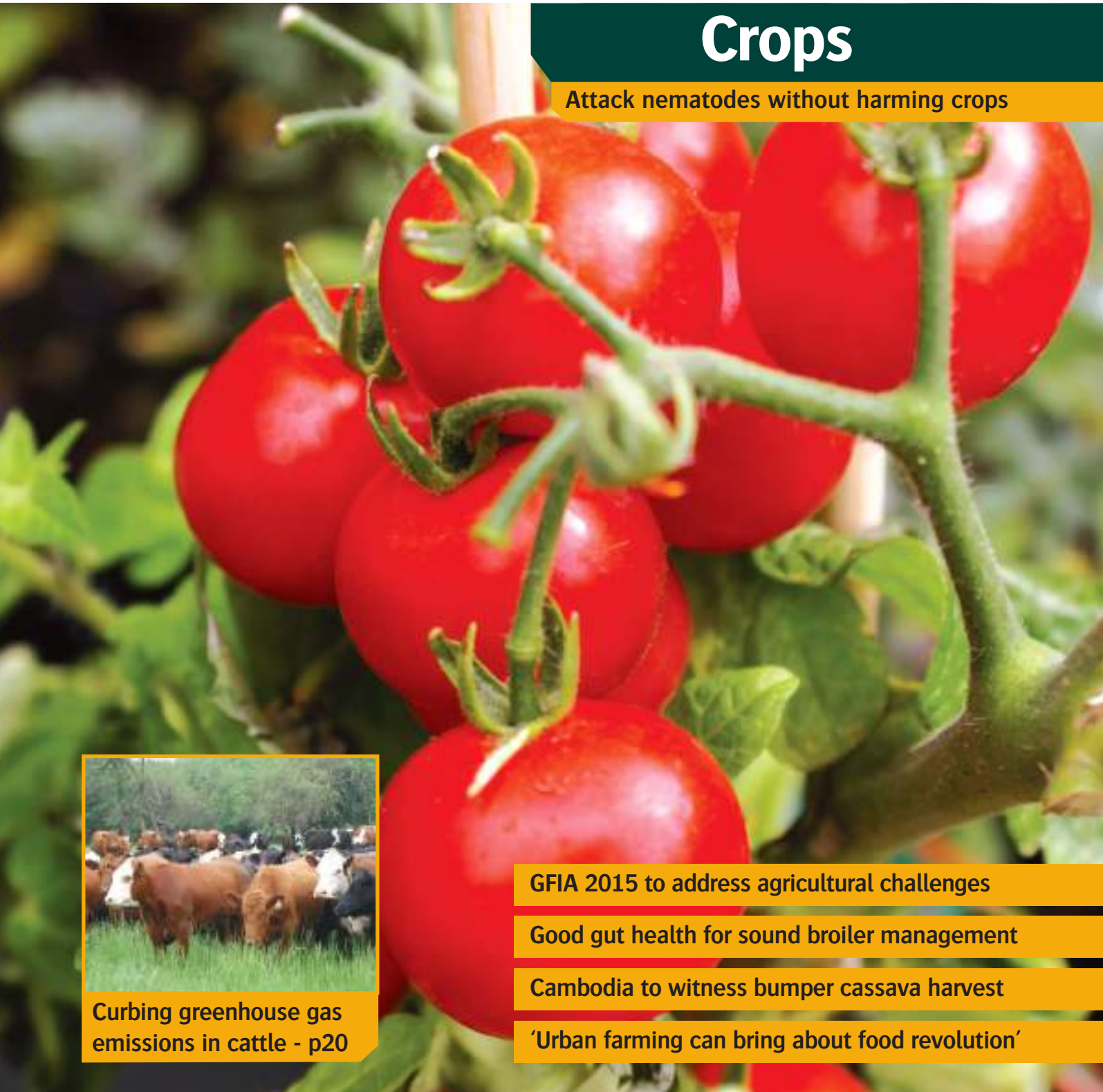


Far Eastern Agriculture

Crops

Attack nematodes without harming crops



Curbing greenhouse gas emissions in cattle - p20

GFIA 2015 to address agricultural challenges

Good gut health for sound broiler management

Cambodia to witness bumper cassava harvest

'Urban farming can bring about food revolution'



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Serving the world of business

Cargill opens cocoa plant in Indonesia

CARGILL'S NEW COCOA processing facility in Gresik, Indonesia, is expected to meet the growing demand amongst Asian consumers for chocolate and cocoa products.

The US\$100mn facility will have a 70,000-metric tonne processing capacity and produce Cargill's premium brand Gerken's cocoa powder, as well as high quality cocoa liquor and butter. Its blending capability would leverage the company's broad and in-depth cocoa knowledge to enable customers to benefit from superior, consistent and tailor-made solutions that meet Asian consumers' taste profiles, the company said. The state-of-the-art facility in the East Java region was officially opened in the presence of Indonesian minister of industry Saleh Husin and David MacLennan, Cargill's CEO.

"Our customers expect us to keep innovating and adding value to their products, and this investment focuses on delivering for their success," said Cargill's cocoa & chocolate business head in Europe Middle-East, Africa and Asia Jos de Loor. "We have been sourcing cocoa in Indonesia since 1995 and we are committed to supporting sustainable agricultural production and a responsible cocoa supply in the country. We work with governments, communities and partners to help build a vibrant Indonesian cocoa industry with a long-term future."



The US\$100mn facility will produce Cargill's premium brand Gerken's cocoa powder

Sunzen Biotech charts expansion plans

HEALTH SPECIALIST SUNZEN Biotech Bhd is seeking expansion into the Middle East, Africa and India to double its revenue and net profit in three years. For fiscal year 2013, the ACE-listed company reported a net profit of US\$1.03mn on revenue of US\$10.66mn. Sunzen Biotech chairman Tan Sri Musa Hassan said that it was time to explore new opportunities in order to move to the main board of Bursa Malaysia in five years. The company produces feed additives, nutritional feed supplements, veterinary pharmaceuticals, animal vaccines and disinfectants for livestock such as poultry, swine, goats, cattle and freshwater fish. It has two plants in Kota Kemuning, Selangor, and 70 per cent of the products are exported to almost all Asian countries and Nigeria.

Biomin launches website in Japanese

BIOMIN HAS NOW launched a Japanese version of the new corporate website. Strengthening visual appeal while preserving the content-rich structure that embodies the research and development core of Biomin, the revamped site comes with the following new features:

- a new improved newsletter design that allows responsive mailings for optimised display on smartphones, particularly to meet the trend of increasing email use on smartphones
- visuals offering a modern look that combines both useability and appeal
- a stronger species-focus to help users quickly navigate their way to the most relevant information

Major improvements in the Knowledge Center such as filters and a dedicated search allow users quick and easy access to articles, videos, magazine issues and more, Biomin said.

Keenan signs expansion deal in China

MANUFACTURERS OF FEED mixer wagons Keenan has announced two major developments in China — joining with top Chinese and Irish institutions in the setup of the China-Ireland Dairy Research and Technology Centre and the appointment of a new Keenan China national franchise. The China-Ireland Centre, the first of its kind, was being formed by the Chinese Institute of Animal Science, University College Dublin and Keenan to deliver technology and know-how to farms in China that will improve the efficiency and profitability. The centre will also undertake research in animal husbandry, rumen function, feed quality and animal health. Keenan China is a franchise partnership with Shanghai Shengmu Livestock Company (SSLC) to expand operations from the Shanghai in southern China to a full-scale national business, which will service dairy, beef, sheep and goat producers.

Polish firm to launch processing plant in Indonesia

POLISH MEAT PROCESSOR Konspol is setting up a new poultry meat processing plant in Indonesia as part of the company's expansion plans to expand export sales to a number of markets in Asia. Konspol has decided to locate its new processing facility there to diversify its revenue stream and expand to a market which is less competitive, but also significant in size, said the company's management. "The Polish meat market is a very difficult one and also a very competitive one," Konrad Pazgan, chief executive of Konspol, added. According to him, due to the relatively high number of active poultry processors, the Polish market was more competitive than that in neighbouring Germany. "By producing similar products in Indonesia to those that we are currently making in Poland, we believe we will be able to increase our competitiveness. And, let us not forget, the profit margins are also much higher in Indonesia than in Europe," Pazgan noted.

Vietnamese dairy firm to raise cows in province

THE VIETNAM DAIRY Products Joint Stock Company (Vinamilk) will start a project to raise 8,000 dairy cows in southern province of Tay Ninh in 2015. To carry out the project, the company said that it will import 2,500 cows in early 2015 and the rest by the end of 2016. According to chairperson of the provincial People's Committee Nguyen Thi Thu Thuy, the project was licensed in 2012 with a total investment of US\$33mn. Its aim is to produce 35mn litres of milk per year. Vinamilk will also build a milk processing factory here to reduce costs and provide more jobs for locals, she added.



Vinamilk is Vietnam's biggest dairy company that makes up half of the local market share

Events 2015

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FEBRUARY

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| 2-3 | 15th Aquafeed Platform AMERICAS | Guayaquil, Ecuador | www.smartshortcourses.com/pdf/15thaquafeed.pdf |
| 5-8 | Animalia Istanbul | Istanbul, Turkey | www.animaliaistanbul.com |
| 11-13 | Agro Animal Show 2015 | Kiev, Ukraine | www.animal-show.kiev.ua/en |
| 22-26 | SIMA | Paris, France | en.simaonline.com |

MARCH

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|-------|--------------------------|-------------------|---|
| 4-5 | Cocoa Revolution | Singapore | www.cmtevents.com/aboutevent.aspx?ev=150307 |
| 9-10 | GFIA | Abu Dhabi, UAE | www.innovationsinagriculture.com |
| 10-12 | Global Grain Asia | Singapore | www.globalgrainevents.com |
| 11-13 | VIV Asia | Bangkok, Thailand | www.vivasia.nl/en/Bezoeker.aspx |
| 16-18 | Agra ME | Dubai, UAE | www.agramiddleeast.com/en/home |

APRIL

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|-------|--|-----------------------|--|
| 16-17 | 3rd China Dairy Industry Summit | Beijing, China | www.duxes-events.com/dairy3/index.html |
| 22-26 | 3rd International Poultry Meat Congress | Antalya, Turkey | www.poultrymeatcongress.com |
| 23-25 | INPALME | Medan City, Indonesia | www.palmoilexhibition.com |

Vietnam's fruits and vegetables exports reach all-time high in 2014

VIETNAM'S FRUIT AND vegetable export turnover is expected to hit a record high of US\$1.4bn in 2014, according to its Ministry of Agriculture and Rural Development (MARD).

The country is also eyeing the potential for exporting fruit and vegetables to the UAE, having earned US\$11mn from the trade in the first 10 months of 2014.

The Southeast Asian nation mainly exported dried coconut pulp and fresh fruits and vegetables to this market, the Ministry of Industry and Trade's Africa, West Asia and South Asia Market department said. The launch of direct air routes between the two countries by Emirates and Etihad also provided a more convenient method to boost the export rates of fruit and vegetables from Vietnam to the UAE.

China currently leads the list of Vietnam's 10 major importers of such products with 28.6 per cent of market share, followed by Japan with 4.74 per cent, South Korea with 3.76 per cent and the USA with 3.44 per cent.

The country had exported more than US\$1bn worth of fruit and vegetables last year, which showed a notable increase from the US\$827mn it earned in 2012.

The Southeast Asia nation is also expected to earn US\$245mn from tea exports by year-end because of its efforts to accelerate trade promotion, reorganise production and improve product quality.

Vietnam Economic News quoted Viet Nam Tea Association (Vitas) chief officer Hoang Vinh Long as saying that unfavourable weather conditions in the early months of 2014, including prolonged droughts and heavy rainfall in several tea-growing areas during the main cropping season, had a negative impact on tea production for export in many localities.

During the period, tea exporters also encountered several difficulties



The country had exported more than US\$1bn worth of fruit and vegetables last year

especially after Taiwan, one of the major Vietnamese tea importers, applied stricter rules of origin, Long noted. Challenges came from Pakistan, another important tea consumer, as many of its traders went directly to each enterprise in Vietnam to negotiate the price, which affected tea planters and suppliers, he revealed.

To deal with these issues in the later months of 2014, trade promotion activities were improved with a focus on organising more direct meetings between Vietnamese businesses and foreign importers and diversifying types of tea products to be displayed at international exhibitions.

The MARD had reported that Vietnam had exported about 109,000 tonnes of tea worth US\$186mn until October this year.

Food Outlook

THE FAO FOOD price index averaged 192.3 points in October 2014, marginally (0.2 per cent) below the revised September figure but 14.3 points (6.9 per cent) short of its corresponding level one year ago. A firming of international prices of oils and, especially, of sugar, compensated for a retreat of dairy and meat, while cereal prices remained stable around their relatively low September value.

The FAO cereal price index averaged 178.4 points in October, virtually unchanged from September, but 18.2 points (9.3 per cent) lower year-on-year. After five months of steep falls, international prices of wheat and coarse grains firmed slightly in October, supported by harvest delays in the United States (maize) and deteriorating prospects in Australia (wheat). On the other hand, rice prices tended to soften on newly harvested supplies and a slowing pace of sales.

The FAO vegetable oil price index averaged 163.7 points in October, 1.6 points (one per cent) up from September, interrupting the declining trend initiated in April 2014. Palm oil strongly contributed to the reversal, as production slowdowns in Malaysia and Indonesia, combined with a revival in global import demand caused palm oil prices to

strengthen after six consecutive months of contraction. Sunflower seed quotations also rose, mostly reflecting smaller than anticipated harvests in the Black Sea region. By contrast, soyoil prices weakened further, still driven by the prospect of ample availabilities.

