaporation during the dry spell. The residue cover on the conservation agriculture plots cushioned the crops from birds and ants attack. The crops on the conservation agriculture plots received least water stress during a two-week dry spell in December. Due to better water infiltration, soil moisture contents were highest in no-till plots and least in disced plots. Soil temperature and evaporation were higher in disced plots than in the ripped and no-till plots.

The time taken in land preparation and planting were double in the disced and ripped plots compared to no-till plots. Less amount of fuel was used on the no-till plots compared to the disced and ripped plots. Similarly, labour costs were highest in disced plots. Weed control, top-dressing and insect control operations recorded insignificant time, labour and fuel differences. Physical inspections reveal taller crops with bigger cobs in MCA plots compared to disced plots.

These preliminary results indicate that MCA is not only a climate-smart way of farming but also time-saving and more economically sound. The reduced fuel consumption and low labour costs can be used for more farm inputs while the time saved may be turned to other economically viable activities.

Farmers from the neighbouring districts of Chisamba and Chibombo got hands-on experience on MCA land preparation, planting and weed control at AKTC during the on-farm demonstrations throughout the season. This culminated in a successful field

MCA is a climate-smart way of farming, time-saving and more economically sound.



Image Credit: AKTC

day on the 25th February 2020 attended by around 200 farmers and stakeholders. During this field day, the crop's development under different tillage types was showcased. Among the institutions and stakeholders present were: GART, Conservation Farming Unit (CFU), BAYER AG, BHBW, Omnia fertilizers, Precision Farming, Seed Co, University of Zambia (UNZA) and the University of Hohenheim in Germany.

The outcomes of the CAFM project are sure demonstrations that MCA has the potential to upscale conservation agriculture adoption and overall agricultural productivity in Zambia. Through MCA, agriculture can become more profitable

while offering farmers an opportunity to cope with the effects of climate change. This is true because, farmers are able to conserve moisture, use less time in their farming activities and minimise cost on fuel. Through MCA, farming as a business is not only economically viable but also sustainable since the conservation of soil and water translates to better soil quality and improved yields. To achieve this desired goal, conservation agriculture must be mechanised and both the government and the private sectors have a big role to play.

*Godfrey Omulo, CAFM project lead researcher at AKTC and a PhD Candidate at the University of Hohenheim, Germany.* 

## AGCO continues commitment to sustainable technology solutions

AGCO, A GLOBAL leader in the design, manufacture and distribution of agricultural machinery and solutions, highlighted its commitment to bring farmers sustainable high-tech solutions by relaunching its vision.

"Our new vision – sustainable high-tech solutions for farmers feeding the world—better represents our thoughtful approach to helping our farmers and our business continually find better and more sustainable ways to raise the food people need, all around the world," said Martin Richenhagen, president and chief executive officer of AGCO Corporation. "As the world celebrated the 50th anniversary of Earth Day last month, we felt it was the right time to stress the importance of sustainability in our company's vision," he added.

AGCO precision agriculture tools help

farms and machines run more efficiently with lower inputs and higher yields. Sustainable productivity arises through technology, innovation and integrated solutions to grow more food and deliver higher farm income.

AGCO creates solutions to reduce stress and maximise comfort while maintaining healthy animals and encouraging natural behaviour. AGCO's sustainable high-tech solutions enable farmers to do more with less.

Advanced farm machines require less fuel and need to make fewer passes in the field, reducing compacted soil and increasing soil fertility.

Precision technology and agronomic solutions enable farmers to grow and harvest more per acre, making the most of our farmland.

Better sprayer technology enables farmers to apply products only where needed, reducing inputs to grow healthy food.

More efficient harvesting equipment means more crops are captured in the field, and better grain and seed storage mean more goes to market. Next-generation biosecurity, housing and feeding solutions mean safer, healthier and more productive conditions for swine and poultry.

"We don't want to stop at meeting the needs of today's farmers; we must support future generations," added Eric Hansotia, Chief Operating Officer of AGCO Corporation. "We need to continuously bring to market high-tech solutions to support farmers in producing nutritious food while reducing resource and environmental impacts."

A report by Rocky Mountain Institute highlights the importance of rural electrification in increasing agricultural productivity in Ethiopia, with plenty of opportunities for transformation in rural communities, even in times of crisis.

