www.fareasternagriculture.com

Far Eastern Agriculture

VOLUME 42 ISSUE 1 2024

Addressing zinc deficiency in maize

Crops:
Zinc enrichment of maize grain through foliar application

Poultry:
Improving flock health through poultry litter monitoring

Aquaculture:
Boosting climate resilience in freshwater aquaculture

VICTAM Asia 2024 preview - p7

Poultry Buyers' Guide 2024

African Farming and Food Processing

THE MAGAZINE SERVING AFRICA'S AGRICULTURAL COMMUNITY

Bi-monthly issue contains a mix of editorials devoted to sustainable development, market intelligence, products, techniques and innovations across agricultural sectors, as well as coverage of all the major exhibitions and trade events

REACH KEY BUYERS AND SPECIFIERS ACROSS AFRICA THROUGH PRINT AND DIGITAL ADVERTISING

12,000+ monthly readers

NEWSLETTER

23,500+ circulation

post@alaincharles.com www.alaincharles.com

www.africanfarming.net

Alain Charles Publishing

CONTENTS

Far Eastern Agriculture

Cover Image : Adobe Stock

Editor: Madhuri Ramesh
Email: madhuri.ramesh@alaincharles.com
Editorial and Design team:
Prashanth AP, Sania Aziz, Rajesh Balakrishnan, Miriam Brtkova, Robert Daniels, Shivani Dhruv, Matthew Hayhoe, Leah Kelly, Naveen Kumar, Rahul Puthenveedu, Madhurima Sengupta, Louise Waters
Publisher: Nick Fordham
Head of Sales: Vinay Nair
Email: vinay.nair@alaincharles.com
Magazine Manager:
Richard Rozelaar, Tel: +44 207 834 7676
Email: richard.rozelaar@alaincharles.com

India TANMAY MISHRA
+91 98 80075908
tanmay.mishra@alaincharles.com

Nigeria BOLA OLOWO
+234 8034349299
bola.olowo@alaincharles.com

South Africa SALLY YOUNG
+ 27 (0) 824 906 961
sally.young@alaincharles.com

Head Office:
Alain Charles Publishing Ltd
University House, 11-13 Lower Grosvenor Place
London SW1W 0EX, United Kingdom
Phone: +44 20 7834 7676 **Fax:** +44 20 7973 0076
Middle East Regional Office:
Alain Charles Middle East FZ-LLC
Office L2- 112, Loft Office 2, Entrance B, PO Box 502207
Dubai Media City, UAE
Phone: +971 4 448 9260 **Fax:** +971 4 448 9261
Production: Rinta Denil, Mulakala Gayathri, Nelly Mendes, Infant Prakash and Merin Sinny
Email: production@alaincharles.com
Subscriptions: circulation@alaincharles.com
Chairman: Derek Fordham
Printed by: Buxton Press
Printed in: February 2024
Far Eastern Agriculture
(ISSN 0266-8025)

Alain Charles Publishing
Serving the world of business

AGENDA

POULTRY

LIVESTOCK

AQUACULTURE

CROPS

EQUIPMENT

TECHNOLOGY

Advertisers Index

EVENTS 2024

March

12-14
VICTAM Asia
Bangkok, Thailand
www.victamasia.com

MAY

22-24
Livestock Philippines 2024
Pasay City, Philippines
www.agriintex.codissia.com

22-24
AGRITECHNICA ASIA
Bangkok, Thailand
www.agritechnica-asia.com

29-31
ILDEX Vietnam
Ho Chi Minh City, Vietnam
www.ildex-vietnam.com

JUNE

12 - 14
Agri Vietnam
Ho Chi Minh City, Vietnam
www.agri-exhibitions.com/en/vietnam-3.html

JULY

17-19
Indo Agrotech 2024 Expo & Forum
Jakarta, Indonesia
www.indoagrotech.id

30-01
INAGRITECH 2024
Jakarta, Indonesia
www.inagritech-exhibition.net

Durable dumper unveiled by Fliegl Agrartechnik

The TMK 279 is a versatile tool for the agricultural sector.

Image Credit: Fliegl Agrartechnik

FLIEGL AGRARTECHNIK, A trailer manufacturer, has developed a dumper that not only offers an ideal blend of power and performance but also boasts a wealth of innovative features for optimum use in agricultural applications.

The new TMK 279 combines an enhanced design with a permitted total weight of up to 24 tonnes. This robustness allows it to transport large volumes of bulk materials and ensures maximum durability during everyday use on the field.

With a basic capacity of approximately 31 cu/m and an impressive 40 cu/m when fitted with a 500 mm attachment, the TMK 279 dumper serves as a highly flexible solution for transporting a range of different materials. The ability to expand the capacity makes it a versatile tool for the agricultural sector.

The standard Profit frame boasts an attractive design thanks to its painted finish, which guarantees a long service life and reliable resistance to external influences. The hydraulically sprung draw gear ensures optimum adaptation to different loads, effectively compensates for different coupling heights on towing vehicles and helps to minimise vibrations.

With its hydraulic chassis, the TMK 279 offers sophisticated technology for maximum stability in even the most demanding conditions. The standard 710/50 R30.5 tyres in conjunction with the 410 x 180 axle configuration ensure optimum soil protection, traction and manoeuvrability on various different surfaces.

The TMK 279 dumper is approved for speeds of up to 40 km/h, which enables efficient and time-saving travel on public roads. Moreover, the dumper is also ideal for transporting light bulk materials and is capable of handling even the most challenging conditions with very wet ground, thanks to its high-volume tyres and advanced chassis.

Overall, Fliegl Agrartechnik has stated that the TMK 279 dumper represents an optimum addition to the upper tandem dumper segment, offering the perfect combination of performance, innovation and versatility to satisfy the demanding requirements of modern agriculture.

Livestock Philippines set to promote and contribute to the growth of the country's agriculture industry

LIVESTOCK PHILIPPINES, THE International Trade Fair for Innovative Production and Processing for Poultry and Livestock, takes place from 22-24 May 2024 at the World Trade Center, Pasay City, Philippines.

Since its first edition in 2011, Livestock Philippines has always been the foremost international B2B event dedicated to the livestock, poultry, aquaculture, feeds, and meat sectors to help promote and contribute to the growth of the agriculture industry in the Philippines. This is a biennial event that serves as a comprehensive platform for local and international exhibitors to help them showcase their most innovative products available in the global market, and connect them with key industry players, decision makers, and thousands of trade buyers.

Livestock Philippines provides free access to various technical seminars, conferences, and other activities that enable knowledge sharing concerning market trends, news, research, and latest industry developments. It offers a relaxed but professional business environment to conduct meetings, network and seek new business opportunities. Participants will have access to key professionals in the feed, livestock and aquaculture industries in order to generate sales leads, grow business and foster new partnerships.

Image Credit: Livestock Philippines

Livestock Philippines provides free access to various technical seminars, conferences and other activities.

Taking place concurrently with Livestock Philippines is Aquaculture Philippines, which exhibits the latest innovations in the aquaculture sector and opens a platform for discussions that cater to the entire value chain in aquaculture from production to processing. This year, Aquaculture Philippines is set to hold a conference session tackling various topics in the fisheries and aquaculture sectors.

Given the strategic geographical location of the Philippines, surrounded by a large body of water, it gives many livelihoods for the Filipinos with abundant fisheries and aquaculture resources, with aquaculture accounting for 15.1% of the total value of production. The Aquaculture Philippines Expo will support the local fishery and aquatic sectors in the country.

Aquaculture Philippines 2023 will be attended by the market-leading local, regional and international suppliers covering all sectors of the aquaculture, fisheries, and seafood sectors.

For further information, see the website at www.livestockphilippines.com.

A spotlight on Vietnam's business opportunities

Image Credit: ILDEX Vietnam

91% of visitors were satisfied with the previous show.

ILDEX VIETNAM, RUNNING from 29-31 May 2024, is arriving in Ho Chi Minh City to demonstrate the immense business opportunities for international investors and stakeholders in the country.

As one of the new tiger economies within southeast Asia, Vietnam has shown a robust growth in the last few years, bolstered by its large and dynamic population. The country has now emerged at the forefront of international trade and is a highly attractive target for international investments. Alongside its economic growth, the Vietnamese Government has been steadily opening the country up to investments and expatriate workers.

It is within this context that the SECC will open its doors for ILDEX Vietnam as an international livestock, dairy, meat processing and aquaculture exposition. Organised by VNU Exhibitions Asia Pacific Co., the conference has become a leading trade show in the Asia region with industry experts proclaiming it one of the best marketplace and international business platforms for the Vietnamese market. Previous editions have welcomed more than 10,308 trade participants in attendance from 45 countries, and around 150 leading global companies were also represented. In addition to a similar turnout this year, those arriving for the show will also enjoy more than 30 conference topics to be discussed with 40 global speakers providing their expertise.

Discover more at: https://www.ildex-vietnam.com/

How did January 2024 impact global food prices?

THE FAO FOOD Price Index (FFPI) serves as a metric for monitoring the monthly fluctuations in international prices of a selection of food commodities. It comprises the average of five commodity group price indices, with each group weighted according to the average export shares during the period from 2014 to 2016. A feature article, published in the June 2020 edition of the Food Outlook, details the revision of the base period for FFPI calculation and the expansion of its price coverage, set to take effect from July 2020. Additionally, a technical background on the previous construction of the FFPI can be found in a November 2013 article.

