

# **Far Eastern** **AGRICULTURE**

## Copper fungicide for tea

Protecting tea in high rainfall



VIV Asia 2017  
set to break records

Silage management to prevent  
mycotoxin contamination

Massey Ferguson's  
new utility tractor range

**Poultry Buyers' Guide 2017**



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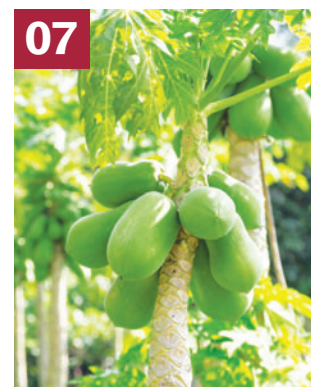
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## Bird flu sparks culling of more than 80,000 chicken in Japan

ABOUT 80,000 CHICKENS were culled at a poultry farm in Yamagata, Japan after about 100 dead birds tested positive for a highly pathogenic strain of bird flu. The Gifu Prefectural Government has launched inspections at 16 nearby chicken farms. The government body has also ordered farms within a 10 km radius not to transport any chickens or eggs to prevent spread of disease.



Bird flu has led to mass culling of poultry across Asia. (Photo: ChameleonsEye/Shutterstock)

The new drive means more than a million farm birds will have been killed in seven mass culls this season as officials work to prevent the spread of the virulent H5 strain, which has been detected at several farms across the country. Since November, cases of the highly pathogenic H5 virus have been reported at poultry farms in Niigata and Aomori prefectures, Hokkaido as well as in Miyazaki Prefecture in Japan.

## China grants import approval to Balance GT soybeans

MS TECHNOLOGIES AND Bayer have announced that Balance GT Soybean Performance System has been granted import approval by China, moving the new soybean system one step closer toward commercialisation.

The Balance GT Soybean Performance System aims to combine industry-leading genetics with a double herbicide-tolerant trait that will confer tolerance to glyphosate and isoxaflutole, the active ingredient in the new Balance Bean herbicide. According to the company, the Balance GT Soybean Performance System will benefit



The new performance system will grant the crops tolerance to glyphosate and isoxaflutole. (Photo: Oticki/Shutterstock)

soybean growers by providing high-yielding genetics and protection against a variety of broadleaf weeds and grasses. This approval is welcome news for growers, dealers and industry experts seeking a new mode of action for soybeans. However, while this approval means that the Balance GT trait has received all necessary export approvals, the Balance GT Soybean Performance System will not be commercially available until Balance Bean herbicide receives all of the required regulatory approvals.

## New bovine tuberculosis detection kit launched

THERMO FISHER SCIENTIFIC has announced the launch of VetMAX M. tuberculosis Complex PCR Kit, the only commercially available PCR test that detects all seven strains of the M. tuberculosis complex in a single solution. "The VetMAX M. tuberculosis Complex PCR Kit is a reliable and fast tool to confirm the presence of mycobacteria belonging to the tuberculosis complex," said Martin Guillet, global head and general manager of AgriBusiness at Thermo Fisher Scientific.

The robust PCR test is designed to detect all seven strains belonging to the Mycobacterium tuberculosis complex – M. tuberculosis, M. bovis, M. africanum, M. microti, M. canetti, M. caprae and M. pinnipedii. According to the company, it is the sole commercial M. tuberculosis complex PCR with an integrated ready-to-use master mix. The test uses the Applied Biosystems VetMAX Xeno Internal Positive Control that is detected in the same well as the sample for a duplex PCR approach.

## Marel Poultry to unveil new poultry processing equipment

MAREL POULTRY HAS announced that it will unveil a number of new poultry processing developments at the 2017 International Production and Processing Expo at the Georgia World Congress Center in Atlanta, Georgia USA. The company stated that the solutions that will be unveiled are set to make life easier and business more profitable for poultry processors.

One of the highlighted solutions is the world's first inline high-capacity thigh filleting solution. This solution will carefully separate the meat from the bone, while ensuring that the knee cap is removed accurately, negating the need for manual trimming. CAS SmoothFlow, a new method that makes use of a controlled environment to stun animals in the most humane way, while securing the highest quality meat and the ACM-EH cut-up system, designed for markets that prefer a manual infeed of chilled whole products, will also be unveiled at the event. The multiphase CAS SmoothFlow complies with all legislation, including those of the USDA.



The ACM-EH cut up solution facilitates manual hanging and its modules perform reliable wing, leg and breast processing. (Photo: Marel Poultry)

# Events 2017

## MARCH

02-04	<b>Cafe Show Vietnam</b>	Ho Chi Minh City, Vietnam	<a href="http://www.cafeshow.com.vn">www.cafeshow.com.vn</a>
03-05	<b>India International Tea &amp; Coffee Expo</b>	Kolkata, India	<a href="http://www.teacoffeexpo.in">www.teacoffeexpo.in</a>
15-17	<b>VIV Asia 2017</b>	Bangkok, Thailand	<a href="http://www.vivasia.nl">www.vivasia.nl</a>
15-17	<b>Agritechnica Asia</b>	Bangkok, Thailand	<a href="http://www.agritechnica-asia.com">www.agritechnica-asia.com</a>
20-21	<b>Global Forum for Innovations in Agriculture - GFIA</b>	Abu Dhabi, UAE	<a href="http://www.innovationsinagriculture.com">www.innovationsinagriculture.com</a>
22-24	<b>INPALME</b>	Medan, Indonesia	<a href="http://www.palmoilexhibition.com">www.palmoilexhibition.com</a>

## APRIL

12-14	<b>Greenbuild Asia</b>	Kuala Lumpur, Malaysia	<a href="http://www.ecobuildsea.com">www.ecobuildsea.com</a>
22-24	<b>China International Modern Agricultural Exhibition</b>	Beijing, China	<a href="http://www.cimae.com.cn">www.cimae.com.cn</a>

## MAY

11-13	<b>Hortiflorexpo IPM</b>	Beijing, China	<a href="http://en.hortiflorexpo.com">en.hortiflorexpo.com</a>
17-19	<b>Indolivestock 2017</b>	Surabaya, Indonesia	<a href="http://www.indolivestock.merebo.com">www.indolivestock.merebo.com</a>
18-20	<b>China Animal Husbandry Exhibition</b>	Qingdao, China	<a href="http://www.caaa.com.cn">www.caaa.com.cn</a>
24-26	<b>Livestock Philippines 2017</b>	Manila, Philippines	<a href="http://www.livestockphilippines.com">www.livestockphilippines.com</a>

## AUGUST

28-30	<b>International Exhibition on Poultry, Livestock &amp; Technologies</b>	Bangalore, India	<a href="http://www.iplexpo.com">www.iplexpo.com</a>
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## SEPTEMBER

01 - 03	<b>Agri Asia</b>	Ahmedabad, India	<a href="http://www.agriasia.in">www.agriasia.in</a>
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## Bühler and Protix to boost industrial insect production

AS THE GLOBAL population grows, so does the necessity for alternative, sustainably-generated protein sources. Insects provide a natural and sustainable protein source that will contribute to closing the future protein gap.

In order to address this potential, Bühler – a solution provider for the food and feed industry – and Protix – the insect production company – have founded Bühler Insect Technology Solutions. This joint venture will develop scalable, industrial solutions for the rearing and processing of insects to provide protein primarily to cater to animal feed and food.


Bühler Insect Technology Solutions is located in China and has already begun operations. “By combining the knowledge and experience of our two companies, we can provide industrial insect processing solutions to address the alternative protein market,” explained Ian Roberts, CTO of Bühler.

“Together, we can develop both sustainable and cost effective solutions for large scale insect producers and processors that cover the whole value chain,” added Kees Aarts, CEO of Protix.


The company detailed how one of the most promising sources to generate protein sustainably and with a low footprint is insects: fly larvae or mealworms, for instance, are easy to breed and can be fed with organic waste. They are remarkably efficient at converting feed into protein and require little space to cultivate.




Specialising in insect production, Protix has developed proprietary equipment and solutions gaining extensive operational expertise not only in the breeding and rearing cycle, but also in separating and extracting proteins and lipids from insects. With a pilot plant, it processes 1,600 tonnes of insect larvae per year and produces high quality, insect-based ingredients.

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## Food Outlook

THE FAO FOOD Price Index (FFPI) averaged almost 172 points in December 2016, unchanged from November with strong gains in the prices of vegetable oils and dairy largely offsetting a fall in sugar and meat quotations. For 2016 as a whole, the index averaged 161.6 points, down 1.5 per cent from 2015, representing the fifth consecutive annual decline.

While prices of sugar and vegetable oils rose significantly in 2016, falling prices in cereal, meat and dairy markets kept the Index below its 2015 average.

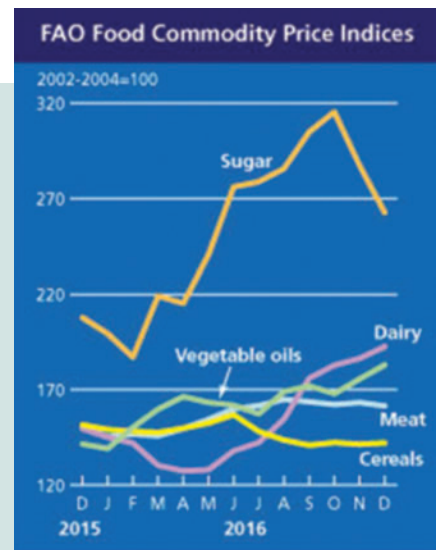
The FAO Cereal Price Index averaged 142.1 points in December, up just 0.5 per cent from November and broadly stable since September. International rice prices increased somewhat in December, sustained by official measures put in place in Thailand to prop-up local prices and also strong demand for supplies from Pakistan. Overall, the Cereal Price Index averaged around 147 points in 2016, down 9.6 per cent from 2015 and as much as 39 per cent from its peak in 2011.

