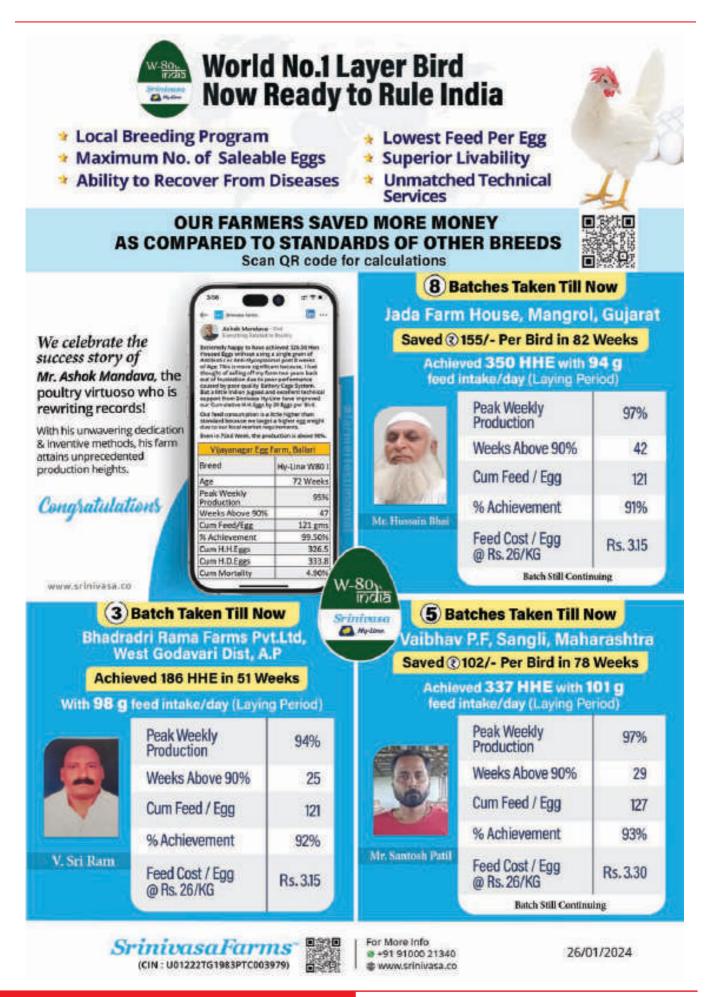
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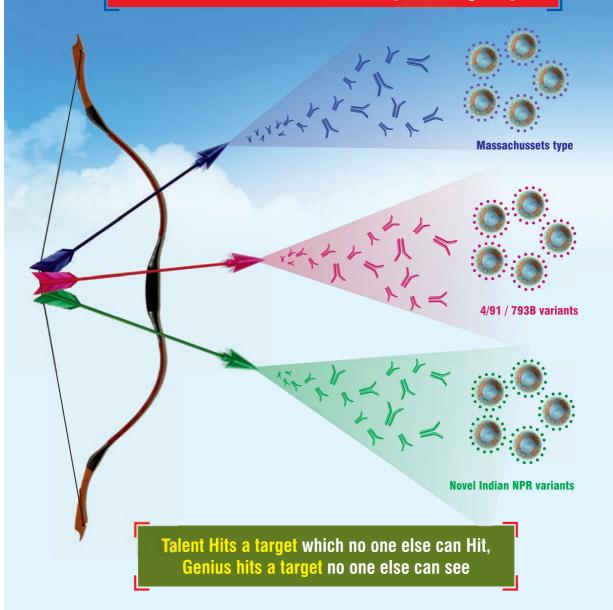


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- Editor



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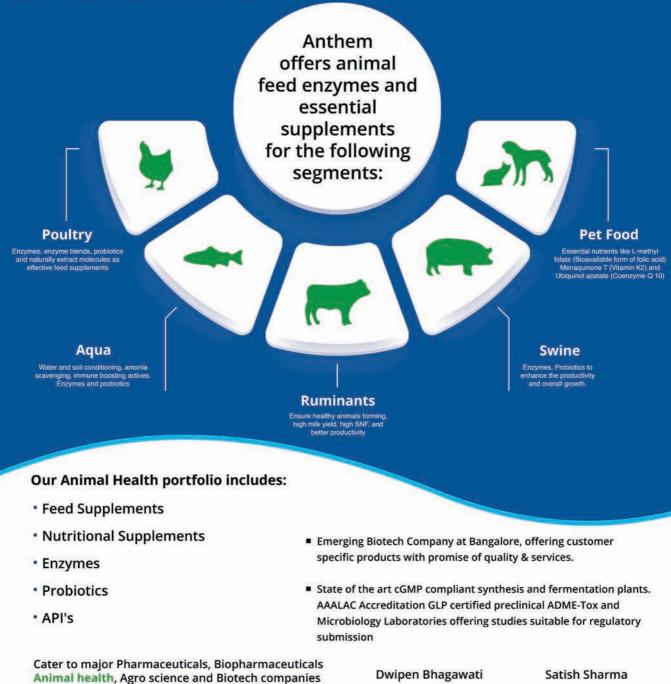
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worldwide.

Global Animal Nutrition market anticipated to rise considerably, expected to reach a value of USD 740 million by 2029

The occurrence of mycotoxins in feed is of great concern and an unavoidable problem in the worldwide feed industry. Mycotoxins also endanger human health through the cycle of the food chain. Feed constitutes one of the major input costs incurred in poultry farming, nearly 65 to 70% of the total rearing cost of Poultry is constituted by the Feed alone and thus it becomes imperative to have the best quality feed in order to maintain healthy flocks and ensure best performance for maximum profits.

Dear Readers,

The February 2024 issue of Poultry Fortune is in your hands. *In the news section you may find news about ...*

Its interesting to note that the Chief Minister of Telangana State Mr A.

Revanth Reddy strongly felt the need of strengthening Telangana State Public Service Comission on the lines of reputed Union Public Service Commission. The people and the youth of the country are suffering and struggling due to ever increasing commodity prices, increasing unemployment and religious intolerance. The CM's decision is a welcome step and it will help the needy, hardworking and talented youth to get employment.

UPSC had 100 years history and reputation of issuing employment notifications and taking up recruitments in a time-bound and transparent manner. This kind of steps should be followed by other states too on the lines of reputed UPSC and provide employment to the people.

The egg price, which touched Rs 5.85 per egg in the fourth week of December in Namakkal, has now reduced to Rs 5.15 per egg, and poultry farmers claim that they are incurring 10 to 15 paise loss per egg. Per day, more than six crore eggs are produced in Namakkal district through over 1100 poultry units. Eggs are sent to various parts of the State, besides Kerala, Karnataka, and the north Indian States. Eggs are also exported to foreign countries including Oman, Dubai, and the United Arab Emirates. The poultry market in Kerala is facing a severe shortage of free-range country eggs. Despite heightened demand, the availability of these eggs known for their quality has diminished significantly leaving both consumers and retailers struggling to meet requirements. Rural chicken farms, though present in some areas, aren't able to keep up with the soaring demand. These farms typically yield a modest 100 to 120 eggs annually per chicken, pricing each egg between Rs 10 to Rs 15. Shopkeepers lament the infrequency of steady supplies with only sporadic arrivals of these sought-after eggs. Instead, eggs from Giriraja breed chickens sourced from various Kerala farms are more commonly found and priced at Rs 10 each.

An egg crisis in Russia may present an opportunity for Namakkal in Tamil Nadu. Since the escalation of the Russia - Ukraine war in 2022, India became one of the largest importers of crude oil from Russia. Now, if negotiations between both the countries are successful, Namakkal may well be an answer to the ongoing shortage of eggs in Russia. According to traders, Namakkal is the 'Egg City' and reportedly exports 95 per cent of India's table eggs. Talks are already on with Russia for export of eggs. This comes at a time when Russian President Vladimir Putin issued a rare apology last month regarding the price hike and shortage of eggs.

The global Animal Nutrition market is anticipated to rise considerably, expected to reach a value of USD 739.87 million by 2029, with a CAGR of 5.50% during the forecast period from 2023 to 2030. The India Compound Feed Market size is expected to grow from USD 25.66 billion in 2023 to USD 34.50 billion by 2028, at a CAGR of 6.10% during the forecast period from 2023 to 2028. Feed *Contd on next page*



Our Mission

Poultry Fortune

will strive to be the reliable source of information to poultry industry in India.

PF will give its opinion and suggest the industry what is needed in the interest of the stakeholders of the industry.

PF will strive to be The Forum to the Stakeholders of the industry for development and self-regulation.

PF will recognize the efforts and contribution of individuals, institutions and organizations for the development of poultry industry in the country through annual Awards presentation.

PF will strive to maintain quality and standards at all times.

TALK TO US

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FOLLOW US: facebook.com/poultryfortune, twitter.com/nrspublications **Send a letter:** Letters to the Editor must include writer's full name, address and personal telephone and mobile numbers. Letters may be edited for purposes of clarity and space. Letters should be addressed to the Editor:

POULTRY FORTUNE, BG-4, Venkataramana Apartments, 11-4-634, A.C.Guards, Near Income Tax Towers, Masab Tank, Hyderabad - 500 004, T.S, India. Tel: +91 040 - 2330 3989, 70329 19554. Website: www.poultryfortune.com and Animal Nutrition market in India is increasingly driven by performance. The poultry industry navigates a competitive landscape marked by integration and consolidation, particularly within the broiler sector. In the poultry sector, the delicate and often unremunerative challenge of low-end product rates and high ingredient prices propels a quest for remunerative prices over commodity rates, stated Mr Rahul Kapur, Chairman & Managing Director, Avitech Nutrition.

The V Biennial Poultry Health Conference of the Association of Avian Health Professionals and National Symposium is being organized by ICAR - Directorate of Poultry Research, Hyderabad and AAHP on 23 - 24 February, 2024. The theme of the conference is *"Poultry Health: Current Challenges and Future Strategies"*. A comprehensive scientific program, scientists-industry interface and plenary session have been scheduled for the conference. Broadly, the deliberations would be on emerging and re-emerging poultry diseases, vaccines, antimicrobial resistance, gut health, mycotoxins, biosecurity, disease control and food safety. A modest gathering of about 300 to 350 delegates and officials are expected to participate in the deliberations. Speakers from India and abroad in the field of poultry health are identified for the conference.

Hotraco's Fortica Central Egg Collection is a unique system that reduces egg collection labour time and costs while also increasing egg quality and facilitating the operators' job. This is achieved by establishing low-complexity and high-efficiency egg collection processes, automating and limiting the number of starts and stops with a smooth egg flow.

