

Far Eastern **Agriculture**

Crops

Effective fungicide redistribution

Open-ocean aquaculture to
cope with climate change

Demand fuels growth in
poultry processing

Greater productivity with IoT



Ildex Indonesia review - p9

Feed and Grain Buyers' Guide 2017



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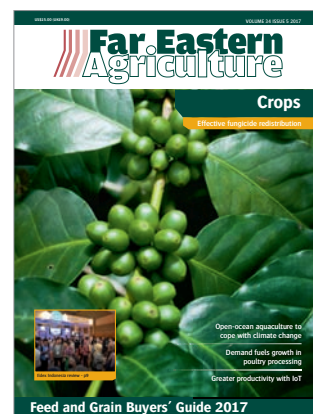


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Focus on innovation at SIMA ASEAN 2017



A natural alternative to antibiotics



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Printed by: Buxton Press

Printed in: October 2017

Far Eastern Agriculture
(ISSN 0266-8025)

www.fareasternagriculture.com

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Vietnamese shrimp exports to Europe record rise

VIETNAMESE SHRIMP EXPORTS to Europe have recorded a rise during the months of August and September, making the region Vietnam's biggest shrimp customer, Customs News reported. Vietnam's total shrimp exports during the period was US\$2.5bn.

The Vietnam Association of Seafood Exporters and Producers (Vasep) stated that the country's EU exports have increased 32 per cent over the first nine months of 2017. Shrimp exports to the EU had come to a standstill owing to supply shortages and price hikes, while EU companies reduced shrimp imports. However, since August, an upward trend has been recorded, with more supply from domestic businesses.



Image Credit: Ivoense/Adobe Stock

The EU is now the largest importer of Vietnamese shrimp.

Ross Asia training seminar spotlights hatchery management

ROSS ASIA HOSTED a training seminar in Kuala Lumpur, Malaysia with excellent attendance from customers throughout the region.

The Ross Asia Training Seminar (RATS) aimed to provide a forum to exchange ideas and information with hatchery managers and to help them produce the highest quality day old chicks from each of their hatcheries. It also provided the opportunity to update attendees with the latest technology and provide the best possible incubation environment for the modern breeder and broiler.

The initial session was tasked with building an "incubator" that would hold eggs for a break out session three days later to look at the early embryonic development differences. The second day covered hatchery maintenance, transfer, sanitation programs, trouble-shooting hatch, chick holding and transportation and rounded out the agenda with trends in hatchery automation. Day three focused on interpreting and using hatchery data effectively, hatchery vaccination programs and techniques. The final period reviewed the opening incubator exercise and assessed early three day embryo development.

The seminar was well supported with 47 participants from customers in Japan, Korea, Bangladesh, Taiwan, Papua New Guinea, Indonesia, New Zealand, India, Myanmar, Malaysia, Indonesia and Thailand. Post seminar customer feedback also indicated that the training format had been appreciated.

Japan to export fully farmed bluefin tuna to bigger marketplaces

JAPAN IS PLANNING to ship out the bluefin tuna fish as early as November 2017, and have also considered exporting the fish to bigger markets. This is in line with the country's initiative to protect bluefin tuna, whose population has plunged due to overfishing.

Kyokuyo Co, one of the major fisheries companies in Japan, said that it will begin in November 2017, to sell bluefin tuna to restaurant

chains and shops specialising in fresh fish in department stores across the nation.

In addition to it, the company also plans to export the fish in international marketplace in near future. According to the company, the quality of the flesh of a fully farm-raised tuna compares with that of wild fish, hence with large demand in the global market.

Another Japanese fisheries company, Nippon Suisan Kaisha Ltd, further aims to start shipment of the fish for the first time by the end of 2017. The company aims to ship around 500 tonnes in the fiscal year of 2018 and 1,000 tonnes in 2019.

The bluefin tuna is completely farm-raised in waters southwest of the Shikoku region. In 2015, the country supplied about 46,000 tonnes of the species. As estimated by the Japanese government, the volume of wild bluefin tuna caught by domestic fishermen was about 8,000 tonnes.

With the export of farm-raised bluefin tuna, the country is expanding its footprints in the international market, highlighting the goal for mass-production, with focus on both protecting natural resources in the region as well as boosting its economy.

FAO seeks to manage serious threat to the world's bananas

FAO AND ITS partners Bioversity International, the International Institute of Tropical Agriculture and the World Banana Forum have launched a global programme requiring US\$98mn to manage Fusarium wilt strain, a disease that jeopardises livelihoods reliant on banana, the world's most traded fruit

According to FAO, the fungus poses major risks to the world's banana production and could cause vast commercial losses and even greater damage to the livelihoods of the 400mn people who rely on it as a staple source of income.

Fusarium wilt TR4 was first detected in Southeast Asia in the 1990s and has now been identified at 19 sites in 10 countries, including the Near East, South Asia and Mozambique in sub-Saharan Africa. Scientists estimate that without a coordinated intervention, the disease could affect up to 1.6mn ha of current banana lands by 2040, which represents one-sixth of current global production with an estimated annual value of US\$10bn.

FAO's campaign is initially targeting 67 countries in a bid to prevent its spread and management. The programme aims to reduce the potentially affected area by up to 60 percent, said the UN organisation. The five-year programme focuses on strengthening local technical capacities and supporting the development of new technologies and tools through research on biology and epidemiology of the fungus, its detection, surveillance, rapid containment actions, soil health and the development of resistant cultivars.



Image Credit: Matusek/Adobe Stock

The global campaign aims to ensure the livelihoods and income of the world banana traders.

Events 2017-2018

NOVEMBER

10-11	Agrilivestock Cambodia 2017	Phnom Penh, Cambodia	www.agrilivestock.net
12-18	AGRITECHNICA	Hanover, November	www.agritechnica.com
16-19	Plastics & Rubber Indonesia 2017	Jakarta, Indonesia	www.plasticsandrubberindonesia.com
22 - 24	Poultry India 2017	Hyderabad, India	www.poultryindia.co.in
23-27	Krishithon Nashik	Nashik, India	www.krishithon.com
29 - 30	3rd Global Feed Summit	Bangkok, Thailand	www.cmtevents.com

DECEMBER

01-03	Agrilivestock Myanmar 2017	Yangon, Myanmar	www.agrilivestock.net
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2018

MARCH

14-16	ILDEX VIETNAM	Ho Chi Minh City, Vietnam	www.ildex.com.vn
27-29	VICTAM Asia	Bangkok, Thailand	www.victam.com