The FAO dairy price index averaged 184.3 points in October, down 3.5 points (1.9 per cent) from September and 66.8 points (26.6 per cent) less year-on-year. Quotations for butter and whole and skimmed milk powder fell, while those for cheese were unchanged. The October slide constituted the eighth consecutive monthly decline, bringing the Index to its lowest value since August 2012.

The FAO meat price index averaged 208.9 points in October, 2.3 points (1.1 per cent) less than its revised value for September. However, quotations for most types of meat are still at historic highs and the Index stands 21.6 points (11.5 per cent) above its corresponding level in 2013, principally because of strong bovine meat prices. In October 2014, the quotations of bovine meat and, especially, pig meat moved lower, while those of poultry and ovine meat were, respectively, stable and slightly stronger. Pig meat prices have shown signs of weakness



since July, as production recovered in some of the countries affected by outbreaks of porcine epidemic diarrhea (PED) – reducing import demand and increasing availability for export. Also, favourable weather and prices are supporting a recovery in the bovine herd in Australia and hence export availability.

The FAO sugar price index averaged 237.6 points in October, up 9.5 points (4.2 per cent) from September 2014. Last month's rebounding mainly followed reports of a smaller than expected sugarcane crop in drought-affected areas in Brazil. However, against a backdrop of ample supplies, international sugar prices remain more than 10 per cent below their level in October 2013.

Global cereal output set at 2,532mn tonnes in 2014

WORLD CEREAL PRODUCTION in 2014 is expected to create a new record of 2,532mn tonnes (including rice in milled terms), which is 10mn tonnes higher than November's forecast and seven million tonnes or 0.3 per cent above last year's peak.

In December 2014 alone, the global production is set to reach 1,312mn tonnes and 8.5mn tonnes higher than anticipated earlier.

The forecast for maize production has been raised by over five million tonnes since November, driven primarily by upward adjustments to production levels in China, the EU and Mexico. Global wheat production is currently forecast at 725mn tonnes, up 7.6mn tonnes from the 2013 record level and 2.3mn tonnes more than reported last month.

However, unlike for the other cereals, rice production may undergo a slight contraction in 2014, in the order of two million tonnes, or 0.4 per cent. The forecast is lower than predicted last month, reflecting poorer crop prospects especially for India, Thailand and Guinea. The forecast for world cereal utilisation in 2014/15 is put at 2,465mn tonnes, up 48.2mn tonnes from 2013/14.

The anticipated year-to-year increase mainly reflects greater cereal usage by the livestock sectors, supported by falling prices.

Much higher maize carryovers are also anticipated in China. World wheat stocks are expected to reach 193mn tonnes in 2015, nearly unchanged from the previous forecast but as much as 17mn tonnes (10 per cent) higher than their opening levels, reflecting further stocks accumulations in the EU, China, India and Russia.

Philippines to invest US\$11.2mn in poultry sector

ENCOURAGED BY STRONG domestic demand and the opening of new foreign markets for poultry products, new and existing investors in the broiler and layer business in the Philippines are expected to pour in US\$11.2mn worth of investments until 2015, according to the country's department of agriculture (DA).

Agriculture undersecretary for livestock Jose Reaño said the bulk of the investment volume would be made by local industry players. "Most of the new projects would be put up north of Manila," he said adding that some of the projects have started a few months ago.

Without identifying companies, Reaño said that foreign investor is also expected to come in next year. "We have a very vibrant poultry industry," he said.

Reaño said that aside from strong domestic demand, poultry growers also want to take advantage of strong demand for chicken in South Korea, Japan and the Middle East.

"We can't cope with South Korea's demand although we are accredited and we are also negotiating with Japan and working out the Middle East market," he added.

Early this year, the chicken dressing plants of San Miguel Corporation in Quezon Province had passed the sanitary and phytosanitary requirements of the UAE, but the company is still awaiting halal pre-qualification before it can proceed with exports.

The Philippines is also looking to increase its poultry exports to Japan, which is already importing yakitori nuggets from the country.

Indonesia sets up task force to prevent illegal fishing

THE INDONESIAN GOVERNMENT has set up a fish theft eradication task force to investigate violators of fishing rules, minister of maritime affairs and fisheries Susi Pudjiastuti said.

“The task force has been established in accordance with a decision made by the Ministry of Maritime Affairs and Fisheries,” she added.

The force will be in charge of improving licensing procedures, following a moratorium on the issuance of permits to large fishing ships, among others, she noted. Pudjiastuti added that the task force will also verify data on the number fishing vessels and calculate losses inflicted to the state by fish theft.

The squad will be led by the deputy of the Presidential Working Unit for the Supervision and Management of Development (UKP4) Mas Achmad Santosa.



The team will include members from the ministry, as well as the finance and transportation ministries, the National Police Criminal Investigation Directorate (Bareskrim), UKP4, and PPAK.

Moreover, the FAO added that Indonesia suffers a potential loss of US\$2.4bn a year because of illegal fishing. However, Pudjiastuti recently stated that the losses inflicted were much larger.

New fishing port in Taiwan

TAIWANESE COUNTY OF Changhua will build a fishing port in order to stimulate its economy, according to county vice-magistrate Ko Cheng-fang.

Cheng-fang said that a proposal was raised to allocate a 50 ha land plot situated in northwestern Lukang for the development of the local maritime and fisheries industry during the initial planning phase of the Changhua Coastal Industrial Park project.

The proposal, jointly devised by the county government, the council of agriculture and the Changhua district fishermen’s association, was approved in November 2014. He revealed that the project is to be carried out in two phases. The first phase will require funds of US\$44mn to establish the port’s infrastructure such as wharfs, breakwater structures and windbreak vegetation. A second phase, costing an additional US\$12.77mn, will begin following the completion of the first phase, Ko added. The Changhua County Department of Agriculture stated that in addition to a boon for the local marine and fisheries industries, the windbreak vegetation areas surrounding the port will also serve as recreational parks to promote tourism, creating additional revenue and jobs.

Malaysia to ban trawl nets for fishing in 2016

THE USE OF trawl nets for fishing will be banned beginning 2016, said Malaysia’s agriculture and agro-based industries minister Datuk Seri Ismail Sabri Yaakob.

The ban would first be imposed within Zone B, which is between 14.8 km and 28 km from the shore, and may be extended further after discussions with fishermen associations and related agencies.

Yaakob said that some 5,000 trawler boat operators nationwide had been advised to use the purse seine or *pukat jerut* next year in order to protect the interests of inshore fishermen, who typically operated less than 14 km from the shore, an area also known as Zone A.

Fishermen could start applying for the licence for using the purse seine, which was previously suspended by the fisheries department.

Studies and feedback received by the ministry showed that the purse seine nets were more suitable for Zone B and C as they could pose less impact on the marine ecosystem compared with trawl nets.

“Meanwhile the inshore fishermen, who operate within Zone A, have to upgrade their boat capacity and equipment if they want to use the purse seine in Zone B. They are not allowed to use the purse seine within Zone A as it will affect other inshore fishermen who are still using fishing rods and small nets.”

He added that the government would also introduce marine fish rearing projects in future as a means for fishermen to survive the monsoon months, and was prepared to allocate US\$18mn this project.

According to MCA Youth chief Chong Sin Woon, there was still room for changes saying that a discussion needed to be held between the Agriculture and Agro-based Industries Ministry, fisheries department and fishermen association on the ban and its feasibility.

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South Korea and Australia FTA to improve agribusiness

SOUTH KOREA-AUSTRALIA FREE Trade Agreement (KAFTA) is expected to boost Australia's agribusiness by allowing tariff cuts to benefit the country's agriculture, food, fisheries and forestry sectors.

"South Korea is Australia's third-largest beef market valued at US\$788mn in 2012. Australian beef exporters have had to face a 40 per cent tariff on beef, but on 12 December 2014 it fell to 37.3 per cent and then again on 1 January 2015 down to 34.7 per cent," said Australia's agriculture minister Barnaby Joyce.

"The beef tariff will be progressively eliminated over 15 years under this agreement but the early entry into force gives us an accelerated start to the reductions and helps us make up ground faster with our USA competitors.

"Australia's important citrus trade will also benefit from the double tariffs cuts, with the high seasonal tariff dropping from 50 per cent now to 37 per cent on 1 January 2015. This will provide an immediate boost to the competitiveness of Australian citrus in South Korea against competitors such as the USA and Chile."

A three per cent tariff on sugar was eliminated in December 2014, helping to strengthen Australia's competitive position. "Korea is our fifth-largest export market with our agricultural exports valued at US\$2.3bn," the minister added.

The agreement would help protect and enhance the competitive position of Australia's businesses in South Korea.

India's shrimp exports to meet target this year

HEAVY BUYING BY the USA and continuing shortage of farmed shrimp in Southeast Asian countries have ensured India that it is on course to achieve the target of US\$6bn in marine product exports in 2014.

In the seven months to the end of October, seafood exports increased 16 per cent to US\$3.33bn as per the provisional estimates of India's Marine Products Export Development Authority. This is despite a marginal drop of less than one per cent in quantity to 5,49,142 tonnes.

While some of the farmed shrimp, particularly of the *Vannamei* variety which is much in demand in Southeast Asia, are yet to recover fully from early mortality syndrome (EMS) disease, others have to cope with the trace presence of antibiotics.

"The production in Thailand is not yet in full swing. Export of seafood has been hit by antibiotic problems in Vietnam. A few Indian consignments were also rejected due to the presence of antibiotics. But the numbers are far too low to be of any concern," said L Satyanarayana, president of the All India Shrimp Hatcheries Association.



To meet global demand, farms in India raised production to around three lakh tonne last year

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Australia to witness high cattle turnoff in 2014/15

CATTLE TURNOFF FOR the remainder of the year 2014/15 is pegged to remain high, with slaughter and live exports forecast to reach 10.35mn head, back slightly from 2013/14, said ABARES' *Agricultural commodities: December quarter 2014*.

According to *Meat and Livestock Australia*, for the first four months of the financial year, over 3.6mn head of cattle have been processed and 406,502 head of live export cattle shipped. Beef and veal exports, in 2014/15, are expected to remain steady year-on-year at 1.18mn tonnes.

ABARES forecasts that the export demand will be driven by the USA, with 360,000 tonnes swt to be exported during 2014/15, up 35 per cent year-on-year and an increase in market share from 22 per cent to 31 per cent.

Meanwhile, exports to Japan and China would contract with four per cent and 19 per cent respectively, and shipments to South Korea to grow one per cent year-on-year.

While turnoff is likely to remain high, ABARES is forecasting the weighted average 2014/15 sale yard cattle price to improve 12 per cent year-on-year on the back of strong export demand and a return to normal seasonal conditions mid-2015.



ILDEX Cambodia 2014 debut proves successful

The inaugural livestock event in Southeast Asian country was customised for national exhibitors as well as international companies

CAMBODIA'S FIRST INTERNATIONAL livestock, dairy, meat processing and aquaculture conference and presentation — ILDEX Cambodia 2014 — took place in Phnom Penh recently.

Held on 12-13 November, the event opened avenues for international businessmen to meet exhibitors and local manufacturers in the country.

According to exhibition organiser VNU Exhibitions, livestock sector is set to grow in Cambodia. There is still a great potential for growth with a population of 16mn currently and the meat consumption is projected to grow in 2020 when the population hits 17.7mn in the country.

Cambodia currently imports 800 pigs daily from Thailand and Vietnam to complement local supply of 3,000-3,500 pigs. With the help of the EU, Cambodia hopes to improve the efficiency and competitiveness of livestock production.

ILDEX Cambodia 2014 was also supported by local and international industry partners including department of animal health and production Cambodia, Royal University of



ILDEX Cambodia 2014 was also supported by local and international industry partners

Agriculture in Cambodia and Federation of Asian Veterinary Associations (FAVA) and VIV Asia, touted to be the largest international livestock exhibition in Asia.

During its two-day run, the customised livestock show offered a platform of conference forum and product presentation with the leading international companies such as BIOMIN, SKOV, VET PRODUCTS GROUP. Delegates also paid attention to the special presentation from keynote speaker on the topic of Trend and Potential of the livestock industry in Cambodia in AEC, followed by speakers

With the help of the EU, Cambodia hopes to improve the efficiency and competitiveness of livestock production

from FAVA for swine and aquaculture sessions. VET PRODUCTS GROUP also brought the very intensive seminar and workshop regarding animal feed. There were more than 300 delegates at the forum.

The event proved successful as it initiated exhibitors meet their new partners and expand business with the local manufacturers in Cambodia. Exhibitors also expressed satisfied with the quality of visitors and the business matching that maximised their business opportunities to cover the new targets.

ILDEX Cambodia updated the visitors with the global trend and technologies to go forward with the new knowledge from the presentations and conference topics.

Apart from ILDEX Cambodia conference, VIV Asia 2015 Networking Night was organised to repeat the main business platform of livestock and aquaculture industry in Asia that is set to return to Bangkok during 11-13 March 2015. □



The event opened avenues for international businessmen to meet exhibitors and local manufacturers in the country

Germany to host biggest FIAAP, VICTAM & GRAPAS



VICTAM Asia 2014 was, by far, the largest and most dominant exhibition in Southeast Asia for animal feed production technology

The three-in-one trade show in 2015 will help industry experts exhibit their agribusiness strength on a single platform

AFTER A SUCCESSFUL 2014 event in Asian city of Bangkok, the FIAAP, VICTAM & GRAPAS International 2015 trade show and conference is set to take place from 9-11 June in Cologne, Germany.

Touted to be the biggest yet, already many major international companies have signed up to participate within the GRAPAS International trade show.

Millers will come from all over the world to join their counterparts in viewing the many specialist exhibits that will be on display in this growing trade show, according to VICTAM organisers.