The highly contagious virus has ravaged Sonoma County, where officials have declared a state of emergency. During the past two months, nearly a dozen commercial farms have had to destroy more than one million birds to control the outbreak, dealing an economic blow to farmers, workers and their customers. Merced County in Central California also has been hit hard, with outbreaks at several large commercial eggproducing farms in recent weeks. Experts say bird flu is spread by ducks, geese and other migratory birds. The waterfowl can carry the virus without getting sick and easily spread it through their droppings to chicken and turkey farms and backyard flocks through droppings and nasal discharges. California poultry farms are implementing strict biosecurity measures to curb the spread of the disease. State Veterinarian Annette Jones urged farmers to keep their flocks indoors until June, including organic chickens that are required to have outdoor access.

The West Bengal Poultry Federation is all set to organize the 10th **Kolkata International Poultry Fair** in association with the Animal Resources Development Department, Government of West Bengal on 6 to 9 February 2024 at Eco Tourism Park, Major Arterial Road, New Town, Kolkata, India. A seminar on poultry is scheduled for February 6.

Backyard poultry can be a lucrative option for the rural population and prove the most potent source for subsidiary incomes for landless and poor farmers. Meat and eggs are the best and cheapest source for meeting the protein requirement. With government also laying stress on diversification, it can become the best alternative for small scale farmers to subsidise their income with little input. Satbir Singh, an expert from Krishi Vigyan Kendra of Punjab Agricultural University, advising poultry farmers said that reproductive capacity of birds declines as it ages. Birds lay their best during first and second

laying spans and are considered older thereafter. Adding new birds to flock every 1 to 2 years should be a common practice and is the best way to ensure more consistent egg production throughout the year.

Glamac International Pvt Ltd, specialised in Poultry Nutrition and Feed Additives, has been awarded the *Veterinary Pharma Innovation of the Year* award by The Economic Times for its innovative product, Cynka HBR.

In the Articles section – Acidomix DF+: An Unique Solution for Improved Productivity and Salmonella Control in Broilers and Layers, authored by Mr Christian Luckstadt, said that organic acids have long been used in animal nutrition, usually to stabilize compound feed, but also to enhance animal performance. In poultry one of the first reports of improved broiler performance when diets were supplemented with single acids was for formic acid. The use of pure formic acid in breeder feed reduced the contamination of tray liners and hatchery waste with S. enteritidis drastically. KIRCHGESSNER et al., found significantly better feed utilization in laying hens after adding fumaric acid, but only when the feed was low in protein and methionine and cysteine. Performance enhancement was influenced by both quantity and quality of the protein. Although growth performance benefits of organic acids and their salts have been shown in numerous studies over the past half-century, the significant increase in scientific and commercial focus shifted on it only after ban on antimicrobial growth promoters in Europe.

Another article titled **3-D** approach for Mycotoxin Risk Management, authored by Dr Stuti Baruah, informed that Mycotoxicosis are diseases caused by the poisonous effects of the toxins produced by filamentous micro fungi. Hundreds of mycotoxins are known and can produce mild to severe toxic effects when they occur above levels of concern. Poultry is particularly susceptible to mycotoxicosis, as they are often fed diets that contain a variety of grains and other ingredients that may be contaminated with mycotoxins. The importance of mycotoxin problems in poultry is probably considerable yet difficult to measure directly. Chronic low levels of exposure to more than one type of mycotoxin appears to be a very common now a days. Usage of alternate raw materials in poultry diets also causes the risk of exposure to multiple mycotoxins.

Article titled Understanding Mycotoxins is Not Easy, authored by Dr S.K. Maini, discussed that the occurrence of mycotoxins in the feed is of great concern and an unavoidable problem in the worldwide feed industry. Mycotoxins also endanger human health through the cycle of the food chain. Feed constitutes one of the major input costs incurred in poultry farming, nearly 65 to 70% of the total rearing cost of Poultry is constituted by the Feed alone and thus it becomes imperative to have the best quality feed in order to maintain healthy flocks and ensure best performance for maximum profits. The Feed, which is made up of various raw materials, is also the major source of mycotoxin and their metabolites that cause the damage to the birds immune system, health and well being, diseases and failure of vaccines and poor response with treatments, leading to poor overall performance, confusion and leading to financial losses.

M.A.Nazeer Editor & Publisher Poultry Fortune

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Government committed to strengthen TSPSC on lines of UPSC, says CM

Telangana Chief Minister A. Revanth Reddy has said that his government has resolved to strengthen the Telangana State Public Service Commission on the lines of Union Public Service Commission (UPSC) which had 100-year history and reputation of issuing notifications and taking up recruitments in a timebound and transparent manner.

The Chief Minister conveyed the government's intentions to UPSC Chairman Manoj Soni when he called on the latter in New Delhi recently. The discussions during the hour-long meeting centred on functioning of the UPSC and steps that should be taken to reform the TSPSC for meeting the aspirations of the unemployed youth.

Mr Revanth Reddy enquired about the functioning of the UPSC which was known for its transparent processes, without giving scope for allegations of corruption in its century-long existence. The Telangana government had decided to adopt new policies and processes for taking up recruitments, he said.

Dr Manoj Soni had appreciated the "young Chief Minister" for his decision to focus on the recruitment processes and told him that there would be no political interference in the selection of chairman and members of the UPSC. The selection would solely be based on the merit and efficiency of the candidates.



Telangana Chief Minister A. Revanth Reddy and Irrigation Minister N. Uttam Kumar Reddy called on UPSC Chairman Manoj Soni in New Delhi on January 5, 2024

The Chief Minister informed the UPSC Chairman that the Telangana government proposed to take up recruitment for two lakh vacant posts by the end of December 2024 and it was accordingly decided to reform the TSPSC. He told Dr Manoj Soni how the previous government had politicised the appointments to the TSPSC and converted the Commission into a "political rehabilitation centre".

As a result, issuance of notifications, conduct of examinations and declaration of results had become a ritual while leakage of question papers had become a major issue during the BRS tenure.

Mr Revanth Reddy had averred that the State government was committed to take up appointments of chairman and members of the TSPSC without giving scope for political interference and it was resolved to appoint them on a permanent basis. Responding to the Chief Minister's request, the UPSC Chairman had assured that training would be provided to the chairman and members of the TSPSC and awareness programmes would be conducted for staff in the Secretariat in this direction.

The Chief Minister's decision is a welcome and it will help the hardworking and talented youth to get employment in Telangana state.

This kind of steps should be followed by other states and provide employment in a transparent manner.

The Chief Minister's decision is a welcome step and it will help the needy, hardworking and talented youth to get employment in the state.

This kind of steps should be followed by other states on the lines of the reputed UPSC and provide employment in a time-bond and transparent manner.

- Editor



The active VHPL P.R. Head: **Mr Arvind Chouhan, Head – P.R. and Corporate Communications, Venkateshwara Hatcheries Group** with Poultry Fortune Editor M.A. Nazeer and Dr Devender Hooda, Director, Sales & Technical, Huvepharma SEA, India during Poultry India event in Hyderabad recently.

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Egg price reduces to ₹5.15 in Namakkal; poultry owners sustain 10 to 15 paise loss per egg



Central and State governments urged to guide poultry farmers in exporting eggs.

The egg price, which touched ₹5.85 per egg in the fourth week of December in Namakkal, has now reduced to ₹5.15 per egg, and poultry owners claim that they are incurring 10 to 15 paise loss per egg.

Per day, more than six crore eggs are produced in Namakkal district through over 1,100 poultry units. Eggs are sent to various parts of the State, besides Kerala, Karnataka, and the north Indian States. Eggs are exported to foreign countries, including Oman, Dubai, and the United Arab Emirates.

Due to the cold climate prevailing in various parts of the country, egg consumption has increased, and following that, the single egg price in Namakkal touched ₹5.85 per egg last month. But within two weeks, the price of the eggs have come down to ₹5.15 on Thursday evening.

Chairman of the Tamil Nadu Egg Poultry Farmers Marketing Society Vangli Subramaniam said that poultry owners are facing some issues in exporting eggs to foreign countries and orders from foreign countries have also come down.

Now, the poultry farm owners are exporting eggs in their individual capacity. So, the Union and State governments should guide them in exporting eggs as poultry farms give jobs to lakhs of people. The other important factor is that supply of eggs to north Indian States has reduced due to the poultry business starting to boom there, especially in Uttar Pradesh and Bihar. The State governments are giving subsidies to the poultry farms there, impacting the egg supply from Namakkal, Mr. Subramaniam added.

Stating that the price of eggs will increase after the Pongal festival, Mr. Subramaniam added that in 1976, the price of an egg was 33 paise and the price of a single tea was 25 paise. After 48 years, the egg price is between ₹5 and ₹6. Now, the price of a single tea is ₹12. But the public expresses shock if the egg price touches more than ₹5.50.

The cost of raw materials has increased greatly, and for the production of a single egg, ₹5 to ₹5.25 is needed. Due to the price reduction of eggs, poultry owners are facing loss, Mr. Subramaniam added.

Availability of free-range country eggs in Kerala declines

Kozhikode: The poultry market in Kerala is facing a severe shortage of free-range country eggs. Despite heightened demand, the availability of these eggs, known for their quality, has diminished significantly, leaving both consumers and retailers struggling to meet requirements. Rural chicken farms, though present in some areas, aren't able to keep up



with the soaring demand.

These farms typically yield

a modest 100 to 120 eggs annually per chicken,

pricing each egg between Rs 10 to Rs 15.

Shopkeepers lament the infrequency of steady supplies, with only sporadic arrivals of these soughtafter eggs. Instead, eggs from Giriraja breed chickens, sourced from various Kerala farms, are more commonly found and priced at Rs 10 each.

However, a bulk of the market influx is from Tamil Nadu, particularly Namakkal, flooding Kerala with an astounding 1.5 to 1.75 crore eggs daily. In comparison, Kerala's daily POLYZYME

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production amounts to approximately 60 lakhs, as per the Animal Husbandry Department.

> The absence of a streamlined procurement process and inadequate sales prospects discourage more farmers from venturing into egg production, states the Animal Husbandry Department. The profit margins remain slim, with nearly 120 grams of poultry feed costing a day. Moreover, unlike the dairy sector, there's a lack of substantial subsidy schemes.

However, keeping freerange chickens at home proves a profitable endeavor for some. Individuals with ample outdoor space can benefit from not incurring chicken feed expenses while selling eggs at premium prices. Nevertheless, increasing stray dog populations pose a challenge.