The FAO Vegetable Oil Price Index averaged 183 points in December. Driven primarily by palm and soy oils, the index gained 7.4 points (or 4.2 per cent) from

November and reached its highest level since July 2014. For palm oil, low global inventory levels and protracted supply tightness continued to bolster prices. For the year as a whole, the index averaged nearly 164 points, up 11.4 per cent from 2015 but well below the values recorded in the preceding five years.

The FAO Dairy Price Index averaged 192.6 points in December, up 6.2 points (3.3 per cent) from November. Moderate rises were recorded for butter, cheese and whole milk powder (WMP), while quotations for skimmed milk powder (SMP) remained stable. While the Index average for 2016 was four per cent lower than the previous year, international dairy prices staged a substantial recovery from mid-year onwards, with butter and WMP recording the largest increases.

The FAO Meat Price Index averaged 161.5 points in December, 1.8 points (1.1 per cent) down from its revised value for November. Quotations for ovine and bovine meat in particular fell, while those for poultry and pig meat were only slightly down. Despite modest growth during the course of the year, the average value of the Index in 2016 was seven per cent below that of 2015,



with the largest falls recorded for bovine and poultry meats.

The FAO Sugar Price Index averaged 262.6 points in December, down 24.6 points (8.6 per cent) from November. The sharp fall in international sugar prices in December was mainly driven by a continuous weakening of the Brazilian currency (Real) against the US Dollar, boosting sugar exports from Brazil, the world's largest sugar producer and exporter. Overall, the FAO Sugar Price Index averaged 255.9 points in 2016, that is 34.2 per cent higher than in 2015. The sharp increase in 2016 mostly reflected in tighter supplies in Brazil, India and Thailand.

## Case IH celebrates 175 years of agricultural equipment production

GLOBAL AGRICULTURAL EQUIPMENT manufacturer, Case IH, is beginning a year of celebrations to commemorate its 175th anniversary at the brand's global headquarters in Racine, Wisconsin.

The Brand President Andreas Klauser said that the anniversary was a testament to many years of quality, perseverance and progress.

"I find it amazing to see just how far the farming industry and our company have come during the last 175 years especially given the fact that we are stronger than ever before today," Klauser stated. "The common theme which has always guided our innovative approach is to provide customers with ever-improving technologies that enable them to farm more efficiently and profitably."

The ACV robotic tractor is one of Case IH's latest offerings in farm equipment. (Photo: Case IH)



The company's beginnings were closely linked with those of the American economy, as American pioneers moved west and new farms were established there to feed the growing population centres in the East.

In 1869, Case went on to manufacture the first steam engine tractor, which though wheeled-mounted was drawn by horses and used only to power other machines, then in 1876 built the first self-propelled traction steam engine. As steam engines quickly replaced horses for threshing, the JI Case Threshing Machine Company became the world's largest producer of steam engines by 1886.

In 1902, five companies merged to form the International Harvester Company in Chicago, the deal being brokered, personally, by JP Morgan, the American banker who dominated corporate finance and industrial consolidation at the time. Case IH was formed in 1985 when JI Case acquired the agricultural division of International Harvester, uniting the legacies of Case and IH in a single brand.

Its first product, the Magnum tractor from 160hp to 240hp, was introduced in 1987 and became the first tractor to win the Industrial Design Excellence Award. Now producing up to 380hp, the Magnum continues to be one of the most recognisable Case IH products and more than 150,000 have been sold.

"When I look at the enormous transformation which has taken place in agriculture over the last 175 years, it is very exciting to think about what might be achieved during the next 175 years. I am sure that will be discussed during our celebrations with customers, dealers and employees," Klauser added.

## Biocontrol eliminates Pakistan's papaya pest

BIOCONTROL WAS SUCCESSFULLY used in Pakistan to fight a severe infestation by the papaya mealybug (*Paracoccus marginatus*), after pesticides failed to solve the problem.

Developed by agro-biotechnologists and entomologists at the Pakistani centre of the UK-based Centre for Agriculture and Bioscience International (CABI), the initiative used *Acerophagus papayae*, a parasitoid (insects whose larvae live as parasites and eventually and eventually kill the host) wasp to control the mealybug infestation.

"Farmers are happy with this cost-effective, pesticide-free technique to deal with the mealybug and now see possibilities of recovering their papaya farms," said CABI research coordinator Abdul Rehman.

Papaya, which once covered more than 921ha in the two coastal provinces of Sindh and Balochistan, shrunk to 307ha by 2014 after the first mealybug attack on papaya was reported in 2008.

Rehman told SciDev.Net that after the pest had gripped almost 80 per cent of the papaya orchards, CABI, US Development Agriculture and the US Agency for International Development initiated the biological control programme in close collaboration with NARC to stop the pest's possible spread to other more important commercial crops.



The mealy bug infestation had gripped almost 80 per cent of the country's papaya orchards. (Photo: Idiaphoto/Shutterstock)

In 2014, under CABI's papaya pest management programme, *A. papayae* specimens were collected from the coastal areas near the port city of Karachi, reared in the laboratory and then released into papaya plantations after screening and environmental assessments. CABI researchers set up a 'Natural Enemies Field Reservoir' on the farmers' fields to breed the *A. papayae* parasitoid as well as eight other natural predators of the papaya mealybug.

Amjad Pervez, director-general at the NARC's Karachi-based regional office, said that the advantage of the biocontrol approach lies in its simplicity of implementation and in the fact that it is self-sustaining.

"Demonstration of the biocontrol technique and awareness building among farmers helped wide-scale adoption and resulted in over 80 per cent control of the papaya mealybug," Pervez said. "Besides, the process was non-laborious, highly affordable and simple enough for farmers not to need support from government agencies."

Controlling the papaya mealybug has also helped to contain its potential spread to numerous other commercial crops including citrus, tomato, aubergine, peppers, mulberry, beans and peas, sweet potato, mango, cherry and pomegranate.



## SUPER CONVENIENT RAPID BREAST DEBONER M4.0

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# Unfolding the potential of the Asian market

The Asia edition of Agritechnica, the world's largest trade fair for agricultural machinery and equipment in Germany, to be launched on 15-17 March 2017 at Bangkok, will explore the potential of the growing Asian agricultural machinery and equipment market.

**A**GRITECHNICA ASIA TO be held in Bangkok, Thailand, is the first Asian edition of the world's leading agricultural machinery and equipment show from Germany organised by DLG International and VNU Exhibitions Asia Pacific. The show will focus on agriculture machinery for top produced crops in Asia such as rice, sugarcane, cassava, maize, root crops, palm oil and wheat and will see participation from 221 exhibitors from Asia and Europe and more than 8,000 trade visitors on 7,550 sq m of exhibition space.

At Agritechnica Asia, the emphasis will be on agricultural engineering solutions that are relevant to the development of agriculture in the Asian markets. The event also aims to provide an opportunity for leading agricultural equipment companies from around the world to address growing demands of the Asian market.

Mirco Maschio, president of Maschio Gaspardo Group, which will be participating in the event said, "In the last few years, the company has invested heavily in two new production sites in China (Qingdao) and India (Pune) to serve the Asian markets. This investment is an important step in achieving the global leadership position for providing the complete crop solutions to farmers. We decided to participate as a launch partner at the first Agritechnica Asia in Bangkok, aware of the strategic importance and the considerable growth of the Asian market in recent years."

Agritechnica Asia aims to not only bring together key stakeholders from the agricultural machinery industry but also to act as a unique platform for information and knowledge transfer through farming, research, consultancy and industries.

The event will host a broad program of conferences and discussion panels in collaboration with the DLG (German Agricultural Society). The conferences will cover a wide range of topics including sugarcane production, rice cropping or trade and investment of agricultural machinery close-partnered with well-known regional and international institutions. A few of the conferences topic include 'What are the actual trends in cane cropping?', 'How can rice yields be maintained facing changing climate and soil conditions?' and 'How to evaluate Asia's machinery markets?' These conferences will endeavour to offer participants a unique source of knowledge to fuel their farm and crop management, the event organisers said.

## International hosted buyer programme

One of the highlights of Agritechnica Asia is its unique hosted buyer programme. This programme sponsors 200 selected agriculture and horticulture buyers from across the world to participate in the event. The hosted buyer programme was created as a way to engage leading suppliers, farm owners, agriculturalists, agronomists, investors, distributors, dealers, decision makers and top executives from high profile companies to participate in the trade fair in March 2017. The key benefit for both parties is the time efficiency with real business on the line – relationships are established pre-event to ensure that onsite face-to-face appointments are productive.



The show will bring together the best of agricultural technology from around the world. (Photo: VNU Exhibitions)

Speaking about the programme, Agritechnica Asia project managers Marie Servais and Akachai Ponsomboon said, "The quality buyer that Agritechnica Asia looking for is the farm and managers who work in the sugarcane, rice, maize, cassava, oil palm plantation and processing in Cambodia, China, India, Indonesia, Japan, South Korea, Laos, Myanmar, Philippines and Vietnam. The program will support the 4/5 stars hotel accommodation in Bangkok for two nights during the exhibition, round trip flight ticket to Bangkok for one person and the participant will be invited to the Hosted Buyer Exclusive Lounge, business matching services and have free access to educational sessions. Agritechnica Asia team collects buyer's interests and solutions needed for farming to ensure that each qualified buyer that we host has genuine business for a variety of our exhibitors."

## Technical Forum

Another special feature of Agritechnica Asia 2017 is the Technical Forum, which will bring together experts from several sectors to provide expert knowledge and create a platform for discussions with farm managers and technology providers. Consultants, scientists or representatives of the agricultural technology industry will participate in the forum, which aims to provide participants an opportunity to present their topics, projects or experiences as well as strategies in agriculture and machinery and to participate in panel discussions. DLG's technical program is an essential part of Agritechnica Asia's aim to provide a unique opportunity for its participants to gain new knowledge and expertise in the latest developments in agricultural technology and machinery and beyond. ■



VIV Asia is one of the largest livestock events in Asia.  
(Photo: VIV Asia)

# VIV Asia 2017 set to break records



Zhenja Antochin,  
show manager at VIV Asia.