Co-located with FIAAP & VICTAM International exhibitions, the event will comprise approximately 250 international exhibitors and will contain the very latest technology used within flour and rice mills and grain processing plants. Also on display will be a wide range of auxiliary equipment and systems such as silos, conveyors, cooler/dryers, magnetics, etc.

'The Global Milling Conference with GRAPAS 2015' is set for Day 3 – on the last day of the three-day GRAPAS exhibition.

The programme will be offered in three parts to allow delegates to attend the GRAPAS

exhibition as. However, the focus will be on attending a full-day programme that will offer sessions from food safety/quality control to nutrition/milling technology to markets/storage & handling.

Whilst in the VICTAM, show visitors will be able find a wide range of the latest available specialist technology that is used within an animal feed processing plant/mill. The industry executives attending the event will be able to see and touch the great variety of equipment that will be on display at the show. This will include anything from a pellet mill or an extruder to a silo or delivery truck, in fact anything required within a feed mill. The range of equipment on display will be enormous, according to VICTAM organisers.

The sixth annual Feed Ingredient and Additive (FIAAP) Conference will showcase the latest and greatest technologies related to the ingredients and additives used within the formulation of animal feeds presented by researchers and thought leaders from around the world.

For over a decade, Europe has witnessed a rapid growth in its wood pellet sector, which is now well established as a key player in the European energy mix. The European Union is

the undisputed world leader in pellet production and consumption, and looks set to maintain this position in the coming years, according to organisers.

As the development of the sector continues apace, wood pellets are increasingly able to offer an alternative, efficient, reliable and sustainable energy source to the European consumer.

To emphasise its leadership, many of the world's leading producers and suppliers of biomass pellet production technology will present their latest innovations at the VICTAM International 2015 trade exhibition that will be held at the Koelnmesse exhibition halls.

Against this backdrop, the European Biomass Association (AEBIOM) will also host an International Pellet Conference on the 9 June 2015 to address the most pressing and topical issues for the pellet sector including EU legislative developments, sustainability and market development.

The one-day education and networking conference will feature a mix of presentations on alternative ingredient utilisation and efficacy; the impact of additives on animal health and welfare; and touch on broader issues critical to animal feed producers and formulators. □

GFIA looks to address agri challenges

THE SECOND EDITION of the Global Forum for Innovations in Agriculture (GFIA) is set to take place in Abu Dhabi from 9-11 March 2015. Held under the patronage of HH Sheikh Mansour Bin Zayed Al Nahyan, deputy Prime Minister of the UAE, and in strategic partnership with the Abu Dhabi Food Control Authority (ADFCA), the exhibition and conference will feature more than 300 next-generation agricultural solutions that could shape the future of sustainable farming around the world.

With global policy makers and scientists tasked with identifying innovative ways to feed a population of more than nine billion people by 2050, GFIA aims to accelerate the development of solutions that meet the world's pressing challenges.

The event is expected to bring together participants from the entire agricultural value-chain — from agribusiness and academia to policy and investment — to witness more than 400 presentations of game-changing ideas with the potential to fundamentally change the way food is produced, processed, stored, distributed and consumed.

“As the world looks to support sustainable economic and social development into the 21st century and beyond, the solutions we identify to our food and water security challenges today will define the future of our nations,” said Mohamed Jalal Al Rayssi, chairman of the organising committee, Director of Communication and Community Service at Abu Dhabi Food Control Authority.

“Furthermore, with climate-smart food production being a critical factor for the UAE and other water-constrained parts of the MENA region. Abu Dhabi is strongly committed to driving the global dialogue on food security and climate resilience and this event reinforces that commitment.”

Meanwhile, the inaugural Global Climate-Smart Agriculture Summit will serve as key element of the 2015 event. The summit has been developed under the guidance of the Global Alliance for Climate Smart Agriculture launched during the UN Climate Summit in New York in September 2014. Climate-Smart Agriculture is a strategic farming approach designed to raise agricultural productivity whilst mitigating the effects of climate change.

Mark Beaumont, GFIA's project director, noted, “From policy-makers and governments to food producers, commercial organisations, bilateral and multilateral development agencies and investors, GFIA is a stage that helps actualise real progress. This harmonisation approach is essential if we are to meet the challenge of feeding a rapidly growing global population.”

According to the organisers, GFIA is the only major international exhibition and conference in the world focused on how technology is employed to produce more food, sustainably, whilst using less resources. The event also brings together those involved in the fight to rid the world of poverty and malnutrition through the advancement of agriculture in developing countries.

“The world needs something like this – a major event devoted to the future of agriculture” said Frank Rijsberman, CEO, CGIAR Consortium. □

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Deputy Prime Minister of the UAE, Minister of Presidential Affairs and Chairman of
Abu Dhabi Food Control Authority

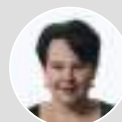


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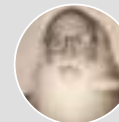
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VIV Asia 2015 to showcase new themes in livestock production

VIV ASIA, REGION'S foremost Feed-to-Meat show, is set to be bigger and better when it returns to Bangkok in Thailand on 11-13 March 2015. Special events, features and themes added to the exhibition are expected to serve the needs of dedicated target groups.

Located at BITEC, the exhibitors in attendance have increased to 850, highest until now.

In 2013, the number of visitors totalled at 33,229 from 118 countries. The visitors rated the exhibition with a score of 8.3, while exhibitors rated VIV Asia 2013 as 8.1.

According to organisers VNU Exhibitions, VIV Asia is introducing a special theme of pork production for pig producers in the Asian region. Other animal protein sectors also figure strongly in the show's line-up, as demonstrated by the Aquatic Asia and DairyTech conferences and pavilion areas arranged for the aquaculture and milk



businesses. In another first for VIV Asia 2015, these will be joined by a special biogas conference and pavilion combination.

Additional conferences for the VIV Asia week include a Pork Summit on pig production techniques, a MeatTech seminar on links between marketing and technology in meat and eggs, an egg business conference for Asia introduced by the International Egg Commission and an animal health seminar hosted by the

Federation of Asian Veterinary Associations.

VIV Asia exhibition manager Ruwan Berculo said, "In total our forecast for visitor numbers is that there will be over 35,000 animal protein professionals and associated buyers from Asia, Africa and the Middle East.

"In fact, we think we will have people from every continent because the show has grown into such a big international event. Today it can claim to serve almost all of the world's most promising markets for animal proteins, at a time when Thailand is ready to play a major part in driving the food supplies of the new ASEAN trade zone."

Some of the exhibitors include Andritz Feed and Biofuel A/S, AWILA Anlagenbau GmbH, Ayurvet Limited, Biomin, Cargill, EUROFEED TECHNOLOGIES S.p.A., Marel Stork Poultry Processing, etc.

Agri-Food Business Week Asia event is also a part of the event in Bangkok.

EuroTier 2014: An innovative platform for agribusiness

EUROTIER 2014, HELD 11-14 November 2014, attracted 156,000 trade professionals at Hanover in Germany.

The world's leading trade fair for animal husbandry professionals reflected concerns of the international agriculture scenario and the challenges it has been facing, posed by an ever changing social and political landscape and by markets in which demand is increasingly fluctuating.

The solutions to tackle the global issue, innovative technologies were showcased at EuroTier 2014.

Around 2,360 exhibitors from 49 countries presented a comprehensive range of products and services to the animal husbandry sector. Nearly half the exhibitors were from countries other than Germany, underlining EuroTier's international credentials.

EuroTier hosted around 30,000 visitors from abroad. The Netherlands (3,800) provided the highest number of international visitors, followed by Austria (2,000), Finland (1,300), Switzerland (1,200), Poland (1,200), the UK (1,100), France (1,100), Denmark (1,000), Belgium (950) and Russia (900).

Despite the current geopolitical situation, the exhibitors are reporting that the investment climate continues to be positive. There was also strong representation from North America (1,100) and Central and South America (1,300), while around 1,100 people came from the Middle and Far East, 990 from Africa and 270 from Oceania.

EuroTier represented itself as an engine of innovation and a marketplace of ideas for the agriculture sector. Manufacturers used the platform to showcase their innovations for productive livestock management. The solutions that were presented – in particular in the fields of process engineering, farm inputs, management and software, animal housing installations and animal housing and shed construction are giving pig, poultry and cattle farmers a wide range of new opportunities for making essential improvements in efficiency.

The welfare of the animals is also high on the agenda for the developers and their customers. The annual conference of the Association of Veterinary Practitioners, held at the same time as EuroTier, offered an ideal forum for discussing all aspects of animal health.



The general economic conditions affecting livestock production and EuroTier's position as the world's leading trade fair are creating major interest from visitors both from within Germany and from abroad

The EuroTier 2014 technical programme was very well received by visitors. Among the highlights were the international events for the dairy and pig farmers and the International Poultry Day, which was held the day before EuroTier started.

EnergyDecentral 2014, held jointly with the German Engineering Federation's VDMA Power Systems association, proved to be an excellent marketplace for the energy industry. The exhibitors presented solutions for the entire value chain of decentralised energy supply.

The exhibition was complemented by an extensive programme of events that was organised by the DLG together with the Society for the Promotion of Construction in Agriculture (BFL), the Energie & Management publishing house and other partners.

The next EuroTier will take place from 15-18 November 2016 in Hanover.

Good gut health leads to sound broiler management

Poultry producers must be adept in recognising digestive disorder at early stages to ensure sustainable commercial production

GUT HEALTH IS the key to optimum feed efficiency and successful broiler production is all about bacterial balance in the intestine. Contrary to popular belief, many bacteria play important roles in helping broilers digest rich and bountiful feed rations. But any imbalance will most certainly cause digestive problems and significant degradation in intestinal integrity.

Feed composition and the viscosity of gut contents impact the development and composition of gut micro-flora, particularly those found in the small intestine. Bacterial overgrowth (dysbacteriosis) causes diarrhoea and intestinal damage leading to diseased birds and poor performance. Overgrowth is the result of bad bacteria greatly outnumbering good bacteria within the bird gut. This permits bad bacteria to exert a considerable influence with consequent detrimental effects on the gut epithelium and digestion. Maintenance of sound avian health and welfare requires firm farmer focus on intestinal integrity.

Mike Eckman of Auburn State University in the USA has likened the intestinal system of the broiler bird to the engine that drives all others, claiming 'its integrity from first day to market is paramount in the expression of the genetic potential of the broiler.' Any digestive disorder must be diagnosed as early as possible with any changes in bird faeces being a very first indicator of deteriorating gut health. By monitoring flock health such as measuring the fluid content of the faeces, broiler producers may get a good idea and indication of how the digestive system is functioning.

Causes of gut ill-health

Many factors contribute to the loss of intestinal integrity but the immediate interface between environment and bird are the established main causes. The first is immune-suppression caused by common pathogenic viruses responsible for Mareks disease and Gumboro disease, which is routinely controlled by vaccinating the flock.

Other health problems including those caused by infectious bronchitis (IB) and variants and challenges from coccidiosis have phases which replicate in the gut to significantly damage the epithelial cells that line the gut. Even the slightest damage to intestinal cells can disrupt bacterial balance thus permitting malign bacteria to multiply. Sound biosecurity and robust coccidiosis control programmes based on the measured application of anti-coccidial products is crucial for control of such challenge and resulting concurrent intestinal disease.

Veterinary anti-microbial chemicals are widely used poultry with little consideration of their non-target effects on the natural micro-flora of the avian intestine. Highly targeted (selectively acting) chemicals are always preferable to the broad blast from those with a wide spectrum anti-microbial action. For instance, the broad spectrum antibiotic amoxicillin (chemically related to penicillin) is good at controlling respiratory infection caused by the *E. coli* bacterium. Downside is the considerable disruption of benign bacteria of the natural gut micro-flora and resulting dysbacteriosis.

Specific physical problems arising from poor management of the in-house environment may provide conditions that encourage bad



Monitoring flock health such as measuring the fluid content of the faeces will help broiler producers get a good idea and indication of how the digestive system is functioning

bacteria to become a reservoir for infection. Classic example is failure to properly manage and replenish poultry litter. Poultry litter invariably supports large populations of undesirable bacteria, which act as a reservoir of infection.

Many poultry diseases including Salmonella and avian influenza are successful pathogens of poultry because they are able to persist for long periods of time within the poultry environment. Two other classic examples are clostridial disease and coccidiosis. Clostridium bacteria produce spores that survive for long periods of time even when challenged by disinfectants, thus persisting to infect new batches of birds at a much later date. Coccidiosis oocysts (eggs) possess the same level of longevity.

Feed factors also play an important part. Domestic chickens have been bred from their wild omnivorous (meat and plant eating) ancestors but legislation in many countries, including those in the EU, forces producers to only use plant based feeds such as soya, maize and wheat. Poultry nutritionists, therefore, play a critical role in ensuring that broilers

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are able to utilise all the feed ingredients provided in rations. It only takes one relatively small dietary component such as an enzyme to be inappropriately mixed or applied for gut health and intestinal integrity to be seriously compromised.

Recognising gut ill-health

Intestinal integrity is assessed by what you don't see rather than what you see during post-mortem examination of birds. Absence of inflammation and disease, with no excess secretion (mucus and watery contents) within the intestinal tract, are measures of good intestinal integrity.

Provided the gut contents are not excessively watery with no mucus visible along the tract and an intestine curls that round on itself when opened is regarded as good to excellent. Conversely, if contents are excessively watery or there are signs of inflammation and the gut wall is obviously thin then intestinal integrity is wanting.

Much mucus

Mucus is a natural product of the intestine produced by cells in the intestinal endothelium (inner lining) in response to irritation and inflammation. Mucus production is an inherent intestinal mechanism used to avoid and manage infection. That said, mucus can actually aggravate some infections by enhancing multiplication of some dangerous pathogenic bacteria such as *Clostridium perfringens*. This particular pathogen can use mucus as a substrate for energy utilisation in growth and reproduction. This bacterium is responsible for dysbacteriosis and its ability to utilise mucus is the cause of necrotic enteritis.