Meanwhile, prices of regular chicken eggs are surging exponentially. Starting from Rs 5.50 in September 2023, they reached Rs 8 on January 1, 2024. The onset of the cold season in North India has boosted egg consumption, compounded by increased demand during Christmas and New Year for cakemaking. Some parts of North India have witnessed egg prices exceeding Rs 8. The 20% reduction in egg production in Namakkal, Tamil Nadu, has further contributed to the price hike. This upward price trend is expected to continue until mid-January.

In Russia's egg crisis, Tamil Nadu town hopes to crack export opportunity

A combination of high inflation and sanctions imposed by the West has led to the egg crisis in Russia

An egg crisis in Russia may present an opportunity for Namakkal in Tamil Nadu.

Since the escalation of the Russia-Ukraine war in 2022, India became one of the largest importers of crude oil from Russia.

Now, if negotiations between both the countries are successful, Namakkal may well be an answer to the ongoing shortage of eggs in Russia. According to traders, Namakkal is the 'Egg City' and reportedly exports 95 per cent of India's table eggs. Talks are already on with Russia for export of eggs.

This comes at a time when Russian President Vladimir Putin issued a rare apology last month regarding the price hike and shortage of eggs.

"I apologise for this, but this is a failure of the government's work... I promise that the situation will be corrected in the near future," Putin said, according to a Reuters report.

A combination of high inflation and sanctions imposed by the West has led to the egg crisis in Russia. This resulted in prices going up by 42 per cent in the last 12 months.

"Russia is going through a huge shortage and has asked for eggs. We need government intervention. If it works out, Russia will be a huge market for us," said Vangili Subramaniam, president of Tamil Nadu Egg Poultry Farmers Marketing Society. Currently, Oman, Sri Lanka, Maldives, Qatar and UAE are the top five countries to which India exports eggs.

"Russia is not yet open. It is just an early stage and will be a huge opportunity. We are requesting the government to speed up the process of tying up with Russia. Only dialogue is going on now," said Valsan Parameswaran, secretary of All India **Poultry Products Exporters'** Association (AIPPEA). He added that going by the demand in that country, the requirement for Russia may be over 50 containers a month.

India exported eggs worth \$110,000 to Russia during April-October 2023 compared to \$10,000 a year ago, commerce department data showed. India's total egg exports nearly doubled to \$53.37 million during the first seven months of the current financial year.

However, experts feel that export of eggs to Russia may not be easy for India.

A senior government official said that when it comes to human health, countries, especially western nations, are sensitive about the quality of products they import. These include items such as eggs, milk, fruits or vegetables, among others. In the case of eggs, there aren't any export restrictions imposed by India.

"For instance, if countries intend to import a particular food item, they generally reach out to the concerned government department. They put up a request to check Indian facilities and we will see if import-related standards are met," the official said. "They also raise queries, if required," the person added.

Standards vary, depending on the product and the country of export.

COUNTING THE CHICKENS

Major countries that import eggs from India (Apr-Oct FY24)

| Country | (in \$mn) | % change Y-o-Y | V |
|----------------------------|--------------|-------------------|------------------------|
| Oman | 24.16 | 67.5 | |
| Sri Lanka | 10.16 | NA* | |
| Maldives | 7.36 | 40.9 | |
| Qatar | 4.83 | 117.57 | |
| UAE | 3.61 | 62.14 | |
| India's total eggs exports | 53.37 | 98.56 | *Data nol available |

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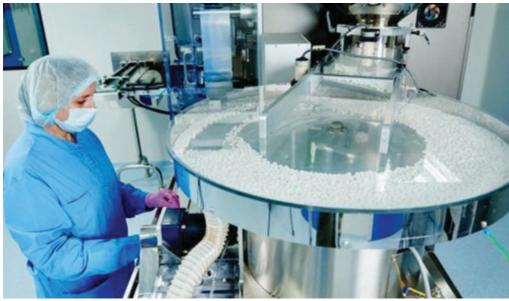
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Centre notifies revised rules for quality control of pharma products

The revised Schedule M prescribes the Good Manufacturing Practices (GMP) and requirements of premises, plant and equipment for the production of pharmaceutical product



GMP was first incorporated in Schedule M in 1988 and was last amended in June 2005

Aimed at ensuring robust quality control for pharma biopharmaceutical products, the Union Health Ministry on January 6, 2024 notified revised rules under Schedule M of the Drugs and Cosmetics Rules, 1945.

Schedule M prescribes the Good Manufacturing Practices (GMP) for pharmaceutical products and the revised Schedule M has been notified as rules to ensure that GMP is adhered to and requirements of premises, plant, and equipment for pharmaceutical products are met.

The GMP is the mandatory standard that builds and brings quality into a product by way of control of materials, methods, machines, processes, personnel, facility/ environment and so on GMP was first incorporated in Schedule M of the Drugs and Cosmetics Rules, 1945 in 1988 and was last amended in June 2005.

With the amendment, the words 'Good Manufacturing Practices' (GMP) have been replaced with 'Good Manufacturing Practices and Requirements of Premises, Plant and Equipment for Pharmaceutical Products'.

Global benchmark

"To keep pace with fast changing manufacturing and quality domain, there was a necessity to revisit and revise the principles and concept of GMP mentioned in current Schedule M. This would bring our GMP recommendations on a par with global standards, especially to those of the World Health Organization (WHO), and ensure production of globally acceptable quality of drug." said a senior Health Ministry official.

The changes introduced in the revised Schedule M include the introduction of a pharmaceutical quality system (PQS), quality risk management (QRM), pro duct quality review (PQR), qualification and validation of equipment, and a computerised storage system for all drug products

The notification, dated December 28, 2023, states that manufacturers must assume responsibility for the quality of pharmaceutical products to ensure that they are fit for their intended use, comply with the requirements of the licence, and do not place patients at risk due to inadequate safety, quality, or efficacy.

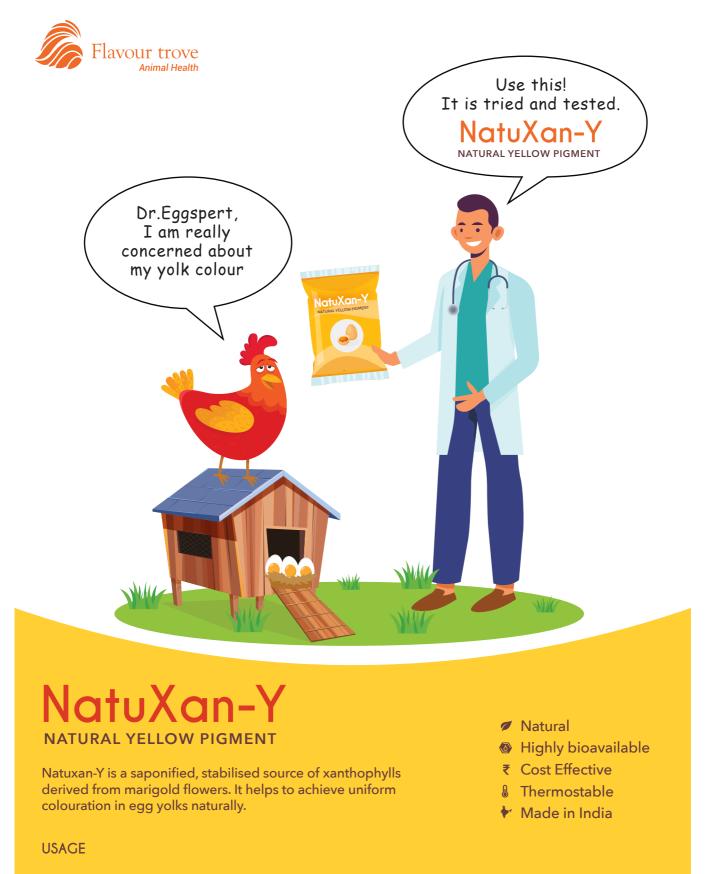
It adds that companies must market a finished product only after getting "satisfactory results on tests of the ingredients and retain a sufficient quantity of the samples of intermediate and final products to allow repeated testing or verification of a batch.

Speaking about the revision, Sudarshan Jain, Secretary-General of the Indian Pharmaceutical Alliance (IPA), said: "The revision of Schedule M by the government is a positive step and an important milestone for the Indian pharmaceutical sector. This will elevate and update the quality standards of medicines, reinforcing the reputation of our industry and improving patient outcomes. We welcome this initiative in helping India's journey to become a global benchmark in quality."

Earlier in August, the Ministry had set a six month deadline for small manufacturers and a 12month deadline for large ha units to get their World Health Organization-Good Manufacturing Practices (WHO-GMP) certification.

The revised rules are to be implemented based on company turnovers where the medium and small manufacturers include those with an annual turnover of less than 250 crore and large manufacturers include those with an annual turnover of over 1250 crore.

Courtesy: The Hindu, January 7, 2024





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US: California Poultry Farms Grapple with Avian Flu Outbreak, Forcing Culling of Millions of Chickens

California faces a severe avian flu outbreak, forcing poultry farmers to cull millions of birds, impacting egg prices and posing challenges to the poultry industry



A worker moves crates of eggs at the Sunrise Farms processing plant in Petaluma, Calif., which has seen an outbreak of avian flu in recent weeks.

California, USA: Last month, Mike Weber got the news every poultry farmer fears: His chickens tested positive for avian flu. Following government rules, Weber's company, Sunrise Farms, had to slaughter its entire flock of egg-laying hens — 550,000 birds — to prevent the disease from infecting other farms in Sonoma County north of San Francisco.

"It's a trauma. We're all going through grief as a result of it," said Weber, standing in an empty hen house. "Petaluma is known as the Egg Basket of the World. It's devastating to see that egg basket go up in flames." A year after the bird flu led to record egg prices and widespread shortages, the disease known as highly pathogenic avian influenza is wreaking havoc in California, which escaped the earlier wave of outbreaks that devastated poultry farms in the Midwest.

The highly contagious virus has ravaged Sonoma County, where officials have declared a state of emergency. During the past two months, nearly a dozen commercial farms have had to destroy more than 1 million birds to control the outbreak, dealing an economic blow to farmers, workers and their customers. Merced County in Central California also has been hit hard, with outbreaks at several large commercial egg-producing farms in recent weeks.

Experts say bird flu is spread by ducks, geese and other migratory birds. The waterfowl can carry the virus without getting sick and easily spread it through their droppings to chicken and turkey farms and backyard flocks through droppings and nasal discharges. California poultry farms are implementing strict biosecurity measures to curb the spread of the disease. State Veterinarian Annette Jones urged farmers to keep their flocks indoors until June, including organic chickens that are required to have outdoor access.