APRIL

08-10	CIMAE China International Modern Agricultural Exhibition	Beijing, China	www.cimae.com.cn
19-21	Livestock Asia Kuala Lumpur	Kuala Lumpur, Malaysia	www.livestockasia.com

JULY

04-06	INDO LIVESTOCK Expo & Forum	Jakarta, Indonesia	www.indolivestock.com
25-27	INAGRITTECH 2018	Jakarta, Indonesia	www.inagritech-exhibition.net

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FAO Food Outlook

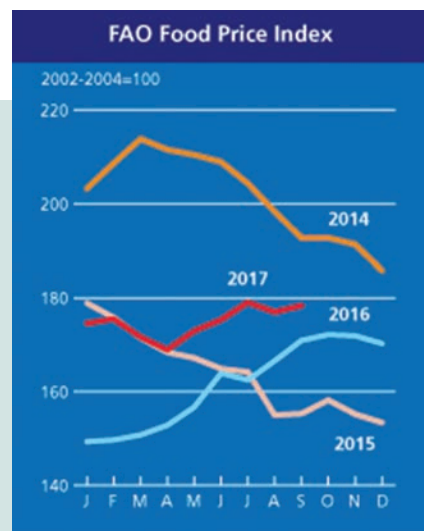
THE FAO FOOD Price Index (FFPI) averaged 178.4 points in September 2017, up 1.4 points (0.8 per cent) from August and 7.4 points (4.3 per cent) above September 2016. Firmer prices in the vegetable oil and dairy sectors were behind the small month-on-month rise in the value of the FFPI. The FAO Cereal Price Index averaged 152.2 points in September, down 1.6 points (1.0 per cent) from August. While the index declined for the second consecutive month, it remained eight per cent above the corresponding month last year. Maize prices fell in September, reacting to ample supplies in South America and harvest pressure in the northern hemisphere. Wheat values were also weaker, with continued upgrading of this year's harvest in the Russian Federation a major factor. By contrast, seasonally tight availabilities of fragrant rice and firm demand for higher quality Indica supplies kept international rice prices firm over the month.

The FAO Vegetable Oil Price Index averaged 171.9 points in September, compared to 164.4 in August – rising for the second consecutive month and marking a

seven-month high. The gain was primarily driven by palm oil, prices of which strengthened amid lower than anticipated production in Southeast Asia and firm import demand fuelled by low inventory levels in main importing countries. International soy oil prices also rose, mainly reflecting concerns about a slow start in plantings in South America, though the price increases were capped by larger than expected harvest estimates in the United States.

The FAO Dairy Price Index averaged 224.2 points in September, up 4.5 points (2.1 per cent) from the previous month. At this level, the index was 27.4 per cent higher than the corresponding period last year, but still 18.6 per cent below its peak reached in February 2014. Butter and cheese remain the dairy products in highest demand, especially in Asia.

The FAO Meat Price Index averaged 173.2 points in September, unchanged from August but up 9.5 points (5.8 per cent) compared to the same period last year. In September, a rise in the international prices of ovine meat countered a decline in pig meat quotations, while those of bovine and poultry meat



remained largely unchanged. In the case of ovine meat, prices rose, buoyed by strong import demand, especially from the Middle East and South East Asia, coupled with continued overall supply constraints in Oceania.

The FAO Sugar Price Index averaged 204.2 points in September, nearly unchanged from August but as much as 101 points (33 per cent) below the same period last year. The rapid decline in sugar quotations since the beginning of this year reflects a continuing oversupply situation prevailing in world markets, in parallel with the slow-down in demand.

China exports drought-resistant rice farming technique

CHINA HAS DEVELOPED a drought-resistant rice breed and farming method, which the country is now introducing to nine countries, mainly in southeast Asia and Africa, according to Rice Research Institute of the Anhui Agricultural Academy in east China's Anhui Province.

Dr Wang Shimei, of the institute said the plantation area of the rice breed, Lyuhan No. 1, had reached 2.3mn hectares in China. The breed was first exported in 2009 to Angola. Plantation has reached 10,000 ha in the country since then. The rice has also been planted in countries such as the Philippines, Cambodia, Pakistan and Cameroon.

In Cameroon, the rice yield reached just over 29 kg per hectare this year, as compared with about an average 4.5 kg per hectare of other rice breeds in the country.

Wang said agricultural experts from 10 countries, including Egypt and Uganda, came to China in June to study the rice growing technique, hoping it could help improve the yield in their countries, which face severe drought.

She said the rice breed has also proved to have a steady yield in saline-alkali soil in the Philippines, where fields suffer from monsoon flooding.



The technique helps farms improve their yield even in drought conditions.

Myanmar signs seed sharing protocol agreement

MYANMAR HAS BECOME the latest country to sign the Seed Sharing Protocol Agreement, joining Cambodia, India, Bangladesh, Nepal, and Sri Lanka in this initiative that allows signatories to rapidly distribute modern rice varieties across their borders. This will enable new, climate-resilient seed varieties to reach the fields of the farmers in a shorter amount of time, which in turn will secure their food supply and increase their income.

The agreement will establish common parameters for varietal release. Standard regulatory systems for new rice varieties require multi-season testing to ensure performance, pest and disease resistance and consumption quality. While these processes are important for quality assurance, it is typically conducted independently by each country. As such, a variety released in one country is still required to go through a similar vetting process in a neighbouring country, increasing the time to market these new rice varieties.

The expansion of the regional seed-sharing agreement to include Myanmar builds on the success of the existing South Asia Regional Seed Policy Agreement, which was signed in 2014 by the governments of Bangladesh, Nepal, and India. In its first three years, this has enabled eight rice varieties to be released across three countries.

IRRI introduces advanced hermetic rice storage tech in Vietnam

ONE SIGNIFICANT CHALLENGE among Vietnamese rice farmers is proper storage and management of the grain. Mismanagement of storage can lead to rice loss due to birds, rodents, and other animals, as well as grain quality deterioration. On the other hand, storing rice properly helps preserve its high quality while reducing its negative effects on the environment. It also enables farmers to gain a bigger profit margin.

The International Rice Research Institute (IRRI) has collaborated with GrainPro and introduced the Ultra Hermetic Storage technology in Vietnam to improve grain storage.

To build awareness on effective and sustainable rice storage techniques, a workshop titled, "The Ultra Hermetic Storage: A seminar-workshop for ensuring Vietnam's rice quality" was held at Nong Lam University, Ho Chi Minh. It was attended by government agencies, NGOs and private sector representatives from big rice producers in the country.

Hermetic storage is an IRRI-developed postharvest technology that is being used in many countries for the past 20 years. Because of the air-tight enclosure, it can reduce loss and preserve grain quality. It can also be operated without power, and does not require pesticides for fumigation.