The FAO Food Price Index (FFPI) declined to 118.0 points in January 2024, reflecting a 1.0% decrease from the revised December level. This drop was primarily driven by lower prices in the cereals and meat categories, outweighing slight increases in the sugar index, with dairy and vegetable oils experiencing minor adjustments. Notably, the FFPI stood 10.4% lower than its value from the same month in the previous year.

The FAO Cereal Price Index averaged 120.1 points in January, registering a 2.2% decline from December and a significant 18.6% decrease from January 2023. Factors influencing this decline included reduced global wheat and maize export prices due to heightened competition and improved crop conditions, particularly in Argentina and the United States.

The FAO Vegetable Oil Price Index, at 122.5 points, showed a marginal 0.1% increase from the previous month. This stability resulted from higher palm and sunflower seed oil prices offsetting lower soy and rapeseed oil quotations,

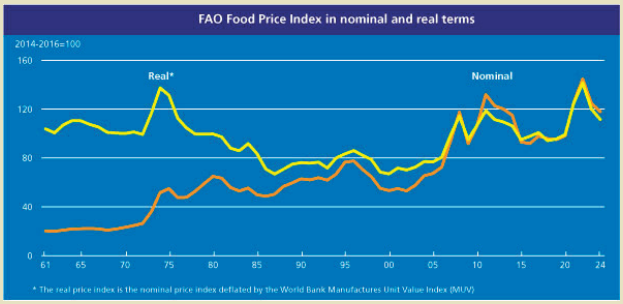


Image Credit: FAO

influenced by factors such as seasonally lower palm oil production and increased demand for sunflower seed oil.

The FAO Dairy Price Index, averaging 118.9 points, remained virtually unchanged from December. While butter and whole milk powder prices increased, skim milk powder and cheese prices declined due to varying demand and supply dynamics.

The FAO Meat Price Index, at 109.8 points, experienced its seventh consecutive monthly decline, down 1.4% from December, driven by lower poultry and pig meat quotations. Conversely, ovine meat prices increased due to strong global import demand and lower supplies in Oceania.

The FAO Sugar Price Index averaged 135.3 points, marking an 0.8% increase from December. This rise was attributed to concerns over below-average rains in Brazil impacting sugarcane crops, coupled with production challenges in Thailand and India. However, factors like ample supplies from the previous harvest in Brazil and currency fluctuations tempered the overall increase.

AGRITECHNICA ASIA: Uniting for agriculture

IN THE FACE of complex challenges like climate change, food security, and population growth, AGRITECHNICA ASIA's fourth edition goes beyond being just an exhibition – it's a call to unite, innovate, and overcome.

Global agriculture is standing at a crucial juncture, burdened with the monumental task of feeding a growing population amidst depleting resources and unpredictable climates. Asia, housing over half of the world's population, bears a disproportionate share of this challenge. However, within this challenge lies a significant opportunity – an opportunity for technology, innovation, and collaboration to reshape the narrative.

AGRITECHNICA ASIA serves as the epicentre, bringing together brilliant minds

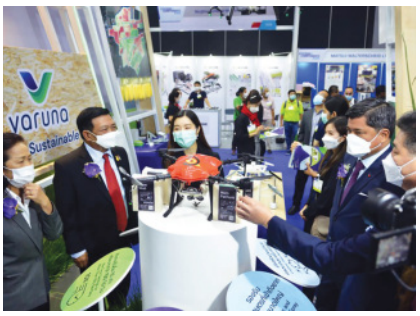


Image Credit: AGRITECHNICA ASIA

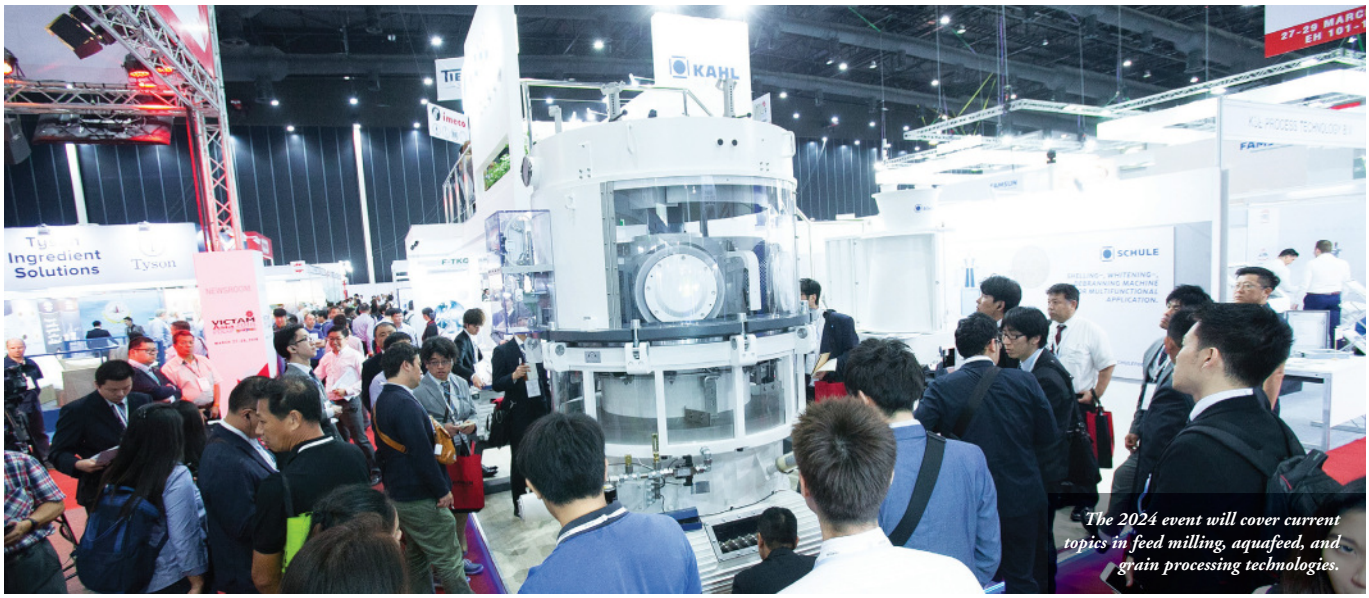
AGRITECHNICA ASIA serves as the epicentre, bringing together brilliant minds and industry leaders globally.

and industry leaders globally. It functions as a platform for deliberation, innovation, and the co-creation of solutions that transcend the borders of Asia. Beyond its identity as an exhibition, it acts as an arena for breakthrough innovations, a launchpad for cutting-edge technologies, and a forum for dialogues on best practices, policies, and the future of farming.

In partnership with Horti Asia and Systems & Components Asia, a comprehensive platform covering all aspects of smart farming, from seeds to sales, is proudly presented. The emphasis on technology and mechanisation is not a mere luxury but an essential component in the journey towards sustainable agriculture.

AGRITECHNICA ASIA 2024 extends an invitation to be part of this pivotal movement. Whether you are a farmer, innovator, policymaker, or entrepreneur, your contribution holds the power to make a substantial difference in shaping the future of agriculture.

VICTAM Asia and GRAPAS Asia prepare to kick off in March 2024



The 2024 event will cover current topics in feed milling, aquafeed, and grain processing technologies.

Image Credit: VICTAM International

Together with GRAPAS Asia, which focusses on the grain and rice processing sector, VICTAM Asia 2024 will be taking place from 12-14 March at BITEC in Bangkok, Thailand

WITH VICTAM ASIA 2024 taking place from March 12 – 14, 2024 at BITEC in Bangkok, here is a look at its development and current role in the industry.

Market Trends

The animal feed processing equipment market is projected to reach US$34.8bn by 2033, with the Asia Pacific region playing a crucial role in this growth. This makes the VICTAM Asia exhibition an important platform in the region.

Focus of VICTAM Asia 2024

The 2024 event will cover current topics in feed milling, aquafeed, and grain processing technologies. Sustainability, a growing concern in the industry, will also be a key focus. Notable exhibitors will include Amandus Kahl, DSM, CSI Group and Van Aarsen.

> **Notable exhibitors will include Amandus Kahl, DSM, CSI Group and Van Aarsen.**

GRAPAS Asia 2024: A Spotlight on Grain and Rice Milling

Running concurrently, GRAPAS Asia 2024 highlights the grain, rice and flour milling industry. As the leading exhibition in this sector in Asia, GRAPAS Asia will provide insights into the latest trends and technologies in milling. The current market for these sectors is marked by technological advancements and an increasing focus on efficiency and sustainability.

Collaboration with Health & Nutrition Asia

In partnership with Health & Nutrition Asia, organised by VIV worldwide, VICTAM Asia 2024 will offer a comprehensive view of animal health and nutrition, integrating pharmaceutical and high-tech solutions.

VICTAM Asia 2022 Review

The 2022 edition was significant for its organisers, marking a robust post-pandemic return. It attracted 231 exhibitors from 33 countries and more than 6,000 visitors, reaffirming its status as a vital industry platform. This sets a positive foundation for the 2024 event.

Historical Overview

VICTAM Asia was organised for the first time over thirty years ago in a car park in Bangkok. It has since developed into a key event within the industry and is currently held at BITEC Exhibition Centre. Each edition reflects the changing requirements and advancements within the animal feed and grain processing industries, introducing new technologies and facilitating industry networking every single time. ■

Free visitor registration
Registration for visitors is free of charge. Discover more at: www.victamasia.com; www.grapas-asia.com; or www.vivhealthandnutrition.nl.