Peyers patch inflammation

Peyers patches exist as groups of immune cells along the interior length of intestine and their presence and action is vital in the bird's ability to fight against disease. When exposed to infection they become raised and reddened and this is a sure sign the bird is delivering an active immune response against a microbial challenge.

Fate of feed

Feed passing along the alimentary canal without being digested is an irretrievable lost opportunity for the broiler and its performance will suffer accordingly. Failure to properly digest feed is a common condition occurring in tandem with dysbacteriosis. Faeces rich in undigested feed is a signal of a malfunctioning digestion and is often caused by an infection, which facilitates the feed to move too quickly along the gut and without sufficient time for digestion.

Watery contents

Presence of watery contents in the bird's gut is due to excess secretion of fluids by the intestinal tissues or an inappropriate diet that pulls water into the lumen from the gut lining. Excessive secretion occurs when cells lining the gut are damaged by infective agents or poisonous



It only takes one relatively small dietary component such as an enzyme to be inappropriately mixed or applied for gut health and intestinal integrity to be seriously compromised

substances already in the feed and/or subsequently produced by bad gut bacteria. These events are often the result of using sub-standard ingredients in feed rations and/or electrolyte imbalance in the feed.

Inflammation

Inflammation of the gut lining is the response to an infective agent inside the gut. In response, the broiler's body increases the supply of blood with its white blood cells and antibodies used to fight the infection. This may, in turn, cause excessive secretion of fluid from the gut wall and into the lumen (central space) of the intestine. □

— By Dr Terry Mabbett

Maggots good source of protein for organic poultry

MAGGOT MEAL SUPPLEMENTED with live maggots is a good alternative to fish meal in organic poultry production, according to new research from Aarhus University.

This is the results of experiments carried out in the project BioConval, which is supported by the International Centre for Research in Organic Food Systems (ICROFS).

The lack of a locally grown protein feed with a sufficiently high content of sulphur-containing

amino acids is a major challenge for organic poultry production. Since synthetic amino acids are not permitted in organic production, organic poultry producers rely on animal protein sources with a favourable amino acid profile such as fish meal. But fish meal is a limited resource and, therefore, it is important to find alternatives.

During experiments, the chickens relished the maggots, and the group fed live maggots achieved the highest growth rate. They ate

roughly six grams less of the mixed feed per day, although they were only allocated two to three grams fresh larvae. Live maggots can consequently be regarded as a promising feed ingredient both nutritionally and particularly in terms of welfare. However, there is always some risk of infection associated with the use of maggots from manure. There is, therefore, a need to develop a suitable sanitising method that can minimise this risk.

Hatchery vaccine effective against H5N1, study reveals

A RECENT EGYPTIAN study by Dr Walid Kilany published in *Avian Pathology* confirmed that a single hatchery vaccination using rHVT-AI vector vaccine can be an effective tool to address H5N1 prevention and control in endemic countries.

The research also found that the immunisation by-passed maternally derived antibody (MDA) resistance to the vaccine. Furthermore, it noted that a single dose given in the hatchery delivered up to 19 weeks of protection and was far more cost-effective and efficient than existing vaccination systems, which cannot be applied until week four and require boosters during the chicken's lifetime.

The AI vector vaccine is suitable for layers, broilers and breeders. It has been developed by Ceva 'using contemporary science and novel technology which has been applied to a 50-year-old proven frozen Marek's vaccine (HVT)'. Moreover, the application of the vaccine within the controlled environment of a



hatchery when the chick is one day old, means that they are protected earlier in their lives, are at significantly less risk of infection during their lives and will live healthily and productively to provide safe proteins (eggs and meat) to consumers.

Ceva stated, "Vectormune AI's protection has been evaluated against about 13 different strains of the AI virus (H5N1), isolated from around the world belonging to different categories of strains of this rapidly spreading

and fast mutating virus. Its efficacy is well proven ensuring a survival rate of between 80 and 100 per cent of flocks within the test, no matter the provenance of the AI strain. Once inoculated, the vaccine remains in the chick."

Commenting on the results of the Egyptian study, Pierre-Marie Borne, Public Health Zoonoses & Food Safety and Public Affairs Director, Ceva, said, "Avian Influenza remains a major threat to the global poultry industry and ultimately to human health. This study, like many before it, proves that a vector hatchery vaccine is labour saving, cost effective and provides clinical protection after a single dose immunisation.

"The current endemic status in some Asian countries including China and Vietnam demand that we take a long hard look at the tools open to governments, public health authorities as well as hatchery and farm owners to complement the existing ways to reduce the prevalence or control the risk."

Peppermint an effective feed for layers

PEPPERMINT LEAVES CAN be used as an effective feed additive to improve the performance of laying hens during the late laying period.

A recent study was conducted to determine the effects of supplementation of dried peppermint (*Mentha piperita L.*) leaves in laying hen diets on laying performance, egg quality, and serum metabolic profile. A total of one hundred and fifty Hy-Line Brown laying hens (64-week old), were assigned to five treatment diets including dry peppermint leaves at 0, 5, 10, 15 or 20 g/kg, respectively, for 12 weeks. Each treatment had six replicates with five hens each.

According to *Wattagnet*, results indicated that over the course of the trial incremental levels of dietary peppermint leaves significantly increased (linear, $P < 0.001$) egg weight, egg production and egg mass. They also increased feed intake from 64 to 76 weeks of age. However, feed conversion ratio was linearly decreased ($P < 0.001$, a positive result) with increasing levels of peppermint leaves in laying hens diet. The inclusion of 20 g/kg peppermint leaves resulted in overall best performance.

Notably, serum cholesterol significantly decreased ($P < 0.001$), but serum total proteins increased ($P = 0.015$), with increasing levels of peppermint leaves. It, therefore, can be safe to say that peppermint leaves can be used as an effective feed additive to improve performance of laying hens during the late laying period and that up to two per cent can be used with safety.

'Turkey genome project important for poultry industry'

A PROJECT LAUNCHED in 2008 to map the entire turkey genome is nearing completion, with more than 95 per cent of the genome sequence now in place.

The results of the current work, which has relied primarily on the use of next-generation sequencing (NGS) technologies, should prove valuable for studying and subsequently enhancing economically important traits in poultry, according to a recent article in *Poultry Science*.

In addition to benefiting the industry and consumers, the findings of the sequencing project will also help accelerate research in agricultural animal genomics. The close homology between the chicken and turkey genomes will enable knowledge of the latter to be used as a resource to fill in current gaps in knowledge of the chicken genome sequence, noted Rami A. Dalloul, lead author of the article and associate professor, Department of Animal and Poultry Sciences, USA's Virginia Tech University.

Intense genetic selection for increased growth rate, meat yield, and growth efficiency has enhanced the turkey industry's ability to roughly double its US annual production of turkeys over the last 30 years to almost 300mn birds, while supplying more value to consumers. During this same period of time, a number of economically challenging consequences have developed for producers. These include increased skeletal problems, cardiac morbidity,



reduced immune response to some pathogens, and some instances of meat quality issues, among others — all issues that have been, despite years of effort, difficult to address through conventional approaches to breeding.

Finding solutions to these kinds of challenges associated with heavily-muscled birds has been arduous due to researchers limited understanding of the complex genetic factors underlying them. One benefit of the turkey genome project is that thorough knowledge of the genome sequence will provide a refined tool for improved understanding and, eventually, resolution of these issues.

Benefitting poultry breeders

"Providing a complete turkey genome sequence will benefit poultry breeders and producers in terms of finding solutions to disease resistance and numerous other problems. It should also help improve nutrient utilisation and reproductive success," said Dalloul.



Sow productivity could be slowly heritable like complex traits controlled through numerous loci

Improving sow productivity

Experts assess the various factors that determine the quality of sow, and how it affects productivity

FOR QUALITY PRODUCE, the quality of sow is essential. The productivity of sow can be assessed by the number of pigs weaned per litter, per year or per lifetime. A sow should wean at least 30 piglets a year, or 50 to 60 in its lifetime. In order to increase sow productivity, it is essential to increase the number of piglets born alive, minimise stillbirths and pre-weaning mortality.

To achieve standard and consistently good results, it's important to understand the effect of nutrition, housing, management, health, immunity and stockmanship, and determine whether animals are able to achieve their genetic potential.

There are several theories to approach the topic, but genetics is a good way to begin. According to Chad Yoder, geneticist with Elanco Animal Health Value Added Swine Services, several factors could determine the sow productivity but if the genetic link is poor, little can be achieved for good results.

"Nowadays, most of the swine genetics are pretty good," said Yoder.

A report in *Pork Checkoff* has mentioned that changes in vulva development during days 95 to 115 of age, presumably driven by oestrogen production from tertiary follicles, may be a useful tool to identify which gilts to keep for breeding. Numerous factors, including herd-life (length in days), removal parity, total piglets born and the number of piglets weaned, impact sow productive lifetime, according to Dr Jason Ross of Iowa State University.

However, sow productivity could be slowly heritable, much like complex traits that are controlled through numerous loci, subject to environmental influence.

Ross' project was conducted to facilitate the identification of physical and blood markers that could be used by the swine industry through incorporating this information into the replacement gilt population.

The objectives of the project were to determine if specific, easily identifiable factors could be reliable in identifying gilts for the replacement pool that have a high probability of achieving their first oestrus prior to 180 days of age.

The data in this project demonstrate that by approximately 95 days of age, gilts begin to

demonstrate a high degree of variation in the amount of follicular activity, absent at 75 days of age. The variation in follicular activity appears to impact the growth and development of the reproduction tract which can be observed by variation in vulva size.

On Day 95 of age, only 31 per cent of gilts whose vulva size was more than one standard deviation below the mean achieved their first oestrus by 180 days of age, compared to 66 per cent of all other gilts. However, the variability in vulva size at Day 75 of age was not useful in identifying gilts that are likely to achieve their first oestrus by 180 days of age.

Additionally, kisspeptin, a molecule associated with activation of the hypothalamic-pituitary-gonadal axis, was greater on Days 75 to 105 of age in gilts that achieved their first oestrus by 200 days than those that did not.

Collectively, Ross and his colleagues have identified a time point in gilt development when decisions regarding the inclusion or exclusion of gilts in the replacement gilt pool could be made that may reduce the number of non-productive days in the sow herd as age of first oestrus is one of the best indicators of sow lifetime production. □

Whey protein a tasty protein additive in piglet formulas

WHEY PROTEIN CONCENTRATE (WPC) is an expensive, yet common, feed ingredient used in many piglet formulas, sometimes as the only source of milk protein. It is high in crude protein, ranging from 30 to 80 per cent, depending on the level of lactose and ash extraction.

The protein of WPC is highly digestible, exceeding 90 per cent. It is rich in lysine, threonine, valine and isoleucine, but relatively low in threonine, methionine and cysteine. Compared to common piglet feed specification, WPC is an ideal protein with slight deficiencies that can be covered easily by synthetic methionine. Thus, when removing WPC from a piglet formula, it is methionine that must be carefully balanced first to avoid a deficiency, with tryptophan being second in importance.

Alternative proteins that can cover the supply of amino acids offered by WPC include mostly products of vegetable origin — wheat gluten, pea protein, potato protein, soy protein concentrate and rice protein. All of these proteins can be equally high in protein content (ranging from 70 to 90 per cent) and of equally high digestibility.

However, vegetable proteins have a very blunt taste, whereas WPC is extremely tasty and palatable. As such, when WPC is one of the few or even the only ingredient in a formula that imparts a favourable taste, its replacement by a vegetable protein will reduce acceptance of the diet.

Bovine colostrum increases intake of creep feed in piglets

IN A RECENTLY concluded experiment carried out in Canada, bovine colostrum was added to the creep feed of piglets which increased the number of piglets that consumed the creep feed immediately after weaning.

Bovine colostrum is a good source of nutrients and growth factors, and is considered palatable. The experiment was conducted to see if it could reduce the impact of post-weaning growth lag. Though the colostrum didn't lead to any increase in growth or feed intake of piglets, the experiment did lead to a marked increase in the number of piglets that consumed the creep feed after weaning.

A total of 20 sows (10/week) and their litters were used for this experiment. All litters were supplied with creep feed from day 19 post-farrowing to weaning (26 ± 2 days of age). Half of the litters had supplemented bovine colostrum with their creep feed (six per cent of offered feed).

At weaning, piglets were moved to the nursery and randomly assigned into



Bovine colostrum is high in nutritive value, growth factors and is considered palatable

nursery pens, based on treatment (± colostrum) and body weight. Pigs were housed four to a pen, and there were six pens per treatment per room (two rooms). The treatments were arranged as a 2 x 2 factorial (plus or minus colostrum in creep x plus or minus colostrum in phase one nursery diet). Piglet body weights were recorded one week prior to weaning, at weaning, and on days 9, 16 and 30 in the nursery.

Creep feed consumption was determined daily in farrowing rooms. Feed intake was recorded in the nursery. Creep feeding

began one week prior to weaning. Creep feed was spiked with 0.5 per cent brilliant blue for three days to detect eating behaviour; which was determined by anal swabbing 48 hours after the blue dye was removed. Half of the phase one diets contained colostrum and all of them were spiked with ferric oxide (red dye colour) for 24 hours post-weaning. Anal swabbing was used to determine the "eaters" of the phase one diet 36 hours post-weaning.

However, further research is required to determine how this method can improve the growth and health of piglets.

ILRI propagates the use of animal genetics to improve quality of livestock

THE SUSTAINABLE USE of animal genetics to improve quality and quantity of livestock was propagated at a conference held by the Southeast Asian Regional Centre for Graduate Study in Agriculture (SEARCA) in the Philippines.