"This workshop helped us understand best practices in storage management and gives us more options for our rice processing and business," said Gentraco Corporation representative, Ho Chi Cong. Du Ngoc Bao Anh from the Loc Van Company added, "This new technology should be introduced to start-up business models supported by Vietnamese Government."

Bühler showcases optical sorter for hygienic nut processing

THE BÜHLER GROUP has introduced its new optical sorting platform, SORTEX F, which aims to provide best-in-class hygienic design and high capacity performance, for the nut and dried fruit processing industry. Available with Bühler's SORTEX BioVision technology, it provides three-in-one detection of colour defects, shell and foreign materials, for exceptional product quality and food safety.

Developed by in-house specialists, using current best practice and hygienic product design guidelines, the SORTEX F features the most accessible and easy to clean frame in the industry. Its meticulous design minimises the risk of physical and biological contamination that can harm consumers and lead to ruinous food product recalls.

Featuring a stainless steel, open design frame, with sloped surfaces, hygienic conduits and food-safe grade fixings, the SORTEX F allows for quick and easy cleaning and helps to eliminate the risk of cross contamination and product build up, as well as preventing the growth of pathogenic bacteria that can induce food-borne diseases such as salmonella, in low moisture foods. Furthermore, the finish of all its metal surfaces complies with the recommended requirement for safe food contact and all polymer materials are resistant to high pressure washer jets or air and conforms to FDA regulations.

Speaking about the importance of hygienic design, Bühler head of optical sorting Charith Gunawardena said, "The hygienic design of food processing equipment is one of the major prerequisites for the prevention of food contamination. The SORTEX F optical sorter provides nut processors with protection from foodborne hazard."



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Ushering in the 'Agriculture 4.0' era

SIMA ASEAN Thailand 2017 held in Bangkok from 7-9 September 2017 focused on how innovations in machinery could improve Thailand's agri-business industry and help it reach the 'Agriculture 4.0' era.

THE SIMA ASEAN Thailand 2017, a leading international exhibition and conference for agribusiness in ASEAN, ended on a successful note on 9 September 2017. This year's focus was on the latest innovations in agricultural machinery designed to improve Thai agri-business industry to reach the Agriculture 4.0 era. Thailand 4.0 is the Thai government's new economic model aimed at pulling the country out of the middle income trap. Agriculture 4.0 aims to achieve a seven-fold increase in average annual income of farmers within the next 20 years by adopting farming practices that use of digital technology to increase sustainability and productivity. Agriculture 4.0 aims to achieve a substantial increase in yield per hectare by more sustainable use of resources, reducing inefficiencies, improving water consumption and regulating the use of fertilisers, insecticides, and other chemicals that lead to harmful effects.

Show records 15 per cent growth

The number of qualified visitors at the show has increased by 15 per cent compared to the previous year, generating approximately US\$30mn worth of trade, the event organisers reported. The event drew more than 300 exhibitors from many countries, including China, Japan, Singapore, South Korea, Turkey and Vietnam.

The event was conducted through a cooperation between IMPACT Exhibition Management Co Ltd, COMEXPOSIUM and Union des Industriels de l'Agro equipment from France AXEMA and was supported by the Ministry of Agriculture and Cooperatives and Kasetsart University. The third edition aimed to be an effective platform to help the agriculture industry to be sustainable by using innovations and advanced technology that suit the demands of the region, as well as to raise the bar of the local produce to meet international standards.

"SIMA ASEAN Thailand 2017 featured innovations, latest technology, and new machinery for the agricultural sector in ASEAN. It also served as a meeting point for traders, buyers, import-export operators, farmers, experts, and professionals in agribusiness. SIMA ASEAN 2017 is considered as the leading



The event drew more than 300 exhibitors from around the world.

international agri-business exhibition and conference in the region. There were exhibitors and international pavilions from many countries, such as Turkey, Japan, China, South Korea, Taiwan, Singapore and Vietnam. There were also visitors including VIP buyers, associations, and press from the ASEAN countries, making it a truly international exhibition," said Martine Degremont, ag-equipment business unit director at Comexposium.

SIMA's exhibitors showcased a comprehensive range of products and services, including tractors, spare parts and accessories, embedded electronics, tilling, sowing, planting, harvesting and post-harvest equipment, equipment for tropical and special crops, livestock handling, transportation, storage and breeding equipment, renewable energy, consultancy, management and software.

A strong knowledge programme

Symposiums on new agriculture technology and machinery were also hosted during the three-day event. A few of the seminars of note were 'Technology for soil management and Precision Farming to Agriculture 4.0' by Soil and Fertiliser Society of Thailand, 'Thai Innovation Leads to

Thailand 4.0' by Department of Agriculture, Ministry of Agriculture and Cooperatives, 'Drone International Conference,' 'Agriculture Machinery Clinic' by Patcharin Posirisuk, chairman of Agriculture Machinery Manufacturers Industry Club (FTI). Smart IoT for agriculture, precision agriculture and energy production from biomass were a few of the topics that were on focus during the event.

"The event generated a lot of interest from exhibitors both in Thailand and other countries, who joined the event to showcase their agricultural innovations and technology. The increase in the number of buyers and business meetings that took place during the event was an indication that many key players and companies are still active in expanding their business network and maintaining their competitive position during the recession. As a result, IMPACT is confident moving forward and organising a more successful SIMA ASEAN Thailand in 2018, to support Thailand's agri-business industry, with the intention to efficiently enhance the value of the agricultural trade and industry in the ASEAN region towards the international market in the future" said Loy Joon How, general manager at IMPACT Exhibition Management. ■

Image Credit: SIMA ASEAN



The show hosted 230 exhibitors from 34 countries.

Indonesia on focus

ILDEX Indonesia 2017, the third edition of the International Livestock and Dairy Meat Processing, and Aquaculture Exposition, held in Jakarta, Indonesia, from 17-19 October succeeded in providing a platform for the livestock industry in Indonesia to converge and discuss the opportunities for future growth.

THE EVENT SAW participation from 230 exhibitors from 34 countries, two international pavilions from China (24 companies) and South Korea (six companies and a new special Pavilion from the Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries (KPIS)). It also attracted 9,109 high-quality attendees from 47 countries around the world, including Indonesia, the Philippines, China, Malaysia, Thailand, South Korea, the Netherlands, Germany, the USA, India and more.

Strong growth

"ILDEX Indonesia has seen tremendous growth this year, both in terms of size and visitors. The exhibitors have increased by 48 per cent from the previous edition with several companies increasing their exhibition area by 50 per cent, as well as many new companies. There were 230 top companies interacting with 200 potential buyers that we hosted from many focus countries," said Nino Gruettke, managing director at VNU Exhibitions Asia Pacific Co Ltd.