Welcoming the 17th Indo Livestock 2024 Expo & Forum

Image Credit: Indo Livestock

The 17th Indo Livestock 2024 Expo & Forum is scheduled to take place from 17-19 July 2024.

Indo Livestock Expo leads the charge in innovation for a resilient farming future.

INDONESIA'S LEADING INTERNATIONAL livestock industry exhibition and forum, Indo Livestock, is proud to announce its 17th Indo Livestock 2024 Expo & Forum, which will be held at the Jakarta Convention Centre (JCC) from 17-19 July 2024.

The exhibition and forum will become an important platform for livestock industry players to share knowledge, the latest technology and business opportunities. Incorporating with Indo Dairy, Indo Feed, Indo Agrotech, Indo Vet, dan Indo Fisheries 2024 Expo & Forum, this international exhibition will highlights the latest developments in livestock, agriculture, animal feed, dairy processing, animal health, veterinary equipment, fish farmers, fish feed, fishing equipment, aquaculture industries, seafood and food processing and cold storage.

Exciting progress

Four months prior to the start of the exhibition, the participation numbers continue to increase, with almost all exhibition areas filled. This reflects the high demands of all related industries, who need to expand their marketing reach globally, build networks and business opportunities, increase insight for human resources regarding product development and innovation, and explore export opportunities to destination countries through Indo Livestock 2024 Expo & Forum.

Reasons to join

In 2024, Indo Livestock will present many potential programmes and participating industries. With a total of 700 participants from 50 countries, 10 country pavilions and 18,000 visitors are targeted at this year's exhibition. Continuing the previous success, Indo Livestock has brought back SDTI (Susu, Daging, Telur, Ikan) Socialisation to accelerate the importance of balanced nutrition for living a healthy lifestyle, through the consumption of animal protein. This activity also invites the government, both central and regional, as well as professionals, society and the media in one place.

> **In 2024, Indo Livestock will present many potential programmes and participating industries.**

The organisers of Indo Livestock 2024 Expo & Forum promoted the event at Swiss Expo 2024, which took place from 17-20 January 2024. ■

For more information, visit: https://indolivestock.com/

UPCOMING EVENT

INDO AGROTECH 2024 EXPO & FORUM

17 18 19 JULY 2024

Jakarta Convention Center
Jakarta, Indonesia

The 3rd Indonesia's No.1 International Agriculture Technology Industry Event

Incorporating With

- INDO LIVESTOCK 2024 EXPO & FORUM
- INDOFEED 2024 EXPO & FORUM
- INDO DAIRY 2024 EXPO & FORUM
- INDOVET 2024 EXPO & FORUM
- INDO FISHERIES 2024 EXPO & FORUM
- SDTI

SCAN HERE FOR VISIT

https://visitorreg.id/q/IDL24

Official Local Publication

Majalah Ekonomi, Industri & Teknik Perunggasan POULTRY INDONESIA

Supporting Publications

AGRINA · Alain Charles Publishing · Far Eastern Agriculture · ASIAN POULTRY MAGAZINE · ASIAN FEED MAGAZINE · AsianAgribiz · AQUA INDONESIA · Indotrading Indonesia's Largest Supplier Network · Infovet · TROBOS Livestock · TROBOS Aqua · SwaDaya Media Bisnis Pertanian · Info Akuakultur · vetnesia Media Komunikasi Dokter Hewan Indonesia · eFeedLink The agribusiness knowledge provider · Vietfish Magazine

Organised By

Napindo

Contact us
Limited Space Available,
Book Your Space Today!

Indo Agrotech Expo & Forum · IndoAgrotech · Indoagrotech · Indo Agrotech

www.indoagrotech.id

Improving flock health through poultry litter monitoring

Monitoring gut health is crucial as it has a significant impact on the performance and health of poultry.

Image Credit: Adobe Stock

Monitoring faeces through non-invasive techniques is the most convenient way to measure poultry gut health.

POULTRY GUT HEALTH says a lot about the overall health of the flock. Having a significant impact on both the performance and welfare of poultry, gut health is crucial to be monitored. However, the gut being an internal organ makes its measurement a complex process. Therefore, the most convenient way would be to monitor the faeces of these birds through a number of non-invasive techniques. A recent study published in the journal 'Animals' last year, explained that integrating artificial intelligence (AI) with advanced computer vision techniques held significant promise for non-invasive health assessments within the poultry industry.

Notable differences in colour and consistency of poultry droppings are often indicative of serious and infectious diseases. This study involved the collection of data from three different Lithuanian poultry farms. Litter-covered surfaces were scanned using a motorised pan-tilt-zoom (PTZ) camera, and the captured images were transferred to the image processing model, where segmentation and classification tasks were performed.

Image segmentation

Image segmentation was carried out by applying the K-means clustering algorithm to each image. By setting the background to zero and assigning the desired colour spectrum to the object of interest, this algorithm — which is an unsupervised technique — can be employed to distinguish the region of interest from the background. Applying this algorithm for dropping segmentation is extremely valuable since it enables disease identification, while also providing additional information about the welfare of birds.

> **Integrating AI with advanced computer vision techniques holds promise for non-invasive health assessments in the poultry industry.**

Over the years, a plethora of deep learning techniques have been developed for image segmentation. Some prominent examples include U-Net and Mask R-CNN.

Image classification

Three different deep learning models were implemented for image classification, namely Residual Neural Networks (ResNets); VGG-16 and You Only Look Once (YOLOv5).

- **Resnets:** Examples of some well known models belonging to the ResNet family include ResNet50, ResNet101 and ResNet152, among others. Besides addressing challenges pertaining to

vanishing gradients in deep neural networks, ResNet also introduces residual connections that enable the training of deep networks by effectively propagating gradients through skip connections.

- **VGG-16:** This is a variant of the VGGNet architecture, well known for its simplicity and uniformity. Comprising 16 layers with learnable weights, the VGG-16 model remains a popular choice for image classification tasks due to its simplicity, ease of use and compatibility with transfer learning techniques.
- **YOLOv5:** A combination of object classification and localisation within a single network makes YOLO a popular choice for object detection tasks. This model is available in eight different versions, with each version including improvements in architecture and features pertaining to speed and object detection accuracy. Version 5 of YOLO, consisting of four distinct models, was utilised in the study.

Following detection, the object (faeces) was classified into six distinct classes, with the final class determined by identifying the dominant class among them. These include:

- **Normal:** A healthy chicken produces solid excreta that is generally brown or greyish-brown in colour, consisting of a chalky part comprising uric acid from their urinary tract.
- **Minor abnormality:** Indicated by small changes in shape or texture.
- **Mild health issues:** Marginal changes in dropping form and texture may be suggestive of health issues that are often mild, but still require addressing. Loose, irregularly shaped and discoloured stools may possibly be due to minor bacterial enteritis caused when normal gut function is disrupted by intestinal inflammation. Such abnormalities usually come as a warning signs of health issues that may require further investigation. In addition, frothy and bubbly stools are also potential signs of underlying infection or disease, caused due to conditions such as necrotic enteritis.
- **Diarrhea:** The most common signs of diarrhea include the presence of a significant amount of moisture and discoloration in the faeces, resulting from bacterial or parasitic disease. Such diseases, if left untreated, can eventually lead to malabsorption syndrome.
- **Severe digestive disturbance or disease:** A combination of high moisture and gas frothiness in droppings may imply a severe digestive disturbance or disease.
- **Malabsorption syndrome:** Visible undigested feed particles are a clear sign of malabsorption syndrome which often results from bacterial enteritis or coccidiosis. Both of these cause inflammation and damage to intestinal walls, thereby preventing the chicken's digestive system from adequately processing the consumed feed. This is a major health concern as malabsorption can lead to nutrient deficiencies, weight loss and stunted growth.

Implementation of deep learning resulted in the object detection rate of droppings to reach an accuracy of 92.41%.

Notable differences in colour and consistency of poultry droppings are indicative of serious and infectious diseases.

Despite being presented with as many as 11 objects, implementation of deep learning resulted in the object detection rate for droppings to reach an accuracy of 92.41%. Lack of detection or inaccuracy was only observed in small pieces of droppings, which exhibited little to no impact on the overall decision making. The K-means algorithm outperformed U-net and Mask-RCNN in the segmentation task, by achieving an accuracy of 0.88 Dice coefficient. On the other hand, YOLOv5 demonstrated superior performance over VGG-16 and ResNet-101 for the classification task, by achieving an accuracy of 91.78%.

In another recent study from last year, a proposed system was developed using YOLO-V3 object detection algorithms and pre-trained ResNet50 for detection and classification of poultry diseases from the segmented image. By monitoring the faecal image of poultry, the system was capable of detecting common poultry diseases such as Coccidiosis, Salmonella, and Newcastle Disease.

Moreover, for ease of accessibility to end users, a mobile application called KUKU was developed using flutter mobile application development framework. Integrating the application with the device camera module enabled pictures of chicken droppings to be captured, following which they were sent into ROI extraction and disease classifier API. The trained model was converted to a format that could be ideally used by the iOS and Android mobile frameworks, which was then integrated into the mobile app. The model was also tested on a set of test data for validation and to ensure that the output matched the expected result on the app. ■

Research reveals in-feed antibiotic alternative for swine production

As antibiotic resistance becomes a public health concern, various alternative strategies are currently being explored to reduce dependence on antibiotics.