The 2017 edition of international feed-to-food trade show VIV Asia, in Bangkok, Thailand, promises to break records, in terms of attendance, exhibitors and events. Zhenja Antochin, show manager for VIV Asia, speaks to *Far Eastern Agriculture* about what the show has in store this year.

INTERNATIONAL FEED-TO-FOOD TRADE show, VIV Asia, is getting ready for what is being described as its largest ever edition. Since its last edition the show has seen tremendous growth, said show manager Zhenja Antochin. "In the last edition, we had 867 exhibitors from 47 different countries, which was a 15 per cent increase, compared to VIV Asia 2013. The 2017 edition will have 1000 exhibitors 52 countries, who are already confirmed. We have sold out our booth spaces and we are now looking at how we can allocate companies from the waiting list and give them a space to exhibit."

The show will have 10 official country pavilions and will feature latest innovations in animal health, feed ingredients and additives, breeding/hatching, feed production, farm management, slaughtering and processing.

Although it is still early to give an exact number, Zhenja estimates that this year the show will see more than 40,000 visitors from around the world.

## Event highlights

This year VIV Asia will co-host the aquatic feature for fish and shrimp production, Aquatic, the dairy event, DairyTech and its latest addition, Pet Health and Nutrition. Speaking about this new feature Zhenja said, "There is a lot of interest from our visitors for pet health and nutrition and we see a very big overlap between this and the other sectors we cover. Pet producers are visiting the show and many exhibitors at the show cater to this sector as well. So we are launching Pet Health and Nutrition as a speciality, a satellite."

Bio-energy is another speciality focus at the show this year, with a dedicated pavillion. "Last edition we had a small bio-energy pavillion which got a very good response at the show. It will be continued this year as well. We are setting up a conference with the team as we see that there is a very big overlap between bio energy, bio gas and solar energy. Farmers are also looking for ways to convert waste into biogas, which is used for energy, and can help them save money and contribute to sustainability."

The event will also host the e-Novations Gallery and Awards to encourage innovations in the industry. Visitors will have chance to vote for their favourite innovation, either online or while at the show, in each of the main show categories. The winning entry per category is to receive a special e-Novation Award in a ceremony on the second day of the show.

## Revamped floorplan

VIV Asia 2017 will feature a new and revised exhibition layout, which includes three newly built exhibition halls and two main squares and grand boulevards for events and activities. Where before VIV Asia was divided into separate halls, now it will occupy a single large space at BITEC in which the only sub-divisions are by signs to mark the groups of exhibits according to category. When visitors walk in from the newly built entrance they come to a broad boulevard path running the full length of the exhibit area. This has been specially designed to provide easy access to each individual section and make sure that all parts of the show are fully visible.

"The great thing about the new layout is that there no separation between the halls. It is the perfect set up for a configuration like this because under one roof, literally in one big area, we will have the complete industry represented, grouped by the sectors. Since we have around 1000 companies exhibiting, this layout which segregates companies by sector, also makes it more convenient for visitors to find suppliers in their field of interest."

## Knowledge programme

One of the key attractions of the show is its comprehensive knowledge programme.

"Our knowledge programme is one of the main reasons for visitors to come to the show because apart from visiting the booths, doing business and networking, knowledge is a very important goal for someone to visit an event like this," Zhenja said. He pointed out that during the whole week of the show numerous conferences, summits and seminars will take place in the city of Bangkok.

Some of them are organised by VIV, others by exhibitors and other organisations. "We try to identify the stakeholders who can bring in certain knowledge, it can be an NGO or an association or a media partner and give them a platform. Now, more and more of exhibitors have begun to organise their own conferences in conjunction with the show." Pre-show conferences on all the three speciality features of the show will be held before the opening of the show on 14 March 2017 in the city.

VIV Asia 2017 will be held from 15-17 March at Bangkok International Trade & Exhibition Centre (BITEC), Bangkok, Thailand. ■

# Fighting mite infestation in cage-free chickens

New research shows that dust baths and longer beaks can reduce mite infestations in cage-free and free-range chickens.

IN RECENT TIMES, with increasing interest in animal welfare among consumers, large portions of the poultry industry are shifting towards less restrictive housing. Many poultry farmers are replacing the conventional conjoined small wire cages with cage-free housing in large open poultry houses. While cage-free housing are said to improve the health of the birds, they also face greater risks from ectoparasites.

Most of the methods that commercial poultry farmers use to control mites, lice and other ectoparasites on their birds were designed with battery cages in mind. Chickens in battery cages can be sprayed with insecticides through the wire walls of the cage, so they do not need to be handled individually. On the other hand, the solid floors and nest boxes available in cage-free housing make life more comfortable for chickens, but they also provide places for parasites like the chicken mite (*Dermanyssus gallinae*) to hide, as well as organic debris where larvae of sticktight fleas (*Echidnophaga gallinacea*) can develop.

Apart from causing the chickens discomfort, mite infestations have economic consequences for poultry farmers. Stress due to mites can reduce egg laying by 10-15 per cent and severe infestations can reduce weight gain in birds raised for meat.

The challenge is to find ways to control ectoparasites effectively in cage-free environments. In the most recent issue of the *Journal of Economic Entomology*, researchers Amy Murillo and Bradley Mullens of the University of California, Riverside, tested whether providing cage-free chickens with dust baths containing a diatomaceous-earth mixture can effectively control one of the most common poultry ectoparasites—the northern fowl mite (*Ornithonyssus sylviarum*).

Dust bathing is a natural behaviour that chickens and other birds use to remove excess oils and to dislodge parasites from their feathers. To dust bathe, chickens typically scratch a shallow depression in the dirt, squat down in it and use their wings to fling the dirt or dust up into their fluffed feathers. Many poultry farms provide chickens with a shallow box filled with sand and other materials specifically for this purpose.



Dust baths are inexpensive and relatively easy to set up. The four essential ingredients that go into a dust bath are builder's sand, wood ash, soil and diatomaceous earth (DE). DE is actually a sedimentary rock made up of fossilised algae called diatoms. DE crumbles easily into a fine powder and has many commercial uses. Most terrestrial arthropods, including mites, have a waxy coating on the surface of their exoskeletons. This wax helps them maintain their internal water balance. DE scrapes off and absorbs this surface wax, and without the wax, mites die of desiccation.


While the idea of adding DE to a chicken's dust bath is not new, the research studied whether it would be effective on a larger, commercial-poultry-production scale. They housed experimental flocks of mite-free chickens in cage-free poultry houses and provided them with dust baths containing DE mixed with sand. They then put 20-30 northern fowl mites on each hen and monitored them. After several weeks, they removed the dust baths from half the flocks and continued to monitor mites.

When chickens had access to dust baths, mite populations increased, but slowly. Infestation severity remained below the threshold at which it has significant effects on the hens' egg laying and weight gain. In flocks where dust baths were removed, mite populations increased—in most cases to economically damaging levels.

"Ectoparasite problems are not going to decrease in cage-free or free-range poultry, but we can try to be as proactive as possible when it comes to managing pest problems," said Murillo. "There needs to be a balance between keeping chickens healthy (disease and parasite free) while allowing for natural behaviours and increased welfare."

The answer to controlling poultry ectoparasites in commercial, cage-free housing could very well be to let chickens be chickens. The research concludes that the natural dust bathing and grooming behaviours of the birds are effective at removing northern fowl mites—especially if beak trimming is minimised and birds are provided with dust baths containing DE mixtures. ■

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## Algae to enrich livestock products

ALGAE ARE GAINING worldwide attention for their application to the feed and food industries as a highly sustainable source of Docosahexaenoic acid (DHA). DHA is an omega-3 fatty acid naturally found in some species of algae and in fatty fish used for fish oil. Research has demonstrated DHA's importance as an essential nutrient for health at all stages of both human and animal life. In humans, DHA is essential for brain and eye development. Plentiful levels of dietary DHA are also linked to improved cognitive function and learning ability in children, including benefits for children with ADHD, as well as reduced risk of coronary heart disease, depression and Alzheimer's disease.

According to animal nutrition company Alltech, the DHA found within algae can naturally enrich pork, milk and eggs. Alltech provides a range of algae nutritional products for use in the diets of pigs, dairy cows and laying hens, allowing users to market their DHA-enriched products as value-added functional foods, meeting consumer demand



Alltech's algae nutritional product when used in the diet of chicken can improve the DHA content in their eggs. (Photo: Siambizkit/Shutterstock)

for nutrient-rich foods and beverages.

"Consumers are becoming increasingly nutrition-focused, seeking out foods that provide specific health benefits when shopping at the supermarket," said Nikki Putnam, registered dietician nutritionist at Alltech. "They're demanding more nutrition out of each bite while asking farmers and the food industry to keep their food fresh and flavorful. Alltech's ForPlus and All-G Rich dried microalgae fermentation products give producers the opportunity to increase the nutrient content of pork, milk and eggs without changing the flavour and quality consumers expect."

As such, Alltech is continuing to expand its algae DHA plant, one of the only two plants commercially producing high-DHA heterotrophic microalgae. The facility, which is capable of producing approximately 15,000 tonnes of algae per year, has already been updated since its opening in early 2011.

Alltech algae products are now registered with the Canadian Food Inspection Agency (CFIA).

## Big Dutchman expands operations in Asia-Pacific

GERMAN LIVESTOCK FEEDING systems and housing equipment company, Big Dutchman, has expanded its operations in the Asia-Pacific region with the opening of offices in the Philippines, Myanmar and Australia.

After combining forces with the Proline Group, the company has announced the expansion of its office in the Philippines. The office is one of the new additions to a growing list of established Big Dutchman locations across the Asia-Pacific region

that already includes Malaysia, Thailand, Indonesia, Vietnam, and Myanmar.

"The future expansion plans will allow the team to build up the market, promote the Big Dutchman brand and provide the Philippines with a new level of support that we are known for in the global market," said Patrick Ty, managing director at Big Dutchman Philippines.