The show was conducted through a collaboration between the Federasi Masyarakat Perunggasan Indonesia/Federation of Indonesia Poultry Society (FMPI), the Ministry of Agriculture, Ministry of trade and DKI Jakarta Government, and the international exhibition organiser VNU Exhibitions Asia Pacific. "ILDEX

Indonesia 2017 will be the third 'Unique-comprehensive Expo' ever held in the country focusing on livestock and fishery, including the genetic, feeds additive and premixes, animal drugs and medicines, on-farms, processing and many more," said Don P Utojo, president of FMPI. He added that the exhibition aimed to be a place for new information, technology and knowledge to improve the efficiency and productivity of Indonesia livestock so as to strengthen the competitiveness of Indonesian livestock products in Asia.

Impressive showcase of exhibitors

Spread over the two halls of the spacious JI Expo centre, the show was well planned and executed. The companies represented the entire spectrum of the livestock industry showcasing service and equipment from feed-to-meat including feed and animal health; feed milling and farm equipment; and genetic, breeding and processing. Some of the bigger exhibits were Flying Dutchman, Ceva, JAPFA, Buhler and Evonik. Indonesia's burgeoning livestock market is what had attracted most of the companies to the show.

With a population of 263 million (in 2017), which is still growing, the market opportunities are enormous. The consumption demand for livestock products has continuously risen. With the industry quickly changing from wet markets to automated

systems and large scale production, it is market with great potential. Indonesia needs technology transfer from upstream sources to downstream receivers in order to be able to make products locally and not to rely too much on imported products. In addition, business partnerships in Indonesia are needed to meet growing demand and to fulfill the supply chain.

"Indonesia is an important market for us. With the Indonesian government announcing the ban of AGP in the country from 2018, most producers are showing increased interest in feed additives and other alternatives," representative from Evonik said.

This edition of Ildex also featured the "hosted buyer programme," which brought more than 200 potential buyers from Thailand, Myanmar, Bangladesh, the Philippines, Malaysia, Taiwan and India to the show. The online business matching offered exhibitors exclusive opportunities to connect with top level buyers from all over the world, as well as for trade buyers to find suppliers, showcasing their latest innovations at the show. This service allowed industry professionals the chance to extend their professional network and seek out new business alliances and suppliers from around the world.

"The hosted buyer's programme is a valuable addition to the show. It has helped us have a few very good meetings here," said Eric Brawner from Jansen Poultry Equipment. ■

Coping with climate change with open-ocean aquaculture

The warming of waters as a result of climate change is posing a threat to the global aquaculture industry. A recent study reveals that open-ocean aquaculture might be a viable option for industry expansion.

A RECENT STUDY CARRIED by researchers of Oregon State University has revealed that open-ocean aquaculture for three species of finfish is a viable option for industry expansion under the looming threats of climate change.

The results of this study has been published in the *Proceedings of the Royal Society B* and explains how the warming of waters as a result of climate change poses a serious threat to aquaculture and open-ocean aquaculture might provide a solution. The modelling study found that the warming of near-shore surface waters would shift the range of many species toward the higher latitudes – where they would have better growth rates – but even in areas that will be significantly warmer, open-ocean aquaculture could survive because of adaptation techniques including selective breeding.

A sustainable approach

Open-ocean aquaculture, also known as offshore aquaculture, is an emerging approach to mariculture where fish farms are moved some distance offshore. The farms are positioned in deeper and less sheltered waters, where ocean currents are stronger than they are inshore.

The sustainability of aquaculture is a topic that has been under debate for many years. Habitat destruction, the use of marine ingredients in feeds, freshwater usage, impact on wild gene pools, spread of



Image Credit: Thomas Bjørkan/Wikimedia Commons

Open-ocean aquaculture uses fish cages similar to these inshore cages, except they are submerged and moved offshore into deeper water.

diseases and the threats associated with overuse of antibiotics are some of the impacts that aquaculture has on the environment.

Open-ocean aquaculture is now cited as a way of improving the sustainability of aquaculture. One of the concerns with inshore aquaculture is that discarded nutrients and feces can settle below the farm on the seafloor and damage the benthic ecosystem. Open-ocean aquaculture allows the wastes from the farms to be swept away from the site and diluted. Moving aquaculture offshore also provides more space where aquaculture production can expand to meet the increasing demands for fish. It avoids many of the conflicts that occur with other marine resource users in the more crowded inshore waters, though there can still be user conflicts offshore.

The case of the finfish

In the aforementioned study, the researchers looked at three species of finfish that represent species in different thermal regions globally – Atlantic salmon (*Salmo salar*), which grows fastest in sub-polar and temperate waters; gilthead seabream (*Sparus aurata*), found in temperate and sub-tropical waters; and cobia (*Rachycentron canadum*), which is in sub-tropical and tropical waters. “We found that all three species would shift farther away from the tropics, which most models say will heat more than other regions,” said Dane Klinger, a former postdoctoral researcher at Princeton University and lead author of the study. “Production of Atlantic salmon, for example, could expand well into the higher latitudes, and though the trailing edge of their range may face difficulties, adaptation techniques can offset those difficulties.”

Challenges ahead

Open-ocean aquaculture is not without its own set of challenges. Critics are concerned about issues such as the consequences of using antibiotics and other drugs and the possibilities of cultured fish escaping and spreading disease among wild fish. Major challenges for the offshore aquaculture industry involve designing and deploying cages that can withstand storms, dealing with the logistics, and finding species that are profitable to cover the costs of rearing fish in exposed offshore areas. ■

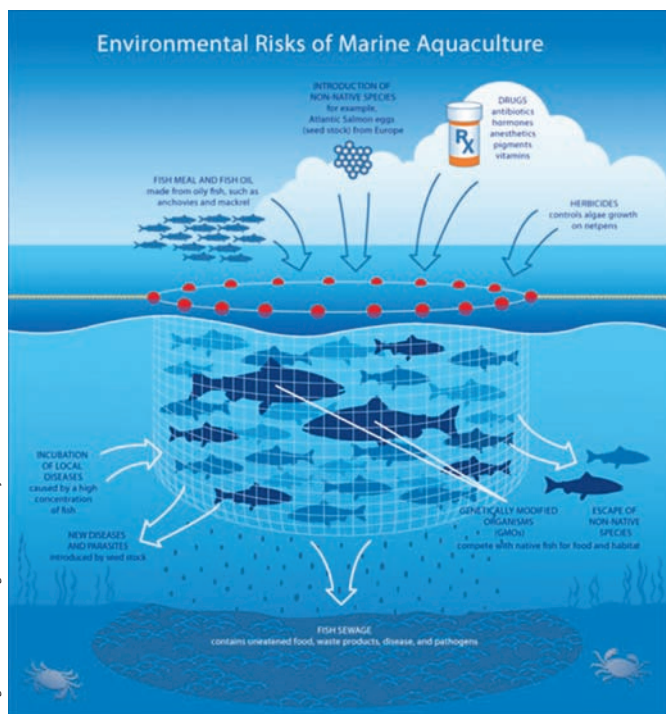


Image Credit: Dr George Pararas-Carayannis/Wikimedia Commons

Inshore marine farming systems in shallow sheltered water can have problems with waste collecting on the sea floor.