WITH FARM ANIMALS such as pigs being raised together in large numbers, the spread of infectious diseases among these herds becomes inevitable. Vaccines and antibiotics are commonly administered to keep these diseases at bay. However, antibiotics must be approached with caution, since repeated use over extended periods of time can cause a large number of bacterial strains to become increasingly resistant. Although antibiotic resistance is normal, it is however a public health concern, which is why an integrated One Health approach becomes essential.

Various alternative strategies are currently being explored to reduce dependence on antibiotics. Antimicrobial peptides (AMPs) for example, are small, endogenous, polycationic molecules that have broad microbicidal activity against various bacteria, fungi and viruses. Unlike traditional antibiotics that act by inhibiting enzymes, most AMPs kill bacteria by physically disrupting their cell membranes. Hence, it is unlikely for microorganisms to develop resistance to these agents, which is why AMPs are being widely explored as possible alternatives to coventional antibiotics. There are more than a dozen distinct AMPs that have been identified in pigs, which have been found to be effective against various species of microorganisms.

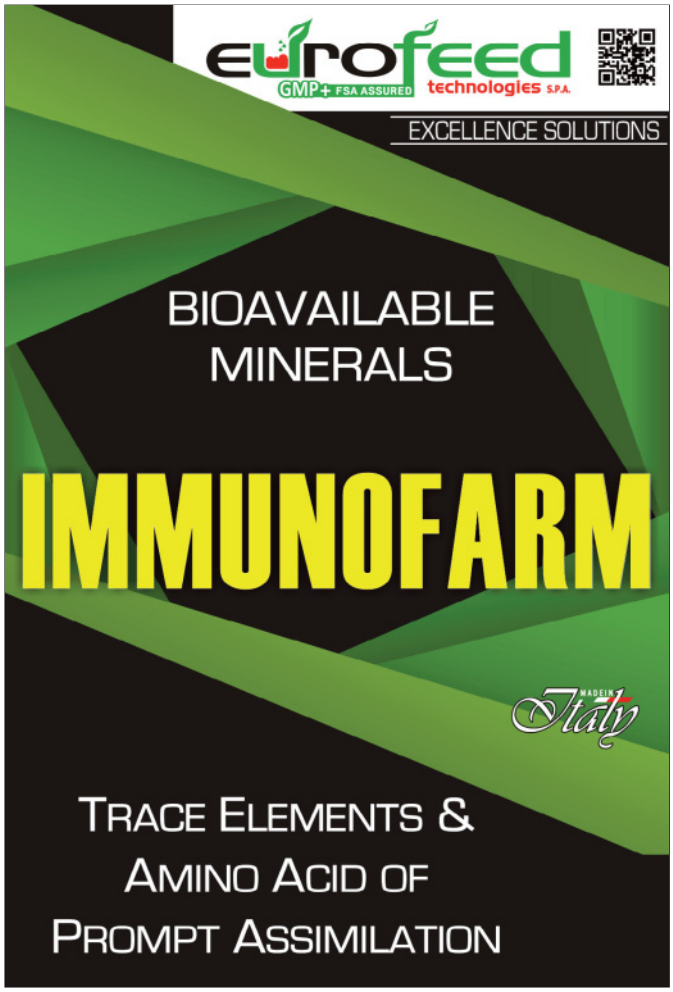
Image Credit: Adobe Stock

More than a dozen distinct AMPs have been identified in pigs.

> **"PIAP supplemented in small doses could have beneficial effects on the intestine in weaned piglets."**

A 2023 research study from China investigated the efficiency of Porcine intestinal antimicrobial peptide (PIAP) as an alternative to in-feed antibiotics in swine production. Results from the study showed that the PIAP supplementation in the feed did not affect the blood biochemical parameters and relative organ weight, thus indicating no negative effects on visceral organ development. Furthermore, findings from the study indicated an increase in the number of Ki-67 labelled cells, which are a key index reflecting cell proliferation. The number of goblet and endocrine cells however stayed the same, thereby suggesting a significant improvement in intestinal development. Moreover, when parameters concerning immunity, such as SIgA and IALP were analysed, both their concentrations were found to be elevated in the PIAP supplemented group, thus indicating an enhancement in the mucosal immunity function of piglets. Also, by reducing D-lactate, diamine oxidase and endotoxin levels, supplementation of PIAP displayed an advantage in decreasing intestinal permeability.

Overall, the study concluded that PIAP supplemented in small dosages of 400 mg/kg from day 1-24 and 300 mg/kg from day 25-37 could have beneficial effects on intestinal morphology, digestion, immunity and permeability. This in turn confirms PIAP's success as an in-feed alternative to antibiotics in weaned piglets. ■



Boosting climate resilience in freshwater aquaculture

Image Credit: Adobe Stock

Researchers identified candidate genes that enable fish to tolerate warmer and saltier water.

Rising global temperatures have reduced the ability of Nile tilapia to thrive in hotter and highly saline environments, urging the need to boost weather resilience.

AS THE GLOBAL impact of climate change intensifies, the health of marine ecosystems continues to face a rapid decline. This, combined with the pressure of overfishing, can make it more difficult for fish populations to withstand and adapt to the constantly changing weather patterns, thus calling for the need to boost weather resilience in fish populations.

Fish varieties such as the Nile tilapia that offer rich sources of essential nutrients and protein, are being widely used in freshwater aquaculture. These varieties are also highly adaptable to varying water conditions and production systems. However, depletion of freshwater due to rising global temperatures has reduced their ability to thrive in these hotter and highly saline environments.

To address this issue, researchers from Earlham Institute, University of Stirling, and the University of East Anglia recently identified candidate genes that enable fish to tolerate warmer and saltier water.

By exploring the tilapia genome, the researchers managed to locate advantageous changes in the genome responsible for an increased tolerance to changing water conditions. Tissues were extracted from the gills of the fish, generating DNA and RNA sequence data to study the activity, regulation, and function of different genes. They then proceeded to identify genetic differences at gene regulatory regions in the Nile tilapia and 27 other tilapia species.

According to their assumptions, the control genes responsible for adapting to different water environments are the reason behind the differences exhibited by the Nile tilapia, a freshwater species and the species adapted to saline water environments.

> **"Researchers located changes in the tilapia genome responsible for increased tolerance to changing water conditions."**

A genome sequence approach was then optimised by the team, which revealed the activity of potential transcription factor binding sites and genetic switches for turning expressions on and off. This approach helped identify specific regions of the genome that were believed to be responsible for controlling the activity of certain osmoregulatory genes that influenced the function of gills as well as the fish's response to changing water conditions. In addition, a number of genes that reacted to environmental changes, maintained balance and were involved in metabolism, were also identified. These genes were found to be relevant to traits that helped Nile tilapia tolerate saltier water, while also acclimatising to freshwater.

Dr Tarang Mehta, study author and postdoctoral research scientist at the Earlham Institute stated that characterising the genes responsible for these desirable traits allowed researchers to share these new resources with freshwater fish farms to help guide selective breeding programmes. ■

Maize reliance on the zinc micronutrient

Dr Terry Mabbett in conversation with Omex Agrifluids' managing director, Peter Prentis provides insight into commercially used zinc nutrient products for foliar application as well as other novel treatments for maize.

Image Credit: Omex

Omex Kingfol Zn applied as seed priming and foliar spray treatments achieves zinc enrichment of the grain.

MAIZE IS A big cereal crop in every respect and the most widely grown. Maize crops are cultivated in temperate and tropical climates and yield a greater weight of grain per unit area. More than 150 million hectares are currently down to maize production. For 2022/2023 period, maize grain production was 1.15 billion metric tonnes, with wheat and rice the closest on 783.80 million and 503.00 million metric tonnes, respectively. In biomass too, mature maize dwarfs all other cereal crops.

Maize requires a full and balanced complement of essential plant nutrients, but as frequently happens, some nutrients appear to be more 'essential' than others. The one nutrient that can 'make or break' a maize crop is zinc, although as a micronutrient, it is only required in trace amounts. Maize is highly responsive to zinc.

Maize is a critical staple food for several hundred million people in Asia, Africa and Latin America and the most important cereal feed for livestock. It is the main source of calories and minerals for rural populations in a number of developing countries, but has poor concentrations of protein and micronutrients, especially zinc. Where maize consumption is very high, the incidence of micronutrient malnutrition is correspondingly high, especially for zinc, thus resulting in human zinc deficiency.

> **Zinc is crucially important for proper maize growth and development, especially in the early part of the growing season.**

The enrichment of maize with high levels of zinc is a growing global challenge to ensure the health and well-being of human populations who rely on maize for their nourishment. The first step

in zinc enrichment is through fertilisation of the growing crop. Although maize has a huge grain yield capacity on a given area, its yield can be significantly reduced by adverse soil and climatic conditions, such as drought stress and mineral nutrient deficiencies in the soil. Like durum wheat and rice, maize is also highly susceptible to soil zinc deficiency. Zinc is crucially important for proper maize plant growth and development, especially in the early part of the growing season to realise full yield potential and bring forward the harvest date.