The conference, titled *Strengthening resilience, equity and integration in ASEAN food and agriculture systems* discussed a host of issues such as productivity improvement, inclusive value chains, sustainability and poverty reduction, food security and safety, institutions, governance and regional cooperation and integration. There were more than 450 representatives from international development agencies, research centres, academic institutions and governments.

Steve Staal, International Livestock Research Institute (ILRI) regional representative for East and Southeast Asia, delivered a presentation on 'The sustainable use of animal genetics in developing countries' in the session on 'productivity improvement'. He spoke about the demand for livestock products growing strongly in Southeast Asia, which is driving increased use of higher productivity and mostly exotic livestock breeds among small-scale producers and larger commercial

producers. However, governments are increasingly recognizing the value of conserving genetic diversity of animals in Southeast Asia, particularly in poultry and pigs. Staal questioned whether it is fair to ask farmers to maintain and conserve animal genetic resources at the expense of productivity gains and income?

According to the ILRI representative, ex-situ conservation of animal genetic resources is being used as an alternative to help farmers improve both breeds and their production. Unique breed characteristics can now be conserved at the gene, genetic and animal levels as new technologies have made it possible to collect and assemble scientific data. However, in-situ conservation is still important both in terms of meeting specific farmers' demands and meeting supply requirements. On the demand side, new market-driven models are being developed to raise consumer demand for specific traits of local breeds through innovative branding and marketing, while in terms of supply, exciting new genomic tools to increase adaptability and productivity of local breeds are very rapidly being developed, increasing their attractiveness to producers.

Asia-Pacific adopts sustainable production



Decision makers in the aquaculture industry have identified the need to promote sustainable intensification in the industry to preserve the environment and improve productivity

UNITED NATIONS' FOOD and Agriculture Organization (FAO) has revealed that the Asia-Pacific region has conceptualised a strategy and action plan that would lead to the sustainable intensification of aquaculture.

According to the organisation, senior government aquaculture and fisheries officials from 16 countries in the region, along with representatives of specialised organisations, the private sector and international funding agencies have agreed upon a regional strategy and action plan for to sustain aquaculture in the Asia Pacific region.

Hiroyuki Konuma, FAO assistant director-general and regional representative for Asia and the Pacific, said, "Aquaculture is a critical sector in this region which presently supplies more than 90 per cent of world production. In total, aquaculture is responsible for more than half of

all fisheries products we consume, and demand for aquaculture products is expected to increase."

To ensure high productivity and preservation of the environment, a planned method to imbibe sustainable intensification is imperative.

While Asia-Pacific's aquaculture outputs help nourish the world, they are also responsible for more than 20 per cent of total protein intake of people living within the region. However, as it is the most populous region of the world, and with heavy demands on natural resources, Asian aquaculture will face great challenges to sustain its growth and meet the increasing demand for fish inside and outside the region.

Fish consumption in Asia and the Pacific is expected to increase by 30 per cent by 2030 and aquaculture production may need to increase by 50 per cent during that time to meet increased global demand for fish, revealed Konuma.

With nearly two thirds of the world's 800mn chronically undernourished people living in the region, the sustainable intensification of aquaculture can assist with future food security needs and access to improved nutrition for hundreds of millions of people. At the same time, the aquaculture sector is facing a lot of challenges, such as impact of climate change and variability, urbanisation and related social and economic changes, increasing intra-regional trade and increasing concern over the environment and food safety by the public.

The only way to meet the increasing demand for fish is to promote sustainable intensification of aquaculture, while ensuring environmental sustainability, which means 'to produce more with less' by increasing the productivity and efficiency in aquaculture production with reduced consumption of resources and mitigating negative environmental and social impacts.

The strategy and plan of action aims to work with all stakeholders to improve governance, management practices and the adoption of innovative technologies. □

New Zealand's Greenshell mussels gaining ground in Asia

EMERGING ASIAN ECONOMIES are keen to import New Zealand's Greenshell mussels, according to Aquaculture New Zealand (AQNZ).

Gary Hooper, chief executive of AQNZ, said, "Asia can't get enough New Zealand Greenshell mussels. The popularity is driven by the quality, purity, taste, health properties and the reputation of the product. Consumers deliberately seek out premium New Zealand-farmed mussels because they know they come from pristine waters, are handled with integrity and are guaranteed safe products they can trust."

A recent study by New Zealand's Ministry for Primary Industries showed 91 per cent of New Zealanders support the sustainable growth of aquaculture because of its ability to create green jobs in regional areas through environmentally friendly production of premium seafood.

Specifically, mussel exports to the industry's second largest market Thailand have grown 450 per cent in the past five years. China, which is now the fourth largest market, is also gaining prominence as a leading exporter.

Karen Campbell, New Zealand trade commissioner in Bangkok said taste, quality and reputation of the mussels' had made them extremely popular in mid-tier restaurants.

"Greenshell mussels are an excellent fit for both the traditional and emerging eating culture," Campbell added.

Aside from the growing demand for mussels, New Zealand and South Korean governments also signed a free trade agreement, which helped remove the current 20 per cent tariff. The New Zealand government is also keen advance trade agreement discussions with India.

Scientists produce organic fertiliser from marine fish remains

US-BASED COMPANY Ocean Crest Seafoods, along with researchers from the University of Massachusetts' marine science research centre, developed a process which could convert fish remains (gurry) into fertiliser.

Gurry makes up nearly 70 per cent of the fish after it has been filleted. After being processed, the outcome is organic and environment-friendly. In addition, Ocean Crest uses up all the remains, ensuring no waste is thrown back into the ocean but instead is used to grow plants.

Ann Molloy, sales director for Neptune's Harvest (parent company of Ocean Crest Seafoods), said, "The whole world used to be under water. They found fish fossils on the top of Mount Everest. Ever since then it's been demineralising. By adding products from the ocean back to the soil, it replenishes it."

The company's line includes hydrolysed fish fertiliser, fish-seaweed blend, seaweed plant food, crab shell or flour, kelp meal and newly introduced turf formula. The turf formula was specifically designed for areas lacking phosphorus laws. It contains fish, seaweed, humate, yucca, molasses and a biological component, high in energy that shows greening within days. The crab flour is finely ground crab and lobster shell. It has 23 per cent calcium and has high Chitin, which can get rid of root nematodes, grubs, ants and fungus problems.

Golf Course Superintendents and Landscapers have discovered benefits of using the Turf Formula and the Crab Flour.

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Curbing greenhouse gas emissions in cattle

IN THE PAST 40 years, the global cattle population has doubled, leading to higher emission of methane into the atmosphere.

According to a research, data atmospheric concentration of methane have more than doubled in the last two decades. Taking into account for 18 per cent global warming contribution from livestock worldwide, an approach, which is sustainable to environment and business is required.

Greenhouse gases like oxides of nitrogen, methane, carbon dioxide is responsible for global warming. Out of these, methane is 21 times more powerful than any other greenhouse gas. Livestock contribution of carbon dioxide emissions is only nine per cent where as in terms of nitrous oxide and methane it is 65 per cent and 37 per cent.

Studies conducted worldwide show while there is no single process to cut methane rather different, ways to curb it like improve fodder quality or feed additives that boost efficiency of these animals and reduce pollutants in manure.

Reducing methane emission

During digestion cow uses cellulosic material from the feed and ferment it with the help of microbes in its stomach (rumen). Cow converts feed stuff into volatile fatty acids for its energy requirement, like humans convert food into glucose for energy. In that process of fermentation large



Methane loss from the cow could be up to 15 per cent of the gross feed energy intake

amount of gases (carbon dioxide and methane) form, which come out through process of belching. Formation and belching of carbon dioxide is essential to prevent bloating but formation of methane is actually a production loss. Study says that methane loss from the cow could be up to 15 per cent of the gross feed energy intake.

Improve efficiency in animals

Many studies state that natural way to suppress methane production is to manipulate the diet to give high rates of fermentation affecting volatile fatty acid (VFAs). These desired changes in VFAs proportions have been associated with increased digestion of fibre content in diet. Study also insights for reduction methane best way is to boost efficiency of cow by increasing milk yield per unit of feed consumed.

Ayurved products improves efficiency of biological converters through its range of products. One of its products is Ruchamax. This is used to enhance digestion process in livestock to enhance fibre digestion, manipulating in desirable changes in VFAs which in turn improves the efficiency of animal for better milk production at the same time reduce methane emission by as much as 32 per cent.

Scientific studies have proved that Ruchamax acts as natural methane inhibitor which causes reduction in methane production and results into the efficient utilisation of nutrients in the ruminants. This is due to the presence of certain active principles like saponin, tannin or essential oils in Ruchamax which either suppresses the growth of protozoal population in the rumen responsible for the production of methane or by directly inhibiting the growth of methanogenic bacteria.

Study reveals UK dairy processing now environmental-friendly

DAIRY PROCESSING IS becoming more environmentally friendly in the UK, a report looking at the last six years shows.

The UK's dairy sector has made 'significant environmental strides', seeing an eight per cent increase in energy efficiency since 2008. *The 2014 Dairy UK Environmental Benchmarking* report stated the industry is on track to meet Climate Change Agreements and Dairy Roadmap 2020 targets. This would require efficiency rises of 13.6 and 15 per cent respectively.

Waste management progress was highlighted. Processors reduced by 74 per cent waste sent to landfill and demonstrated a 176 per cent increase in the amount of waste recycled or recovered per tonne of milk output.

Joanna Stewart, environmental manager of Dairy UK, said, "The tool is a valuable resource for processors to track their performance and identify areas for improvement. These results show that the



UK dairy processing sector is on track to meet its Dairy Roadmap targets and processors will continue to make every effort to reach the next step."

This report demonstrates that the industry is committed to environmental improvements

and charts progress towards Dairy Roadmap targets. The preliminary results cover a five-year period from 2008 to 2013 and show progress in a short period of time. The main findings of the 2014 benchmarking report are:

- An eight per cent increase in energy efficiency
- A 10.5 per cent decrease in water use per tonne milk input
- A six per cent decrease in effluent* loads per tonne milk input
- A 15 per cent decrease in chemical oxygen demand (COD) loads per tonne milk input
- A 74 per cent decrease in waste to landfill per tonne milk input
- A 176 per cent increase in waste recycled per tonne milk input

Dairy Makes a Difference, a new initiative launched by Dairy UK, is aimed at highlighting the benefits of dairy products and the dairy industry and to underpin growing confidence within the UK industry.

Philippines must fight climate change

The Southeast Asian country has been subject to increasing number of typhoons and it is high time it finds alternate ways to revive itself

A YEAR AFTER HAIYAN in 2013, super typhoon Hagupit hit the Philippines in November, tearing down infrastructure and rendering millions homeless. Although weaker than its predecessor, Hagupit brought heavy rains and flooded many parts of the country.

According to a study, in the last fifty years, the country has already experienced a range of observed climate changes including declining precipitation, increasing water scarcity, rising average water temperatures and growing frequency of extreme weather events such as storm and flood. During the last decade alone, Philippines' agriculture has been incurring losses averaging to US\$200mn, with average human casualties of 600, consisting mostly of farmers and fishermen.

The government has already reported more than US\$22mn in agriculture damages from the cyclone. The researchers are now finding solutions to lessen the impact of future calamities, if not fight it.

Situated in the so-called Pacific Ring of Fire and located along the typhoon belt on the Western North Pacific Basin where 66 per cent of tropical cyclones enter or originate, the Philippines ranked third among the 173 countries in the world in terms of disaster risk index. In terms of sea level rise, the country is fifth over the world as Manila sea level already rose 82 cm since 1959. In a paper by Philippine agriculture undersecretary Joel Rudinas, Esteban Godilano, technical advisor on Climate Change and Alicia Ilaga, agriculture climate change officer submitted during the ASEAN-FAO GIZ (German International Cooperation) Regional Expert Forum on Climate Change, it was revealed that many highly populated areas are exposed to multiple hazards; 22.3 per cent of the land area is exposed to three or more hazards in that area with 36.4 per cent of the population in danger. Areas where two or more hazards are prevalent comprise 62.2 per cent of the total area where 73.8 per cent of the population could be affected. Basic statistics on poverty incidence, of which 75 per cent of those affected by poverty are in the rural areas, 41 per cent are fishermen and 37 per cent are farmers, and they are the most vulnerable to the impacts of climate change.

The paper said that climate change is one such risk that will complicate and compound existing development problems in the country such as population growth, rapid urbanisation, increasing competition for natural resources, environmental degradation and food insecurity.

Agriculture, which serves as the country's backbone in achieving food security and a major contributor to the economy, is highly vulnerable to the effects of weather aberrations. According to the National Economic Development Authority, 74 per cent of estimated damages of natural disasters in 2013 were in the agriculture sector. For Haiyan, a total of 600,000 ha of agricultural lands, with an estimated 1.1mn tonnes of crops lost.



Agriculture, which serves as the country's backbone in achieving food security and a major contributor to the economy, is highly vulnerable to the effects of weather aberrations

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The impact of climate change to agriculture automatically threatens food security. Aside from floods, the paper said that changes in weather patterns have resulted to rising pest and disease incidence, landslides, droughts, soil erosion, among others. In a preliminary spatial analysis of climate change by the United Nations, it showed that approximately 67 per cent or 20mn ha of the country's total areas will be affected, including production areas, farm-to-market roads, warehouses, postharvest facilities, irrigation, infrastructure, industries, mariculture parks and seaports. The authors wrote that the impact of climate change — drought, flooding and landslide — could make some 10.2mn ha inhabitable.

But the worst of the climate change is its impact on the country's poorest. In a report by the UN on climate change via local online news site *Rappler.com*, the extreme weather conditions will hit the poor hardest, particularly those who depend on agriculture and fisheries for income and subsistence.