The company has also announced the opening of its Myanmar office in Yangon and its Brisbane

office in Australia. The new office will further enhance the company's sales and support services for customers in the poultry production equipment.

The additional offices will accommodate the growing company structure and enable Big Dutchman to expand its business functions across the company while meeting the increasing demand of their customers regarding sales and support.



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## New disease detected in Vannamei Shrimps in India

THE DEPARTMENT OF Marine Living Resources at Andhra University (AU), India, has detected a new virus among Vannamei shrimps in Thailand and Vietnam. The findings show that a dual infection caused by abdominal segment deformity disease (ASDD) and microsporidian enterocytozoon hepatopenaei (EHP) has been affecting the growth and life of the Vannamei shrimps.

The findings, which were presented at the International Conference held in Kuala Lumpur, explain that both the diseases were detected in brooders in Thailand and Vietnam in 2012 and the AU department found the diseases in 2015. According to a report published in TheHansIndia, *Litopenaeus Vannamei* was introduced in India in 2008, when aquaculture had reached its peak.

The virus is estimated to affect over US\$147mn worth shrimps every year. “Brooders are imported from Hawaii by Rajiv Gandhi Centre for Aquaculture and supplied to the hatcheries after screening. Some hatchery owners directly import from Hawaii and set into production without screening. This could be one reason for spreading the diseases all over,” said R Janakiram, Marine Living Resources department.

A researcher at the department, Gandham Krishna Geetha, has also discovered a new probiotic, a new strain of *Bacillus cereus* isolated from the gut of wild *Penaeus monodon* brooder, which could be resistant to many diseases. Geetha said that the new strain proved



*Litopenaeus Vannamei* shrimp was introduced in India in 2008 to boost aquaculture production. (Photo: Kentaro Foto/Shutterstock)

to be antagonistic to *V. Harveyi* and can be used as a feed probiotic in shrimp after field trials. The commercial application of this new probiotic will give a big boost to the aquaculture industry in India, Janakiram added.

## EU green lights insect protein for aquafeed

EU COUNTRIES REPRESENTATIVES have voted in favour of the European Commission proposal to open the aquaculture feed market for insect derived protein from July 2017. The vote took place following a discussion on the proposal in a meeting of the biological safety of the food chain section of the EU Standing Committee on Plants, Animals, Food and Feed (SCoPAFF).

The text will be formally adopted during the spring 2017, which means that insect proteins should be effectively authorised for use in fish feed as from 1 July 2017. The decision removed the last barrier to the use of insects in fish feed in the EU.

IPIFF, the European Umbrella Organisation representing the interests of the insect production sector for food and feed, has welcomed the move. IPIFF president Antoine

Hubert said, “We are particularly pleased with the move made by EU institutions: the opening of this legislation is in our view a major milestone towards the development of the European insect production sector.”

Referring to the statement released by the European Food Safety Authority (EFSA), which concluded that insects fed with plant based materials entail no risks if insect producers comply with best hygiene practices, IPIFF vice president Tarique Arsiwalla said, “This is precisely the case of the IPIFF members, who comply with very stringent risk management procedures, in accordance with the EU food and feed safety legislations.”

Looking ahead, IPIFF expressed the will to pursue efforts towards a possible authorisation of insect proteins to other non-

ruminant species like pigs and poultry or to allow the use of other ‘high grade’ materials to feed their insects. “We will plead for further relaxation of EU rules, in case safety conditions associated with these new routes have been demonstrated,” explained Hubert. The recent ABN Amro report on this topic expects approval of insect meal for pigs and poultry in 2020.

“In the long run, these changes should contribute to alleviate European dependency on protein imports, while securing a promising source of protein for EU farmers and customers,” the IPIFF chair said.

Commenting on the move, Jason Drew, co-founder of South Africa based fly farmer AgriProtein, said that the move brings insect protein into the mainstream of ingredients permitted in animal feed. “This is a big step forward for the environment and for world food security,” he said.

“Trawling the oceans to produce fishmeal is one of the most destructive activities on the planet. Replacing fish protein with insect protein in animal diets allows us to dedicate our oceans to production for human consumption alone. But while the new regulations will permit insect protein as a feed in EU aquaculture, the situation has not changed for other farm animals.” Drew is hopeful that regulators will soon approve insect protein as a feed for all non-ruminants.

The move is expected to contribute towards reducing trawling in oceans for fishmeal. (Photo: taurus15/Shutterstock)



# The new face of utility tractors

With multiple new features and added flexibility for tackling heavier tasks, Massey Ferguson's newly launched Global Series utility tractor ranges redefines the 'utility' of utility tractors.

**M**ASSEY FERGUSON, A worldwide brand of AGCO, has announced an extension to its Global Series utility tractor range with the release of the MF5700 and MF6700 Series in both platform and cabin models. The two new larger and more powerful ranges complete the Global Series model offering by adding five new models from 92 hp to 132 hp, continuing on from the successful MF4700 Series (74 hp – 82 hp) that was released to the Far East in 2014.

"The release of the new MF4700 Series in 2014 was an exciting initiative as it allowed us to offer customers a new concept in utility tractors with a choice of build-specifications, options and accessories at exceptional value," said Alex Baker, manager for AGCO's operations in the Far East. "The new MF5700 and the new MF6700 Series further increases the offering and provides added flexibility for customers wishing to tackle heavier tasks with a straightforward and dependable tractor."

Massey Ferguson's Global Series is the result of a US\$350mn investment in a completely new, clean sheet design with more than 90 per cent of the parts and components being engineered specifically for the tractors.

"Unlike the majority of other tractors in the sector, which are based on earlier designs and components, the Massey Ferguson Global Series has been designed and built in the 21st century and is purpose-built for modern applications. While using the very latest advanced engineering and manufacturing tools and techniques, they still retain our traditional straightforward operation, dependability and value for money," Baker pointed out.

MF5700 and MF6700 Series includes MF5709 (92 hp), MF5710 (102 hp), MF6711 (110 hp), MF6712 (120 hp) and MF6713 (132 hp), which come with AGCO POWER 4.4 L, four cylinder turbocharged, mechanical fuel injected engines.

## Highlighted features

Massey Ferguson engineers in Beauvais, France have developed a completely new 12 speed synchronised transmission which is available in both mechanical and electro-hydraulic reverse shuttle options. This makes the engine simple, reliable and easy to use with gear levers acting directly on the selector rails – one lever selects high or low range; while the other shifts the gears. The declutch button mounted on the gear lever makes shifting on the move even easier with the electro-hydraulic option.

All models are available with either a comfortable flat floor platform operator environment or an inviting newly designed cab. Either option comes equipped with logical and easy to use controls that are operated manually.

An analogue instrument panel provides information on engine speed, fuel level and temperature as well as housing the warning lights for 4WD, PTO, diff-lock and other functions. A digital display shows PTO speed, engine hours and forward speed.

The machine's modern, heavy duty, structural casting rear axle design contains new inboard

reduction units and oil-immersed brakes. The hitch control combines straightforward operation of the lever with the responsiveness and accuracy of an electronic system.

## Fuelled by hydraulic power

Massey Ferguson has developed a completely new open-centre hydraulic system for the Global Series, which exceeds the flow and pressure demands of most modern applications and implements.

This employs two high pressure gear pumps, one to supply the rear linkage and the other to supply auxiliary spool valves. A separate pump supplies the low pressure system including the steering, 4WD and diff-lock engagement as well as PTO control. This dual circuit system ensures there is always sufficient flow for continuous, efficient operations. The two high performance pressure pumps can be coupled using a switch supplying 98 L/min to loader or auxiliary operations without disabling the lift functions.

## Centre drive four-wheel drive

The modern gearbox design provides an additional output shaft to provide drive to the front axle. The drive shaft is tucked neatly underneath the centre of the gearbox and engine and it is fully guarded for protection.

Four-wheel drive is engaged electro-hydraulically on the move, through a simple, robust 'dog-tooth' clutch. It is permanently engaged by spring pressure and released by hydraulic pressure. The purpose-built 4WD front axles with hydrostatic steering, offer excellent maneuverability and load capacity. To enhance traction, the electro-hydraulic differential lock engages both the front and rear axles. ■



The two new ranges includes five new models from 92 hp to 132 hp. (Photo: AGCO)

# Fighting mycotoxin contamination in silage

Due to continuous development of moulds in storage, silage is at high risk for mycotoxin contamination. However a robust silage management and control programme can help to control such infestation.

**T**HE RECENTLY PUBLISHED Nutriad 2016 mycotoxin survey concluded that the level of mycotoxin contamination found in UK and Ireland has increased since the last two years. With rising level of mycotoxins in feed, concerns over its impact of animal health are growing.

Mycotoxins are secondary metabolites produced by filamentous fungi that cause a toxic response known as mycotoxicosis when ingested by farm and companion animals. *Fusarium*, *Aspergillus*, and *Penicillium* are the most common moulds that produce these toxins. Mycotoxicosis in ruminants is often the result of exposure to multiple toxins, due to pre-harvest infestation of feed materials as well as from postharvest contamination of stored materials.

According to Dr Max Hawkins, a nutritionist with Alltech's mycotoxin management team, some of the factors that affect mycotoxin production in fermented forages include plant stress prior to harvest, packing density, moisture, oxygen exposure and face management.

"Producers often ask how this is possible once the forage has been fermented. Mycotoxins are produced by soil-born moulds and these not only infest the plant but are also brought into the storage facility with the harvested crop," said Dr Hawkins. "Just as in the field, if the environmental factors are in place for the moulds to flourish, they will; and if crops are stressed, they can produce a mycotoxin."

Researchers warn about the danger posed by multi-mycotoxin contamination, which is the most common type of contamination caused by silage. At farm level, animals are more frequently exposed to a moderate amount of different mycotoxins over an extended period of time, rather than to high amounts of a single mycotoxin. This is of particular concern because of the detrimental additive effects of the mycotoxins on animal health.