A wide range of fertiliser trials have demonstrated the benefits of zinc and drilling down into the data, it is easy to see why. Pollen viability at the tasselling stage is increased with correspondingly more and heavier kernels located in the apical portion of the ear where inferior grain is typically found. Malaysian studies have shown how treatment with zinc increased diameter, length and kernel row of the maize ear. Zinc plays a significant role in basic plant metabolism and enhances growth, yield and quality of the maize grain by stimulating chlorophyll production, photosynthetic activity, nutrient uptake and protein biosynthesis.

Research has shown that foliar application of zinc increases the concentration and bioavailability of both zinc and iron in maize.

However, zinc deficiency is a common occurrence in maize. Deficiency symptoms include the appearance of pale yellow coloured chlorotic zones of leaf tissue running parallel to the midrib and beginning at the base of the maize leaf, while the margins, tip and midrib stay green. The youngest unfolding leaves at the apex of the plant can be completely chlorotic yellow or even white, the latter condition known as 'white bud'. When zinc deficiency is acute and severe, leaves at the base of the plant may develop a reddish brown necrotic discolouration, a condition that may also appear on the basal part of the stem. Internode growth is interrupted with plants having a stunted appearance.

First step to zinc enrichment of maize grain is through fertilisation of the growing crop, but as touched on before, there are many constraints on zinc moving from the soil and into the roots of the maize plant. Soils may be inherently deficient in zinc or deficient in plant available zinc because the micronutrient is locked up due to specific soil or climatic conditions. Zinc deficiency is aggravated in soils which contain high organic matter, have a high pH (alkaline) and those rich in phosphorous. Climatic effects are important too, with soil zinc availability inhibited by cold, wet conditions and also drought. Clearly there has to be another way to get zinc into the maize plant and that avenue is through the leaves using soluble zinc applied as a foliar spray.

Extensive trials on foliar feeding are ongoing around the world with one such set in Poland proving particularly interesting. Maize responded significantly to foliar feeding. The optimal rate of zinc for achieving significant grain yield response was in the range of 1.0 to 1.5 kg Zn/ha. Grain yield increase was around 18% as compared to the treatment which was fertilised only with NPK. Plants fertilised with 1.0 kg Zn/ha showed significant increases in total N uptake and grain yield. Increases in cob (ear) length and higher numbers of kernels per plant were among the plant 'structures' contributing to increased yield.

Well-timed treatments with Omex Kingfol Zn are rewarded with zinc-enriched grain.

Image Credit: Omex

Maize may well be highly sensitive to shortfalls in zinc but some enterprising research programmes have shown a relationship with other micronutrients. For instance, foliar application of zinc not only increased zinc concentration and bioavailability in maize but also improved the concentration and bioavailability of Fe (iron) to some extent. Other research has focussed on treatment with zinc and boron to see if there is evidence of a relationship between these two micronutrients in the growth and development of the maize plant.

Zinc goes foliar with Omex Agrifluids

So much for the theory, but I wanted to learn about zinc nutrient products in commercial use for foliar application and other novel treatments such as seed treatments for maize. To find out more, I spoke with Peter Prentis at Omex Agrifluids a world-leading, R&D based company in the UK, with headquarters and manufacturing facilities at Kings Lynn in the East Anglian region of England. Peter Prentis is the managing director with remit and responsibility for research, development and marketing throughout Asia.

I asked Peter Prentis about the well-tried and tested Omex Kingfol range of single element formulations for specific nutrient deficiencies, with Kingfol Zn being at the top of the list. "Our Kingfol foliar nutrients have been formulated using only the highest quality mineral elements," said Prentis. "They are marketed as highly concentrated liquid formulations to minimise handling, packaging and transport costs as well as application rates. They disperse easily with no requirement for pre-mixing and are ideal for correcting specific mineral deficiencies. Concentration of Kingfol Zn is 70% Zn w/v (weight to volume)".

I asked whether there were any special features in the way of adjuvants. "Yes", said Prentis, "they are formulated with uptake enhancers to optimise their performance over time. Inclusion of these unique enhancers in the formulation allows the entry of the zinc mineral nutrient via two main pathways, one rapid and one more slowly, thus providing a mechanism for sustained uptake over time.

"The rapid uptake takes place via the stomata which are distributed over the surface of the maize leaf. This avenue of entry is enhanced further by ensuring good spray coverage which is materially enhanced by addition of a high quality wetter such as Omex SW7 to the spray mix. This achieves so called 'stomatal flooding' to facilitate maximum absorption of the zinc containing spray liquid.

"The slower, sustained uptake is furnished by the uptake enhancers contained in the Kingfol Zn product formulation. They stimulate the microbes which occur and live naturally on the surface of the leaf and which are sometimes called epiphyllic micro-organisms. Now in ionic form, due to the solubilising activities of these naturally occurring microbes, soluble zinc cations pass into the leaf by diffusion through minute aqueous pores in the leaf cuticle."

> **Omex Kingfol foliar nutrients have been formulated using the highest quality mineral elements.**

Next on the agenda was mode of application and application rate. "Main mode of application for Kingfol Zn is by foliar spraying at any time during growth and development of the maize crop, by applying at a rate of 0.5 – 1.0 l of product/ha, and of course at any time a zinc deficiency is indicated by appearance of the classic zinc deficiency symptoms in maize," Prentis told Far Eastern Agriculture.

"Is there any other accepted mode of application?" I asked. "Yes, Kingfol Zn can be applied as a seed primer treatment and particularly pertinent. That is because treatment with zinc often stimulates rooting and is therefore particularly beneficial in the early stages of the crop," said Prentis.

Finally I was interested to know whether there had been any investigation into using Kingfol Zinc as a seed primer treatment and in tandem with foliar sprays of Kingfol Zn or any other Omex product.

Prentis referred to some interesting trials featuring Kingfol Zn as a seed priming treatment for maize seed grain and followed up with foliar applications of Omex CalMax Gold (24% w/v calcium) and Omex Foliar Boron (15% w/v boron). Best treatment for grain yield was Kingfol Zn (15ml/kg seed) as a seed priming treatment followed by foliar sprays of Omex CalMax Gold (3ml/l at the V6 – sixth leaf collar stage) and Omex Foliar Boron (1.5ml/l) at the VT stage which is 9-10 weeks after seedling emergence, in that order. ■

Image Credit: Omex

Kingfol Zn as a seed priming treatment is important because zinc stimulates rooting and is therefore particularly beneficial in the early stages of the crop.

Bringing together ease and precision with turn automation

To address turning difficulties, John Derre recently introduced the ATTA technology, which plays an important role in simplifying combine harvester operation.

AS COMBINE HARVESTERS are increasingly being adopted by farmers, a number of challenges are coming into picture. Turning at the corner of fields for instance, has become particularly difficult. This is because the outer harvesting path being very close to the edge of the field, limits free space for maneuvering. To address this issue, John Deere in October last year, launched its latest round of software updates for Gen 4 Displays and the Operations Centre. The introduction of the AutoTrac Turn Automation (ATTA), in particular, will play an important role in simplifying harvester operation. Combine AutoTrac Turn Automation is compatible with Gen 4 Displays and the new G5 Display on X9, S700 and even S600 combines which were introduced in 2012. ATTA requires a field boundary created with either SF3, SF-RTK or RTK level signal accuracy and a boundary headland which can now be easily created in Operations Centre. The ATTA feature can support multiple harvesters working in the same field, to increase overall productivity, while reducing stress throughout the entire harvest season.

"Combine harvesters utilising ATTA will support U-Turns, Spiral In or Spiral Out turns," said John Deere production system manager, Ben Kelly. "The spiral in and spiral out turns have been developed to ensure the unload auger is always extended over the harvested row, creating an opening for chaser bins, and allowing simple unloading on-the-go." ■

HIGH QUALITY AGRICULTURE MACHINERY FROM FINLAND

Tume Harrow R
SHOVEL ROLLER
- Efficient an durable basic tillage machine
- Simple and cost-efficient
- Good for cultivating autumn sowing
- Creates a fluffy working surface that allows good water absorption
- Raises weed roots in the field to dry

Kivi-Pekka 3,3
STONE PICKER
- Simple and cost-efficient
- Working width 3.3 m
- Stone hopper volume 5 m3
- Lifting drum width 2 m!
- Strong 45 mm tines and springs
- Power requirement 60 hp

Tume Greenmaster
LIGHT SEED DRILL
- For landscaping or grass seeding / patching
- Can be towed with an ATV, compact tractor or even with man power!
- In plants suitable for seeding grass, sowing rates can vary up to 50-3000g / 100 m2
- 150 cm working width

TUME
tumeagri.fi

VALTRAC
valtrac.co.za

Johann Dedwith
+27 82 881 4855
Valtrac (Pty) Ltd

Ricardo Quaresma
+5516996085756
ricardo.quaresma@pel-tuote.fi
Skype: jose.ricardo.quaresma

PELTUOTE
pel-tuote.fi

CONTACT US AND ASK FOR A QUOTE

Detecting the misfits with spectral sensors and advanced AI

The technology provides accurate information on the material under investigation.

Image Credit: Adobe Stock

With the advent of AI, a number of advanced agricultural technologies are being used to accurately detect produce imperfections at an early stage.

GIVEN THEIR HIGH moisture content, fruits and vegetables are extremely susceptible to damage due to a number of factors including pests, diseases, storage, weather patterns, maturity, and internal changes. Early and accurate detection of produce imperfections plays a role in retaining fruit and vegetable quality and improving horticulture sustainability. This is why, accurate quality assessment is critical not only on the farm, but also during packaging, storage and transport.