With growing demand for poultry products, producers are turning to automated poultry processing systems.

Image Credit: iStockphoto/Adobe Stock

Demand fuels poultry processing machinery growth

The poultry processing industry in Asia is witnessing steady growth fuelled by a fast growing population, greater demand for meat quality and safety and increasing integration of mechanisation.

THE ASIA-PACIFIC POULTRY processing equipment market has been estimated at US\$0.72bn in 2016 and is projected to reach US\$0.95bn by 2021, at a CAGR of 5.9 per cent during the forecast period from 2016 to 2021, a report by Market Data forecast states.

The market for poultry processing equipment in Asia-Pacific region is a fast-growing one, driven mainly by a growing

population and increased consumption of processed food. Labour reduction and greater meat quality and safety are demands that automation in poultry processing are helping to deliver. Government support for the use of equipment in developing countries and mechanisation in production processes have also contributed positively to the growth in the industry.

According to the report, the poultry

processing equipment market in the Asia-Pacific region is projected to grow at the highest CAGR, which is greatly due to economic growth and the shift of the preferences of the consumers towards value added food. Also, the demand for animal protein in the countries has increased and has become important due to the current busy life styles, which is creating a great opportunity for the market to flourish.

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Meyn's thigh deboning solution delivers greater productivity.

Image Credit: Meyn

The poultry processing equipment is segmented into killing and de-feathering, evisceration, cut-ups, deboning and skinning, marinating and tumbling. Killing and de-feathering dominate the poultry processing equipment market among other equipment as it is a pre-requisite in every automated poultry processing plant. On the basis of poultry type, which include chicken, duck and turkey, the poultry processing equipment market is led by chicken, followed by duck. Chicken consumption is growing faster than other meat.

Automation in the poultry value chain is essential in meeting the rising demand for poultry meat. Poultry processing companies catering to the region offer a range of products. Speaking to *Far Eastern Agriculture*, Hans Tieleman, sales manager at Foodmate BV said, "Primary processing is picking up in Asia." He pointed out that the markets in Asia are very diverse and cannot be grouped together. Bangkok, for instance, is very advanced market with huge poultry processing plants. Other markets like Vietnam and Indonesia are slowly picking up, moving away from wet markets to larger processing units. Foodmate provides a series of poultry processing units catering to slaughtering, eviscerating, chilling, cut-up and deboning. Tieleman commented out that the leg-deboner machine is attracting a lot of interest, especially in Korea and Japan.

Driven by innovation

"Being innovative is essential for our business. Looking at the market developments and

increase in demand for deboned and cut up products it is not a surprise that our recent innovations cater to these needs," said Olivier Roelfs from Meyn Food Processing. While Meyn has solutions for all stages of the processing line, it specialises in the precise and specialised deboning of different chicken parts. Its latest innovation is the Rapid breast deboner M 4.0 for up to 4000 bph, the Plug & Play version of the renowned Rapid Plus which processes up to 6000 bph.

The Rapid Plus Breast Deboner can harvest all fillets and tender products automatically at the highest capacity and can debone front halves and breast caps with the same concept. The company's Rapid Breast Deboner features a plug and play concept that reduces installation cost and time and delivers excellent product presentation for wings, fillets and tenderloins.

Another innovation from Meyn is the Multistage CO₂ Stunning System that prioritises animal welfare. In this machine, the birds remain in the drawer or container during stunning, thereby eliminating handling and transport of active birds completely. This largely reduces handling stress and thus risk on injuries to the birds. The closed cabinet construction allows for the CO₂ concentration to be managed perfectly in every stage of the process. This ensures a humane stun and greatly improves product quality.

Marel Poultry is another poultry processing company that is making strides in the Asian poultry processing market. The company was recently selected by the South Korean

enterprise Harim Co to be the main supplier for the modernisation of the factory in the city of Iksan. Marel Poultry will renovate two existing lines and install four of its high speed lines at the plant, which will be one of the largest poultry processing facilities in Asia.

Marel Poultry provides in-line poultry processing solutions for all process steps and processing capacities. One of the innovative solutions from the company is the Stork Nuova, which the company describes as the world's most efficient eviscerator. The Nuova eviscerator separates the viscera pack from the carcass immediately after evisceration and rehanges the viscera pack into a viscera pack shackle. This is done in such a way that heart and lungs are positioned on top with liver and the rest of the viscera pack below it. As a result, giblet harvesting, whether manual or fully automated, can be done faster, easier, more simple and in the most hygienic circumstances.

SmartWeigher from Marel Poultry is another product of note. This is a whole product weigher that enables accurate weighing in the ACM-NT cut-up line. It consists of a section of Sigma track, installed into a conventional Sigma overhead conveyor, to which a load cell and vibration sensor are attached. This sensor and its software pick up and neutralise the effect of any vibrations on weighing accuracy. Weight information from SmartWeigher is used to size whole products or determine how they are to be cut.

With a range of innovations on offer, the poultry processing industry in the region is growing fast to meet demand. ■



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A natural alternative to antibiotics

THE OVERUSE OF antibiotics in human medicine is a major cause for the development of bacterial resistance. Another important contributing factor is the overuse and misuse of antibiotics in intensive animal production. It is estimated that over half of all the antibiotics produced is used up in farm animals, that too for non-therapeutic purpose. When animals are administered an antibiotic that is closely related to an antibiotic used in human medicine, cross resistance occurs and disease-causing bacteria become resistant to the drugs used in human medicine.

Non-therapeutic use of antibiotics are being slowly limited from intensive animal production. Worldwide, consumers are actively pressurising governments to bring resolutions to limit the use of antibiotics as growth promoters. However, the burning question now is, what do you replace antibiotic growth promoters with?

According to feed additives company, Ayurvet, nature has provided us with immense treasure which when harnessed with right kind of knowledge can provide solutions to practically every problem.