# Rural electrification boosting agriculture

The synergies between rural electrification and agricultural productivity, processing and businesses in Ethiopia, as across much of Africa, increases community resilience, according to a Rocky Mountain Institute (RMI) insight brief, *Capturing the Productive Use Dividend*. In addition to the widespread global economic disruptions caused by COVID-19, territories within the Horn of Africa face the mounting threat of desert locust infestations.

“There is a huge opportunity for Ethiopia to capture an economic dividend and accelerate progress toward national development goals, capturing the benefits of electrification for rural smallholders,” said Francis Elisha, principal at Rocky Mountain Institute.

**“In agriculture, electricity can unleash higher farm income and productivity by enabling irrigation, cold storage and post-harvest processing and handling,” said Dawit Mekonnen, research fellow at the International Food Policy Research Institute (IFPRI).**

Beyond obvious public health crises, Ethiopia faces threats to food security including disrupted trade and import channels, price spikes, and delayed or compromised harvest yields. Furthermore, water supplies risk being strained as planting cycles are delayed further into the dry season. Efforts to transform agriculture in Ethiopia continue to be critical in the face of imminent systemic pressure tests. RMI’s insight brief explores the opportunity for mutually assured success among agricultural transformation and rural electrification efforts. In collaboration with the International Food Policy Research Institute, the Ethiopian Ministry of Water, Irrigation and Energy, and the Agricultural



While the economic opportunity is huge, the impact of joint agriculture and rural electrification efforts are especially relevant today.

Transformation Agency, the brief outlines synergies between rural electrification and agricultural productivity, processing, and businesses, and the value that can flow from linking the two. By mapping value chains and opportunities, this analysis demonstrates the US\$4bn economic case for a national programme to promote productive electricity use. This would add US\$22mn in annual revenue streams for utility and minigrid developers, helping justify investment in power systems for rural institutional loads. While the economic opportunity is huge, the impact of joint agriculture and rural electrification efforts are especially relevant today. Diversifying business activities helps shield rural communities that depend solely on crop yields for income. The increased income would empower these groups to better prepare and protect themselves in times of

emergency. Productive uses of energy also help accelerate universal access goals, especially during crises, for facilities such as clinics. Ultimately, electrifying agricultural business activities should encourage equitable growth by extending entrepreneurial opportunities to women and impoverished groups. The evolving situation in Ethiopia, and globally, will involve emergency measures to safeguard systems from being overwhelmed. Given that the timeline of this research predated COVID-19, this brief does not directly address ongoing efforts regarding Ethiopia’s critical shocks today. But it provides commentary about increasing community resilience in response to today’s shocks, and in preparation for tomorrow’s. **E**

For more information about the report, go to [www.rmi.org](http://www.rmi.org)

Image Credit: Sam DCruz/Adobe Stock

Advanced automation and agricultural mechanisation is offering a wealth of possibilities for drones and robots in increasing quality and yields from land.

# Agri-robotics: Future farming solutions

**P**RECISION FARMING TECHNIQUES offer immense potential and may soon make possible, the use of drones to map fields and check crops and agro-bots to harvest fruit, sow seeds, identify and treat weeds with exact doses of pesticide and fertiliser – targeting efforts only in areas that need work, which allows for a reduction in labour, capital costs and emissions.

Yanmar R&D Europe (YRE) in Florence, Italy, focuses on a variety of field-based studies to bring added value to the agriculture industry – which include the two-year ‘SMASH’ project being carried out in cooperation with 10 technology partners to develop a mobile agricultural ‘eco-system’ to monitor, analyse and manage agricultural crops. YRE is paving the way in advanced field robotics research and working with partners to test modular robotic agricultural technologies.

**“SMASH is not a single machine, but a series of different devices including a robot, base station, drones and field sensors that together provide vital information to help farmers,” said YRE’s modelling and control engineer Manuel Pencelli.**

SMASH or ‘Smart Machine for Agricultural Solutions Hightech’ involves the development of a modular robotic platform that employs the latest information communications technology to examine crops and soils, analyse gathered information and provide clear, actionable information to farmers to support crop management.

One of Yanmar’s many roles was to develop control systems for the multipurpose robotic arm for mobile manipulation (including precision spraying), sensor integration for positioning technologies, and autonomous navigation and software



Yanmar R&D Europe is working with partners to test modular robotic agricultural technologies.

development for the control of the system’s mobile base (in collaboration with other partners).