With the advent of artificial intelligence (AI), a number of advanced agricultural technologies are making their way into the market. Dutch spectral sensor technology company MantiSpectra last year, launched its top quality spectral sensor 'ChipSense,' which allows farmers to analyse fruits and soil directly on the field. By using integrated photonics technology, MantiSpectra has managed to compress a full near-infrared spectrometer onto a tiny chip which functions by using an array of detectors comprising of wavelengths in the near infrared range, to convert reflected light into electrical signals. When combined with advanced AI algorithms, this technology provides accurate information on the material under investigation.

MantiSpectra's technology finds use in a variety of applications including:

Monitoring fruit and vegetable quality: The technology enables farmers to monitor and gather data regarding the level of sugar and ripeness. The data gathered is then utilised to determine the grade and shelf-life following harvest, during storage and prior to reaching the final customer. Moreover, the entire monitoring process is carried out during the growth phase, while ensuring that there is no damage.

> **MantiSpectra's ChipSense allows farmers to analyse fruits and soil directly on the field.**

- **Monitoring milk quality:** The technology allows fat and protein samples to be monitored directly on the farm, while also improving feed selection, monitoring cow health and milk quality.
- **Raw material identification:** Employing spectral scanners within the field or inside processing plants can help understand the chemical composition of solids, powders and liquids.
- **Decoding coffee quality:** The technology helps in tracking moisture, type and origin of coffee, while also allowing remote maintenance for new generation coffee machines.
- **Measuring moisture content:** Water content can be measured in food, paper, pills and powders.
- **Classification of plastics for recycling:** The technology brings in a new era for recycling where identification and classification of different plastics and textiles is possible, thanks to NIR analysis. ■

POULTRY BUYERS' GUIDE 2024

Section One - Supplier listings by categories
Section Two - List of suppliers
Section Three - Contact details of agents in Asia

PLEASE MENTION FAR EASTERN AGRICULTURE WHEN CONTACTING YOUR SUPPLIERS

Section 01

Administration Aids
Pel-Tuote Oy

All Equipment
Henke-Sass, Wolf GmbH
Pel-Tuote Oy

Breeding Equipment
Pel-Tuote Oy

Breeding Stock
Pel-Tuote Oy

Clearing and Sanitation
Pel-Tuote Oy

Climate Systems
Pel-Tuote Oy
Termotecnica Pericoli

Computer Systems
Pel-Tuote Oy

Disinfection Products
Eurofeed Technologies S.p.A.
Intraco Ltd. n.v

Environment Controls
Pel-Tuote Oy
Termotecnica Pericoli

Evaporative Cooling Systems
Termotecnica Pericoli

Exports
Eurofeed Technologies S.p.A.
Henke-Sass, Wolf GmbH
Pel-Tuote Oy

Feed
Eurofeed Technologies S.p.A.
Pel-Tuote Oy

Feed Additives
Eurofeed Technologies S.p.A.
Intraco Ltd. n.v
Unipoint AG

Feed Additives, Natural
Eurofeed Technologies S.p.A.
Hamlet Protein A/S
Unipoint AG

Feed Ingredients
Eurofeed Technologies S.p.A.
Intraco Ltd. n.v
Unipoint AG

Feeds, Concentrates, Premixes
Eurofeed Technologies S.p.A.
Hamlet Protein A/S
Intraco Ltd. n.v

Flooring
Pel-Tuote Oy

Hatchery Supplies and Services
Pel-Tuote Oy

Health Control
Henke-Sass, Wolf GmbH
Socorex Isba SA.

Health Products
Eurofeed Technologies S.p.A.
Henke-Sass, Wolf GmbH
Socorex Isba SA.

Heat Control Systems
Termotecnica Pericoli

Housing
Pel-Tuote Oy

International Exhibitions
Pel-Tuote Oy

Medicators
Henke-Sass, Wolf GmbH

Mould Inhibitors
Eurofeed Technologies S.p.A.

Nests and Nesting Systems
Pel-Tuote Oy

Pork Processing
Pel-Tuote Oy

Processing - Killing and Defeathering
Marel Singapore Pte Ltd

Salmonella Control
Eurofeed Technologies S.p.A.

Sanitation
Eurofeed Technologies S.p.A.
Intraco Ltd. n.v

Services
Pel-Tuote Oy

Slaughtering Equipment
Marel Singapore Pte Ltd

Turkey
Pel-Tuote Oy

Turnkey Operations
Marel Singapore Pte Ltd \
Pel-Tuote Oy

Veterinary - Vaccinators
Henke-Sass, Wolf GmbH
Socorex Isba SA.

Veterinary Instruments
Henke-Sass, Wolf GmbH
Socorex Isba SA.

Watering Equipment
Pel-Tuote Oy

Section 02

Eurofeed Technologies S.p.A.

Via Luigi Einaudi, 12
25030 Brandico (Bs)
Italy
Tel: +39 0306864682 / 0309973064
Fax: +390306866560 / 0307772419
Web: www.eurofeed.it
E-mail: info@eurofeed.it

Eurofeed Technologies S.p.A. is an Italian Company that produces and trades feed additives all over the world. We are GMP+Certified.Eurofeed Technologies' portfolio includes: Acidifiers-Antimicrobials-Antioxidants-Aromas-Enzymes-Energising-Elettrolyte-Micotoxin Binders-Mold Inhibitors-Natural Adjuvant In Coccidiosis Prevention-Natural Diarrhea Prevention-Natural Growth Promoter-Nucleotides-Organic Trace Elements-Pellet Binders-Pet Food-Sanitizing-Vegetable Protein Concentrates-Vitamins

Hamlet Protein A/S

Saturnvej 51
8700,Hersens
Denmark
Tel: +45 75 631020
Fax: +39 0182 589005
Web: www.hamletprotein.com
E-mail: info@hamletprotein.com

HP AviStart is superior to soybean meal. HP AviStart is a unique soy-based product that contains a low level of anti-nutritional factors (ANF) that challenge the gut system. High digestibility and fast absorption ensure the chicks gain full benefit from the product's high level of essential amino acids

Agents:
Thailand - Jebsen & Jessen Ingredients

Henke-Sass, Wolf GmbH

Keltenstraße 1
Tuttlingen
78532
Germany
Tel: +49 7462 9466164
Fax: +49 7462 94665209
Web: www.henkesasswolf.de
E-mail: jonas.riess@henkesasswolf.de

Henke-Sass, Wolf (Tuttlingen/Germany) is a leading manufacturer with more than 100 years of experience in designing and producing veterinary syringes, needles and application systems. Everything for the poultry users from one source!
Single/double automatic vaccinator for day-old chicks: enables injection of two different vaccines with only one penetration.
HSW UNI-MATIC® - 0,1 ml- 1 ml; no o-ring to reduce maintenance issues; failure free valves ensure injections without interruption. HENKE- JECT® disposable needles-extra short sizes e.g. 18Gx1/2", 20Gx1/4", 22Gx3/8".
HSW ECO® needles- re-usable metal hub needles; extra short sizes e.g.19Gx1/2", 20Gx1/2". Wing Web Vaccinators- ideal for pox and other micro-dosage injections; enables a total dosage per vaccinator of 0.001 ml and 0.01 ml.

Agents:
Indonesia - Pesona Scientific
Korea - Yushin Corporation
Philippines - P & J Agricultural Trading
Taiwan - Ennchih Co. Ltd.

Intraco Ltd. n.v

Jordaenskaai 24
Antwerp
2000
Belgium
Tel: +32 3 2269850
Fax: +32 3 2269852
Web: www.intraco.be
E-mail: intraco@intraco.be

Intraco Ltd. is the specialist in feed concentrates, premixtures, protein meals, feed additives. Primary business is finding an optimal balance of all local parameters, thus providing customer-made, comprehensive solutions which optimize yields in a profitable and responsible way.
HI-CONCEPT: Integrated Hygiene Solutions
ADD-OPTIMALS: Innovative feed additives

Marel Singapore Pte Ltd

1 Gateway Dr, #17-01 WestgateTower
608531 Singapore
Tel: +65 62812878
Web: www.marel.com/poultry
E-mail: singapore@marel.com

Marel Poultry is the global supplier of poultry processing equipment, providing inline systems and solutions for each process stage and every capacity level. The product range includes live bird supply, stunning, killing, scalding, de-feathering, evisceration, giblet harvesting, chilling, grading, cut-up, deboning, X-ray bone detection, portioning, production software and service contracts.

Agents:
Australia - MAREL AUSTRALIA PTY LTD
Bangladesh - Axon Ltd.
China - Marel Beijing Trading
Indonesia - PT Marel Indonesia Services
Japan - Marel Japan Co., Ltd
Philippines - Marel Stock Asia
Philippines - MAREL PHILIPPINES SERVICES CORP.
Singapore - Advance Farm Systems Pte Ltd.
Sri Lanka - Bodum Engineering Solution ltd
Taiwan - Ever Prima Co. Ltd.
Thailand - K-Plus Engineering Co. Ltd.
Vietnam - Peja Vietnam

Mavitec B.V.