"We still have migration going for another couple of months. So we've got to be as vigilant as possible to protect our birds," said Bill Mattos, president of the California Poultry Federation. The loss of local hens led to a spike in egg prices in the San Francisco Bay Area over the holidays before supermarkets and restaurants found suppliers from outside the region.

While bird flu has been around for decades, the current outbreak of the virus that began in early 2022 has prompted officials to slaughter nearly 82 million birds, mostly egg-laying chickens, in 47 U.S. states, according to the U.S. Department of Agriculture. Whenever the disease is found the entire flock is slaughtered to help limit the spread of the virus.

The price of a dozen eggs more than doubled to \$4.82 at its peak in January 2023. Egg prices returned to their normal range as egg producers built up their flocks and outbreaks were controlled. Turkey and chicken prices also spiked, partly due to the virus. "I think this is an existential issue for the commercial poultry industry. The virus is on every continent, except for Australia at this point," said Maurice

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NEWS

Pitesky, a poultry expert at the University of California, Davis.

> Climate change is increasing the risk of outbreaks as changing weather patterns disrupt the migratory patterns of wild birds, Pitesky said. For example, exceptional rainfall last year created new waterfowl habitat throughout California, including areas close to poultry farms. In California, the outbreak has impacted more than 7 million chickens in about 40 commercial flocks and 24 backyard flocks, with most of the outbreaks occurring over the past two months on the North Coast and Central Valley, according to the USDA.

Industry officials are worried about the growing number of backyard chickens that could become infected and spread avian flu to commercial farms. "We have wild birds that are are full of virus. And if you expose your birds to these wild birds, they might get infected and ill," said Rodrigo Gallardo, a UC Davis researcher who studies avian influenza.

Gallardo advises the owners of backyard chickens to wear clean clothes and shoes to protect their flocks from getting infected. If an unusual number of chickens die, they should be tested for avian flu. Ettamarie Peterson, a retired teacher in Petaluma, has a flock of about 50 chickens that produce eggs she sells from her backyard barn for 50 cents each.

"I'm very concerned because this avian flu is transmitted by wild birds, and there's no way I can stop the wild birds from coming through and leaving the disease behind," Peterson said. "If your flock has any cases of it, you have to destroy the whole flock." Sunrise Farms, which was started by Weber's greatgrandparents more than a century ago, was infected despite putting in place strict biosecurity measures to protect the flock.

"The virus got to the birds so bad and so quickly you walked in and the birds were just dead," Weber said. "Heartbreaking doesn't describe how you feel when you walk in and perfectly healthy young birds have been just laid out." After euthanizing more than half a million chickens at Sunrise Farms, Weber and his employees spent the Christmas holiday discarding the carcasses. Since then, they've been cleaning out and disinfecting the hen houses.

Weber hopes the farm will get approval from federal regulators to bring chicks back to the farm this spring. Then it would take another five months before the hens are mature enough to lay eggs. He feels lucky that two farms his company co-owns have not been infected and are still producing eggs for his customers. But recovering from the outbreak won't be easy. "We have a long road ahead," Weber said. "We're going to make another run of it and try to keep this family of employees together because they've worked so hard to build this into the company that it is."

Backyard poultry lucrative option for landless farmers

Ludhiana: Backyard poultry can be a lucrative option for the rural population and prove the most potent source for subsidiary incomes for landless and poor farmers.

Meat and eggs are the best and cheapest source for meeting the protein requirement. With government also laying stress on diversification, it can become the best alternative for small scale farmers to subsidise their income with little input.

Satbir Singh, an expert from Krishi Vigyan Kendra of Punjab Agricultural University, advising the poultry farmers said that reproductive capacity of birds declines as it ages. Birds lay their best during first and second laying spans and are considered older thereafter. Adding new birds to flock every 1-2 years should be a common practice and is the best way to ensure more consistent egg production throughout the year.

Another expert Aparna added that selection of an appropriate breed is very important factor that affects the genetic potential of birds. If you want your hen to lay more then buy breeds that are known to be good egg layers, she added. There are several breeds that can lay around 200 eggs per year. Procurement should always be made from a reputed hatchery or institute.

"Birds that experience stress will utilise all their energy into combating the stress, and will produce no or very few eggs. Ensuring safety in a free range system will support the production while insecurity can hamper it. A predator resistant system will allow comfort to birds," said she.

Infectious or non-infectious diseases like coxy, Newcastle disease and infectious coryza severely affect the laying capacity of birds hence all possible measures like deworming, fumigation and vaccination should be practised to avoid any such losses, further added the experts.

Water represents about 70 per cent of total body weight. Birds need clean, fresh water every day to support their body needs. Muddy or dirty water may contain parasites and bacteria that can make them sick. Hens are more sensitive to a lack of water than a lack of feed. Dehydrated birds may stop laying eggs and when rehydrated it will take them a few days to start laying again, said Satbir Singh.

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Lumis enlightens customers about Enzyme solutions to improve poultry productivity

Mumbai: Lumis Enzymes, a leading provider of enzyme solutions for the animal feed industry, recently participated and made a significant impact at the Poultry India Exhibition held at Hitex Exhibition centre, Hyderabad on 22 to 24 November 2023. The exhibition provided Lumis Enzymes with an excellent platform to showcase their innovative enzyme solutions and engage with industry professionals, researchers, and customers. The company's participation in the exhibition was a resounding success, as it showcased its innovative enzyme products and demonstrated their effectiveness in improving poultry health and productivity. Lumis Enzymes' booth at the exhibition attracted a large number of visitors, including poultry farmers, industry professionals, and experts, who were keen to learn about the company's latest advancements in enzyme solutions and their potential impact on poultry production.

The company's team of experts was on hand to provide in-depth information about their products, answer questions, addressing the challenges faced by the poultry industry and offering tailored enzyme solutions to meet the specific needs of farmers. This interactive approach allowed Lumis Enzymes to effectively communicate the value of their enzyme solutions and highlight their potential to improve the overall efficiency and profitability of poultry operations. It not only garnered attention but also solidified Lumis Enzymes' reputation as a trusted partner in the animal feed industry.

Moreover, Lumis Enzymes' participation in the Poultry India Exhibition provided an excellent platform to network with industry peers, exchange knowledge and insights, and explore potential collaborations and strengthen existing relationships. The company's active participation in the exhibition helped them to elevate their presence in the poultry industry and position themselves as a trusted partner for enzyme solutions. Overall, the successful participation in the exhibition has not only elevated the company's profile but also reinforced its dedication to driving positive change and delivering exceptional value to the animal feed sector, including the Poultry, Aqua and Cattle industry.











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Glamac Honored with 'Veterinary Pharma Innovation of the Year' Accolade by The Economic Times

Mumbai, 20 January 2024: Glamac International Pvt Ltd, a leading veterinary pharmaceutical company, specialised in Poultry Nutrition and Feed Additives, has been awarded the prestigious "Veterinary Pharma Innovation of the Year" award by "The Economic Times" for its innovative product, Cynka HBR. The award ceremony was held at Courtyard by Marriott, Mumbai. It was at-tended by the Glamac team, including Meghana Mukherjee Salvi, Director of Glamac; Dr Sumon Nag Chowdhury, Group Technical Manager; Sujit Jadhav, Sr. Manager -Finance & Operations; and Dr Rahul Mogale, Product Manager.

CYNKA HBR - an innovation from the R&D platform of Glamac - unique specialized preparation with strong antimicrobial action protects the flock against the development of digestive tract disor-ders and maintains the overall performance.

In the announcement, Ms Meghana Mukherjee Salvi said, "We are thrilled to receive this prestigious award, and we are grateful to The Economic Times for recognizing us for our innovation. Cynka HBR is a breakthrough innovation which is born through series of research and technical trials. It envisaged our vision of developing a non-antibiotic preventive



Abir Mukherjee, Managing Director of Glamac

feed additive that ensures effective gut health management in poultry."

The award is particularly relevant to the poultry industry. In chicken rearing, digestive disorder with microbial challenge is a perpetual and financially crippling problem. Entire poultry fraternity is desperately looking for a smart solution against E.coli, salmonella, digestive disorder and loose dropping. CYNKA HBR is an innovative formulation for diarrhoea, microbial control and gut health mod-ulation in chicken that can outrightly replace conventional antibiotics (AGP) & age old Halquinol in feed with much better efficacy & ROI. On a larger prospective and long-term vision, it can support the drive of antibiotic free chicken &eggs in India.

Mr Abir Mukherjee, Managing Director of Glamac, said, "This award is a testament to our commitment to innovation and excellence. We are proud to be recognized and we strive to be technically driven to bring cuttingedge formulation to the ecosystem supported by our strong technical expertise headed by Dr Sumon Nag Chowdhury and dedicated team. We expect Cynka HBR to be a game changer particularly eyeing the antibiotic free eggs & chicken segment of India and global market in the days to come and as the successful alternative of Halquinol & conventional Antibiot-ics (AGP) for effective antidiarrhoeal and antimicrobial solution."

For more information about Glamac International Pvt Ltd and their products, please visit their web-site at www. glamac.com.



Dr Rajeev Singh Raghuvanshi - Drugs Controller General (India), Mr Sujit Jadhav, Sr. Manager- Finance & Operation, Ms Meghana Mukherjee Salvi, Director, Dr Sumon Nag Chowdhury - Group Technical Manager, Dr Rahul Mogale - Product Manager, Mr Vivek Seigell - Advisor, Walter Bushnell & SVP Apeejay Stya Svean Group



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Global Animal Nutrition market anticipated to reach USD 740 million by 2029

Gurugram: Mr Rahul Kapur, Chairman & Managing Director, Avitech Nutrition in a statement to *Poultry Fortune* spoke on How the industry has changed over the years. What are the new trends experienced and the changes faced ?

"The global Animal Nutrition market is anticipated to rise considerably, expected to reach a value of USD 739.87 million by 2029, with a CAGR of 5.50 % during the forecast period from 2023 to 2030. The India **Compound Feed Market** size is expected to grow from USD 25.66 billion in 2023 to USD 34.50 billion by 2028 at a CAGR of 6.10 % during the forecast period from 2023 to 2028.

Today, the Feed and Animal Nutrition market in India is increasingly driven by performance. The poultry industry navigates a competitive landscape marked by integration and consolidation, particularly within the broiler sector. In the poultry sector, the delicate and often unremunerative challenge of low-end product rates and high ingredient prices propels a quest for remunerative prices over commodity rates.

This quest unfolds through vigorous branding initiatives, with safety as a pivot, urging a shift from antibiotics to phytogenic micro-ingredients in feed. The increasingly organized approach to milk



Rahul Kapur, Chairman & Managing Director, Avitech Nutrition

production emphasises increased output, driving greater usage of concentrates and feeds.