## Prevention of mycotoxin contamination

There are two stages in which fungi can colonise and lead to the production of



Farm animals are exposed to multi-mycotoxin contamination in silage, which puts them in danger of more harmful effects. (Photo: Alisa24/Shutterstock)

mycotoxins: pre-harvest or post-harvest stages. In the first case, since pre-harvest events are dictated by multiple environmental and agronomic factors including moisture, humidity, temperature, plant stress, pesticide and fungicide treatments and insects, mycotoxin contamination is controllable only to a limited extent.

However in the post-harvest stage environmental conditions can be controlled and optimal ensiling conditions can play a major role in decreasing the growth of moulds and mycotoxin contamination. It is recommended that dairy farmers adopt an effective silage management and control programme that covers all the production phases including the ensiling process and the management of the open silo.

## Silage management measures

Researchers Feredica Cheli and Vittorio Dell'Orto from the University of Milan, Italy, explain that there are many critical points in ensuring good ensiling practices. Proper assessment of the size of the silo to match the feeding rates and evaluation of the moisture content and stage of maturity of the crop are essential as these can help to control the

growth of mould. Assessment of the best chop length and particle size allowing a good compaction, density, rapid pH drop and fermentation is another important step.

A crucial way to avoid mycotoxin contamination is through rapid harvest, filling and sealing of silage. Choosing the right covering material to reduce the risk of air penetration is also critical.

Many researchers advocate the use of microbial inoculants like heterolactic LAB inoculants as higher production of antifungal compounds such as acetic acid, may improve the silage aerobic stability.

When a silo is opened, oxygen becomes available to the front of the mass and thereby boosting the activity of yeasts and moulds. This is why silage face management practices are of crucial importance. Experts recommend a smooth surface perpendicular to the ground with no cracks.

It is essential to ensure that mouldy parts of silage are discarded quickly and efficiently. Controlling spoilage at the feed bunk, removing uneaten feed, cleaning the bunk daily and keeping water out are few among other practices that can go a long way in controlling mycotoxin contamination. ■

## Cow facial recognition now a reality

FACIAL RECOGNITION IS set to revolutionise the world of livestock farming by using a cow's unique set of features as usable data to identify that specific animal.

Machine vision company Cainthus has developed the technology to turn visual information into actionable data to facilitate visual recognition on cows. Their current focus is on improving agriculture, regardless if their technology's end-use has great potential.

David Hunt, the co-founder of Cainthus, said, "As far as we know, we're the only company in the world that can ID a cow solely using visual recognition. Today we have 97 per cent accuracy in ID on an individual image, but by sheer weight of analysis our ID accuracy is effectively 100 per cent."

He also pointed out that they have made their first commercial sale and installation. They plan on prioritising larger dairies of over 1,000 cows, as this is where their system will have the maximum impact.

Hunt said their mission to create an effective cow recognition system stemmed from the realisation that one of the big problems in the industry is a lack of scale measurement. "We realised many years ago that most of the big problems in agriculture can be a result of a lack of commercial scale measurement," said Hunt.

They added that this can make things difficult to improve within the industry, as not being able to accurately measure something makes it hard to improve. Imaging sensors, according to him, are the cheapest way to provide commercial scale measurement for agricultural fields and a solution for the problem of the decreasing labour force. He said, "The combination of advanced sensor data and analytics to interpret them will create a platform capable of making constant small interventions to ensure maximum productivity."



**This technology can successfully identify cows based purely on facial recognition. (Photo: Smereka/Shutterstock)**

This technology, according to Hunt, could make farms more of a mixed enterprise in the future. By 2050, Hunt thinks farms will be mixed and use agro-ecology style systems with many different crops and livestock.



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# Copper bottomed protection for tea under high rainfall

A contact protectant fungicide plays a major role in protecting tea crops against the blister blight disease and other fungal infections, especially under high rainfall. Dr Terry Mabbett explores the history, logistics and benefits of using copper fungicides for the crop.

**A** CONTACT PROTECTANT fungicide does exactly what the name says. Fungicide deposited by spraying on the plant surface protects the crop against infection by killing fungal spores and other infective microbial propagules that contact the active fungicide ingredient. An effective protectant fungicide requires a particular physical and chemical profile, including the following traits.

- Have a high tenacity so that the deposit adheres strongly to the leaf
- Resist erosion and loss from the splashing action of rainfall and the washing effect of surface water
- Is sparingly soluble in water so that the active fungicide is released slowly from the deposit over an extended period of time
- Have a broad spectrum of microbial activity which covers fungi from across the classification system and other pathogenic microbes including bacteria and algae.

These requirements are especially important for the protection of tea (*Camellia sinensis*). Tea is traditionally grown in areas experiencing prolonged rainfall of high intensity and large in total amount, together with extended periods of heavy cloudy cover, high humidity and leaf surface wetness. This combination of conditions is invariably favourable for fungal infection, disease development and spread, while protectant fungicide deposits are exposed to exceptionally high weathering pressure.

Tea grows and yields best under high and evenly distributed rainfall requiring at least 1500 mm and optimally between 2500 to 3000 mm, although rainfall figures of 4000 mm per annum are not unknown in some tea growing areas of Asia. Optimum temperature range is 21°C to 29°C with a 16°C minimum. Atmospheric humidity must be high (between 70 and 90 per cent) because otherwise the shoots form dormant buds and the bush stops growing. This defeats the whole object of cultivating tea because the young leaf is the harvestable commodity. Despite its high requirements for water, tea requires an average five hours of sunshine per day because under cloudy conditions with heavy and prolonged



Classic blister-like lesion on the tea leaf which gives blister blight disease this very appropriate common name. (Photo: Trond Kristiansen, Nordox)

rainfall, yield drops due to plant physiological reasons and due to higher pathogen activity, greater levels of disease and accompanying plant damage.

*The combination of conditions in which tea is grown is invariably favourable for fungal infection, disease development and spread.*

Like other evergreen tropical tree crops, including citrus and coffee, well managed tea has a long productive life spanning 50 years or more but is correspondingly more affected by climate and weather compared to annual arable crops like wheat and maize. The salient

difference between tea and other evergreen tropical tree crops, also requiring protection against foliar disease by fungicide spraying, is that leaves on the tea plant only require protection for a comparatively short time. And clearly because they only remain on the plant for a short period time before being picked for processing while still young. By the same token, any fungicide used on tea must possess a short safe harvest interval (minimum time allowed between last fungicide application and leaf picking). Citrus leaves which are closest in form and structure to tea leaves will typically stay on the tree for three to four years.

## Finding a fungicide for tea

There is a very long history of fungicide use on tea and a contact protectant fungicide was already in use 100 years ago. Copper (as the divalent cation or  $\text{Cu}_2^+$ ) was the first contact protectant fungicide to be discovered and



developed, first in southern France where it was sprayed in vineyards as Bordeaux Mixture (a formulation of blue copper sulphate and lime water) to control downy mildew of grapes.

By 1915 Bordeaux Mixture was being recommended in India for the protection of tea against a number of leaf, stem and branch diseases. A fascinating publication called 'Notes on the spraying of tea' published in 1915 by the Indian Tea Association recommends sprays of Bordeaux Mixture to control of copper blight (*Laestidia thea*), grey blight (*Pestalozzia palmarum*), brown blight (*Colletotrichum camelliae*), red rust (*Cepaleuros virescens*), the dieback disease (*Gloeosporium* sp), tea canker (*Nectria* sp) and epiphytic plants including lichens, mosses and ferns. Application was made by knapsack sprayers using essentially the same mechanism and operation as our modern hydraulic high volume lever-operated knapsack sprayers, except in those days the spray tank was made of metal and not plastic.

Perversely, no mention was made of Blister blight of tea (*Exobasidium vexans*) although the disease had been reported in the tea estates of Assam as early as 1868. However, this highly damaging disease affecting young shoots and leaves rapidly became the number one disease problem for tea growers across the Indian sub-continent and South East Asia. Today most fungicide spraying is directed at blister blight disease and still mainly using copper fungicides, although the copper-containing chemicals, the formulations and the spray application equipment used has changed out of all proportion. Bordeaux Mixture is still



**Blister blight infection which has severely damaged the still growing and expanding leaf tissues, creating tensions in the leaves and distorting the normal tea leaf shape.**  
(Photo: Trond Kristiansen, Nordox)

used today but was overtaken by the development of fixed copper compounds (cuprous oxide, cupric hydroxide and copper oxychloride) as agricultural fungicides.

*Cuprous oxide developed in the 1930s made the most impact as an agricultural fungicide because of its inherent advantage over other fixed copper fungicides.*

#### **Particulate fixed copper fungicides**

The word 'particulate' describes the discrete particles of fungicide while the word 'fixed' refers to the insolubility of these particles in

water, or to be more exact how they are only sparingly soluble in water. These two properties ('particulate' and 'fixed') form the basis of high tenacity or ability to adhere (stick) to the tea plant surface, which is clearly an essential credential for maintaining lasting protection against infection and disease development under high rainfall conditions.

Cuprous oxide developed in the 1930s made the most impact as an agricultural fungicide simply because it has an inherent advantage over other fixed copper fungicides. The molecular weight of cuprous oxide [Cu<sub>2</sub>O] is 143.00 with 127.00 (88 per cent) accounted for by the mass of two copper atoms. The equivalent figure for cupric hydroxide [Cu(OH)<sub>2</sub>] is 63.5/97.5 (65 per cent) and for copper oxychloride [3Cu(OH)<sub>2</sub>.CuCl<sub>2</sub>] is 381.00/696.00 (55 per cent).