Galileistraat 32 - 1704 SE Heerhugowaard
17045E
Netherlands
Tel: +31 (0)72 574 59 88
Web: www.mavitec.com
E-mail: info@mavitec.com

Maximize the value of your organic by-products! Mavitec is specialized in rendering, gasification & green energy solutions and is a leading company in the international rendering industry. Our continuous and batch rendering solutions create the best nutrient values in the market, such as high quality feather/blood/meat meal, tallow, fat and oils

Pel-Tuote Oy

Seppalansalmentie 181
Rantasalmi
Finland
58900
Tel: +551 69 96085756
Web: www.pel-tuote.fi
E-mail: ricardo.quaresma@pel-tuote.fi

Kivi-Pekka rock picker removes stones efficiently from all kinds of soil and clears new fields of tree roots and branches. Kivi-Pekka rock pickers are expertly manufactured from carefully selected steels and top-notch components. There are five different models of Kivi-Pekka, from 3 to 7 meter wide working width.

Agents:
Thailand - Thaus Co. Ltd. (Crop Tech Asia)

Socorex Isba SA.

Chemin de Champ-Colomb 7a
Ecublens, 1024
Switzerland
Tel: +41 21 6516000
Web: www.socorex.com
E-mail: socorex@socorex.com

Socorex Isba SA is a Swiss manufacturer of reliable syringes for serial animal injections. Feed tube and vial holder models, volumes ranging 0.02 to 10 mL. Ideal for fish, rabbit, poultry, swine, sheep and cattle. Superior materials, perfect balance are appreciated by professionals. All parts interchangeable and fully autoclavable.

Termotecnica Pericoli S.r.l.

Regione Rapalline 44
Albenga (Sv)
17031
Italy
Tel: +39 0182 589006
Fax: +39 0182 589005
Web: www.pericoli.com
E-mail: pit@pericoli.com

In over 55 years we have specialized in the production of climate control machinery for large spaces. Termotecnica Pericoli designs and manufactures equipment for industrial climate control in greenhouses and warehouses, both for livestock and industrial use.

Agents:
Malaysia - Pericoli Asia Pacific

Unipoint AG

Gewerbestrasse 2
Ossingen
CH-8475
Switzerland
Tel: +41 52 3052041
Web: www.unipoint.ch
E-mail: info@unipoint.ch

Klinofeed is the unique feed-additive with a high capacity to bind ammonium and mycotoxins. Klinofeed is the original product and the purest clinoptilolite on the market. EU-registered by Unipoint AG as feed additive No.: 1g568 Klinofeed has also the highest quality standards.

Section 03

Australia

MAREL AUSTRALIA PTY LTD
42 Borthwick Ave,
Murarrie
4172
Tel: +61 7 3900 3003
Web: www.marel.com
E-mail: nick.thompson@marel.com

Bangladesh

Axon Ltd.
#5B, H-31, R-10
Block-G, Banani
Dhaka, 1213
Tel: +880 1730595809
E-mail: info@axon-group.net

China

Marel Beijing Trading
No. A608, Yeqing plaza
Building A, Yeqing Plaza 9
Wanqing north Street
100102
Tel: +86 10 89472150
Fax: +86 10 89472350
E-mail: china.poultry@marel.com

Indonesia

Pesona Scientific
Komplek Kopo Mas Regency
Block 8-j, Bandung
40225
Tel: +62 22 5430583
Fax: +62 22 5430314
Web: www.pesonascientific.com
E-mail: cvpesona@bdg.centrin.net.id

PT Marel Indonesia Services
Regus WTC 5, Level 3A, Wisma M
Jl. Jend. Sudirman Kav.29-31,
DKI Jakarta
12920
Web: www.marel.com
E-mail: joost.miltenburg@marel.com

Japan

Marel Japan Co., Ltd.
3-4-19 Kitamachi Nishiakashi
Akashi City
Hyogo
673-0018
Tel: +81 80 3823 6123
E-mail: casper.beeker@marel.com

Korea

Yushin Corporation
712,(751BLDG,203 Nonhyon-Dong)
129-1 Bongeunsa-Ro
Kangnam-Ku
Seoul
06121
Tel: +82 2 5682525
Fax: +82 2 5693113
E-mail: ryushin@netsgo.com

Malaysia

Pericoli Asia Pacific
14 Jalan Sejahtera 25/124
Axis Premier Industrial Park
Sector 25
Shah Alam
Selangor
40400
Tel: +60 3 51223880
Fax: +60 3 51225899
Web: www.pericoli.com
E-mail: pap@pericoli.com

Philippines

Marel Food System Ltd
#1 Langka Road
FTI Complex
Taguig, Metro Manila
Tel: +63 2 4020601
Fax: +63 2 8383913
E-mail: asia.poultry@marel.com

MAREL PHILIPPINES SERVICES CORP.
Unit 1205, 12th Floor
The Podium West Tower
12 ADB Avenue, Ortigas Center
Mandaluyong City, 1550
Tel: +63 2 8231 2536
Web: www.marel.com
E-mail: roel.falcatan@marel.com

P & J Agricultural Trading
184, Dr. Sixto Antonio Ave.
Caniogan, Pasig City, 1600
Tel: +63 2 6410053
Web: www.pjagri.net
E-mail: bobby@pjagri.net, info@pjagri.net

Singapore

Advance Farm Systems Pte Ltd.
53 Ubi Ave 1, #07-01
408934
Tel: +65 67486613
E-mail: kmpow@advancefs.com.sg

Sri Lanka

Bodum Engineering Solution ltd
20-11 Epitamulla Rd
Pitakotte
Western, Sri Lanka
Tel: +94 11 4510719
E-mail: bodum@sltnet.lk

Taiwan

Ennchih Co. Ltd.
No. 310 Chung Shan S. Rd
Taoyuan City, Yangmei Distr, 32662
Tel: +886 347 58168
Fax: +886 347 53803
E-mail: ennchih3@ms6.hinet.net

Ever Prima Co. Ltd.
4th Floor, No. 77
Le Shan Street, Nei Hu Chu, Taipei
Tel: +886 33821717
Fax: +886 2 26270211
E-mail: info.poultry@marel.com

Thailand

Jebsen & Jessen Ingredients
23/110-117, Sorachai Building
25th-29th Floor
Soi Sukhumvit
63 (Ekamai), Sukhumvit Road
Klongton Nua
Wattana, 10110
Tel: +66 2 7878700
E-mail: info jjcht@jjsea.com

K-Plus Engineering Co. Ltd.
299/132 Areeya Mandarina
Sutthisarn Winijchai Road
Samsennok
Huaykwang
Bangkok, 10310
Tel: +66 2 2748673
E-mail: kplus.engineering@gmail.com

Thaus Co. Ltd. (Crop Tech Asia)
305 M.4 Soi Khun Vivian
Chang Wattana Road
Thung Song Hong
Laksi
Bangkok
10210
Tel: +66 81 9123838
Fax: +66 2 5737904
E-mail: vorachaim@croptechasia.com

Vietnam

Peja Vietnam
Worc@Q2 Building,
Unit 12A.02 21 Vo Truong Toan
Thao Dien Ward
Thu Duc, HCMC
Vietnam
Tel: +84 8 8293503
Web: pejavietnam.com
E-mail: info@pejavietnam.com

Poultry coccidiosis vaccine launched under new name

BOEHRINGER INGELHEIM RECENTLY announced the launch of Vaxxilive Cocci 3, a poultry coccidiosis vaccine previously known as Hatchpak Cocci III.

Vaxxilive Cocci 3 is a tool for the prevention of coccidiosis and also a biological alternative to in-feed anticoccidial drugs. The vaccine works to stimulate the bird's natural immune response while minimising tissue damage. The vaccine contains the same proven formula producers have come to rely on, including three genetically stable precocious strains of the important Eimeria species that affects broilers. With shortened life cycles, precocious strains can achieve immunity earlier than non-precocious strains.

Since the precocious strains have a faster turnover rate, Vaxxilive Cocci 3 triggers less oocyst production and less tissue damage, causing the vaccine to ultimately achieve better immunity, while preserving barrier integrity and producing minimal vaccine reactions. In addition, the vaccine can be used year-round, enabling better management of coccidiosis with less likelihood of developing chemical resistance than protocols that rotate between vaccination, chemical treatment and feed additives.

Image Credit: Boehringer Ingelheim

Vaxxilive Cocci 3 is a tool for the prevention of coccidiosis and a biological alternative to in-feed anticoccidial drugs.

Boehringer has also used this launch as an opportunity for process innovation, drastically improving procedures to enable more consistent, quality manufacturing. "Our experienced and knowledgeable field team provides industry-leading support to producers, regularly visiting them to review vaccination protocols, and create and maintain comprehensive poultry health programmes," said DVM, director, key account veterinarians at Boehringer Ingelheim Poultry, Rick Phillips.

CNH invests in Nature's Net Wrap

CNH, THROUGH THEIR investment arm, CNH Ventures is supporting the scientific development of the first viable compostable net wrap for bales in agriculture.

CNH's investment in the Canadian start-up Nature's Net Wrap aims to accelerate their mission to eliminate waste from the process of collecting and storing crops. This solution uses biopolymer material made from renewable resources, which holds up structurally and can either naturally break down in the earth's soil or be composted.

The investment is supporting the testing and validation of the solution. One of the industry-leading balers from the company's New Holland Agriculture brand is producing all the bales in this testing phase. This latest investment furthers CNH's commitment to sustainably advance the work of farmers everywhere.

ADVERTISE HERE!