The shrimp sector grapples with fierce competition emanating from Ecuador in export markets, prompting strategic integration and consolidation efforts to enhance competitiveness.

Meanwhile, novel ingredients like Black Soldier Fly meal aspire to fulfil protein requirements in the feed sector, though commercial viability remains an ongoing pursuit. In the everevolving landscape of the egg sector, a shift in the willingness to procure feed rather than selfmanufacture is observed.

Micro ingredients are emerging as pivotal elements, steadily enhancing efficiency, and controlling production costs. As the industry adapts, innovation and strategic shifts become the lynchpin for sustained success in the dynamic market. With a burgeoning

KIPF at Kolkata on February 6 – 9

The West Bengal Poultry Federation is all set to organize the 10th Kolkata International Poultry Fair in association with the Animal **Resources Development** Department, Government of West Bengal from the o6th of February to the 09th of February, 2024 at Eco Tourism Park, Major Arterial Road (South-East), Action Area-II, New Town, Kolkata – 700 156, India. An International Seminar on poultry is scheduled for February 6, 2024, featuring speakers of international repute.

Mr Madan Mohan Maity, General Secretary, West Bengal Poultry Federation stated that the primary objective of this poultry fair is to promote the growth of the poultry industry in our state and nearby states, including the North East. This fair is expected to attract around 50,000 farmers from our state, in addition to participants from other states and neighboring countries, eager to learn about the latest developments in the

middle class and rising levels of disposable income, the appetite for milk, eggs and meat is set to grow exponentially over the next decade. In time a steady transition from live to processed meat is anticipated. This shift reflects changing consumer preferences but also signals the commencement of large investments in the processing sector", stated Mr Rahul Kapur.



Madan Mohan Maity, General Secretary, West Bengal Poultry Federation

poultry industry. Besides farmers, renowned poultry experts from various parts of India, Speakers and poultry producers from all over India and neighboring countries such as Bangladesh, Nepal, Bhutan, Nigeria, Myanmar and more, will attend. We anticipate that this year will witness an even larger number of international participants joining our fair.

Program Schedule:

6 February 2024 10:00 am-6:00 pm: Technical Seminar - NovaCon (Conference on innovation).

6 February 2024 7:00 pm-9:00 pm: Inauguration of the Fair.

7 - 9 February 2024 9:00 am-5:00 pm: Exhibition.

Keeping in mind the glorious images of the fair in the past nine years and the extraordinary support from your end that has let us go ahead think big to organize the fair in a much more corporate, professional environmentfriendly stage. With all those glorious memories proud moments, we get set to connect back with

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you and your esteemed organization on the scope of the 10th Kolkata International Poultry Fair, 2024.

> We invite you to be a part of this International Exhibition where firms, industries & organizations related to the Poultry industry from around India & other neighboring countries will be present as participants. We are building this platform to promote your company/ organization by showcasing your high-quality products & services and by branding your company/organization on Eastern India's largest platform in front of an endless number of visitors through our creative promotional ideas.

We are almost set to have an arrangement for an endless number of stalls on the promotional floor along with other options like Souvenir advertising, Banners, cutout Promotions, Standee Advertisements, and several other Sponsorship opportunities.

Your wholehearted participation will make the fair more vibrant and is warmly invited. Our website is open for booking. Please follow the below link for your participation.

For an updated floor plan and stall booking kindly login to http://www.ipfkol. com and go to sitemap.

Thanking You,

For West Bengal Poultry Federation Madan Mohan Maity General Secretary- West Bengal Poultry Federation Convener- Kolkata International Poultry Fair, 2024

Hyderabasd to host AAHP-2024 on Feb 23 - 24

5th Biennial Poultry Health Conference and National Symposium on "Poultry Health: Current Challenges and Future Strategies"

The V Biennial Poultry Health Conference of the Association of Avian Health Professionals (AAHP) and National Symposium (AAHP-2024) is being organized by ICAR-Directorate of Poultry Research, Hyderabad and AAHP during 23rd-24th February, 2024. The theme of the conference is "Poultry Health: Current Challenges and Future Strategies". The venue is at the Auditorium of PJTS Agricultural University, Rajendranagar, Hyderabad.

A comprehensive scientific program, scientistsindustry interface and plenary session have been scheduled for this conference. Broadly, the deliberations would be on emerging and re-emerging poultry diseases, vaccines, antimicrobial resistance, gut health, mycotoxins, biosecurity, disease control and food safety. A modest gathering of about 300-350 delegates and officials are expected to participate in deliberations. Eminent speakers from abroad and from India in the field of poultry health are identified for the conference.

AAHP cordially invite poultry health scientists, researchers, veterinarians from Government and private organizations, industry personnel, farmers, policy makers and students to participate in this crucial event for exchanging scientific and **Registration** technical knowledge and further, interact with eminent scientists and industry experts in the field of poultry health, welfare and food safety. The Conference will facilitate knowledge dissemination of great interest and vivid scientific discussions, as well as stimulate a creative exchange of ideas.

Contact:

Dr M R Reddy, Organizing Secretary-AAHP-2024; Email: aahp2024@gmail.com, rrmaddula@yahoo.com.

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| Students | Rs 3000 | Rs 3500 |
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Hotraco presents Fortica - CEC controller for Central Egg Collection

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We are excited to announce our new Fortica - CEC Controller, a revolutionary system that can manage the egg flow in a whole farm with multiple barns. The Fortica was already a smart device that could control an optimal egg flow per barn, but with the Fortica Central Egg Collection (CEC), it can now adjust the egg flow according to the egg distribution in every barn. This way, Fortica -CEC ensures the desired output of eggs for efficient packing, grading and processing.

Hotraco's Fortica Central Egg Collection (CEC) is a unique system that reduces egg collection labor time and costs while also increasing egg quality and facilitating the operators' job. This is achieved by establishing low-complexity and highefficiency egg collection processes, automating and limiting the number of starts and stops with a smooth egg flow.

- Optimized egg collection processes and smooth egg flow
- Automated operations and decreased system complexity
- Decreased labor time and costs
- Increased egg quality
- Customizable solution to all farm types

Automated operations and decreased system complexity

Fortica - CEC controls several components in the egg flow and collection system, automating operations and simplifying the overall process. This is done through the continuous exchange of information that allows to react faster to the changing conditions of the layer barn. Multiple egg belts communicate with each other to ensure a constant supply of eggs. The system knows the amount of eggs per belt and automatically adjusts their speed to match collection needs and the packing capacity, as well automatically stopping

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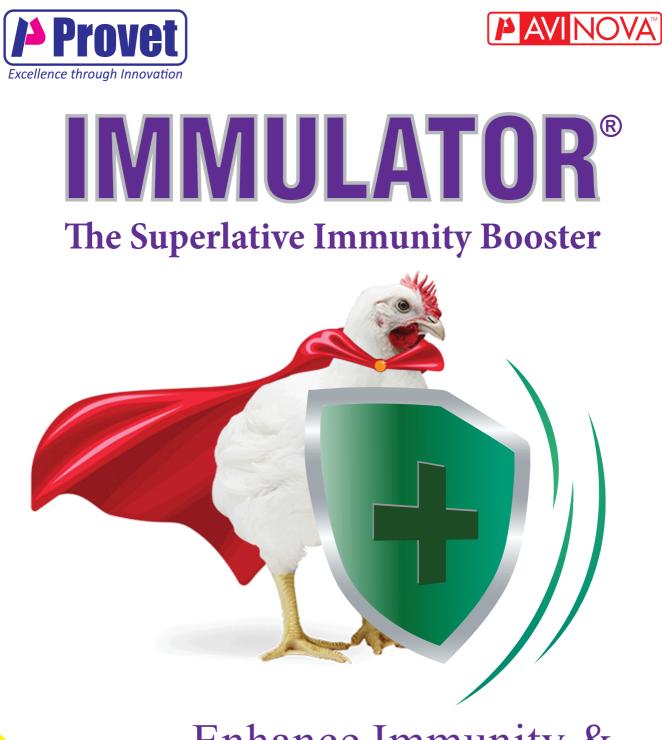
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ARTICLE Acidomix DF+...

Acidomix DF+: An Unique Solution for Improved Productivity and *Salmonella* Control in Broilers and Layers

Christian Lückstädt, Addcon Asia Ltd, India.

Organic acids have long been used in animal nutrition, usually to stabilize compound feed, but also to enhance animal performance. In poultry one of the first reports of improved broiler performance when diets were supplemented with single acids was for formic acid (VOGT et al., 1981). Later, similar effects were noticed for fumaric acid (PATTEN et al, 1988; KIRCHGESSNER et al., 1991; SKINNER et al., 1991). IZAT et al. (1990a) found significantly reduced levels of Salmonella spp. in carcass and caecal samples after including calcium formate in broiler diets. In another trial from IZAT et al. (1990b), buffered propionic acid was used to counteract pathogenic microflora in the intestine and carcass of broiler chickens, and resulted in a significant reduction in E. coli and Salmonella spp. The use of pure formic acid in breeder feed reduced the contamination of tray liners and hatchery waste with S. enteritidis drastically (HUMPHREY et al., 1988). KIRCHGESSNER et al. (1992) found significantly better feed utilization in laying hens after adding fumaric acid, but only when the feed was low in protein and methionine and cysteine. Performance enhancement was influenced by both quantity and quality of the protein. Although growth performance

benefits of organic acids and their salts have been shown in numerous studies over the past half-century, the significant increase in scientific and commercial focus shifted on it only after ban on antimicrobial growth promoters in Europe.

An important limitation, however, is that organic acids are rapidly metabolised in the foregut (crop to gizzard) of birds, which will reduce their impact on growth performance. A new molecule (sodium diformate, similar to potassium diformate) has been proven to be effective against pathogenic bacteria, including salmonella, along the whole gastrointestinal tract (LÜCKSTÄDT et al., 2009). The reduced impact of pathogenic bacteria on the broiler, as well as the improved gut microflora, leading to a state of eubiosis in treated chickens, suggests that including sodium diformate in broiler diets will also result in improved bird performance. Several trials have also been carried out over the last half-decade world-wide that document positive effects on broiler performance.

It was therefore interesting to estimate the potential impact of sodium diformate (Acidomix DF+) in poultry production and *Salmonella* control through an analysis of the results of such trials.