According to the UN, "Climate change will create new poor between now and 2100 in low, medium and high-income countries and jeopardise sustainable development."

Rappler analysed the poor will be hit in two major ways — rice and corn farmers will experience significant decreases in crop yields while the same reduced crop yields, together with growing population, will drive up food prices, making food less affordable for those in poverty.

On the other hand, the news site added that global warming's toll on aquatic resources will harm fishermen everywhere as the change in ocean temperature and ocean acidification will only aggravate massive coral bleaching which will reduce catch of marine resources. By years 2051 to 2060, the maximum catch potential of the Philippines seas will decrease by as much as 50 per cent.

For every 2°C rise in temperature, the UN says it will ultimately affect major crops like wheat, corn and rice and if carbon emissions are not significantly reduced, the world can see a 25 per cent to 50 per cent reduction in these crops. In the Philippines, the local weather bureau predicts a 10 per cent to 15 per cent drop in agricultural production for every 1°C of warming.

In many ways, weather abnormalities can do much damage. *Rappler* reported that many crops are sensitive to changes in temperature and cannot survive in extreme heat or cold, thus, affecting the yield. Long droughts and heat waves can dry up water resources necessary for farming. Aggravated flooding will not just destroy crops but also farmers' homes. Climate change will also compromise the farmers' ability to harvest crops, thus, resulting to food shortage and making food less affordable for them. Without access to grown crops, the urban poor will also suffer from rising food prices, thus triggering 'new poverty traps' and makes urban areas 'emerging hotspots of hunger' tells UN.

Fight climate change

Cognizant of the perils of climate change, the Philippines's department of agriculture (DA) has underlined the following measures:

- Using climate-resilient crops such as drought-tolerant, submergent-tolerant, saline-tolerant and early maturing rice crops
- Review and adjustment of cropping calendar such as early harvesting of rice before harvesting. Staggered planting and use diverse crops will help reduce crop failure risks
- Building climate-proof infrastructure such as strong drainage systems and fortified irrigation canals
- Introducing 'climate change schools' for farmers to deal with specific topics on new farming methods, available services and other important information that is adaptable to changing weather patterns
- Using SALT (sloping agricultural land technology) that will promote contour farming and other soil conservation measures (i.e., using tree legumes to improve the fertility and stability of agricultural soils). SALT is a form of alley farming in which field and perennial crops are grown four to five metres wide between contoured rows of leguminous trees and shrubs. The latter are thickly planted in double rows from hedge-grows
- Rain water harvesting to provide irrigation during the dry season and at the same time slowing down inundation of lowland areas during extreme rainfall. Rain water storage tanks must be constructed from wire-framed ferro-cement with capacities varying from two to 10 cu/m. The tanks were then plastered both inside and outside, thereby reducing susceptibility to corrosion relative to metal storage tanks
- Mitigating methane emissions through new irrigation schemes called alternate wetting and drying (AWD) developed by the International Rice Research Institute and PhilRice to dispel the widely-held perception of possible yield losses from non-flooded rice fields. Rudinas, Iloga and Godilano say this technology has facilitated an optimum use of irrigation water so cropping intensity could be increased from 119 per cent to 160 per cent.
- Using biotech crops resilient to drought and flooding
- Aquasilviculture or the use of mangrove ponds and pens for fish and crabs as these systems not only sequester carbon but more resilient to extreme weather conditions which can help increase production due to improved ecosystems
- Agro-reforestation integrates perennial and annual crops in a two-canopy or multi-canopy production system. The DA is aggressively promoting tree-based farming systems as part of a low carbon emissions development pathway and adaptation strategy □

— By Gemma Delmo

Attack nematodes without harming crops

The parasite's feeding process damages the plant's root system and reduces its ability to absorb water and nutrients

NEMATODES ARE WORMS that feed on living plants and can be observed and identified only under high magnification.

However, the symptoms and damage caused by plant parasitic nematodes are too easy to see. The nematodes inhabit the soil and invade the roots and are identified to be one of the most difficult plant pests to control.

Hard chemical nematode control

Hard chemical nematicides applied to the soil as fumigants (general soil sterilants) and liquids or granules (systemic chemicals, which enter the root system) are generally used to control nematodes. All chemical nematicides will kill the free-living soil-inhabiting at juvenile stage on contact.

The downsides of using chemical nematicides are mostly related to acute toxicity posing high potential risk and hazard to operators and the environment in general.

- High mammalian toxicity of chemical nematicides demands a long withholding period (safe harvest interval) with use confined to the pre-plant or crop planting stage.
- Safe and effective use requires custom-designed, closed pesticide application systems so that operators do not handle or come into contact with the formulation. Only trained and qualified personnel should operate such equipment.
- Risk of water source contamination is exacerbated in arid and semi-arid regions with relatively small and immobile water resources.

erated in arid and semi-arid regions with relatively small and immobile water resources.

- There is a constant risk of chemical stress in young establishing plants to which chemical nematicides are applied.

Plant parasitic nematodes are exceptionally stubborn soil-borne pests requiring treatment at the start of every crop. As such there is high and continual selection pressure on the nematode population with risks of resistance to chemicals.

Greenhouse crops and root knot nematodes

A large number of different plant parasitic nematodes affect a wide spectrum of crops but greenhouse tomato crops attacked by root knot nematodes *Meloidogyne* are among those that suffer most damage. Complete crop failure is not unusual.

Tomato plants are highly susceptible to root knot nematodes and crops grown under protection are especially at risk due to the following reasons:

Greenhouse cultivation means cropping throughout the year with tomatoes grown alongside a limited range and rotation of alternative crops like eggplants, sweet peppers and cucumbers, all of which are hosts to the root knot nematode. As such, greenhouse soils



Plant parasitic nematodes are exceptionally stubborn soil-borne pests requiring treatment at the start of every planting

lack the wider aspects of field crop production where susceptible crops can be rotated with crops which actually reduce nematode numbers. In addition, outdoor soils invariably experience a long hot summer fallow during which the nematode population is reduced by 'soil solarisation'.

There are over sixty different species of *Meloidogyne* worldwide but for tomato and many greenhouse crops *Meloidogyne javanica* and *M. incognita* are the most damaging. Highly susceptible crops grown under warm conditions in light, sandy and friable soils, which facilitate movement of the free living juveniles, are ripe for nematode invasion and development and suffer correspondingly high levels of damage.

Root knot nematodes display a relatively straightforward but highly efficient and effective life cycle:

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- Adult female nematodes lay egg masses on the root surface
- J1 (juvenile) stage develops inside the egg
- J1 develops into free-living J2 stage attracted to the root, which it invades. Invasion and subsequent feeding stimulates the formation of 'giant cells', which collectively form 'galls' (knots) on the roots
- The J2 stage subsequently develops through J3 and J4 stages and eventually into the adult nematode inside the root

A softer touch control alternative

Omex Agrifluids', soluble plant nutrient specialist, all-natural product based on extracts from garlic and other plant species can go easy on crops and tough on nematodes. In earlier times, Egyptian farmers planted garlic between tomatoes and cucumbers to suppress soil-borne nematode pests although they were not aware of 'the root' of the problem.

"Omex Vigga is a natural soil amendment product applied to the root zone to protect plants from nematode attack" said Omex's export director Peter Prentis. "This new product is a highly concentrated water-soluble suspension based on garlic extract obtained by cell burst technology," added Alan Lowes, regional director at Omex.

The garlic extract contains 'allicin' co-formulated in Omex Vigga with another naturally occurring plant extract acting as a synergist.

"Sulphur is the key active in Omex Vigga as 4,000ppm of elemental sulphur (S) and



Plant nematodes are not typically controlled using just one method mentioned above, but instead they are managed using a combination of methods in an integrated pest management system

10,000ppm of sulphite (SO₃), which manages nematodes and provides a bio-stimulatory boost to crop growth and development," Prentis noted.

Omex Vigga is a preventative control product and kills juvenile nematodes on contact. It is not systemic and, therefore, cannot enter the plant to kill established root feeding adults but by the same token does not present any residue problems for harvested produce. "There is no withholding period for Omex Vigga," Alan said.

Recommending Vigga for use at the planting stage, Omex said that it will provide crucial base-line protection at planting the crops and thereafter.

"Growers faced with severe nematode infestations on established crops may still have to use an appropriate chemical nematicide to provide a single 'big hit', but thereafter can apply mex Vigga with Omex Bio20 for extended protection," Prentis added.

Bio20 is a nutritional bio-stimulant targeted at root systems and repairs the damage caused by nematode invasion and feeding.

Greenhouse and outdoor cropping systems equipped with micro/drip/trickle irrigation systems are 'tailor made' for the dual delivery of Vigga and Bio20 in a combined chemigation/fertigation operation. □

— By Dr Terry Mabbett



Tomato plants are highly susceptible to root knot nematodes

Vietnam collaborates with IRRI to redefine rice strategy

VIETNAM'S MINISTRY OF Agriculture and Rural Development (MARD) has devised a national strategy designed to make rice production an even larger engine of inclusive economic growth.

Together with International Rice Research Institute (IRRI) and other public and private sector partners, MARD seeks the rapid and sustained growth of the agriculture sector, especially the rice sub-sector.

Vietnam's agriculture minister Cao Duc Phat and vice-minister Le Quoc Doanh convened a multi-stakeholder effort to refine key elements of the strategy, which includes developing rice varieties with high export value, adopting advanced crop management techniques, and more intensive use of machines and other technologies in rice farming.

The ministry has approved the project on 'Agricultural Restructuring Towards Raising Added Values and Sustainable Development' in the country. In response to this decision and to MARD priorities, IRRI has offered support to Vietnam-led rice sector improvement efforts in key areas.

During a technical workshop in November



this year, MARD officials and partners discussed IRRI's proposed technical assistance package. Co-chaired by Doanh and IRRI deputy director general V. Bruce J. Tolentino, topics included high-quality rice varieties and commercial production of specialty rice for domestic and export markets; branding of Vietnamese rice; reduced pre- and post-harvest losses; climate change adaptation and low carbon emission measures in rice production; support for small farmers; and policy advice to further enhance the country's formidable rice sector.

Vietnam and IRRI have also signed a document on establishing an IRRI office in the country.

IRRI now is recognised by the Vietnamese government as its first international agriculture study facility.

The country has also been urged to build national rice trademark.

Duong Quoc Xuan, deputy head of the Steering Committee for the Southwestern Region (SCSR), said, that although Vietnam was the second-largest rice exporter in the world, the value of its rice was too low, he said. The Mekong Delta, country's 'rice bowl,' lacked investment in rice development.

Experts in Vietnam added that at present, nations like India, Pakistan and the USA have pursued rather aggressive policies to boost rice production and exports and as a result had become tough competitors for Vietnam.

They recommended using advanced technologies to find high-yield and high-quality varieties that could resist diseases and adapt to climate change.

Xuan stressed the need to devise a zoning plan for rice production, organise a purchasing and reserve system and focus on building national brand names.

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South Korea aids rural development in Myanmar

SOUTH KOREA'S KOREA International Cooperation Agency (KOICA) is helping Myanmar launch two rural development projects in a bid to improve the rural people's socio-economic status, according to *Xinhua* news agency.

The projects include establishment of the Myanmar Development Institute to boost the capacity and efficiency of local people and the launch of Saemaul Undong, which is a new village designed to reduce the poverty gap between the rural and urban areas.

South Korea has so far helped renovate two Myanmar villages and 100 more are being planned at a cost of US\$22mn, according to South Korean Ministry of Agriculture and Irrigation.

The five-year Saemaul Undong aid project, from 2015-19, covers some 100 villages in Nay Pyi Taw, Yangon, Tanintharyi, Ayeyawaddy, Mandalay, Sagaing regions and Shan state.

According to official statistics, South Korea has already invested US\$3.087bn in Myanmar until September 2014, accounting for 6.19 per cent of the total foreign input and ranking the sixth in Myanmar's foreign investment line-up.

Biotechnology can help Philippines achieve food-sufficiency

THE PHILIPPINES' DEPARTMENT of agriculture biotechnology program office (DA-BPO) has announced that biotechnology can help in the country's drive for food self-sufficiency and can also help adapt to climate change.

DA-BPO's director Antonio Alfonso opined that biotechnology can be used to improve the characteristics of crops, and it has been used in the development of climate-ready crops.

He added that tissue culture, a biotechnology tool, is being used in the DA's high value crops development programme in producing coconut, abaca and banana planting materials.

Biotechnology has also been used in developing natural health products from indigenous Philippines plants and in the development of biopesticides for the control of insects that attack jackfruit and other crop commodities, Alfonso added.

"Presidential Proclamation 1414, issued on 2007, stipulates the policy of government to promote the safe and responsible use of biotechnology as one of the several means to achieve and sustain food security, equitable access to health services, sustainable and safe environment and industry development."

Besides helping attain food self-sufficiency, biotechnology can also help address feed, fibre and fuel needs in the Philippines

According to Alfonso, because of Philippines' rapid population growth, the agricultural lands grow smaller every day as rice fields give way to subdivisions and our environment gets degraded.

"As our farmlands shrink, we are faced with the challenge of producing more food, feed, fibre and even biofuels and biotechnology can help address these challenges."

He added that the technology was vital in the development of drought and flood tolerant crops. Meanwhile, the DA is also promoting 'submarino' rice variety, which can withstand long periods of being submerged, to flooded areas.

Saline water and high temperature tolerant crop varieties are also being developed through biotechnology, Alfonso noted.

Thailand to launch rubber reforms to boost prices

THAILAND WILL SOON launch a national rubber reform programme and seek cooperation from neighbouring countries to increase the global rubber price.