NBIOTIC is a phyto additive growth promoter fortified with essential oils created by the research and development team of Ayurvet. According to the company, it is a natural alternative to antibiotic growth promoter, helps in improving FCR and attaining better final body weight in pigs and poultry. The herbs present in NBIOTIC include allium sativum, zinzibar officinale and cichorium intybus among others. The herbs promote gut function and maintains the micro biocenosis of the gut. They are natural growth promoters, have antioxidant and antimicrobial properties and promote gut morphogenesis.

NBIOTIC uses herbs that promote intestinal Microbiocenosis.



Image Credit: Krugloff/Adobe Stock

The main mechanism through which NBIOTIC promotes growth is by increasing the height of villus and crypt depth, thus improving the absorptive capacity of the gut. It also helps in improving the intestinal environment for the growth of beneficial bacteria while inhibiting pathogenic bacteria. The goblet cell number also increases, thus providing protection to the gut from local antigens. Ayurvet points out that the overall effect is that it provides all the benefits that are found in antibiotic growth promoters while providing food safety.

Nbiotic has been validated to have replacement efficacy against BMD, tetracyclines, roxarsone and many other antibiotic growth promoter in the US and Europe.

Achieving effective redistribution of fungicides

Rainfall is considered detrimental for fungicide deposits and the control of foliar disease. This, however, is not always the case. Dr Terry Mabbett discusses how rain can be turned into an essential tool for weathering and redistribution of fungicide deposits.

RAINFALL IS GENERALLY thought of as 'bad for' fungicide deposits and the control of foliar disease. It is true that most fungal pathogens, fungus-like pathogens (eg, *Phytophthora* and *Peronospora*) and virtually all bacterial plant pathogens respond favourably to rainfall and the accompanying surface wetness and higher humidity. And that fungicide deposits washed off the plant surface and into the soil represent a loss in foliar disease protection. However, there are situations and scenarios where rainfall is helpful and indeed essential to solubilise deposits and make fungicide available for action against pathogens which are present on the plant surface as spores or cells.

Classic cases in point are the so-called particulate, fixed copper fungicides of which cuprous oxide, cupric hydroxide and copper oxychloride are the most well established and best known, and their complicated sounding label is actually a succinct and straightforward description.

Particulate refers to form and formulation in commercial fungicide products as distinct and discrete solid particles of wettable powder and water dispersible granule. Fixed describes the minimal solubility in water of these copper salts (compounds) which are not actually insoluble but best described as sparingly soluble in water. In essence the word 'fixed' refers to the potentially active fungicide ingredient (metallic copper) being 'locked up' or fixed in the molecule (eg, cuprous oxide - Cu_2O) until released by solubilisation and ionisation in water.

These particulate, fixed copper compounds are classic contact protectant fungicides designed to remain on the plant surface in active amounts for as long as possible, to provide protection against infection by plant pathogens. They cannot enter the plant and therefore do not have any curative disease control function. As such they are purely protective in action and will only act when they come into direct contact with microbial pathogens on the plant surface – hence the name 'contact protectant fungicide.'



Image Credit: Trond Kristiansen, Nordox

Copper fungicide solubilised by rainfall and dew can undergo short-distance redistribution to protect those parts of the plant surface that are between the deposits of fungicide. Orange fruit sprayed with cuprous oxide shown here.

Solubilisation and release of copper

If these copper compounds were insoluble in water they would be of no use as fungicides. Deposits could remain on leaves for days, months or even years but if the fungicidally active metallic copper remained fixed in the molecule, and therefore unavailable, plant pathogens and diseases would proceed unchecked despite the leaves being 'coated' in chemical.

In practice, foliar surface deposits of particulate fixed copper fungicides are solubilised slowly over an extended period of time during which the active fungicide is released (solubilised and ionised) as the divalent copper ion (Cu^{2+}). These charged particles (copper ions) are actively absorbed by germinating fungal spores and growing bacterial cells. This phenomenon has been described as a 'suicide mechanism' because the potential pathogen is subsequently killed by copper ions which disrupt the action of a broad range of enzymes in the microbial metabolism.

The rate at which copper fungicide deposits are solubilised is clearly important. This will

depend on the inherent insolubility of a specific copper compound although particle size and the particle size distribution (profile) of the product formulation have crucial parts to play.

There exists a basic negative relationship between the size of a particle and its surface area which increases proportionately with decreasing particle size. The larger surface areas of increasingly smaller particles generate higher attractive forces causing them to adhere more strongly to the foliar surface. In other words, they will have a relatively higher tenacity and capacity to stick to the leaf surface in the face of environmental forces such as wind and leaf movements. Smaller particles also logically present a proportionately bigger surface area to the surrounding film of water on the leaf surface for subsequent solubilisation and release of Cu^{2+} .

A close look at the particle size distribution of Nordox cuprous oxide is instructive in this respect. All particles in Nordox cuprous oxide fungicide manufactured by Nordox AS in Oslo, Norway are within the $1\mu\text{m}$ to $5\mu\text{m}$ diameter range, with 80 per cent less than $2\mu\text{m}$ and 99 per cent less than $5\mu\text{m}$.

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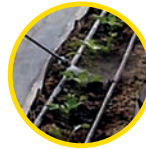
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Centrilab in the Netherlands compared the tenacity of Nordox cuprous oxide with that of two other particulate fixed copper fungicides (cupric hydroxide and copper oxychloride) by applying simulated rainfall to groups of plants sprayed separately with these three copper fungicides.

Following simulated rainfall applied at an intensity of 10mm/hour, the retention of Nordox cuprous oxide was 80 per cent of the initial spray deposit compared with less than 40 per cent for cupric hydroxide and copper oxychloride. Mean particle size of Nordox cuprous oxide was calculated at 1.2µm, whereas the mean particle size of the cupric hydroxide and copper oxychloride fungicide formulations was significantly larger at around 3µm.

This superior tenacity and retention of cuprous oxide is fundamental to the higher efficacy generally recorded for this particular fixed copper fungicide in its role and function as a contact protectant fungicide and use commercially on almost every agricultural and horticultural crop throughout the world. Cuprous oxide has a 'head start' due to its intrinsically low solubility in water compared with other fixed copper compounds, while the superior particle size distribution of Nordox cuprous oxide is the 'icing on the cake' for the exceptionally high disease control efficacy exhibited by this particular product.