Effect of Acidomix DF+ on Broiler Performance

This study analyzed the average impact from all studies on the effect of the additive on the performance parameters weight gain, feed efficiency, mortality, and productivity, as measured using the European Broiler Index, (EBI). EBI is calculated using the following equation:

$EBI = ADG[g] \times survival[\%] / (10 \times FCR)$

The final dataset contained the results of 8 documented, negatively controlled studies, comprising 17 trials with DF+-inclusion, which ranged from 0.1% to 0.6%. Those studies were carried out between 2006 and 2012 across the world under both commercial and institutional conditions and included more than 36,700 broilers from different breeds (Arbor Acres, Cobb, Hubbard) raised to between 35 and 44 days. The above-mentioned performance parameters are expressed as percentage difference from the negative control. The results are given as mean and were statistically analysed using the t-test. A confidence level of 95% was defined for these analyses.

The average level of dietary DF+ from the dataset in all treated broilers was 0.28%. Typical dosage for DF+ in broilers ranges from 1-2 kg/tone feed, depending on age (dietary protein level) and hygienic status of the farm.



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As shown in Table 1, DF+ inclusion resulted in a numerical increase in feed intake of 1.1% (P=0.22).

Table 1. Performance analysis of 17 trials with broilers, fed diets with Acidomix DF+, expressed as an average percentage difference from negative control.

| Dosage | Feed intake | Weight gain | FCR | Survival | EBI |
|---------|----------------|----------------|-------|----------|--------|
| 0.28 | +1.1 | +5.2 | -4.1 | +2.3 | +12.4 |
| P-value | 0.22 | 0.0001 | 0.002 | 0.034 | 0.0005 |

The performance of broilers based on daily gain was significantly increased by 5.2% (P<0.001). Furthermore, the FCR was also significantly improved (4.1%; P<0.01). Survival was increased on average by 2.3% (P<0.05). Finally, the EBI improved significantly due to the inclusion of NDF by 12.4% (P<0.001). In broilers, improved zootechnical performance is thought to stem from both improvements in the intestinal microflora, as a result of suppressing pathogenic bacterial species, and improved protein digestion. As often seen with other additives, hygiene challenge also plays some role in the performance observed. In the present performance analysis, a range of hygiene conditions were included, representing both university and farm trials. The average impact of DF+ inclusion on performance remained above that normally expected. It can therefore be concluded that dietary sodium diformate (Acidomix DF+) can play an important role in improving broiler production world-wide, especially in times of high raw material prices.

Effect of Acidomix DF+ on Salmonella Control

Salmonella ranks among the world's biggest threats to health. Annually, it has been estimated that cases of human salmonellosis in the United States may actually vary from 2 to 4 million (Jones, 2011). Developing and implementing effective Salmonella monitoring, reporting and control systems is prioritised in many countries. Salmonella is often associated with poultry products, mainly chicken and eggs. Salmonella is widely distributed in nature (Winfield and Groisman, 2003) and can survive for an extended period of time on diverse materials (Humphrey, 2004). Since its discovery in the late 19th Century, more than 2,500 different serovars have been discovered. These have emerged over the past 30 years, in parallel with the development of intensive systems of animal husbandry. In the European Union, the proportion of Salmonella and E. coli isolates resistant to ampicillin, sulfonamides and tetracycline were found to vary between 5 and 68 % in poultry, pigs and cattle. Some Member States reported a high occurrence of fluoroquinolone resistance in Salmonella isolates from poultry (5-38%), (EFSA, 2010).

The risks posed by contamination with pathogenic bacteria in the food chain can be reduced without the prophylactic use of antibiotics. Applying appropriate control measures at intervention points in the food chain can help reduce the risk of Salmonella proliferation. While Salmonella cannot be fully eradicated in poultry units, it can be controlled to minimise the risk to consumers. According to Jones (2011) Salmonella control measures in feed can be divided into three major categories: prevent contamination of the facility; measures to reduce multiplication of the bacteria in the plant; and procedures to kill the pathogen. Biosecurity plays a significant role in Salmonella control. In feed compounding, although heat treatment is effective in reducing contamination of feed leaving the feed mill, this effect does not persist during transport, storage and subsequent out-feeding. When conditions within the feed are less conducive to bacterial infection. Salmonella contamination can be reduced. The next critical control point is within the bird, where conditions for bacterial growth are optimal. Salmonella growth is optimal between 35 and 37°C, with moisture content greater than 12% and a pH of 4.5-9.0. Jones (2011) suggests addition of chemical agents to the feed to control Salmonella. This may primarily involve the use of organic acids.

Since the 1980's, reports have shown organic acids, and formic acid in particular, to be especially effective against Salmonella, when used in poultry diets. The use of pure formic acid in breeder diets reduced the contamination of tray liners and hatchery waste with S. enteritidis drastically (Humphrey and Lanning, 1988). By 1990, researchers in the US found significantly reduced levels of Salmonella spp. in carcass and caecal samples, after including calcium formate in broiler diets (Izat et al., 1990). Further research (Kovarik and Lojda, 2000) reported that inclusion of formic acid at 0.5% in the diet can be successfully used on farms to reduce salmonella contamination in the feed, excretion of Salmonella spp. and re-infection of chicken populations.

A number of practical considerations also need to be addressed. Pure formic acid, although it is very effective in controlling Salmonella in feed, is corrosive, hazardous, and volatile, so is difficult to handle easily and safely in the feed mill. Furthermore, pelleting may incur losses of around 15% of the acid. Often, liquid and volatile acids exert their antibacterial effects only in the feed and the birds' foregut. More recently, research has focused on overcoming these limitations to develop chemical compounds which are heat-stable, non-corrosive and yet still effective. Sodium diformate (Acidomix DF+, hereafter abbreviated as DF+) satisfies such industry requirements. An organic acid salt, it is crystalline and non-volatile, meaning that it can be used safely in the feed mill, as well as being effective in the animal.

A UK-study evaluated the anti-Salmonella effects of DF+ in vitro, against Salmonella enteritidis (SE) S9549/07 found in broiler flocks (Wales et al., 2013). Caecal and crop samples were taken from slaughtered broilers from small-scale commercial operations. Caecal contents were used fresh; crop contents were stored at -80°C and thawed before use. Both were mixed with quarter strength Ringer's solution (crop at a 1:1 ratio; caecal contents at 1:2). DF+ was added to 20g aliquots in tubes. These were incubated in a water bath for 10



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minutes at 41.5°C, after which time a o.1ml stationary phase SE culture was added. All preparations were vortex mixed and incubated at 41.5°C. After various time intervals (1, 4 or 8 hours for crop contents; 1, 4, 9 and 24 hours for caecal contents), 5g aliquots were taken, mixed with buffered peptone water (BPW) and prepared for *Salmonella* enumeration. SE counts were recorded as a log reduction, compared to the negative control.

The objective of the second study was to evaluate the effect of DF+ in broilers in vivo, on the control of bacterial contamination in the digestive tract in comparison to a negative control in-vivo (Lückstädt and Theobald, 2009). 1125 broilers were distributed in 9 batches of 125 birds each (5 batches in the treatment; control with 4 batches only). The broilers were fed the following program: starter diet for 21 days, grower diet for 18 days and finisher diet for 3 days only. Birds were treated with 0.3% DF+. After 39 days of treatment, before the finisher feed was given, 10 birds from each of the 3 treatments were taken for further microbial analysis and were screened for Salmonella. The collected data were analysed with ANOVA by the StatisticsXL program. A P<0.05 value was considered to be a significant result.

In vitro study

Table 1 shows the log reduction in SE counts after application of sodium diformate at the manufacturer's maximum recommended dose (0.6%) to samples of crop or caecal contents; this dosage was used for the laboratory test. In practice lower dosages are used. There, and especially in broiler production the recommended dosage for an anti-*Salmonella* effect lies at 1-2 kg/t.

Table 2. Reduction in Salmonella enteritidis (\log_{10}) over time in crop or caecal content treated with 0.6% DF+ (after Wales et al., 2013).

| | 1 h | 4 h | 8 h | 9 h | 24 h |
|----------|-----|-----|-------|-------|-------|
| Crop | 3 | >6 | >6 | n.d.* | n.d.* |
| contents | | | | | |
| Caecum | 1 | 1 | n.d.* | 2 | 4 |
| contents | | | | | |

*not determined

In the crop, exposure of inoculated

crop contents to DF+ resulted in a log 3 reduction in SE counts after 1 hour, reducing further to >log 6 at both 4 and 8 hours. Anti-Salmonella activity in the crop, by rapidly reducing the crop pH and killing Salmonella, may be particularly suited to combating the ingested pathogen from various contamination vectors (feed, environment, litter, etc.).

In caecal contents, only log 1 reduction in SE count was observed after 1 hour incubation, reducing further to log 2 reduction after 9 hours, compared to the negative control. This effect was further pronounced after 24 hours' incubation, with a reduction in SE count of log 4. Since the retention time in the hindgut of chickens is significantly longer, compared to the 'foregut' (crop, gizzard, proventriculus), the reduction in SE count after 24 hours may allow for a continuation of protection against the pathogen. The strong results with a reduction of up to 6 logs (see table above) suggest that also a lower dosage will show significant results, since it has to be mentioned that a reduction by log 2 means already 99% lower Salmonella levels. This approach was used in the in vivo study below.

In vivo study

Results of the *in vivo* study are shown in Table 3 (Lückstädt and Theobald, 2009). No positive samples were found for *Salmonella* in the crop (P=0.15) or intestine (P=0.15) at 0.2% (the recommended commercial dose in case of a suspected pathogenic challenge).

Table 3. Results of sodium diformate (DF+) on Salmonella inhibition (% positive samples) in broiler chickens (after Lückstädt and Theobald, 2009).

| Organs | Control | DF+ 0.3% |
|--------------|---------|----------|
| Crop | 20 | 0 |
| (microbiol.) | | |
| Intestine | 20 | 0 |
| (microbiol.) | | |
| Faeces | 25 | 0 |
| (microbiol.) | | |
| Meat | 0 | 0 |
| (serol.) | | |

Further studies on the anti-Salmonella effect of DF+ were carried out in the

Ukraine at the Animal Agriculture Institute of National Academy of Agricultural Sciences of Ukraine (2012). In that trial Cobb 500 birds were challenged with feed which contained 10° CFU/ml Salmonella Typhimurium (strain no. 371). The trial lasted for a period of 6 weeks. Organs of birds (heart, lung and spleen) as well as intestine and manure were tested for Salmonella in birds fed with (0.3%) or without DF+. After the trial the negative control had positive samples of Salmonella in all organs, the intestine, and the manure whereas in the DF+ treated group the Salmonella was below the detection level.

The above stated trials are in-line with experience from users of DF+ in Europe and Asia. The product is used for its anti-bacterial action, against *Salmonella* or *E.coli*, for instance in Germany, UK and Spain – or if talking about Asia, e.g. in India or the Philippines. Here, customers use the recommended dosage for the anti-*Salmonella* effect of 3 kg/t as long as the thread of the bacteria is present. After that, the normal broiler dosage of 1-2 kg/t of finished feed is recommended.