“There have been many partners involved throughout. We needed mechanical expertise for developing the structure of the vehicle, and many ‘communications’ experts because we have a lot of devices that need to ‘talk’ to each other. Our starting point was in fact a tracked vehicle that was originally built for moving along a beach and cleaning the shoreline,” said YRE’s modelling and control engineer Manuel Pencelli.

There are two working SMASH prototypes – one for grapevines and the other for spinach – to cover the two different types of crops that were originally slated for research. The former has already undergone significant testing at a vineyard farm in the Pisa province, where Manuel has been instrumental in demonstrating the possibilities that this robotic ecosystem could offer farmers.

“SMASH is not a single machine, but a series of different devices including a robot, base station, drones and field sensors that together provide vital information to help farmers. A farmer could programme the task that he wants SMASH to carry out, and while he is involved in other activities, this

machine could move autonomously, monitoring crops, detecting and treating diseases, and saving the farmer or his workers significant time out in the fields manually checking crops,” said Pencelli.

### AI-based technology

SMASH comprises a system designed for a range of precision agriculture technologies, including geomatics, robotics, data mining, and machine learning while taking into account the environmental and social issues facing farmers.

“In addition to all the functions that can be performed by the robotic arm, we also have some attachments that can be mounted on the back of the vehicle for mechanical weeding, or working the soil, as it moves. This work can be done simultaneously, together with the monitoring and detection,” Pencelli added.

YRE joined forces with Florence University’s Agriculture Department in order to further advance research activities in the field. The university’s Professor Marco Vieri believed that a holistic approach to research was needed, alongside enabling the latest technologies: “Farming provides food, feed, fibre and fuel for humans, but we also have to consider rural, cultural and historical issues.” 

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## Saturas and Kerlink collaborate for automated irrigation control system

SATURAS LTD, AN ISRAELI startup and the developer of a breakthrough stem-water measurement system for smart farming, has announced that the IoT specialist Kerlink will provide Saturas with LoRa-based sensors for automated irrigation control system.

Kerlink will supply Saturas's deployments with hardware and software such as its solar-powered Wernet iStation, Wanesty Management Centre, a robust solution for managing private IoT networks, and Wanesty Network-as-a-Service, a turnkey comprehensive offer combining key infrastructure, operations, security, and professional services.

Saturas raised about US\$9mn, including a prestigious US\$1.65mn H2020 grant from the European Commission in 2019, to support its miniature, tree-embedded sensor system that continuously measures stem water potential (SWP) of trees and vines. SWP is recognised as the most reliable measurement of water stress and an important practical tool for irrigation management.

Saturas is the first company to develop a system for measuring SWP automatically, replacing the cumbersome manual devices that fruit-tree and vineyard growers have used for decades. Using Kerlink stations, the company's LoRa sensors transmit processed data to central, automated irrigation-control systems, tailoring irrigation to crops' real-time needs.

"Precision agriculture, led by precision irrigation, is a vital and rapidly growing global business sector with an estimated annual growth rate of over 20 per cent," said Anat Halgoa Solomon, Saturas co-founder and CEO.

"Smart farming, or ag-tech, is one of IOT's most important vertical markets but it needs the breakthrough innovations that companies like Saturas are bringing to fields and orchards to deliver on its promise," said Romain Weryk, Kerlink key account manager.

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## CRAFT investment to boost climate smart agriculture in Africa

CLIMATE RESILIENT AGRIBUSINESS for Tomorrow (CRAFT) has invested US\$2.16mn in a five-year multi-country project for Tanzania, Kenya and Uganda.

As reported in the Tanzania Daily News, the grant is made to 14 agribusinesses in the three countries.

The project specifically targets companies or farmers working in the sunflower, soybean, sesame, common beans, potato and sorghum food chains.

"Co-investment with the private sector is a leading strategy identified by the project. Its main objective is to achieve sustainable results and an increase in the availability and accessibility of climate-resilient food," said CRAFT project manager of Tanzania Menno Keizer, speaking to the source.

"Through its Climate Innovation and Investment Facility (CIIF), the project will support performance-based investments so as to build the resilience of private sector agribusinesses and service providers in the targeted value chains," he added.

So far, four Tanzanian companies such as Nondo Investors Company Limited, Rogimwa Agro Company Limited, Jackma Enterprises Limited and Mwenye Sunflower Oil Mills are signed agreements worth US\$612,874.

The food production in Kenya, Tanzania and Uganda is expected to rise with the help of the project, to provide for the population, which is growing, on an average, by 3 per cent in Tanzania and Uganda, and 2.5 percent in Kenya.

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