Recommendations for use of fixed copper fungicides in the tea growing regions of Asia



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were rapidly established after the Second World War. Number one target in all areas was by then blister blight of tea with dosages, volumes and other specifications made according to stage of tea plant growth and crop management. A brief summary of the recommendations made by the Tea Research institute in Sri Lanka in 2002 for cuprous oxide (Wettable Powder 50 per cent active copper) is:

- In nurseries: use 120 g in 45 l of water to cover 30,000 plants - an area of approximately 250 sq m – sprayed every four days or less
- Tea recovering from pruning: use 420–560g in 170 l/ha sprayed every four to five days
- Tea in plucking: use 280–420g in 170 l/ha sprayed every 7 to 10 days

### Spray application notes

Prevailing high humidity in the tea nursery caused by constant shade places young tea plants at continual threat of infection by the blister blight fungal pathogen (*Exobasidium vexans*) and thus requires these young plants to be treated much more frequently than tea bushes are sprayed in the field. Tea bushes are most vulnerable to blister blight while recovering from pruning because at this stage virtually all the foliage is new, young and tender leaves and shoots. And further re-foliation required due to any loss of this first flush of new growth will be at further expense of food reserves stored in the woody tissue of the bushes leading to their weakening and even death.

A broader range of diseases affecting tea albeit at generally much lower levels than blister blight still exists today. Many of these diseases are susceptible to copper fungicides and will be automatically managed at sub-economic levels by frequent spraying of copper fungicides targeted primarily at blister blight disease. By and large they are the same diseases quoted earlier in this article from the Indian Tea Association's 1915 spray application notes although the scientific names used for many of the pathogens have changed in the intervening 100 years.

Cuprous oxide and other copper fungicides can be sprayed using a hydraulic, high volume, lever-operated knapsack sprayer or by using a motorised low volume shoulder-mounted mistblower. The obvious advantages of employing the latter is the lower volume of



**There are set fungicide recommendations for spraying tea at the different stages of management including the leaf picking period. Tea picking in Indonesia is shown here. (Photo: Trond Kristiansen, Nordox)**

water (30-45 l/ha) that has to be carried and applied (compared with the 170 l/ha for high volume knapsack sprayers) and the quicker coverage of tea fields thus obtained.

However, there are more crucial and critical advantage of using low volume mistblowers related to the interactive biology of the tea plant and fungal pathogens. Evergreen leaves like those of tea plants are covered on the upper surface by a thick waxy cuticle which means the stomatal pores are usually confined to the underside of the leaf. Germinating fungal spores penetrate the leaf in two ways, by developing a high pressure appressorium which 'cracks the cuticle' or by entering the leaf directly via the stomatal aperture. Either way the underside of the leaf is invariably the prime target for infection by fungal pathogens. The air-stream generated by the mistblower ruffles the leaves of the outer canopy to expose their undersides to incoming spray droplets, while opening-up the canopy to spray droplets that will protect the leaves inside.

### High-copper formulations

One significant change in the last two decades is development of high-copper formulations of cuprous oxide which contain a 75 per cent metallic copper equivalent compared to the 50 per cent metallic copper equivalent of standard formulated products. Nordox AS in Norway, which was the first to develop cuprous oxide as an agricultural fungicide back in the 1930s, has been at the forefront of these developments.

Trond Kristiansen, marketing director of agronomy at Nordox AS, told *Far Eastern Agriculture* how tea growers in Indonesia

currently spray cuprous oxide fungicide as Nordox 50 WP (wettable powder with 50 per cent metallic copper equivalent) at a rate 170-200 g/ha or as Nordox 75 WG (water dispersible granule with 75 per cent metallic copper equivalent) at a rate of 130 g/ha after each harvest of the young leaves and shoots and to control blister blight disease.

***There are more crucial and critical advantages of using low volume mistblowers related to the interactive biology of the tea plant and fungal pathogens.***

Tea estates also experience problems with a wide range of epiphytes that grow on the woody stems and branches and which like blister blight disease are encouraged by high humidity within the canopy. These include lichens, algae, mosses, liverworts and ferns. Cuprous oxide will control epiphytic growth due to the broad spectrum action of the divalent copper ion ( $\text{Cu}_2^+$ ).

Tea can be kept clean of epiphytes by applying sprays of Nordox 75 WG at a rate of 5kg/ha after deep pruning of the bushes, and critically before the new tea shoots begin to appear. The alternative option is the manual removal of epiphytes from tea bushes. However, in comparison, this procedure is very expensive and substantially less effective, Kristiansen added. ■

# Poultry Buyers' Guide

# 2017

**Section One** - Listing by categories

**Section Two** - List of suppliers

**Section Three** - Contact details of agents & subsidiaries in Asia

**PLEASE MENTION FAR EASTERN AGRICULTURE  
WHEN CONTACTING YOUR SUPPLIERS**

## Section One

### All Equipment

Henke-Sass, Wolf GmbH  
Pel-Tuote Oy

### Cages - breeder

Big Dutchman International GmbH

### Cages - broiler

Big Dutchman International GmbH

### Cages - brooder and rearing

Big Dutchman International GmbH

### Cages - layer

Big Dutchman International GmbH

### Climate Systems

Big Dutchman International GmbH  
Lubing Maschinenfabrik GmbH & Co. KG  
Termotecnica Pericoli

### Computer Systems

Big Dutchman International GmbH

### Disinfection Equipment

Impex Barneveld b.v.

### Disinfection Products

Impex Barneveld b.v.  
Intraco Ltd. n.v.

### Egg Collection, Handling and Transport

Big Dutchman International GmbH  
Lubing Maschinenfabrik GmbH & Co. KG

### Environment Controls

Termotecnica Pericoli

### Evaporative Cooling Systems

Big Dutchman International GmbH  
Lubing Maschinenfabrik GmbH & Co. KG  
Termotecnica Pericoli

### Exports

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

### Feed

Eurofeed Technologies S.p.A.

### Feed Additives

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

### Feed Additives, Natural

Ayurvet Ltd.  
Eurofeed Technologies S.p.A.  
HAMLET PROTEIN AS

### Feeds, Concentrates, Premixes

Ayurvet Ltd.  
Eurofeed Technologies S.p.A.  
HAMLET PROTEIN AS  
Intraco Ltd. n.v.

### Feed Ingredients

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

### Feeding Systems

AWILA Anlagenbau GmbH  
Big Dutchman International GmbH  
Impex Barneveld b.v.

### Fogging Equipment

Big Dutchman International GmbH  
Impex Barneveld b.v.

### Hatching and Incubation

Impex Barneveld b.v.

### Health Control

Henke-Sass, Wolf GmbH

### Heat Control Systems

Big Dutchman International GmbH  
Termotecnica Pericoli

### Health Products

Ayurvet Ltd.  
Henke-Sass, Wolf GmbH  
Socorex Isba S.A.

### Housing

Big Dutchman International GmbH

### Medicators

Henke-Sass, Wolf GmbH  
Impex Barneveld b.v.  
Lubing Maschinenfabrik GmbH & Co. KG

### Mould Inhibitors

Ayurvet Ltd.  
Eurofeed Technologies S.p.A.

### Nests and Nesting Systems

Big Dutchman International GmbH  
Impex Barneveld b.v.

### Processing - Killing and Defeathering

Meyn Food Processing Technology b.v.

### Salmonella Control

Eurofeed Technologies S.p.A.

### Slaughtering Equipment

Meyn Food Processing Technology b.v.

### Sanitation

Intraco Ltd. n.v.

### Ventilation Equipment

Big Dutchman International GmbH

### Veterinary Instruments

Henke-Sass, Wolf GmbH  
Socorex Isba S.A.

### Veterinary - Vaccinators

Henke-Sass, Wolf GmbH

### Watering Equipment

Big Dutchman International GmbH  
Impex Barneveld b.v.  
Lubing Maschinenfabrik GmbH & Co. KG

## Section Two



### AWILA Anlagenbau GmbH

Dillen 1, Lastrup, 49688, Germany  
Tel: +49 4472 8920  
Fax: +49 4472 892220  
Web: www.awila.de  
E-mail: info@awila.de

Planning, design and erection of turn-key feed mills, grain silo plants, mineral and vitamin premixing and dosing systems, pasteurising systems, biofuel processing equipment. Production of intakes conveyor-system, storage systems, mills, mixers, presses, coolers, conditioners and control systems.



### Ayurvet Ltd.

Unit No101-103, 1st Floor  
KM Trade Tower, Plot No H-3  
Sector-14, Kaushambi  
Ghaziabad (UP), 201010, India  
Tel: +91 120 7100202  
Fax: +91 120 7100202  
Web: www.ayurvet.com  
E-mail: pverma@ayurvet.com

Ayurvet Limited is a leading manufacturer and exporter of natural animal healthcare products for poultry, dairy, pigs, aqua, equine and pets. We have

solutions for current age problems like alternative to antibiotics, natural anti-coccidials, growth promoters, anti-mastitis, natural toxin binders & immunomodulators for food animal production. Our world class manufacturing unit is ISO 9011, and EU-GMP Certified. Contact us for more info and distributorship in your country.

### Agents:

Bangladesh - ACI, Bangladesh  
Malaysia - Yenher Agro Products Sdn  
Myanmar - Yin Yin Kyaw Int'l Trading Co., Ltd.  
Taiwan - J. John Industry Co. Ltd.  
Thailand - American Marketing Co. Ltd.  
United Arab Emirates - Salsabeel Veterinary Medicines LLC



### Big Dutchman

### Big Dutchman International GmbH

PO Box 1163, Vechta, 49360, Germany  
Tel: +49 444 78010  
Fax: +49 444 7801237  
Web: www.bigdutchman.de  
E-mail: big@bigdutchman.de

Worldwide Big Dutchman is the market leader in housing and feeding systems for poultry production. Big Dutchman offers modern cages for laying and rearing as well as for breeders. Manure belt ventilation, complete range of equipment for floor management, drinking systems, climate control, alternative housing systems for laying hens and housing and feeding systems for turkeys and broiler are further examples from the complete Big Dutchman program.