However, it has to be stated that the currently reduced threat with *Salmonella* in Europe – latest figures from the EU zoonosis report (EFSA, 2021) report only 60.000 cases of Salmonellosis in humans (which is a reduction from more than 131.000 cases in 2008 – EFSA zoonosis report 2010) cannot be alone accounted for the use of acidifiers like DF+, but has to be seen as a combination of increased biosecurity and improved management in general, which includes however the use of additives with anti-*Salmonella* action.

Acidomix DF+ Helps to Improve Productivity in Layers.

A meta-analysis on its impact on broiler performance in Eastern Europe is available. However, its impact in layer production systems there was yet to be thoroughly investigated.

This study analysed the average impact from all studies carried out





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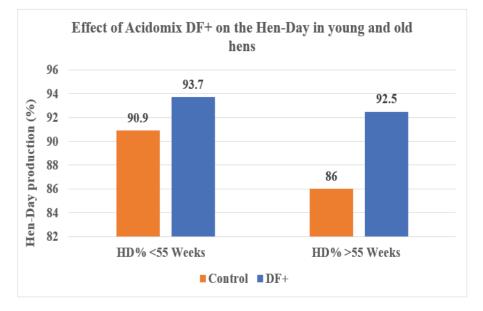
ARTICLE Acidomix DF+...

in Eastern Europe on the effect of the additive on the laying rate of Lohmann Brown hens. The final dataset contained the results of 6 trials with DF+-inclusion, which ranged from 0.1% to 0.15%. The total number of layers used in the trials was more than 200,000 and the bird age ranged from 48 to 78 weeks. Results of the meta-analysis are expressed as percentage difference from the negative control. A P<0.05 value was considered significant.

The average level of dietary DF+inclusion from the dataset in all treated layers was 0.14%. The performance of layers based on henday (HD) percentage was significantly increased by 5.4% (P=0.002), from 88.5% HD in the negative control to 93.1% HD in the DF+-groups. Furthermore, the uniformity was improved in the treated group (Table 4).

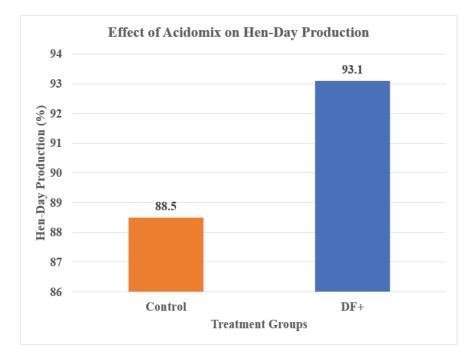
Table 4: Effect of Acidomix DF+ (DF+) on the hen-day percentage of Lohmann Brown hens (Meta-analysis based on 6 trials).

| Control | DF+ | Difference (%) | P-value | Age in weeks |
|----------|----------|-------------------|---------|-----------------|
| 88.5±2.9 | 93.1±1.0 | 5.4±2.6 | 0.002 | 59.5±10.5 |



Graph 2: Comparative analysis of <u>effect</u> of <u>Acidomix</u> DF+ on hen-day production (%) in young and old hens.

A significant difference (P=0.02) in performance was noted between younger and older hens (Table 5): birds less than 55 weeks of age had only an improvement of 2.0% (P=0.02) against the negative control; hens above 55 weeks of age achieved a highly significant improved HD percentage of 7.7% (P=0.007).



Graph 1: Comparative analysis of hen-day production (%) in control and DF+ treatment groups in Lohman Brown layers.

Table 5: Effect of Acidomix DF+ on the hen-day percentage (HD%) of young (<55 weeks) and old (>55 weeks) hens.

| Age in weeks | Control | NADF | Difference (%) | P value |
|-----------------|----------|----------|-------------------|---------|
| HD% | 90.9±1.1 | 93.7±0.8 | 3.0±0.9 | 0.019 |
| <55 | | | | |
| Weeks | | | | |
| HD% | 86.0±1.8 | 92.5±0.8 | 7.7±1.5 | 0.007 |
| >55 | | | | |
| Weeks | | | | |

Conclusions:

Above studies clearly indicate the huge benefits of using organic acids (Acidomix DF+) in broilers as well as layers. Some of the key take aways from these studies are as follows:

- A. Inclusion of Acidomix DF+ showed significant increase in weight gain in broilers compared to control groups.
- B. Inclusion of Acidomix DF+ showed significant decline in %mortality and FCR in broilers compared to control groups.
- C. Acidomix DF+ inclusion showed significant reduction of Salmonella in crop and caeca of the birds conferring long term protection against Salmonella in vitro as well as in vivo.
- D. Inclusion of Acidomix DF+ showed significant increase in hen-day production in late lay (post 55 weeks) stage.



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3-D approach for Mycotoxin Risk Management

Dr Stuti Baruah Program Manager – Feed Safety Trouw Nutrition South Asia

Mycotoxicosis are diseases caused by the poisonous effects of the toxins produced by filamentous micro fungi (i.e., toxigenic moulds). Hundreds of mycotoxins are known and can produce mild to severe toxic effects when they occur above levels of concern. Poultry is particularly susceptible to mycotoxicosis, as they are often fed diets that contain a variety of grains and other ingredients that may be contaminated with mycotoxins.

The importance of <u>mycotoxin</u> problems in poultry is probably considerable yet difficult to measure directly. Chronic low levels of exposure to more than one type of mycotoxin appears to be a very common now a days. Usage of alternate raw materials in poultry diets also causes the risk of exposure to multiple mycotoxins.

Multiple mycotoxicosis in poultry refers to the presence of two or more different mycotoxins in the same feed or feed ingredient, which can lead to more severe and complex symptoms. The symptoms of mycotoxicosis in poultry can vary depending on the type and degree of the toxin exposure. Some of the most common symptoms include decreased feed intake, reduced growth, poor-egg production, decreased immunity, and even death in severe cases. When multiple mycotoxins are present, the symptoms may be more severe and may include a range of different effects on the birds' health and performance.

Feed and food production chains are at risk, globally due to -

• Mycotoxin contamination is one of the main threats in feed production. Improper feed storage, heat & humidity favour the growth of toxicogenic fungi, which produce mycotoxins.

• The sharp rise in international trade has intensified the mycotoxin risk globally.

• Mycotoxin levels in feed and food require careful monitoring and control.

Mycotoxins can have additive, synergistic, and antagonistic effects with other toxins, infectious agents, and nutritional requirements. Mycotoxins can also interact with drugs used as therapeutic agents and diminish the effects of vaccines administered to poultry.

Common mycotoxins associated with mycotoxicosis in poultry include

Aflatoxins, Ochratoxins, Fumnonisins, Zearalenone, and Trichothecenes such as deoxynivalenol (DON) and T-2 toxins. Chronic or intermittent exposure can occur in regions where grain and feed ingredients are of poor quality and when feed storage is substandard or prolonged. Impaired production efficiency can be a clue to a mycotoxin problem, as can improvement due to correction of feed management deficiencies.

Clinical signs of mycotoxin expo-

sure in poultry may include the following:

- Gl issues
- Organ damage, particularly liver and kidneys
- Immunosuppression

Oral ulcers and crusts occurring on the palate or tip of the tongue and oesophagus can occur with exposure to mycotoxins, including aflatoxin and mycotoxins produced by *Fusarium* toxins, such as the trichothecenes T-2 toxin (T-2), deoxynivalenol (DON).

Diagnosis of mycotoxicosis can be done by:

- History; clinical signs
- Mouldy feed
- Detection and quantification of specific mycotoxins



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ARTICLE *3-D approach* ...

Feed and ingredient samples should be properly collected and promptly submitted for analysis. Material wise Mycotoxin analysis that can be done:

| Material Name | MULTITOXIN RANGE | | | | | | |
|-----------------------|------------------|--|------------|-------------|-----|-------|--|
| Material Name | AFLATOXIN | OCHRATOXIN | FUMONISION | Zearalenone | DON | T2HT2 | |
| Any Feed Samples | | | | | | | |
| BROILER FEED | | If concern, should test all mycotoxins | | | | | |
| FISH FEED | | | | | | | |
| LAYER FEED | | | | | | | |
| CATLLE FEED | | | | | | | |
| FEED OTHER | | | | | | | |
| COPRA (PRODUCTS) | | | | | | | |
| DORB | | | | | | | |
| RAW RICE BRAN(RRB) | | | | | | | |
| COTTON SEED MEAL/DOC | | | | | | | |
| GUAR MEAL | | | | | | | |
| MAIZE | | | | | | | |
| MAIZE DDGS | | | | | | | |
| MAIZE GLUTEN MEAL | | | | | | | |
| MAIZE OTHER PRODUCTS | | | | | | | |
| PALM KERNEL MEAL | | | | | | | |
| GROUND NUT (PRODUCTS) | | | | | | | |
| RAPESEED MEAL | | | | | | | |
| RICE BRAN (DEFATTED) | | | | | | | |
| RICE PRODUCTS | | | | | | | |
| SOYA DOC | | | | | | | |
| SOYA-OTHER | | | | | | | |
| SUNFLOWER MEAL1 | | | | | | | |
| WHEAT | | | | | | | |
| WHEAT BRAN3 | | | | | | | |

Prevention of Mycotoxicosis can be done by using Mould-free feed and ingredients implementing good agricultural practices and management practices.

<u>3 D approach</u> for Mycotoxin Risk

Management: Using a broad-spectrum mycotoxin binder would help farmers mitigate the risk of multiple mycotoxins. TOXO-XL offers a total solution against a broad spectrum of toxins produced by moulds, TOXO-XL forms part of an integrated approach at supporting health of livestock and poultry to maintain health status and performance during exposure to mycotoxins. TOXO-XL is designed for all poultry, dairy and pig species and contains multiple mechanisms to help support the animal in dealing with mycotoxins. TOXO-XL consists of an effective aflatoxin binder and specific ingredients that support gut wall integrity and the immune system.

TOXO[®] XL is based on 3 pillars of protection: 1. Mycotoxin binding 2.Gut wall protection

3.Immuno modulation

Benefits of 3-D approach by Trouw Nutrition's Toxo-XL:

- Binds and eliminates mycotoxins.
- Strengthens intestinal barriers.
- Modulates immune response.
- Mitigates animal performance impairment caused by exposure to mycotoxins.

Highly layered smectite clays present in Toxo-XL have high aflatoxin binding. It binds with other polar mycotoxins and LPS. Glucose biopolymers protect the tight junctions and Beta glucans provide immunity. This is the three-dimensional way of mycotoxin risk management.