According to *Reuters*, the government is buying rubber from the market through a US\$183 million buffer fund to support prices, deputy agriculture and cooperatives minister Amnuay Patisae said on Friday, while another fund will support domestic rubber futures with help from private firms.

A total of US\$609mn is available to the Rubber Estate Organisation, Patisae had said earlier this week, and the US\$182mn was part of that.

An additional US\$12.4mn fund has been set up by the government and seven private



Thailand had already sold 200,000 tonnes of rubber to China in 2014

companies to shore up prices of rubber futures on the Agricultural Futures Exchange of Thailand,

the minister added.

The government has previously said it would only intervene in the

market if it had agreed sales for the rubber it bought, to avoid building up stockpiles similar to those accumulated under the subsidy schemes of the previous government.

Thailand had already sold 200,000 tonnes of rubber to China's Hainan Rubber Industry Group, taking sales to the Chinese firm to over 400,000 tonnes in two months.

However, Chinese sources with knowledge of the matter said the second deal had not yet been finalised. An oversupply of rubber has pushed global prices to five-year lows.

Patisae added that Thailand has agreed with Indonesia, Malaysia, Myanmar, Laos, Cambodia and Vietnam to increase the natural rubber price to US\$1.83 per kilogramme in 18 months.

Malaysia to create more area for coconut plantations

MALAYSIA'S AGRICULTURE AND Agro-based Industry Ministry said that the country needed at least 3,000 ha to produce additional 72mn coconuts annually. Agriculture minister Datuk Seri Ismail Sabri added that Malaysia currently produced 539mn coconuts compared with the demand of 611mn coconuts annually earlier.

The shortage in supply of 72mn resulted in the country having to import coconuts from abroad, particularly Indonesia.

"We are encouraging smallholders to participate in the coconut replanting programme as we should not be relying too much on imported coconuts. Coconut farmers should not replace their coconut plantation with other plants. This is because the existing 10,000 hectares site can be expanded to meet the nation's demand," noted Sabri.

"Demand for coconuts always increase during festive seasons, forcing the government to import large volumes," he added.



Cambodia looks forward to bumper cassava harvest

CAMBODIA'S PROVINCIAL AUTHORITIES are hoping for a bumper crop for cassava this harvest season, with both cultivation and prices up in 2014.

In the northwestern provinces, where cassava is most commonly grown, officials are betting on increased demand for the root vegetable from China this harvest season, which runs from December to April. Flood damage too in some areas has been less severe this year, giving officials hope for the harvest.

In Cambodia's largest cassava producing province of Battambang, officials said that cultivation had doubled since last year.

"Cassava cultivation for this new season has increased from 60,000 to 120,000 ha as farmers have switched from planting corn to cassava due to low price of corn last year," said Chhim Vichera, director of agriculture department of Battambang province.

Despite the increase of supply, Vichera said he was confident prices would remain stable as there is more interest from the Chinese market.

"We also see more local traders for cassava, and we have become less dependent on neighbouring countries for our product because we have China as a buyer," he added.

The average yield for cassava is about 25 to 30 tonnes per hectare.

Chhil Chhen, deputy director of Pailin's provincial department of agriculture said that cassava cultivation made up 80 per cent of the total 37,000 hectares of cultivation area for agricultural products in Pailin.

"It is a good year for cassava farmers as there is no flooding, so no damage to their harvest," he said. "The price for the beginning of the harvest is a little higher than last year too. I am optimistic that the price will remain positive as demand from local processing factory has increased," Chhen added.

Fresh cassava currently sells for about US\$0.07 per kilogramme while dried cassava is sold for around US\$0.16.



Meanwhile, Ouch Savorn, deputy director of Banteay Meanchey's provincial department of agriculture, also noted a presence of more local traders in the province. This increase in competition, he said, would hopefully sustain prices as cultivation had increased by more than 60,000 ha.

"The government has also encouraged farmers to diversify their plantation," Savorn added, in order to spread the risk of price fluctuations in one specific product.

Meas Leun, a farmer in Pailin province, said prices for dry cassava were up by about 30 per cent this year. "There has been higher demand from Vietnam and Thailand as cassava production in their countries has decreased due to flooding. Local traders also increased this year creating price competition in the market," he said.

However, independent economist Srey Chanthly, has cautioned that while cassava prices were strong at the beginning of the season, he expected them to drop when they reached their peak supply in January and February 2015.

Although China had promised to buy more of the Cambodian produce, trade volume was not endless, Chanthly went on to say.

"Farmers should manage to release their harvest according to the demand, to have better control over price," he noted.

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Asian equipment industry to grow amidst global crisis

Despite a bright future foreseen earlier this year for the global farm equipment sector, the Asian region is the only one moving forward in terms of prospects and profits

MECHANISATION OF AGRICULTURAL process is advancing steadily in the Asia-Pacific region. In 2013, it was observed that Japan had the highest level of mechanisation of seven hp/ha, followed by South Korea, China, Thailand and Vietnam with 4.11 hp/ha, 4.10 hp/ha, 1.60 hp/ha and 1.56 hp/ha respectively. The moderately mechanised market was constituted by India with one hp/ha.

China, India, Japan and Australia contribute the largest to the development of the agricultural equipment market in Asia Pacific. From the total demand of agricultural equipments in the world, Asia currently accounts for nearly half of the requirement. The revenue generated by the agricultural equipment industry in Asia in 2013 registered a compound annual growth rate of 16.1 per cent during 2008-2013. Last year alone, Asia accounted for 46 per cent of agricultural equipment demand worldwide.

According to a new report *Agriculture Equipment Market by Region and Propulsion - Forecast to 2019*, it is projected that 50.8 per cent of the agricultural equipment market would be accounted from the Asian region by 2019. The region includes countries such as China, India, Japan and South Korea.

Although Japan has the highest level of mechanisation amongst the Asian countries, the regional market for agricultural equipments is largely driven by China and India due to their large area of agricultural land and low level of mechanization.

Understanding the Asian market

The farming equipment is becoming more affordable in many large, rapidly developing agricultural markets due to rising income in the farms. However, overall demand for new equipment in the developing markets will continue to be constrained by competition from used machinery, the report stated.

The rising mechanisation of farming equipment and increasing population are the factors propelling the growth for agriculture equipment in Asia region. China and India are the two largest growing markets in this region. Growing large population in these two countries increased the overall demand for food. China alone holds one-third of the global agricultural equipment market.

Few of the key players involved in the Asian market are Japan-based Iseki, UK-based J.C. Bamford Excavators and India's Mahindra & Mahindra.

Global downside

Although the Asian agricultural equipment market is estimated to grow, the global market is bracing itself for a dramatic slowdown in its machinery sales.

The global machinery sales slump was first brought to notice in September 2014 by CNH Industrial whose leading brands include Case IH and New Holland. It reported a near 12 per cent drop in agricultural equipment sales compared to 2013, and a near 26 per cent fall in operating profits from that segment.



Tractors are becoming more affordable in many developing agricultural markets due to the rising income of farmers

Again in November 2014, the world's largest maker of agricultural equipment John Deere cautioned the global industry of a steep decline in the equipment market, expecting the company's own sales in the sector to fall by 20 per cent in 2015.

The importance of agriculture equipment industry can easily be understood from the fact that it plays a crucial role towards developing the global economy by providing sophisticated farming tools, which reduces the overall agricultural cost and optimises the output.

Why the fall?

In 2012, the hottest temperatures on record caused a dry spell in the USA, which resulted in the price rise of agricultural commodities. As a result of the drought the farm production was subsidised along with tax incentives for putting profits back into the farms, which left the farmers with more to spend on new tractors and other machines such as combine harvesters.

John Deere experienced a jump in sales from US\$20bn in 2004 to nearly US\$38bn in 2013. AGCO's sales also increased more than doubled, from US\$5.3bn in 2004 to US\$10.8bn in 2013.

Some analysts, however, have estimated that the current low crop prices and the recent vintage of farm equipment would constrain the farmers from buying any further farming machinery. John Deere said that it expects equipment sales to decrease around 21 per cent in Q1 2015 and 15 per cent over the year because of the weak demand for agricultural machineries. It also projected the net income to be US\$1.9bn for 2015, down from US\$3.16bn in 2014 and US\$3.54bn in 2013.

As a result of weaker conditions in the global farming economy, the manufacturing major estimated agriculture and turf equipment sales to decline 20 per cent in 2015.

According to Lawrence De Maria, analyst at William Blair, there has been a pretty severe downturn that is coming soon, and the agricultural equipment companies are starting to see it. "We are basically coming off a boom, if not a peak in every region in the world for agriculture equipment and we are going to a period of excess and surplus supplies of global grains which means lower prices and profits for farmers." □

John Deere launches new self-propelled sprayer

US-BASED EQUIPMENT MANUFACTURER John Deere has launched the R4040i self-propelled sprayer in the Australian market.

The self-propelled sprayer, which is designed to improve performance and reduced cost of operation, is also scheduled for New Zealand launch early 2015.

According to John Deere, the R4040i self-propelled sprayer is powered by a 6.8 litre John Deere PowerTech PSS engine, which produces 176kW (240hp) at rated power boosted to 190kW (255hp) with an intelligent power management system.

The sprayer can be operated with two-wheel, four-wheel or crab steering to suit different crop and field conditions, and has a 5.2 metre turning radius. The machine's centrally located cab provides a comfortable operating position and offers good visibility both on the road and in the field, added the company.

For safe and convenient operation, the sprayer features a hydro handle multi-functional control lever and an electronic sprayer control system for automatic filling, mixing, spraying and rinsing. The rounded shape of the 4000 litre polyethylene spray tank features a smooth internal surface for efficient solution mixing and fast automatic cleaning.

John Deere's BoomTrac automatic boom levelling system adds accuracy to the spraying operation. The new automatic variable geometry control system option further increases application accuracy and efficiency by automatically adjusting the height of the individual

The R4040i self-propelled sprayer comes with LED boom lights for maximum spraying efficiency day and night



boom wings independently to match the terrain.

Instant coverage to the full working width of the sprayer is provided by the optional pressure circulation system, which keeps the liquid solution moving along the stainless steel spray lines and right up to the nozzles even when not spraying. Once spraying starts, the system feeds the spray lines from both ends to maintain a constant pressure and application rate.

Case IH tractor wins 'Tractor of the Year 2015' award

MAGNUM 380 CVX tractor from Case IH has won 'Tractor of the Year 2015' title at EIMA International in Italy.

According to the company, the award recognises technological achievements in agricultural engineering.

Matthew Foster, vice-president at Case IH, said, "First launched in 1987, the Magnum series has been continuously improved, step-by-step further increasing performance and productivity, reducing fuel consumption and emissions, improving operator comfort and thus optimising owners' return on investment."

The Magnum CVX 380 has 380hp-rated engine, which can attain a top speed of 50 km/h. The electronically variable geometry turbo-charger (eVGT) delivers a performance boost. A split throttle helps to set the maximum and minimum engine speed. Built for comfort, there is a five-point suspension system. "I am more than proud to represent Case IH and receive the 'Tractor of the Year 2015' award for the Magnum 380 CVX," added Foster.



Magnum 380 CVX

German tractor wins award at EIMA 2015



Deutz-Fahr 9 series

DEUTZ-FAHR 9 SERIES tractors has won the 2015 'Golden Tractor for the Design' award at EIMA International in Italy.

According to the Germany-based tractor manufacturing firm Same Deutz-Fahr, the award holds an important recognition in the high power tractor segment.

Lodovico Bussolati, CEO of Same Deutz-Fahr, said, "The 9 series is an ideal choice for the highest levels of power, comfort, efficiency, fuel consumption and operating costs. Also the style is that of a leader — clear and decisive lines for an aggressive design with the typical traits of the new products of the brand. The four models of this series ensure high performance in the field, both with high traction force tools as well as when working with large dimension tools, while remaining versatile tractors with excellent manoeuvrability."

The 9 series has a new 6-cylinder Deutz TTCD 7.8 L6 engine with four valves per cylinder, which efficiently minimises the power consumption, added the company.

"This award represents the best recognition for the research and development investments made in recent years," noted Bussolati.

Hygienic strapping solutions for poultry applications by Mosca

STRAPPING SPECIALIST MOSCA'S new SoniXs MS-VA and SoniXs TRS-VA machines are the first side-seal strappers for the poultry processing and packaging that are corrosion-resistant and work with Mosca's ultrasonic technology SoniXs. In addition, the machines feature a new, exposed Standard-6 strap path, also made of corrosion-resistant material.

Both strappers have been designed for use under extreme conditions such as dampness or with contaminated products in the poultry industry. Since the sealing unit is located on the side of the strap guide frame rather than below it, process liquids or other foreign particles flow away without soiling it. This makes the machines also suited to food processing industries including meat, fish and seafood, which are characterised by strict hygiene standards and often have to deal with process fluids or perishable product residues. The machine can also be washed down to International Protection Standards and comply with IP56 criteria. The IP56 standard ensures protection from splashing water, hose-driven water, rain, sleet, snow and corrosion.

The SoniXs MS-VA is a manual machine, while the SoniXs TRS-VA works in a fully automated production line in which packages are fed automatically. Both compact machines can be relied on to strap variable product sizes at up to 33 cycles per minute, depending on product and in-feed system.



Robust compact tractors from Massey Ferguson

MASSEY FERGUSON HAS launched two new models in the Far East Asia to strengthen its position in the compact tractor sector.

The 46hp MF 1747 and 38hp MF 1740 are now available and come with platform workstations and strong mechanical transmissions. The new MF 1700 tractors replace the MF 1500 range. With new features and improvements, the MF 1740 and MF 1747 will further enhance the strong reputation for reliability and ease of use, the company said.

"MF1700 range is packed with features that combine performance with ease of use and reliability," says AGCO's David Alvarez, general marketing manager, Far East.