Redistribution dimensions

Solubilisation and release of copper ions into water is essential but where the copper ions go thereafter is equally important. That's because it is practically impossible to completely and adequately cover and protect an entire crop surface with a single spray application of protectant fungicide. And that's why it is important for water to move across the surface of a leaf or a fruit and down through the crop canopy, and thereby act as a vehicle for the movement and transfer of copper ions to places which are inadequately protected in relation to threats posed by plant pathogens. There are two essential dimensions to the redistribution of fungicide which are: short distance redistribution and longer distance redistribution.

Short distance redistribution: The movement of copper ions to unprotected areas of the same leaf or fruit on which the fungicide was retained as spray droplets and subsequently dried to form an initial fungicide deposit. Not so important following high volume 'run-off' spraying in which a continuous liquid film is deposited across the leaf surface, but more so when crops are sprayed using air-assisted reduced volume techniques when fungicide is deposited in very



Copper fungicide sprayed on coffee leaves to control coffee leaf rust can be redistributed down through the canopy to cover and protect berry bunches against coffee berry disease.

small and discrete spray droplets. Consequently there will be unprotected 'micro' areas of plant surface (inter-drop distances and areas) separating the droplets and subsequently the dried 'specks' fungicide adhering to the plant surface. Copper ions released from these 'micro deposits' by rainwater or dew will subsequently cover and protect inter-drop distances and areas.

Short distance redistribution can be important for improving deficiencies in coverage following high volume hydraulic spraying which invariably provides inadequate coverage of the lower (abaxial) leaf surface. Fungicide clearly needs to be redistributed in water from the upper (adaxial) surface of the leaf to the lower (abaxial) surface of the same leaf, but it is difficult to understand how this could happen. Be that as it may, this phenomenon has been demonstrated on coffee leaves. During rainfall the films of water thus formed on the upper surfaces of the leaves, and containing dissolved copper fungicide,

runs to the leaf edge. But instead of dripping off of the leaf it 'creeps' underneath onto the lower surface of the same leaf under the influence of surface tension forces in the liquid.

This is especially important for the control of coffee rust because leaf infection by germinating rust fungus spores occurs exclusively on the lower surface of the leaf because that is where all the stomata (leaf pores) are located. It is reasonable to assume that this phenomenon will most likely occur on relatively hard and waxy leaves characteristic of tropical evergreen tree crops such as coffee, citrus and tea, rather than on the soft, hairy and non-waxy leaves typical of many vegetable crops including tomato, sweet pepper and cucumber.

Similarly, fungicide spray deposits will tend to accumulate on the exposed upper portion of coffee berries and generally less so on the lower portion that is shielded from spray droplets because the berries are borne in tight clusters or bunches. Rainfall and dew will solubilise copper fungicide and carry it down the sides of the berries to protect the whole fruit against coffee berry disease.

Longer distance redistribution: Involves the redistribution of fungicide dissolved in water from the leaf or fruit where it was deposited to many other plant parts including leaves, fruits and bark progressively lower down in the canopy. This is especially important when fungicide spray is deposited on leaves high in the canopy but the actual disease threat is to other plant parts in the lower canopy.

Classic case in point is cocoa where air-assisted spraying deposits considerable amounts of fungicide on the leaves at the top of the tree canopy although it is the flower cushions, cherelles and other pods at all stages of growth and development, and attached directly to the trunk which are vulnerable to infection by the fungus-like pathogens that cause Phytophthora pod rot and stem canker. ■



Cocoa pods at all stages of growth and development and positioned low down in the tree benefit from the protection afforded by redistributed copper fungicide moving down through the canopy in drops, splashes and rivulets during heavy rainfall.

IoT set to fuel the next green revolution in the farming industry

A NEW INDEPENDENT research commissioned by global mobile satellite company Inmarsat has revealed that the Internet of Things (IoT) will play an increasingly important role in helping the agriculture sector become more efficient, productive and sustainable. According to the report, spend on, and interest in, IoT is set to rocket over the next five years within agritech.

Market research specialist Vanson Bourne interviewed respondents from 100 large agritech companies across the globe for Inmarsat's 'The Future of IoT in Enterprise - 2017' report, and found that the sector is rapidly taking to IoT technologies. 62 per cent had already fully or partially deployed IoT-based solutions, far outweighing the adoption levels seen in the mining, transport and energy sectors, and a further 27 per cent had plans to do so within the next six months.

Moreover, the spend on IoT-based



IoT will play an important role in improving the productivity of the agriculture sector.

solutions is set to increase dramatically over the next few years. Today, about five per cent of agritech businesses' IT budgets are spent on the technology; a figure that is expected to more than double to around 12 per cent by 2022, indicating how important IoT will be for the sector going forward.

Commenting on the findings, Ayan Jobse-Alkemade, director of sector development agriculture at Inmarsat Enterprise said, "With

the planet estimated to reach a population of 10 billion people by 2050, humanity will face challenges with sustainable water sources, food production, and the best use of land to get the maximum yield from crops. Additionally, using the most efficient method to deliver the resources will increasingly feature on the global agenda. In short, farmers, with the help of the agritech sector, need to get smarter, leaner and faster from field to fork.

Working with its partners, Inmarsat is at the forefront of this movement, delivering effective solutions for agritech businesses globally. By combining its heritage in critical connectivity with LoRaWAN technology and data analytics platforms that allow for the free-flow of data across organisations, Inmarsat are helping to ensure agritech businesses get ahead of the competition and meet the food production needs of tomorrow.

Case IH launches two multipurpose tractors

CASE IH HAS unveiled two multipurpose tractors, the Puma 150 CVX and Maxxum 125 Multicontroller to the South Korean market at KISTOCK 2017.

The Puma 150 CVX is a tractor with a continuously variable transmission, for ease of use and seamless power transfer in all ground conditions. Powered by an efficient 6.7-litre six-cylinder FPT diesel engine, the Puma 150 CVX boasts a 150 hp (110kW) output with maximum torque of 700 Nm at just 1,500 rpm. The continuously variable transmission delivers a top speed of up to 50 kph, or 40kph in ECO mode. The tractor has rear PTO speeds of 540 and 1,000 rpm, while an optional front PTO can be supplied with a 1,000 rpm capability. The Puma 150 CVX tractor delivers a rear lift capacity of 8,257 kg, permitting the heaviest attachments to be used. The hydraulic system has an axial piston, variable displacement pump with a delivery rate of 170 l/min for fast, effective operation.

The Maxxum 125 Multicontroller is a mid-range tractor that delivers maximum productivity. The Case IH Multicontroller system puts multiple operating functions at the driver's fingertips, including transmission operation, engine speed control, and the operation of electrical remote valves. Power is supplied by a fuel-efficient four-cylinder FPT engine that delivers 125 hp (92 kW). A powershift transmission drives all four wheels, for maximum tractive and towing ability.