For details of advertising in the classified section please contact:

LONDON OFFICE:
University House, 11-13 Lower Grosvenor Place, London SW1W 0EX, UK
Tel: +44 (0) 20 7834 7676 Fax: +44 (0) 20 7973 0076
E-mail: post@alaincharles.com Web: www.alaincharles.com

Reader Information Service

Issue 1 2024

This is a free service, readers who wish to receive urgently further information about any product or company featured in the magazine, please complete this form and fax to: **Far Eastern Agriculture on +44 (0) 20 7973 0076**

or e-mail to: **feag@alaincharles.com**

or post to: **Far Eastern Agriculture, University House, 11-13 Lower Grosvenor Place, London, SW1W 0EX, United Kingdom.**

Name of product and/or company	Page No.

Name: .....

Job title: .....

Company: .....

Address: .....

.....

.....

.....

Tel: ..... Fax: .....

Your organization's product/service: .....

.....

.....

.....

Number of employees in your organization: .....

Signature: ..... Date: .....

Subscription form

I wish to subscribe to **Far Eastern Agriculture** for 1 year (6 issues) starting with the next copy.

Surface Rates:	**1 year:**	£57	US$111	Euro €93
	2 years:	£97	US$189	Euro €158
	3 years:	£129	US$251	Euro €210

☐ Enclosed is my cheque/draft for .....
(Cheques made payable to Alain Charles Publishing Ltd)

☐ Please invoice

☐ Please charge to Visa/American Express/Mastercard (please circle)

Card number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Expiry Date ☐☐ / ☐☐

(please note we debit your account in sterling)

Name .....

Position .....

Organization .....

Address .....

..... Country .....

E-mail .....

Signed ..... Date .....

Send this form together with your remittance to:
Far Eastern Agriculture, University House, 11-13 Lower Grosvenor Place, London, SW1W 0EX, UK. Tel: +44 (0) 20 7834 7676 Fax: +44 (0) 20 7973 0076

Subscription order can also be made via the Internet: www.alaincharles.com or email at feag@alaincharles.com

Please TICK most relevant box

- ☐ 01 Government: municipal services, diplomatic, (UN, International Agencies)
- ☐ 03 Educational/Research Institutes
- ☐ 06 Commercial Services: banking, finance, insurance
- ☐ 08 Import/Export Agents and Distributors
- ☐ 09 Farms and Plantations
- ☐ 11 Food Processing: poultry, dairy, cereal, fruit, vegetables, etc
- ☐ 12 Aid Organizations
- ☐ 13 Agricultural Equipment and Material Manufacturers: irrigation, agro-chemicals
- ☐ 16 Others: please specify:

4. Type of produce

- ☐ 01 Rice
- ☐ 02 Grain
- ☐ 03 Fruit
- ☐ 04 Cocoa
- ☐ 05 Coffee
- ☐ 06 Cotton
- ☐ 07 Rubber
- ☐ 08 Palm Oil
- ☐ 09 Palm Kernels
- ☐ 10 Sugar Cane
- ☐ 11 Feedstuffs
- ☐ 12 Groundnuts
- ☐ 13 Vegetables
- ☐ 14 Cassava
- ☐ 15 Dairy Cattle
- ☐ 16 Beef Cattle
- ☐ 17 Sheep/Goats
- ☐ 18 Pigs
- ☐ 19 Poultry
- ☐ 20 Fisheries

New AI model can mitigate global ammonia emission from agriculture

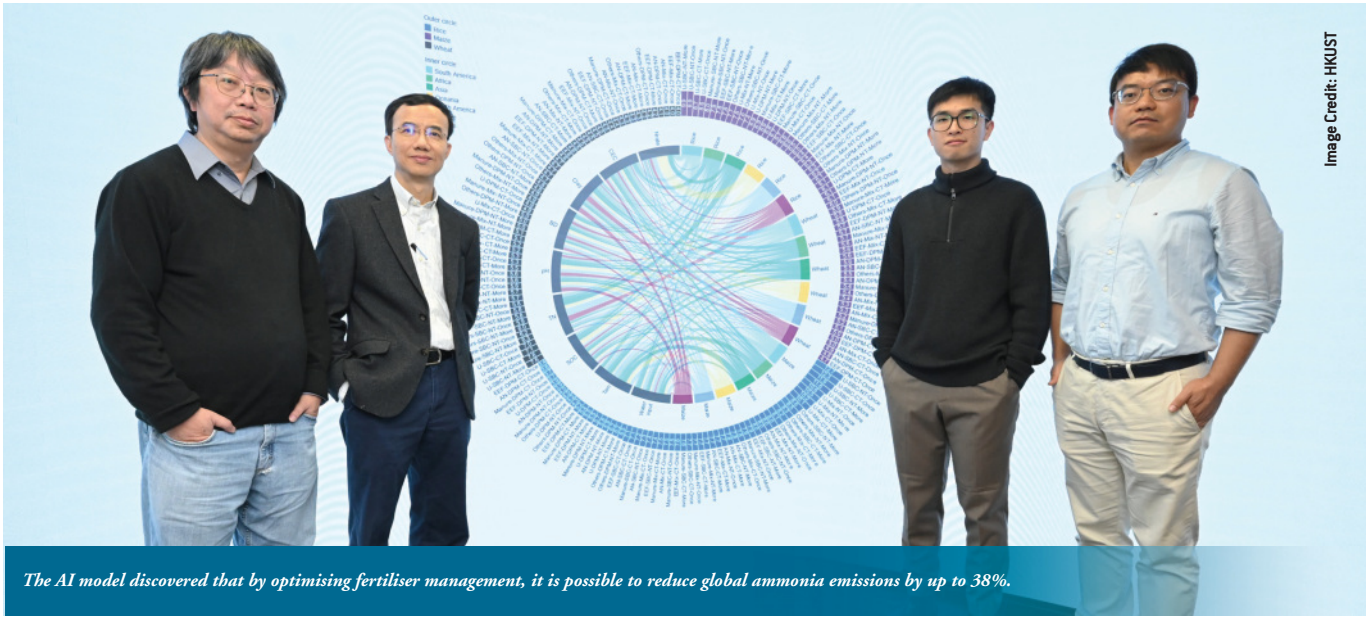


Image Credit: HKUST

The AI model discovered that by optimising fertiliser management, it is possible to reduce global ammonia emissions by up to 38%.

As the demand for food increases amid the world's population growth, it has become crucial to discover ways of reducing these emissions for sustainable development.

AN INTERNATIONAL RESEARCH team led by the Hong Kong University of Science and Technology (HKUST) has developed an artificial intelligence (AI) model that can help mitigate global ammonia emission from agriculture

Harnessing the power of machine learning, this groundbreaking study not only revealed that global ammonia emissions from cropland are lower than previously estimated, but also demonstrated how optimising fertiliser management can effectively reduce emissions by approximately 38%, without compromising the overall use of nitrogen fertilisers. It provides valuable insights for policymakers worldwide to address the United Nations' Sustainable Development Goals (SDGs) related to poverty eradication, food security, and sustainable agriculture.

Notably, the production of three major crops – rice, wheat and maize – account for more than half of the global cropland ammonia emission. In Asia alone, around 76% of wheat land is suitable for using enhanced-efficiency fertilisers (EEFs) to reduce ammonia emissions due to the influence of global warming, as temperature plays a pivotal role in ammonia emission from wheat lands in Asia. The continent has been found to have the highest ammonia reduction potential, followed by North America and Europe.

However, the lack of accurate global-scale information makes it challenging for countries to implement effective emission reduction strategies tailored to their specific conditions. To address this challenge, a research team led by HKUST collected and compiled a dataset based on field observation data of ammonia emission rates spanning between 1985 and 2022.

> **The AI model is capable of generating customised fertiliser management plans for different regions.**

An AI-powered computer model was trained to estimate global ammonia emissions using the dataset while considering various geographical factors such as climate, soil characteristics, crop types, irrigation water, fertiliser, and tillage practices. This model is capable of generating customised fertiliser management plans for different regions. The AI model discovered that by optimising fertiliser management, including adjusting the timing of fertilisation, utilising a specific blend of nutrients, and implementing suitable planting and tillage practices, it is possible to reduce global ammonia emissions from the three crops by up to 38%. This finding holds particular significance as this work has projected a 4.0% to 5.5% increase in global ammonia emissions from cropland over the 30-year period until 2060. Therefore, even achieving a fraction of this potential reduction would suffice to offset the projected increase. ■

REGISTER NOW

VICTAMASIA.COM

MARCH 12 - 14, 2024

BITEC EXHIBITION CENTER, BANGKOK, THAILAND

VICTAM Asia 2024

IN CO-LOCATION WITH grapas grain & rice ASIA 2024 | HEALTH & NUTRITION ASIA

JOIN ASIA'S LARGEST DEDICATED EVENT FOR THE ANIMAL FEED PROCESSING INDUSTRIES

- ✓ Growing market opportunities in the booming Asian region
- ✓ Over 9.000 international visitors
- ✓ See what is trending in your industry
- ✓ Meet delegates from various trade missions
- ✓ Meet (potential) customers
- ✓ Specific conferences with key topics in line with your interests
- ✓ The platform to launch your innovation
- ✓ Access to the industry exhibition

This event is held at BITEC in halls 101 and 102

Bangkok International Trade & Exhibition Center

See you at VICTAM ASIA!

Supported by: THAILAND MICE MEET THE MAGIC | TCEB