Massey Ferguson has developed these tractors to meet the exacting demands of agricultural, plantation and horticultural users, as well as providing versatile tractors for use by smaller farmers and growers in the region.

The MF 1747 is powered by the latest design four cylinder, 2.2-litre engine, which delivers 46hp (ISO), while the MF 1740 is equipped with a turbocharged, 1.5-litre, three cylinder that generates 38hp (ISO). Fuel tank capacity is 45 litres on the smaller model and 53 litres on the higher powered tractor.

Solid and reliable transmission: MF1700 has a mechanical gearbox that provides 12 forward and 12 reverse speeds. With Synchro reverse shuttle lever this gearbox is the perfect combination of reliability with simplicity of use.

Hydraulic power and lift: The MF 1700 Series tractors have 75 litre/min hydraulic flow providing the capacity to operate modern implements with ease. Two spool valves are fitted, along with a new joystick control lever. The high capacity category 1 three-point linkage offers a maximum lift of 1,400 kg lift on both models, providing plenty of power to handle a wide range of mounted equipment with full draft control, via top link sensing.

Standard high specification PTO: MF 1700 Series tractors benefit from a two-speed — 540/540E — Independent PTO (IPTO), with a soft start function that allows gentle take up of the drive. This provides progressive engagement, protecting the tractor and implement.

Operator Comfort: The MF1700 has a semi-flat floor operator platform with folding centre mounted ROPS. The main controls are positioned for ease of use and accessibility, while the instrument panel provides complete and clear displays of all the information the driver needs. Colour-coded controls and switches are arranged in a neat and in a logical order. Styling follows the familiar Massey Ferguson family style with pivoting bonnet and full road lighting.



Agrificent LED lighting to illuminate pig pens

AGRIFICIENT LED, FIRST retro-fit LED light specifically designed for swine facilities, is the creation of US-based Energyefficient Systems, Inc.

The LED is touted to be the most rugged, longest-lasting light in agriculture.

"The purpose-built design of the Agrificent LED addresses all of the daily challenges found with traditional swine barn lighting," according to Chad Palmer, Energyefficient's CEO and design manager.

The challenges include eliminating water penetration from the outside in and inside out, insects and water collecting in the jar, bulb burnout and glass jar breakage from overheating. The bulbs are easy-to-install as the exclusive one-piece design simply screws into original glass jar bases. The unit is made of polycarbonate and ultra-tough nylon, making it nearly indestructible. The polycarbonate lens is

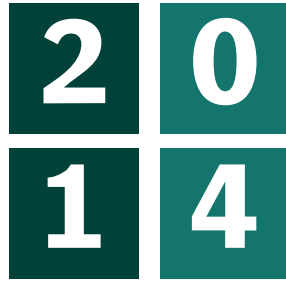
diffused white (not crystal clear) to reduce glare, making it easier to see through the barns.

The exclusive Active Thermal Management System included in the Agrificent LED constantly circulates the cooler ambient air past the special heat sink, keeping the electronics cooler than other methods, Energyefficient Systems said.

The Agrificent LED is waterproof, both inside and out, to protect against water from typical power washing in swine barns and the ingress of water through the conduits that fill up the traditional glass jar fixtures. This also acts as a barrier for insects to get inside the lens.

Backed by a six-year warranty, the Agrificent LED for swine facilities is projected to save 86 per cent of the cost of electricity for lighting compared to traditional incandescent lamps and is expected to last six to 10 years under normal hog structure conditions.

PIG Buyers' Guide



Section One - 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

All Equipment

Henke-Sass, Wolf GmbH
 Hotraco Agri b.v

Breeding Stock

Hermitage Genetics

Disinfection Products

Goizper Group - Goizper Spraying Business

Environmental Control

Big Dutchman Pig Equipment GmbH
 Goizper Group - Goizper Spraying Business
 Hotraco Agri b.v
 LUBING Maschinenfabrik GmbH & Co. KG

Exports

Henke-Sass, Wolf GmbH
 Hermitage Genetics

Feed Additives

Ayurvet Ltd.
 Eurofeed Technologies S.p.A.
 Unipoint AG Klinofeed

Feed Additives, Natural

Ayurvet Ltd.
 Eurofeed Technologies S.p.A.
 Unipoint AG Klinofeed

Feed Ingredients

Eurofeed Technologies S.p.A.
 Unipoint AG Klinofeed

Feeding Systems

Awila Anlagenbau GmbH
 Big Dutchman Pig Equipment GmbH
 Hotraco Agri b.v
 Impex Barneveld b.v
 MIK International GmbH & Co.
 Schauer Agrotronic GmbH

Flooring

Big Dutchman Pig Equipment GmbH
 LUBING Maschinenfabrik GmbH & Co. KG
 MIK International GmbH & Co.
 Schauer Agrotronic GmbH

Handling Equipment

Goizper Group - Goizper Spraying Business

Health Products

Ayurvet Ltd.
 Henke-Sass, Wolf GmbH

Housing

Big Dutchman Pig Equipment GmbH
 Hotraco Agri b.v
 Impex Barneveld b.v
 LUBING Maschinenfabrik GmbH & Co. KG
 MIK International GmbH & Co.
 Schauer Agrotronic GmbH

Manure Treatment

Schauer Agrotronic GmbH

Medicators

Ayurvet Ltd.
 Impex Barneveld b.v
 LUBING Maschinenfabrik GmbH & Co. KG

Mould Inhibitors

Ayurvet Ltd.
 Eurofeed Technologies S.p.A.

Pest Control/Disinfection Equipment

Goizper Group - Goizper Spraying Business

Salmonella Control

Eurofeed Technologies S.p.A.

Sanitation

Goizper Group - Goizper Spraying Business

Semen

Hermitage Genetics

Services

Eurofeed Technologies S.p.A.

Veterinary Instruments

Henke-Sass, Wolf GmbH

Watering Equipment

Big Dutchman Pig Equipment GmbH
 Impex Barneveld b.v
 LUBING Maschinenfabrik GmbH & Co. KG

Section Two



AWILA®
 Anlagenbau GmbH

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Agents:
 Malaysia - Yenher Agro Products Sdn Bhd
 Myanmar - Yin Yin Kyaw Intl. Trading Co. Ltd.
 Taiwan - J. John Industry Co. Ltd.
 Thailand - American Marketing Co. Ltd.



Big Dutchman Pig Equipment GmbH
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Agents:
 China - Big Dutchman (Tianjin) Livestock Equipment Co. Ltd. Supply Chain & After-Sales Service Office
 Japan - Fujii Kasei Co. Ltd.
 Korea - Bongdong Agrico. Ltd.
 Korea - Cham Trading
 Philippines - Asia Giant Enterprises Poultry & Livestock Equipment
 Taiwan - Global Ace Trading Co.
 Thailand - BD Agriculture (Thailand) Ltd.
 Vietnam - Big Dutchman Vietnam HCM Rep. Office of BD Agriculture (Malaysia) Sdn Bhd
 Vietnam - P&N Agro Business Co. Ltd.



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Agents:
 Malaysia - Goizper Asia-Pacific/Spraying Division



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



Hermitage Genetics

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LUBING

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Agents:

China - LUBING System Engineering (Shenzhen) Co. Ltd.
India - LUBING India Pvt. Ltd.
Indonesia - PT. Charoen Pokphand Indonesia Poultry Equipment Division

Japan - Hytem Co. Ltd.
Malaysia - Tong Seh Industries Supply Sdn Bhd
Thailand - KSP Equipment Co. Ltd.
Vietnam - DONG A Material-Veterinary JSC



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China - Beijing Kingpeng Global Husbandry Technology Co. Ltd.
China - GSI Group Shanghai
Philippines - Broad Science Phil. Corporation
Taiwan - Broad Science Co. Ltd.



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Section Three

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India

LUBING India Pvt. Ltd.

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E-mail: surinder@lubingindia.com

Indonesia

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Olive increases growth performance in pig

OLIVES ARE GROWN in many areas of the world with a climate similar to that found in the Mediterranean region. The solid byproduct from the olive oil industry (olive cake) is usually either discarded or fed to ruminants. Very little is used in diets for pigs, although it is an inexpensive source of energy.

Olive oil production waste is currently considered more of a waste than a potential source valuable feedstuff.

In a recent research trial, the effects of olive cake on digestibility, growth performances, and carcass, meat and fat characteristics were studied in sixty gilts, weighing 70 kg at 126 days of age. Increasing levels of olive cake (0, 50, 100 and 150 g/kg of feed) were included in the diet by replacing the same proportion of barley. The trial lasted 35 days, and animals were slaughtered at about 97 kg body weight.

Daily feed intake increased (P=0.04) and



Olives are inexpensive source of energy

daily gain tended to increase (P=0.06), both quadratically, with increasing olive cake inclusion reaching maximum values at 100 g olive cake per kg feed. The daily apparent digestible energy intake also increased quadratically (P=0.04) on increasing dietary olive cake content. The feed conversion ratio was not affected by dietary treatments. Also, the apparent organic matter digestibility tended to decrease quadratically (P=0.06) and energy digestibility decreased linearly (P<0.04) as the level of dietary olive cake level increased.

The experimental treatments had negligible effects on carcass and meat characteristics. However, the inclusion of olive cake increased quadratically (P=0.04) carcass weight and decreased linearly (P=0.02) fat depth measured at the gluteus medius muscle. The experimental treatments did not modify the total polyunsaturated fatty acids profile of subcutaneous fat, but increasing levels of olive cake promoted a linear reduction (P=0.01) of total saturated fatty acid proportion and a linear increase (P=0.02) of total monounsaturated fatty acid percentage, especially that of C18:1 (P=0.01).

Therefore, it can be concluded that olive cake might be included up to 100 g/kg in finishing pig diets improving some aspects of growth performances and carcass quality and also providing a healthier fatty acid profile in fat tissues. It should be noted, however, that the initial by-product had to be partially dried and depitted for the trial. Thus, some further work is required in terms of ingredient technological aspects before olive cake can be used on a commercial basis.

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'Urban farming can bring about food revolution'

With over 50 per cent population living in urban areas around the world, raising crops in city space will enhance economy and reduce emissions

URBAN FARMING is leading to an increase in food being grown and consumed in cities and plays much more important to global food production than previously thought, a new study has revealed.

The research, which used satellite imagery to create the first global assessment of urban agricultural land, found that 456mn hectares — an area the size of the European Union — is being cultivated in and around the world's cities.

The study aims to highlight the role of urban farming in food security and sustainable development, the counter the rural focus of most agricultural policy work.

"This is the first study to document the global scale of food production in and around urban settings and it is surprising to see how much the farm is definitely getting closer and closer to the table," said co-author Pay Drechsel, a scientist at the International Water Management Institute (IWMI).

"We see this dichotomy where urban farming in wealthy countries is praised for reducing emissions and enhancing a green economy while in developing countries, it can be regarded as an inconvenient vestige of rural life that stands in the way of modernisation," Drechsel said. "That's an attitude that needs to change."

The study also said that urban farming puts marginal lands into productive use, helps with flood control, increases income opportunities for the poor, and strengthens urban biodiversity.

It concluded that irrigated urban croplands will play a larger role in more densely populated and water-scarce regions such as South Asia. "In fact, today, some countries such as large parts of India are already more peri-urban than rural. And here we see how urban water needs compete with agricultural demands," Drechsel added.

Another study noted that urban agriculture is not a new phenomenon. It has been practiced ever since the first cities came into existence. In some countries, like China, the importance of urban agriculture has long been recognised and its practice has even been fostered by official policies. In many other countries, particularly since the time of the industrial revolution and the colonial era, urban agriculture has been frowned upon and even discouraged by official policy. Yet, no matter what the official policy, urban residents across the globe persist in growing myriad crops and raising myriad kinds of livestock, for reasons ranging from food security to income production to taste and health concerns.

Until recently, such activities have tended to be ignored in the development of urban economic policies, perhaps in large part because they generally belong to the 'informal' economic sector. However, now there was a clear resurgence of interest in urban agriculture, particularly in developing countries, for several reasons:

- Urban populations throughout the world are growing more than twice as fast as rural populations; according to the UN Centre for Human Settlements, more than half of humanity will live in cities by the year 2015.



Urban farming puts marginal lands into productive use

- Factors such as wage cuts, inflation, job loss, civil strife, and natural disasters, that were formerly considered exceptional, are becoming more frequent, thus leading to greater food insecurity.
- As interest in sustainable development grows, there is a growing realisation that urban agriculture can potentially play a crucial role in making cities sustainable.
- Urban agriculture can also play a very important role in the absorption of labour, particularly women and youth, so that urban households are better able to take full advantage of their own human resources.
- Finally, it is increasingly recognised that, properly managed, urban agriculture can play an important role in turning the urban waste stream and urban wastewater into resources, rather than sources of serious pollution.

UN data shows that more than 50 per cent of the world's population now lives in urban areas, which could explain the changing landscape of global agriculture.

"We could say that the table is moving closer to the farm," observed Drechsel. "The most interesting factor when we look at India is that we could map the whole country as urban or peri-urban because there are so many towns and cities."

He added that this had so many consequences in terms of what cities do to their environment because they are sucking out water but giving back polluted waste.

Using Ghana as an example, Drechsel noted that the majority of vegetable farmers irrigated their crops with polluted water. In Accra, it is estimated that up to 10 per cent of household wastewater was indirectly recycled by urban farms.

"These farms are now recycling more wastewater than local treatment plants," he observed.

Lead author Anne Thebo from the University of California, Berkeley, said the study was 'an important first step towards better understanding urban crop production at the global and regional scales'.

She added, "In particular, by including farmlands in areas just outside of cities we can begin to see what these croplands really mean for urban water management and food production." □



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