"The Case IH range of premium high horsepower tractors, with the addition of the new Puma 150 CVX and the Maxxum 125 Multicontroller, offers the perfect answer for the fast developing mechanisation of South Korea's agriculture," said Emre Karazli, CNH Industrial business director for agricultural equipment in South East Asia, Pakistan and Japan.

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HarvestLab 3000 to help producers measure forage nutrient values

WITH THE AIM of helping beef and dairy producers more accurately and quickly measure certain nutrient values of the forages they're harvesting and feeding their livestock, John Deere has introduced the new HarvestLab 3000. When mounted to John Deere self-propelled forage harvesters, HarvestLab 3000 can monitor forage constituents at harvest, or it can be removed and used in stationary mode to evaluate forage nutrient quality at feeding.

John Deere HarvestLab 3000 uses near-infrared spectroscopy (NIRS) to evaluate constituent characteristics such as moisture, dry matter, protein, starch, neutral detergent fiber (NDF) or acid detergent fiber (ADF).

Results are immediate and allow owners to take more frequent and representative samples rather than relying on periodic, non-representative samples measured via wet-chemistry analysis. In the field, broader light spectrum measures up to 10 nutrient values 4,000 times per second, providing permanent, real-time data gathering. Operators can view constituent measurements while harvesting and then quickly make on-the-go adjustments to maximise feed quality.

When mounted to forage harvesters, HarvestLab 3000 offers integrated, automatic length of cut adjustments based on moisture ranges preset by the



When mounted to John Deere self-propelled forage harvesters, HarvestLab 3000 can monitor forage constituents at harvest.

operator. This feature helps ensure optimum bunker density and high-quality silage. In addition, inoculants can be more precisely applied during harvest based on sugar and dry-matter readings. The end result is high-quality silage with greater feed value and reduced spoilage.

HarvestLab 3000 can be used to map and document important crop characteristics such as moisture or starch content in different forage crops and silage tops. "This is a huge benefit for beef and dairy producers, custom harvesters, and livestock nutritionists wanting to optimize the nutritional value of the feed," said John Mishler, John Deere precision-ag technology tactical marketing manager.

"These nutrient values can be wirelessly transmitted to the John Deere Operations Centre for analysis, future crop and nutrient application planning and for archiving field and crop history."

Utilising the stationary mode of HarvestLab 3000, nutritionists can analyze feed rations for crude protein, fiber, and other characteristics to adjust rations for optimal nutrition and to reduce feed variability. Different forages and silages can be measured as often as possible. These measurements guarantee precise tracking of the silage put into the bunk or silo, and the quality changes taking place in the silage, before its put into a dairy ration.

CLAAS launches new AXION 800 series tractors

TRACTORS IN THE AXION 800 series from CLAAS feature a wide range of models and engines from 205 to 295 hp (in accordance with ECE R 120) and are designed for many different applications. This is the latest generation of the AXION 800 series with enhanced equipment options and many practical solutions that were initially introduced in the new ARION 600/500 and AXION 900 series. These include the new CEBIS system with colour touch display and CMOTION multifunction control lever, the new CIS+ specification option and air brakes with an air dryer.

In addition to the basic CIS and the new touch-screen CEBIS systems, new AXION 800 models are now available for the first time with CIS+, giving three equipment options. Like CEBIS, the CIS+ system introduced with the new AXION 900, ARION 600 and ARION 500 tractors are extremely user-friendly, offering a high level of convenience with reduced complexity. The features within CIS+ include the CIS colour display and the proven multifunction armrest with ELECTROPILOT four-way control lever and DRIVESTICK to operate the transmission.

The CEBIS system includes the new, high-resolution CEBIS terminal with 12-inch touch display and an ergonomic armrest with CMOTION multifunction control lever for convenient operation of all the main functions



The universal hitch support in the new AXION 800 series allows up to six different traction devices to be used.

using the thumb and first two fingers. The armrest now also offers a total of 10 freely configurable function buttons. Eight of these buttons are on the multifunction control lever and can be configured, for example, with various ISOBUS functions. The intuitive operating structure is based on the existing CEBIS generation and has been further optimised for touch display use. Features include the quick-adjustment facility for frequently-used tractor functions using DIRECT ACCESS, which is operated simply by tapping the machine silhouette on the

CEBIS touch display. When working on uneven terrain, all the settings can still be entered using the familiar rotary/push switch with ESC button.

All tractors in the new AXION 800 series have a universal tow hitch support which conforms to ISO 500. This allows problem-free use of the hitches from the new AXION 900 series tractors and other manufacturers with compatible standards. The tow hitch support also comes as standard with a long mounting rail and a slot for traction devices in the drawbar.

Feed and Grain Buyers' Guide

2017

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 One - Categories

Additives and raw materials

Amino Acids

Eurofeed Technologies S.p.A
 Nutriad International

Antibiotics & Anticoccidials

Eurofeed Technologies S.p.A
 Nutriad International

Fats & Oils

Eurofeed Technologies S.p.A
 Nutriad International

Feed Enzymes

Eurofeed Technologies S.p.A
 Nutriad International

Industrial Co-Products

Nutriad International

Microbial & Fermentation Products

Nutriad International

Milk Products

Goizper Group
 Nutriad International

Minerals

Eurofeed Technologies S.p.A

Nutriad International
 Unipoint AG

Molasses Products

Nutriad International

Mold & Mycotoxin Control Products

Ayurvet Ltd.
 Eurofeed Technologies S.p.A
 Nutriad International
 Unipoint AG

Phytogetic Feed Additives

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 Eurofeed Technologies S.p.A
 Nutriad International

Premixes

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Protein Products

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Vitamins

Eurofeed Technologies S.p.A

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Format Solutions

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Batching & Weighing Systems

Ottevanger Milling Engineers

Conveyers

Muller Beltex b.v
 Technical Systems

Elevators

Muller Beltex b.v

Elevator Buckets

Muller Beltex b.v

Machinery and equipment

Bagging

AWILA® Anlagenbau GmbH

Boiler & Steam Systems

AWILA® Anlagenbau GmbH
 Pelleting Technology Netherlands b.v (PTN)

Coolers

AWILA® Anlagenbau GmbH

Conditioners

AWILA® Anlagenbau GmbH
 Pelleting Technology Netherlands b.v (PTN)

Dryers

Alvan Blanch Development Company Ltd.

Flaking Mills

Alvan Blanch Development Company Ltd.

Feeders

AWILA® Anlagenbau GmbH
 Ottevanger Milling Engineers
 Technical Systems

Hammer Mills

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