### Agents:

Bangladesh - AFS Enterprise  
China - Big Dutchman (Tianjin) Livestock Equipment Co. Ltd.  
India - Big Dutchman India Pvt. Ltd.  
Indonesia - PT BD Agriculture Indonesia  
Indonesia - PT BD Agriculture Indonesia Surabaya Office  
Japan - Masahiro Sumiya  
Japan - Nakajima Seisakusho Co. Ltd.  
Japan - Tohzai Sangyo Boeki Inc.  
Korea - Ganong International Co. Ltd.  
Korea - Jeong Jin Soo  
Korea - Samsung MS  
Malaysia - BD Asia Sdn Bhd  
Pakistan - Eastern Veterinary Services  
Philippines - Asia Giant Enterprises  
Singapore - Morgan Enterprise  
Taiwan - Bartholomew Lo, Siu-Man  
Taiwan - Global Ace Trading Co.  
Thailand - BD Agriculture (Thailand) Ltd.  
Vietnam - Big Dutchman Vietnam HCM Rep.



### Eurofeed Technologies S.p.A.

Via L. Einaudi, 12, Loc. Bettolino  
Brandico (BS), Italy  
Tel: +39 030 6864682  
Fax: +39 030 6866560  
Web: www.eurofeed.it  
E-mail: info@eurofeed.it

Eurofeed Technologies S.p.A. is an Italian company that produces and trades feed additives all over the

world. We are GMP Certified. Eurofeed Technologies' portfolio includes the following additives as Acidifiers, Antioxidants, Antimicrobials, Aromas, Mould Inhibitors, Mycotoxin Binders, Natural Diarrhea Preventions, Nutraceutical Feed Supplements, Pellet Binders, Trace Mineral Chelateds, Vegetable Protein Concentrate.



### Format Solutions Ltd.

Format House  
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Woking  
Surrey  
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United Kingdom  
Tel: +44 1483 726081  
Web: www.formatolutions.com  
E-mail: fs\_sales@cargill.com

## HAMLET PROTEIN AS

Saturnvej 51, Horsens, 8700, Denmark  
Tel: +45 75 631020  
Web: www.hamletprotein.com  
E-mail: info@hamletprotein.dk

The highly digestible protein in our product HP AviStart helps give chicks the very best start! HP AviStart is a unique protein source made by co-processing soy and yeast. Compared to standard soy proteins, it contains a very low level of the anti-nutritional factors that limit the absorption of feed nutrients.

### Agents:

Thailand - Jensen & Jessen Ingredients



## Henke-Sass, Wolf GmbH

Keltenstraße 1  
Tuttlingen  
78532  
Germany  
Tel: +49 7462 9466118  
Fax: +49 7462 94665208  
Web: www.henkesasswolf.de  
E-mail: stefan.knefel@henkesasswolf.de

Henke-Sass, Wolf (Tuttlingen/Germany) is a leading manufacturer with more than 90 years of experience in designing and producing veterinary syringes, needles and application systems.

Everything for the poultry users from one source! Single/double automatic vaccinator for day-old chicks: enables injection of two different vaccines with only one penetration.

HSW UNI-MATIC® - 0,1 ml - 1 ml; no o-ring to reduce maintenance issues; failure free valves ensure injections without interruption.

HSW FINE-JECT® disposable needles-extra short sizes e.g. 18Gx1/2", 20Gx1/4", 22Gx3/8".

HSW ECO® needles- re-usable metal hub needles; extra short sizes e.g. 19Gx1/2", 20Gx1/2".

Wing Web Vaccinators- ideal for pox and other micro-dosage injections; enables a total dosage per vaccinator of 0.001 ml and 0.01 ml.

### Agents:

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



## Impex Barneveld b.v

PO Box 20, Harselaarseweg 129  
Barneveld, 3770 AA  
Netherlands  
Tel: +31 34 2416641  
Fax: +31 34 2412826  
Web: www.impex.nl  
E-mail: info@impex.nl

Impex Barneveld b.v is a pioneer and specialist in drinking equipment for poultry, pigs and livestock. Impex automatic AGRILAND® drinking systems originate from the need for efficient animal breeding automation and are perfected by our technical staff with more than 45 years of experience in the coordination of automation for poultry and pig management.



## Intraco Ltd. n.v

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

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

HI-CONCEPT: Integrated Hygiene Solutions  
HI-ALERT: Integrated Biocide Program  
ADD-OPTIMALS: Innovative feed additives



## Lubing Maschinenfabrik GmbH & Co. KG

Lubingstrasse 6, Barnstorf  
49406, Germany  
Tel: +49 5442 98790  
Fax: +49 5442 987966  
Web: www.lubing.com  
E-mail: info@lubing.com

### Agents:

Bangladesh - A.R. Poultry Khamar  
China - Lubing Sysytem Engineering (Shenzhen) Co. Ltd.  
India - Lubing India Pvt. Ltd.  
Indonesia - PT. Charoen Pokphand Indonesia  
Iran - Arsam Kar Tehran  
Japan - Hylem Co. Ltd.  
Korea - LSG Co. Ltd.  
Korea - Sein United  
Malaysia - Tong Seh Industries Supply Sdn Bhd  
Pakistan - Ample Trade Impex  
Russia - Zubarev-Technik GmbH  
Thailand - KSP Equipment Co. Ltd.  
Vietnam - Dong A Material-Veterinary JSC



Poultry Processing Solutions

## Meyn Food Processing Technology b.v

PO Box 16, Oostzaan  
1510 AA, Netherlands  
Tel: +31 20 2045000  
Fax: +31 20 2045001  
Web: www.meyn.com  
E-mail: sales@meyn.com

### Agents:

Bangladesh - Chicks & Feeds Ltd.  
India - Meyn Food Processing Technology b.v India Office  
Indonesia - PT Euroasiatic Jaya  
Japan - Prifood Corporation Ltd. Gordex Co.  
Kazakhstan - Crown Central Asia Ltd.  
Korea - Millbankorea Ltd.  
Malaysia - Poullive Sdn. Bhd.  
Pakistan - Bio-Vet Pvt. Ltd.  
Singapore - Lee Guan Chuan Ltd.  
Vietnam - Euroasiatic Jaya PT.



## Plasson Ltd.

PO Box 108, 105 Ha'llan Street  
North Industrial Zone, Or-Akiva  
30600, Israel  
Tel: +972 73 2413001  
Fax: +972 73 2413221  
Web: www.plassonpoultry.com  
E-mail: poultry@plasson.co.il

### Agents:

Japan - Tohzai Sangyo Boeki Inc.  
Japan - Yamamoto Corp.  
Malaysia - Edaran-Ispro (M) Sdn Bhd  
Philippines - Belmont Agricornp  
Philippines - First Citylink Enterprises  
Philippines - Jemcy Enterprises  
Thailand - Kasethpand Industry-KSP Equipment Co. Ltd.

## Socorex Isba S.A.

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



## Termotecnica Pericoli

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Tel: +39 0182 589006  
Fax: +39 0182 589005  
Web: www.pericoli.com  
E-mail: pit@pericoli.com

Termotecnica Pericoli, a global market leader specialized in climate technology since 1967 in design, manufacture and distribution of efficient/quality heating, cooling and ventilation equipment and systems for livestock, agricultural and industrial sectors with a full range of products to meet all specifications and applications backed by an extensive qualified global distribution network.

### Agents:

Malaysia - Pericoli Asia Pacific

## Section Three

### Bangladesh

#### A.R. Poultry Khamar

69/A, Green Road  
Pathapath, Kolabagan  
Dhaka, 1205  
Tel: +880 2 9821149/51  
Fax: +880 2 9821152  
Web: www.lubing.com  
E-mail: rajufeed@yahoo.com

#### ACI, Bangladesh

ACI Centre 245  
Tejgaon Industrial Area  
Dhaka  
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Fax: +880 2 8878626  
Web: www.aci-bd.com  
E-mail: shaheenshah@aci-bd.com

#### AFS Enterprise

Banani, Dhaka  
1213  
Tel: +880 2 8858404  
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### Chicks & Feeds Ltd.

House 8, Road 14, Dhaka, 1209  
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Fax: +880 2 814253133  
Web: www.cknfeeds.com  
E-mail: info@cknfeeds.com

### China

#### Big Dutchman (Tianjin) Livestock Equipment Co. Ltd.

No. 21, Yuan Shuang Road  
Beichen EDZ, Tianjin, 300400  
Tel: +86 22 26970158  
Fax: +86 22 26970157  
Web: www.bigdutchman.org.cn  
E-mail: bdchina@bigdutchman.com

#### Lubing Sysytem Engineering (Shenzhen) Co. Ltd.

Song Ming Industrial Park, Gongming Town  
Guangming District, Shenzhen City,  
Guangdong, 518106  
Tel: +86 755 27411888  
Fax: +86 755 27411124  
Web: www.lubcn.com  
E-mail: tjlim@lubing.cn

### India

#### Big Dutchman India Pvt. Ltd.

No. 8-2-293/82/A/666 Road No. 34  
Jubilee Hills, Hyderabad  
500033  
Tel: +91 40 33163112  
E-mail: bdindia@bigdutchman.com

#### Lubing India Pvt. Ltd.

271/P/B, Ingawale Patil Estate  
Bhugaon, Paud Road  
Tal Mulshi, Pune Maharashtra  
411042  
Tel: +91 20 2952404  
Fax: +91 20 22952403  
Web: www.lubingindia.com  
E-mail: surinder@lubingindia.com

#### Meyn Food Processing Technology b.v India Office

C-60 Amaltas, Alstonia Estate  
201308  
Tel: +91 120 4251620  
Web: www.meyn.com  
E-mail: alok@meynindia.com

### Indonesia

#### Pesona Scientific

Komplek Kopo Mas Regency  
Bandung, 40225  
Tel: +62 22 5430583  
Fax: +62 22 5430314  
E-mail: cvpesona@bdg.centrin.net.id

#### PT BD Agriculture Indonesia

Green Office Park 6, Wing A  
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Boulevard, BSD Green Office  
Park, BSD City, Tangerang  
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Tel: +61 21 29580286  
Fax: +62 21 29580275  
E-mail: bdaib@bigdutchman.com

#### PT BD Agriculture Indonesia

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Graha Pena Lt. 18 No. 1807  
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Surabaya, 60234  
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**PT Euroasiatic Jaya**  
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**PT. Charoen Pokphand Indonesia**  
Poultry Equipment Division  
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Balaraja, Tangerang, 15610  
Tel: +62 21 5951012  
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E-mail: antoni@cpi-pe.co.id