In conclusion, mycotoxins are silent thieves that eat away profits in livestock and poultry production by affecting performance and health. It is important to routine scan raw materials and finished feed to take appropriate actions.

It is impossible to have one silver bullet to bind and eliminate all mycotoxins, emerging mycotoxins and counteract the immunosuppression caused by synergies and interactions of multiple mycotoxins. Hence, producers need to look at more integrated and holistic approach to counter multiple mycotoxin challenge.

3-D approach gives a more rational, scientific approach to negate the detrimental effects of multiple mycotoxin challenges in poultry and livestock production.

For further information, kindly write to us at customercareindia@trouwnutrition.com or visit our website: <u>www.</u> trouwnutrition.in

References: Manual of poultry diseases, Selko internal data.

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Understanding Mycotoxins is Not Easy

The occurrence of mycotoxins in the feed is of great concern and an unavoidable problem in the worldwide feed industry. Mycotoxins also endanger human health through the cycle of the food chain. Feed constitutes one of the major input cost incurred in poultry farming, nearly 65 to 70% of the total rearing cost of Poultry is constituted by the Feed alone and thus it becomes imperative to have the best quality feed in order to maintain healthy flocks and ensure best performance for maximum profits.

The Feed, which is made up of various raw materials, is also the major source of mycotoxin and their metabolites that cause the damage to the birds immune system, health and well being, diseases and failure of vaccines and poor response withtreatments, leading to poor overall performance, confusion and leading to financial losses. The contamination of feed through various means which include the quality of the raw materials used and the ways by which these raw materials are handled, stored and processed to form the final product plays an important role in determining the negative effects which the feed can bring on the health and productive performance of the birds. It is operationally not possible to have fool proof arrangements to ensure there are no contaminants (Physical or Biological) in the feed. Some way or the other, at the feed manufacturing level or at the farm level, the feed gets contaminated leading poor immunity, to impaired health and productivity in birds. It's a dynamic situation, a variety of fungal spores and fungus are always

present in the feed ingredients, when conditions are favourable, the spores sporulate's and new fungus germinates and grows, the old existing fungus by this time is ready to produce a variety of mycotoxins, with every passing day, the level of the mycotoxins, their combination, metabolites and quantity change's. Nutritionist/Consultants/Advisor's/ Scientist's give least cost, well balanced feed formulations, considering the nutrient contents of each ingredient to the third decimal place, ignoring the quality aspects of the ingredients being used, specially with respect to the mycotoxins and their metabolites.

The Veterinarian's in the poultry industry mostly look for and try to diagnose the new and emerging Viral, Bacterial, Nutritional or Managemental diseases as the main reason for problems in poultry production, usually ignoring the mycotoxins and the complications they create, which are not easy to diagnose and treat.

The present generation farmers, or highly educated son's of old poultry farmers, who frequently "Google" to find the solutions to problems they see and face on their farms, may get theoretical answers to their questions, but they stay away from the reality, and end up using unwanted ingredients, items, drugs, medicines, feed additives, nutraceuticals and vaccines. Farmer's always thinks, the ingredients they purchases to formulate and manufacture the feed for his poultry are the best quality available in the market, and rarely accept the fact, that mycotoxins are entering his birds through the

Dr. S.K.Maini Gen. Manager (Technical) Vesper Group, Bengaluru

so called good feed, then his EGO takes over and they argue, my feed is excellent quality wise or why will I feed toxins to my birds. In India, when ever we talk about mycotoxins, farmers, nutritionists and experts think they are being abused or belittled, so they go into defensive mode, and say their ingredients are good quality, dry and free of mycotoxins, some even get it tested for aflatoxins and show the negative or within limits analysis reports.

The culture of buying cheap fresh feed ingredients with high moisture content and holding/hoarding them till the market rates increase, which may take few weeks to few months, during this period the fungus grows, produce mycotoxins, insects eat certain nutrients changing their nutritional contents and composition, simultaneously add their faecal matter and urine to the ingredients, lowering there quality.

The feed plant's raw material storage area or bins, mixer's, grinder's, elevator's, conveyor's, finished feed storage bins, feed transporting vehicles etc., are very rarely to never cleaned, washed or sanitised, and are a source of fungus spread and mycotoxins.

There are no laboratories for regular and proper testing of the feed ingredients or finished feeds with respect to the nearly 500 types of mycotoxins and their metabolites, present in the poultry industry. Lots of wrong information is fed to the farmers and the young Veterinarians by personnel of the pharma industry,



TOXO®-XL

3-D approach for Mycotoxin Risk Management

THE BENEFITS

Reduces mycotoxin bioavailability



Modulates intestinal barrier function

Reinforces the immune system



Scan the code for latest updates **Trouw Nutrition India Pvt. Ltd.** L4 04, SLN Terminus, Beside Botanical Garden, Gachibowli, Hyderabad, Telangana – 500032 T.: +91 40 2988 0258 E.: customercareindia@trouwnutrition.com W.: www.trouwnutrition.in claiming their product (toxin binder) is capable of preventing all varieties of mycotoxins present in the feed, which in fact is a big lie only to promote their product and make money.

Poor ventilation of storage area, improper construction and other defects add to the already complex situation, failure to prevention and control the rodents, birds, insects etc. ruin the situation further. Understanding mycotoxins is not easy, for the above mentioned reasons, and also as they never come alone, always exist as multiple mycotoxins, mycotoxin incidence in different types of raw materials and feedstuffs is different, combination of toxins is also not same every time, the characters of each toxin, their effect - synergistic or additive, damage caused in various organs and systems, the metabolites produced etc., are also different. As some are neurotoxic, others hemotoxic, nephrotoxic, cytotoxic, Immune system suppressants, they disturb the metabolism and interfere in the reproductive and genetic mechanisms.

Mycotoxin toxicity also differs, depending upon the species of animal in question, age of the animal, Sex, type and number of toxins detected, and the concentration of each mycotoxins in feed.

Everyone concerned with the poultry production have to change their thinking, perception and damage done by the mycotoxins and their metabolites to the birds, their health and performance, to provide safe food, both meat and eggs for the population that consumes it. As no single product of any company can prevent the damage they do. strategies need to be developed for the prevention, control and treatment using combination of products and techniques coupled with high standard of hygiene and sanitation of the feed plants, transportation and storage area's. Establishment of the state of the art laboratories in all important poultry production centres to test and analyse the mycotoxins and their metabolites is the need of the hour.



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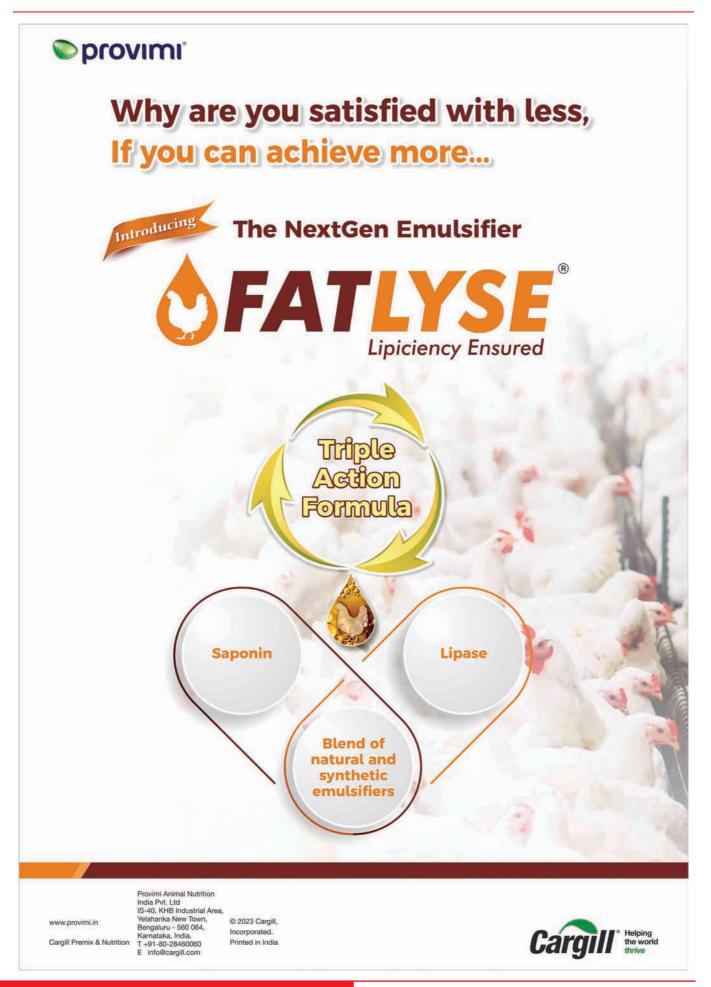
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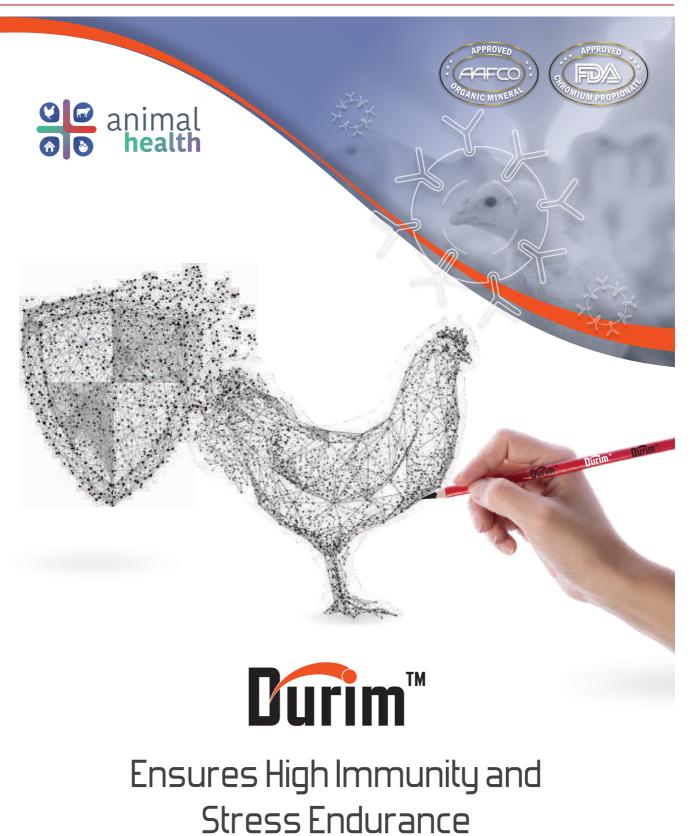








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