**Iran**

**Arsam Kar Tehran**  
No. 211, Forsat Shirazi St.  
Tohid Ave., Tehran  
Tel: +98 21 66911788/9  
Fax: +98 21 66923127  
Web: www.arsamkar.com  
E-mail: info@arsamkar.com

**Japan**

**Hytem Co. Ltd.**  
2-10 Techno Plaza  
Kakamigahara City  
Gifu, 509-0109  
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Fax: +81 58 3851230  
Web: www.hytem.com  
E-mail: info@hytem.com

**Masahiro Sumiya**  
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E-mail: sumiya@bigdutchman.com

**Nakajima Seisakusho Co. Ltd.**  
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388-8004  
Tel: +81 262 921203  
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E-mail: info@nakamatic.co.jp

**Prifood Corporation Ltd. Gordex Co.**  
13 Suzukawa  
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Kanagawa, 25911  
Tel: +81 46 3944601  
Fax: +81 46 3944605  
E-mail: k.okamoto\_gdx@prifoods.jp

**Tohzai Sangyo Boeki Inc.**  
2-Chome, 17 Yushima  
Bunkyo-Ku, Tokyo, 113-0034  
Tel: +81 3 38154491  
Fax: +81 3 38154456  
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**Tohzai Sangyo Boeki Inc.**  
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Tel: +81 3 38154491  
Fax: +81 3 38154456  
E-mail: it@tohzai-sangyo.co.jp

**Yamamoto Corp.**  
66-2 Kamihina-Shi  
Hozu-Cho., Kyoto  
Tel: +81 771 251451  
Fax: +81 771 251453  
Web: www.yamamoto-corp.jp  
E-mail: k-shimoo@yamamoto-corp.jp

**Kazakhstan**

**Crown Central Asia Ltd.**  
Astana, 47, Abai Avenue  
(Hotel Ramada Plaza)  
Offices 705-706, Astana  
Tel: +7 7172 390590  
Fax: +7 7172 390102  
Web: www.cca.kz  
E-mail: office@cca.kz

**Korea**

**Ganong International Co. Ltd.**  
349-1 Cheonhyun-Dong  
Hanam-shi, Kyunggi-Do  
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Tel: +82 23 4366790  
Fax: +82 31 7926305  
E-mail: starmanpark@hanafos.com

**Jeong Jin Soo**  
486-18 Ui-Green Villa 6-202  
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**LSG Co. Ltd.**  
#525, Industry-University  
Collaboration Building Dongguk  
University Iisan 32 Dongguk-ro  
Iisan-donggu, Goyang-si, 410-820  
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Fax: +82 31 9160896  
Web: www.lsglobal.kr  
E-mail: lsglobal@naver.com

**Millbankorea Ltd.**  
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Fax: +82 31 7068564  
E-mail: millbankorea@hanmail.net

**Samsung MS**  
29-23, Bakdalro 275gil  
Anyang-si, Kyunggi-do, 430-849  
Tel: +82 31 4037291  
Fax: +82 31 4037295  
E-mail: ds2hns@hanmail.net

**Sein United**  
PO Box 96, Songpa  
Songpa-Ku  
Seoul, 138-600  
Tel: +82 2 4487188  
Fax: +82 2 4487189  
Web: www.lubing.com  
E-mail: schein@seinunited.com

**Yushin Corporation**  
7F, 751 Bldg.  
Kangnam-Ku  
KR Seoul, 135-010  
Tel: +82 2 5682525  
Fax: +82 2 5693113  
E-mail: ryushin@netsgo.com

**Malaysia**

**BD Asia Sdn Bhd**  
No. 20, Lorong Keluli 1B  
Kawasan Perindustrian  
Bukit Raja, Shah Alam  
Selangor, 40000  
Tel: +60 3 33615555  
Fax: +60 3 33422866  
E-mail: bdasia@bigdutchman.com

**Edaran-Ispro (M) Sdn Bhd**  
27 A Lorong 20  
Sungai Patani, Kedah  
Tel: +60 4 4292058  
Fax: +60 4 4292059/4231779  
E-mail: kktan@poultrye.com

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

**Poullive Sdn. Bhd.**  
No.1 Jalan Tago 12  
Tago Industrial Park  
Sri Damansara  
Kuala Lumpur, 52200  
Tel: +60 3 62755788  
Fax: +60 3 62755787  
Web: www.poullive.com  
E-mail: contact@poullive.com

**Tong Seh Industries Supply Sdn Bhd**  
Lot 780, Block A, Jalan Sg.  
Putus, Off Jalan Kapar3 3/4 Miles  
Klang, Selangor, 42100  
Tel: +60 3 32916958  
Fax: +60 3 32915198  
Web: www.tongseh.com.my  
E-mail: enquiry@tongseh.po.my

**Yenher Agro Products Sdn**  
1628, Jalan IKS Simpang Ampat  
Taman IKS Simpang Ampat 1  
Simpang Ampat, S.P.S. Pulau Pinang  
Tel: +60 12 4023167  
Web: www.yenheragro.com  
E-mail: phong.vet@yenheragro.com

**Myanmar**

**Yin Yin Kyaw Int'l Trading Co., Ltd.**  
No.476, East Gyogone  
St 1 Insein T/S, Yangon  
Tel: +95 9 421144757  
E-mail: yinyinkyawwet@gmail.com

**Pakistan**

**Ample Trade Impex**  
Suit #3, 3rd Floor, Sumak Centre,  
1-D, Commercial  
DHA Lahore-EME Sector, Lahore  
Tel: +92 42 375091314  
Fax: +92 42 37509098  
Web: www.lubing.com  
E-mail: ample@hotmail.com

**Bio-Vet Pvt. Ltd.**  
97-A Near Under Pass, Jail Road  
Lahore, 4000  
Tel: +92 42 35960935  
Fax: +92 42 35960934  
Web: www.meyn.com  
E-mail: hmad.waqas@biovet.com.pk

**Eastern Veterinary Services**  
Office 7, 2nd Floor, Allied Commercial Plaza  
Chandi Chowk, Murree Rd  
Rawalpindi, Punjab, 46000  
Tel: +92 51 4421771  
Fax: +92 51 4421776  
E-mail: estrnbio@dsl.net.pk

**Philippines**

**Asia Giant Enterprises**  
Unit 403, Gold Hill Tower  
San Juan Metro, Manila, 1500  
Tel: +63 2 7236347  
Fax: +63 2 7253942  
E-mail: bengo@asiagiantgroup.com

**Belmont Agricorn**  
Legaspi Tower 100, Legaspi Village  
Makati City  
Tel: +63 2 8159861  
Fax: +63 2 8127905  
Web: www.belmontagri.com  
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Reducing the ecological footprint of agricultural sectors through sustainable practices will contribute to the conservation of biodiversity. (Photo: Adisa/Shutterstock)

# Integrating biodiversity conservation across agricultural sectors

Mainstreaming biodiversity is essential to ensure sustainable development and achieve food security, UN conference concludes.

**M**AINTEINING BIOLOGICAL DIVERSITY is important for producing food and to conserve the very foundation of life and rural livelihoods, FAO Deputy Director-General Maria Helena Semedo told participants in an international summit aimed at protecting biodiversity.

## Integrating biodiversity

UN Biodiversity Conference held in Cancun, Mexico saw governments from 167 countries endorsing the need to protect biodiversity across the agricultural sectors as a key action to achieve sustainable development, including ensuring food security and addressing climate change.

The Conference Declaration stressed that the international community must involve different governmental and economic sectors and not just environment ministries to protect biodiversity - the thousands of interconnected species that make up a vital web of ecosystem services upon which global food production depends. At the conference, governments agreed on specific steps to promote the integration of the conservation and sustainable use of biodiversity within and across the agriculture, fisheries, forestry and tourism sectors.

"This is a turning point. The agriculture sectors and biodiversity have often been regarded as separate and even conflicting concerns, yet they are inextricably connected.

Agriculture is by nature a major user of biodiversity, but it also has the potential to contribute to its protection," said Maria Helena Semedo.

While acknowledging that there are interactions, competition and sometimes even conflicts between biodiversity and agriculture, Semedo also pointed to growing scientific awareness of how farming techniques can contribute to vital ecosystem functions such as maintaining water quality, controlling erosion and fostering pollination, all of which are building blocks for biodiversity.

"Now that the international community has demonstrated its commitment to link both, we can really start building bridges, breaking down silos and tackling global challenges in a more concerted and coherent manner," she added.

She expressed the need to build bridges between the sectors, identify synergies, align goals and develop integrated cross-sectoral approaches to mainstreaming biodiversity into agricultural sectors and proposed through the creation of a platform for mainstreaming biodiversity, to support its members to commit to concrete and measurable transformative steps towards sustainable crop and livestock agriculture, and fisheries and forestry practices.

## FAO biodiversity platform

At the Cancun meeting, governments welcomed

relevant policy frameworks, guidance, and tools developed by FAO and invited countries to use guidance from FAO related to biodiversity and the agricultural sectors.

The conference also welcomed the new biodiversity platform launched by FAO to build bridges between sectors, identify synergies, align goals and develop integrated cross-sectoral approaches to mainstreaming biodiversity in the agriculture, forestry and fisheries sectors.

The platform is aimed at facilitating cross-sector dialogue and will allow ministries of agriculture, forestry, fisheries and environment to share experiences and explore how to best encourage sectors that depend or have an impact on biodiversity to adopt integrated approaches for its conservation and sustainable use.

The Cancun meeting invited FAO to continue supporting countries in the development and implementation of measures, guidance and tools to promote the mainstreaming of biodiversity in the relevant sectors.

Earlier this month, FAO's Council, the organisation's executive, endorsed principles of a Common Vision for Sustainable Food and Agriculture as a basis for the policy dialogue and governance arrangements needed to identify sustainable development pathways across sectors and along related value chains. ■



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